The Graduate School

Graduate Record of
The University of North Carolina
at Chapel Hill
2004-2006

August 2004

On the Web: www.unc.edu/gradrecord

The Graduate Record is on a two-year publishing schedule. The next printed version of the Record will appear in August 2006. For the most current information, please refer to the online Record at www.unc.edu/gradrecord. In instances of discrepancy between the printed and online Records, the online version takes precedence.
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Two-Year Schedule
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Record of the University of North Carolina at Chapel Hill
2004-2006

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The University of North Carolina at Chapel Hill is open to people of all races, is committed to equality of educational opportunity, and does not discriminate against applicants, students, or employees based on age, race, color, sex, religion, national origin, and disability. It is the policy of the University of North Carolina at Chapel Hill that sexual orientation be treated in this same manner. Any complaints alleging failure of this institution to follow this policy should be brought to the attention of the General Counsel.

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The University of North Carolina at Chapel Hill believes that educational and employment decisions should be based on individuals' abilities and qualifications and should not be based on irrelevant factors or personal characteristics that have no connection with academic abilities or job performance. Among the traditional factors which are generally “irrelevant” are age, race, color, sex, religion, national origin, and disability. It is the policy of the University of North Carolina at Chapel Hill that an individual's sexual orientation be treated in the same manner. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied. This policy prohibiting discrimination on the basis of sexual orientation does not apply to the University's relationships with outside organizations, including the federal government, the military, ROTC, and private employers.
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To Graduate Students and Prospective Graduate Students

The University of North Carolina at Chapel Hill is one of the leading graduate research universities in the United States. As one of the most comprehensive in the nation, Carolina provides a breadth of study and interdisciplinary experience matched by few institutions. There are sixty-four doctoral-level programs and ninety-one master's-level programs currently active in The Graduate School.

This catalog provides basic information about these programs. It includes our admission standards and requirements, tuition and other costs, sources of financial aid including fellowships, and information concerning research institutes and centers as well as brief program and course descriptions. In addition, you will find under each program description a listing of all graduate faculty in that area together with their specific research interests. Please visit The Graduate School Web site, www.gradschool.unc.edu, for more information on many of these topics.

The University of North Carolina at Chapel Hill believes that academic excellence is enhanced by the maintenance of a community that includes people from a wide range of ethnic, racial, socio-economic, and geographic backgrounds, as well as individuals whose personal attributes will contribute to a richer learning environment. The University is committed to equality of educational opportunity.

In addition to the resources represented by an outstanding faculty, an outstanding research library, and other outstanding facilities, the University has a warm and collegial spirit that is conducive to personal growth and scholarship.

By attending this institution you are becoming an important part of a 200-year-old tradition of excellence in scholarship, research, teaching, and public service. We hope that your time here is fruitful, challenging, and rewarding.

The Graduate School
Mission Statement:
The University of North Carolina at Chapel Hill

The University of North Carolina at Chapel Hill has been built by the people of the State and has existed for two centuries as the nation's first state university. Through its excellent undergraduate programs, it has provided higher education to ten generations of students, many of whom have become leaders of the state and the nation. Since the nineteenth century, it has offered distinguished graduate and professional programs.

The University is a research university. Fundamental to this designation is a faculty actively involved in research, scholarship, and creative work, whose teaching is transformed by discovery and whose service is informed by current knowledge.

The mission of the University is to serve all the people of the State, and indeed the nation, as a center for scholarship and creative endeavor. The University exists to teach students at all levels in an environment of research, free inquiry, and personal responsibility; to expand the body of knowledge; to improve the condition of human life through service and publication; and to enrich our culture.

To fulfill this mission, the University must:

• provide high-quality undergraduate instruction to students within a community engaged in original inquiry and creative expression, while committed to intellectual freedom, to personal integrity and justice, and to those values that foster enlightened leadership for the State and the nation;

• acquire, discover, preserve, synthesize, and transmit knowledge;

• provide graduate and professional programs of national distinction at the doctoral and other advanced levels to future generations of research scholars, educators, professionals, and informed citizens;

• extend knowledge-based services and other resources of the University to the citizens of North Carolina and their institutions to enhance the quality of life of all people in the State; and

• address, as appropriate, regional, national, and international needs.

This mission imposes special responsibilities upon the faculty, students, staff, administration, trustees, and other governance structures and constituencies of the University in their service and decision making on behalf of the University.
The UNC System
History of the University

In North Carolina, all the public educational institutions that grant baccalaureate degrees are part of the University of North Carolina. The University of North Carolina at Chapel Hill is one of sixteen constituent institutions of the multicampus state university.

The University of North Carolina, chartered by the North Carolina General Assembly in 1789, was the first public university in the United States to open its doors and the only one to graduate students in the eighteenth century. The first class was admitted in Chapel Hill in 1795. For the next 136 years, the only campus of the University of North Carolina was at Chapel Hill.

In 1877 the North Carolina General Assembly began sponsoring additional institutions of higher education, diverse in origin and purpose. Five were historically Black institutions, and another was founded to educate American Indians. Several were created to prepare teachers for the public schools. Others had a technological emphasis. One is a training school for performing artists.

In 1931 the North Carolina General Assembly redefined the University of North Carolina to include three state-supported institutions: the campus at Chapel Hill (now the University of North Carolina at Chapel Hill), North Carolina State College of Agriculture and Engineering at Raleigh (now North Carolina State University at Raleigh), and the North Carolina College for Women (Woman's College) at Greensboro (now the University of North Carolina at Greensboro). The new multicampus University operated with one board of trustees and one president. By 1969, three additional campuses had joined the University through legislative action: the University of North Carolina at Charlotte, the University of North Carolina at Asheville, and the University of North Carolina at Wilmington.

In 1971 the General Assembly passed legislation bringing into the University of North Carolina the state's ten remaining public senior institutions, each of which had until then been legally separate: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University, and Winston-Salem State University. This action created the current sixteen-campus University. In 1985 the North Carolina School of Science and Mathematics, a residential high school for gifted students, was declared an affiliated school of the University.

The UNC Board of Governors is the policy-making body legally charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." It elects the president, who administers the University. The thirty-two voting members of the board are elected by the General Assembly for four-year terms. Former board chairmen and board members who are former governors of North Carolina may continue to serve for limited periods as nonvoting members emeriti. The president of the UNC Association of Student Governments, or that student's designee, is also a nonvoting member.

Each of the sixteen constituent institutions is headed by a chancellor, who is chosen by the Board of Governors on the president's nomination and is responsible to the president. Each institution has a board of trustees, consisting of eight members elected by the Board of Governors, four appointed by the governor, and the president of the student body, who serves ex officio. (The North Carolina School of the Arts has two additional ex officio members.) Each board of trustees holds extensive powers over academic and other operations of its institution on delegation from the Board of Governors.
The University of North Carolina: Sixteen Constituent Institutions

Appalachian State University
www.appstate.edu

East Carolina University
www.ecu.edu

Elizabeth City State University
www.ecsu.edu

Fayetteville State University
www.uncfsu.edu

North Carolina Agricultural and Technological State University
www.ncat.edu

North Carolina Central University
www.nccu.edu

North Carolina School of the Arts
www.ncarts.edu

North Carolina State University
www.ncsu.edu

University of North Carolina at Asheville
www.unca.edu

University of North Carolina at Chapel Hill
www.unc.edu

University of North Carolina at Charlotte
www.uncc.edu

University of North Carolina at Greensboro
www.uncg.edu

University of North Carolina at Pembroke
www.uncp.edu

University of North Carolina at Wilmington
www.uncwil.edu

Western Carolina University
www.wcu.edu

Winston Salem State University
www.wsu.edu
Board of Governors
The University of North Carolina

J. Bradley Wilson
Chair
Post Office Box 2291
Durham, NC 27702-2291
919/765-3558
Fax: 919/765-7818

Teena S. Little
Vice Chair
650 Fort Bragg Road
Southern Pines, NC 28387
910/692-6750
Fax: 910/692-1863

G. Irvin Aldridge
Secretary
125 Scuppernong Road
Manteo, NC 27954
252/473-2207
Fax: 252/473-9394

Bradley T. Adcock
Post Office Box 2291
Durham, NC 27702
919/765-4119
Fax: 919/765-2432

James G. Babb
600 Ardsley Road
Charlotte, NC 28207
704/632-6725
Fax: 704/347-5280

J. Addison Bell
700 Sam Newell Road
Post Office Box 1395
Matthews, NC 28106
704/847-4406
Fax: 704/844-2755

F. Edward Broadwell Jr.
Post Office Box 10
Asheville, NC 28802-0010
828/259-3939 ext. 1360
Fax: 828/259-3956

William T. Brown
1840 Broadell Drive
Fayetteville, NC 28301
910/498-5423
Fax: 910/480-0292

Angela R. Bryant
717 West End Street
Rocky Mount, NC 27803
252/442-4022
Fax: 703/783-8553

William L. Burns Jr.
Post Office Box 931
Durham, NC 27702
919/683-7600
Fax: 919/683-7680

C. Clifford Cameron
1970 Two Wachovia Center
Charlotte, NC 28288-0016
704/374-6470
Fax: 704/338-9539

Anne W. Cates
329 Tenney Circle
Chapel Hill, NC 27514
919/942-2161
Fax: 919/932-1716

John F. A. V. Cecil
Post Office Box 3555
Asheville, NC 28813
828/209-2000
Fax: 828/209-2150

Bert Collins
411 W. Chapel Hill Street
Mutual Plaza
Durham, NC 27701
919/682-9201 ext. 201
Fax: 919/688-0842

John W. Davis III
200 W. 2nd Street, Suite 500
Winston-Salem, NC 27101
336/727-4288
Fax: 336/761-1726

Jonathan L. Ducoté
UNC ASG
2008 Hillsborough Street
Box 10
Raleigh, NC 27603
919/715-2431
Fax: 919/715-7473

Ray S. Farris
Post Office Box 36469
Charlotte, NC 28236
704/998-2223
Fax: 704/376-1628

Dudley E. Flood
1408 Griffin Circle
Raleigh, NC 27610
919/832-7095
Fax: 919/832-6987

Hannah D. Gage
6046 Leeward Lane
Wilmington, NC 28409
910/790-9375
Fax: 910/256-6929
Willie J. Gilchrist  
Post Office Box 468  
Halifax, NC 27839  
252/583-5111  
Fax: 252/583-1474

Hiram Frank Grainger  
Post Office Box 386  
Cary, NC 27512-0386  
919/467-1599  
Fax: 919/467-9142

James E. Holshouser Jr.  
Member Emeritus  
130 Longleaf Drive  
Southern Pines, NC 28387  
910/295-4250  
Fax: 910/295-2630

Peter Keber  
2301 Cloister Drive  
Charlotte, NC 28211  
704/364-6898  
Fax: 704/364-8319

Charles H. Mercer Jr.  
Post Office Box 6529  
Raleigh, NC 27628  
919/821-6247  
Fax: 919/835-6547

Barbara S. Perry  
Post Office Box 1475  
Kinston, NC 28503  
252/523-5107  
Fax: 252/523-8858

Patty Brewington Perry  
2204 Chase Street  
Durham, NC 27707  
919/493-8471  
Fax: 919/493-8471

Jim W. Phillips Jr.  
Post Office Box 26000  
Greensboro, NC 27420  
336/271-3131  
Fax: 336/378-1001

H. D. Reaves Jr.  
104 Cameron Glen Drive  
Chapel Hill, NC 27516  
919/932-1953  
Fax: 919/932-1953

Gladys Ashe Robinson  
Post Office Box 20964  
Greensboro, NC 27420  
336/274-1507  
Fax: 336/274-4251

Benjamin S. Ruffin  
8 West Third Street  
Suite 575  
Winston-Salem, NC 27101  
336/725-1311  
Fax: 336/725-1313

J. Craig Souza  
5109 Bur Oak Circle  
Raleigh, NC 27612  
919/782-3827  
Fax: 919/787-8418

Priscilla Patterson Taylor  
122 North Elm Street  
Suite 816  
Greensboro, NC 27401  
336/274-3541  
Fax: 336/272-8153

Robert F. Warwick  
Post Office Box 1730  
Wilmington, NC 28402  
910/762-9671  
Fax: 910/762-9206

Ruth Dial Woods  
220 Carter Morgan Road  
Pembroke, NC 28372  
910/521-9006  
Fax: 910/521-9305
The University of North Carolina
General Administration

Molly C. Broad, BA, MA
President

L. Bart Corognati, BS, MS
Secretary of the University

Gretchen M. Bataille, BA, MA, PhD
Senior Vice President for Academic Affairs

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Vice President for University-School Programs
The University of North Carolina at Chapel Hill
Board of Trustees

Richard (Stick) T. Williams (2007)
Chair
Duke Energy
Mail Code PB04P
422 South Church Street
Charlotte, NC 28202
(704) 382-2500 Fax 373-7037

Nelson Schwab III (2005)
Vice Chair
Carousel Capital
201 N. Tryon Street - Suite 2450
Charlotte, NC 28202
(704) 372-2040 Fax 372-1040

Jean Almand Kitchin (2007)
Secretary
PO Box 408
Scotland Neck, NC 27874
(252) 442-5200 Fax 442-1101

Timothy (Tim) B. Burnett (2007)
Bessemer Improvement Company
PO Box 14220
Greensboro, NC 27415-4220
(336) 272-8179 Fax 272-1073

Philip (Phil) G. Carson (2005)
Adams, Hendon, Carson, Crow & Saenger, PA
PO Box 2714
Asheville, NC 28802
(828) 252-7381 Fax 252-5018

Russell (Rusty) M. Carter (2005)
Atlantic Corporation of Wilmington
806 N. 23rd Street
Wilmington, NC 28405
(910) 343-0624 Fax 343-1273

The Ellison Company, Inc.
PO Box 29027
Greensboro, NC 27429
(336) 275-8565 Fax 274-9217

Paul Fulton Jr. (2005)
380 Knollwood Street - Suite 610
Winston-Salem, NC 27103
(336) 725-7994 Fax 725-7993

Karol V. Mason (2005)
Alston & Bird LLP
1201 W. Peachtree St., One Atlantic Center
Atlanta, GA 30309-3424
(404) 881-7494 Fax 253-8259

Roger L. Perry Sr. (2007)
East West Partners
190 Finley Golf Course Road
Chapel Hill, NC 27517
(919) 929-0660 Fax 967-0959

A. Donald (Don) Stallings (2005)
404 Wildwood Avenue
Rocky Mount, NC 27803
(252) 937-2464 Fax 443-7997

Robert (Bob) W. Winston III (2007)
Winston Hotels, Inc.
2626 Glenwood Avenue
Suite 200
Raleigh, NC 27608
(919) 510-6002 Fax 510-6016

Matthew Calabria
Ex-Officio Member
Student Body President
Student Government, UNC-Chapel Hill
Box 47, CB #5210, Carolina Union
Chapel Hill, NC 27599-5210
(919) 962-5202

Brenda Kirby
Assistant Secretary
UNC-Chapel Hill
Chancellor's Office
103 South Building - CB #9100
Chapel Hill, NC 27599-9100
(919) 962-1365 Fax (919) 962-1647
The UNC System: UNC-Chapel Hill
Administrative Officers

Record of the 2003 Academic Year

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Connie Boyce, Interim Director, HR Workplace Planning and Recruitment
Judy Sladen, BA, Manager, Tar Heel Tems
Keita Cannon, BA, Director, Policy Administrator
Claire Miller, MA, Director, Training and Development
Rob Kramer, MS, Interim Director, Training and Development
Barbara DeLon, Director, Employee Services
Mari Forbes, MPA, Interim Director, Employee Services
Brenda Glover, Interim Director, Benefits
Anora Robbins, BS, Senior Director, Services
Claire Miller, MA, Senior Director, HR Services
Linc Butler, Generalist Team Leader

1 Resigned, effective 1 August 2003
2 Resigned 31 July 2003
3 Title change, effective 1 July 2003
4 Title change, effective 1 July 2003
5 Title change, effective 1 July 2003
6 Title change, effective 1 July 2003
7 Retired 30 November 2003
8 Title change, effective 12 December 2003
9 Effective 1 April 2003
10 Advance degree
11 Resigned, effective 30 November 2003
12 Resigned, effective 1 December 2003
13 Retired 31 January 2003, position abolished 1
14 Resigned, effective 9 October 2003
15 Effective 10 October 2003
16 Title change, effective 1 December 2003
17 Effective 7 May 2003
18 Resigned, effective 31 July 2003
19 Effective 30 September 2002
20 Resigned, effective 31 July 2003
21 Effective 28 July 2003
22 Resigned, effective 14 April 2003
23 Resigned, effective 31 March 2003
24 Effective 1 August 2003
Gena Carter, Generalist Team Leader
Matthew Brody, BS, Senior Director, HR Planning and Systems 25
Stan Cleverly, BS, Director, HR Project Management 16
Dave Turner, BA, Director, HRIS Support 17
Chris Chiron, MA, Communications Director 18
Maggie Ford, Director, Employee Records

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Terri C. Houston, MA, Director, On-Campus Recruitment and Support Programs
M. Cookie Newsom, PhD, Director, Diversity Education and Research 19

Dean L. Bresciani, PhD, Interim Associate Vice Chancellor, Student Affairs
Cynthia Wolf-Johnson, EdD, Associate Vice Chancellor for Student Learning and Director, Carolina Leadership Development
Dean L. Bresciani, PhD, Associate Vice Chancellor for Student Services
Melissa E. Estum, PhD, Dean of Students
Sarah W. Joinzak, CPM, Director of Finance and Personnel
Virginia Carson, JD, Director, Campus Y
Donald E. Luse, MEd, Director, Frank Porter Graham Student Union
James Kessler, MA, Director, Disability Services
Jay Anhorn, MA, Director, Office of Greek Affairs
Robert J. Locke, EdD, Director, International Center 30
Judy M. Deshotel, MA, Director, Orientation 31
Deborah Horne, Director, Student Activities Fund Office
J. Robert Wirag, HSD, Director, Student Health Services
Marcia B. Harris, MEd, Director, University Career Services
John W. Edgerly, EdD, Director, Counseling and Psychological Services
Christopher A. Payne, PhD, Director, University Housing and Residential Education

Stephen Jarrell, BS, Interim Vice Chancellor for Information Technology and Chief Information Officer
R. Joel Dunn, MA, Acting Associate Vice Chancellor for Information Technology and Executive Director, Administrative Information Services 32
John Oberlin, MBA, Associate Vice Chancellor for Information Technology and Executive Director, Academic Technology and Networks 13

Candice Davies, BA, Director, Systems and Procedures
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Paul Jones, MFA, Director, ibiblio 14

Matthew G. Kupec, MEd, Vice Chancellor for University Development

Marjorie Crowell, BA, Associate Vice Chancellor for Development 35
Andi Sobbe, BA, Director, Donor and Prospect Relations 17
Beth G. Braxton, BA, Director, Annual Fund 38
Mark Meares, BA, Director, Corporate and Foundation Relations for Academic Affairs
Helen N. Snow, MBA, Director, Corporate and Foundation Relations for Health Affairs
June L. Steel, MBA, Director, Planned and Regional Gifts
Charles Hallman, MA, Director, Development Communications
Jean M. Vickery, BA, Associate Vice Chancellor, Administrative Services
Nancy K. Davis, BA, Associate Vice Chancellor, University Relations

Michael McFarland, MA, Director, University Communications
David Williamson, MA, Director, Research News
Bettie Rudo, BA, Interim Director, Design Services
H. Scott Jared, BS, Web Manager

Scott Ragland, MFA, Editor, University Gazette
Joan Rose, BA, General Manager, WUNC(FM) Radio
Jennifer L. Fields, MA, Director, University Events 19
Laura H. Morgan, BA, Director, University Events 40
Sandra Roberts, MS, Director, Visitor Services and Speakers Bureau
Jonathen Howes, MPA, Special Assistant to the Chancellor and Director, Local Relations
Susan Carpenter, MA, Director, Parent’s Fund
Linda Douglas, AB, Director, Community Relations

George Ann Bissett, MA, Major Gifts Officer

25 Title change, effective 1 December 2003
26 Effective 30 June 2003
27 Effective 3 November 2003
28 Title change, effective 1 July 2002
29 Effective 1 April 2003
30 Reporting line change, effective 1 December 2003
31 Effective 18 August 2003
32 Effective 20 February 2003
33 Title change, effective 25 May 2001
34 Title change, effective 1 September 2000
35 New position, effective 23 February 2003
36 Resigned, effective 30 September 2003
37 Title change, effective 10 November 2003
38 Effective 10 November 2003
39 Terminated 4 June 2003
40 Effective 2 September 2003
Robert N. Shetton, PhD, Executive Vice Chancellor and Provost
Bernadette Gray-Little, PhD, Executive Associate Provost
Stephen Alled, JD, Associate Provost for Academic Initiatives
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Jerry A. Lucido, PhD, Vice Provost, Enrollment Management and Director, Undergraduate Admissions
Shirley A. Ott, JD, Associate Provost and Director, Office of Scholarships and Student Aid

Joe A. Hewitt, PhD, Associate Provost for Libraries and University Librarian
Elmira Mangum, PhD, Associate Provost for Finance
Barron S. Matherly, BS, Assistant Provost for Finance
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David C. Lanier, MS, Assistant Provost and University Registrar
Lynn Williford, Assistant Provost and Director, Institutional Research

Gerald D. Bolas, PhD, Director, Ackland Art Museum
Martha Cox, PhD, Director, Center for Developmental Sciences
Lawrence G. Rowan, PhD, Director, Center for Teaching and Learning
Norman L. Loewenthal, MEd, Director, Division of Continuing Education, and Director, The William and Ida Friday Continuing Education Center

Holden H. Thorp, PhD, Director, Morehead Planetarium and Science Center 44
Peter White, PhD, Director, North Carolina Botanical Garden
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Douglas Crawford-Brown, PhD, Director, Carolina Environmental Program

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Joseph F. Jordan, PhD, Director, Sonja Haynes Stone Center for Black Culture and History
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Karen M. Gil, PhD, Senior Associate Dean, Undergraduate Education
Darryl Gless, PhD, Senior Associate Dean, Humanities and Fine Arts
Richard Soloway, PhD, Senior Associate Dean, Social Sciences
Tammy McHale, MBA, CPA, Senior Associate Dean, Finance and Planning

Douglas Kelly, PhD, Senior Associate Dean, Natural and Applied Sciences
Carolyn Cannon, MA, Associate Dean, Academic Advising
Fred Clark, PhD, Associate Dean, Academic Services
Thomas Tweed, PhD, Associate Dean, Undergraduate Curricula
James L. Leloudis, PhD, Associate Dean, Honors
Harold Woodard, MA, Associate Dean, Academic Counseling
James May, MA, Senior Associate Dean and Executive Director, Arts and Sciences Foundation

Julie H. Collins, PhD, Interim Dean, Kranz-Flagler Business School 50
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Gene R. Nichol, JD, Dean, School of Law
Joanne G. Marshall, PhD, Dean, School of Information and Library Science
Jack M. Richman, PhD, Dean, School of Social Work
Michael R. Smith, JD, Dean, School of Government
Linda Dykstra, PhD, Dean, The Graduate School
John W. Stamm, DDS, DDP, Dean, School of Dentistry
Jeffrey L. Houp, MD, Dean, School of Medicine
Linda R. Cronenwett, PhD, Dean, School of Nursing
William L. Roper, MD, Dean, School of Public Health
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41 Effective 1 December 2003
42 Position Eliminated, Effective 1 February 2003
43 Effective 1 October 2003
44 Unit name change, effective 1 January 2003
45 Resigned, effective 1 July 2003
46 Resigned, position eliminated 30 November 2003
47 Reporting line change, effective 1 December 2003
48 Resigned, effective 30 June 2003
49 Effective 1 July 2003
50 Resigned, effective 30 June 2003
51 Effective 1 July 2003 – 31 July 2003
52 Effective 1 August 2003
53 Resigned, effective 20 June 2003
54 Effective 1 July 2003 – 31 October 2003
55 Effective 1 November 2003
56 Effective 30 June 2003
57 Effective 1 July 2003
Carol Jenkins, MLS, Director, Health Sciences Library
Carolyn M. Mayo, PhD, Director, North Carolina Health Careers Access Program

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H. Douglas Robertson, PhD, Director, Highway Safety Research Center
Alan W. Cross, MD, Director, Center for Health Promotion and Disease Prevention
Timothy S. Carey, MD, Director, Cecil G. Sheps Center for Health Services Research
Barbara Enwise, PhD, Director, Carolina Population Center
Tracy M. Heenan, DVM, Institutional Animal Care and Use Committee (IACUC)
Daniel K. Nelson, MS, Director, Office of Human Research and Oversight
F. John Case, MBA, Interim Director, Office of Clinical Trials 64
Barbara Longmire, MSN, Acting Director, Office of Clinical Trials 65
Jospeh M. DeSimone, PhD, Director, Institute for Advance Materials
Carol W. Runyan, PhD, Director, Injury Prevention Research Center
Victor Marshal, PhD, Director, Institute on Aging
John Longenecker, PhD, Institute on Nutrition 66
Melanie Sinche, MA, Director, Office of Postdoctoral Services
The UNC System: UNC-Chapel Hill
Administrative Board of The Graduate School

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Brenda Devellis, PhD, Professor of Health Behavior and Health Education (2005)
Bruce Fried, PhD, Professor of Health Policy and Administration (2005)
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Julia Wood, PhD, Professor of Communication Studies (2007)
Leo Zonn, PhD, Professor of Geography (2006)
* Terms expire July 31 of the year indicated.

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Jennifer Bushman, Graduate and Professional Student Federation

Ex Officio
Sarah Michalak, MLS, Director of Academic Affairs Libraries and Associate Provost for University Libraries
The Chancellor and the Provost also are ex officio members of the Board.

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A. Elizabeth Thurston, PhD, MA, Assistant Dean for Student Affairs
Stephanie A. Schmitt, MPA, Assistant Dean for Academics
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Linda Dykstra, Dean
Kathy Faminola, Dean's Assistant/Special Projects Coordinator
Jameel Freeman, Recruitment and Special Projects Assistant
Curtis Harper, Director of PURSUE Program
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Andy Johns, Interim Director of Information Technology

Deborah Makeumson, Communications Writer
Katie Meyer, Project and Events Coordinator
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Mary Anne Ragan, Director, Office of Development
Sue Robeson, Admissions Processor and Enrolled Students Assistant
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Cheryl Thomas, Director, Admissions and Enrollment Services
A. Elizabeth Thurston, Assistant Dean for Student Affairs
Ginger Tompkins, Admissions Processor
Rachell Underhill, Fellowship Coordinator, Office of Fellowships and Tuition Awards
Leslie Van Meter, Program Review/Student Services Coordinator
UNC-Chapel Hill
General Information

History
The University of North Carolina at Chapel Hill was the first state university to admit students. It was chartered in 1789 and formally opened in 1795; from early in its history, it has encouraged research and creative activity.

As early as 1853-54 the catalog of the University carried an announcement of graduate course work. In 1876, after the institution had been closed for the period 1871-75, the catalog announced the requirements for the master's degree, and the next issue carried an announcement of regulations governing the degrees of master of arts, master of science, and doctor of philosophy. Several graduate degrees were awarded before the turn of the century; the first degree of doctor of philosophy being conferred in 1883, but it was not until 1903 that a separate graduate school with a dean was established.

The Graduate School celebrated its one-hundredth year in 2003 by hosting a national forum on graduate education, numerous student and alumni recognition ceremonies, and by commissioning the book Pioneer to Powerhouse: The History of Graduate Education at Carolina (Puuca, 2003).

In 1920, from an earlier advisory committee, the Administrative Board of The Graduate School was organized. In 1922, the graduate faculty voted, first, to vest in the Administrative Board legislative powers in matters that affected graduate education; second, to authorize the Administrative Board to admit members to the teaching faculty of The Graduate School; and, third, to vest in the Administrative Board the responsibility for authorizing curricula and courses carrying graduate credit. At present, the board consists of nineteen members appointed by the chancellor upon nomination by the dean of The Graduate School.

With the exception of the master of business administration, the master of accounting, the master of school administration (MSA) degree in educational leadership, and the doctor of education (EdD) degree program in educational leadership, all master's degrees offered by the University and the degrees of doctor of philosophy and doctor of public health are conferred by The Graduate School. The inaugural Doctoral Hooding Ceremony was held in May 2003.

Organization
Work toward advanced degrees in the University of North Carolina at Chapel Hill proceeds under policies and regulations established by the graduate faculty. The immediate direction of The Graduate School is in the charge of the Administrative Board, of which the dean is chair, consisting of members of the faculty representing a variety of disciplines.

The Summer School
The University of North Carolina at Chapel Hill established what was possibly the first summer school in America in 1877. The "Summer Normal School," as it was then called, enrolled two hundred thirty-five students in courses over ten different disciplines. About half the students were teachers; students came from forty-two counties across North Carolina and from some neighboring states. The Summer School was first to enroll women as university students and continued this equal admission throughout its history. By 1925, records indicate that 19,983 students had enrolled in Summer School.

Curricula and courses that are offered during the Summer School are comparable to those of the fall and spring semesters. The Summer School is divided into two regular sessions of five and one-half weeks each and a special session that includes short courses, institutes, workshops, etc., with various beginning and ending dates. The summer program is planned to meet the needs of graduate students who are fulfilling degree requirements in this institution, visiting graduate students who desire to take courses for transfer to other institutions, teachers and administrators who desire to meet state certification requirements, and other students who have special educational objectives.

Graduate students who wish to be admitted or readmitted in the Summer School to a degree program should write to the dean of The Graduate School. The requirements for admission to a degree program starting in the summer are the same as those in the regular academic year. Those who desire a copy of the Summer School Catalog, or other information, and those wanting to enroll in the summer as visiting students should visit the Summer School’s Web page at www.unc.edu/depts/summer or write to the dean of the Summer School, The University of North Carolina at Chapel Hill, CB# 3340, 134 East Franklin Street, Room 200, Chapel Hill, NC 27599-3340, or telephone (919) 966-4364; fax (919) 962-2752.

Visiting Scholars
Registration as a Visiting Scholar at the University of North Carolina at Chapel Hill entitles the registrant to certain privileges of the University; the issuance of a UNC One Card, and the use of University facilities for the duration of the visitor’s stay.

Eligibility for registration as a Visiting Scholar is limited to those who (1) are not on the University payroll as employees in any capacity and (2) are visiting the University under the sponsorship of an academic department or school for the furtherance of scholarly interests. Visiting Scholars may include faculty members on leave from other institutions of higher learning, postdoctoral fellows, or others who hold the terminal degree in their fields and are invited to visit by a department or school.

Persons interested in applying for Visiting Scholars status should communicate with the appropriate department or school within the University. Further details concerning University privileges for Visiting Scholars are available from the EPA/Faculty Benefits Office, CB# 1045, 725 Airport Road, Chapel Hill, NC 27599-1045.

The University Year
Two semesters of approximately seventeen weeks each and a summer school consisting of two sessions, each five and one-half weeks long, constitute the University year. The requirements for admission to graduate programs and for graduate degrees in the summer session are the same as those in the regular academic year. For the schedule of events of particular interest to graduate students, consult the Academic Calendar of Events in this catalog.
Admissions and Financial Information

General Admissions Information

Application
Application for admission can be made online at www.gradschool.unc.edu. Inquiries concerning admission should be directed to one of the following:

Internet: www.gradschool.unc.edu
E-mail: gradinfo@unc.edu
Mail: The Graduate School
University of North Carolina at Chapel Hill
CB# 4010, 200 Bynum Hall
Chapel Hill, NC 27599-4010
Phone: (919) 966-2611
Fax: (919) 966-4010

Admission Criteria
Admission is highly competitive, and students are selected on the basis of their preparation and ability. With the exception of the Medical Allied Health Professions, where 75 percent of applicants offered admission must be North Carolina residents, there currently are no residency quotas for admissions. Applicants are eligible to apply if they have, or will complete prior to starting graduate study, an undergraduate degree from an appropriate college or university, or its international equivalent (based on a four-year curriculum), with an average grade of B or better for the last two years of study. Meeting this minimal requirement, however, does not ensure admission.

Application Due Dates
Complete all applications are due January 1 for applicants who wish to be considered for Graduate School funding. Applications received after the January 1 deadline will be considered for fellowships as funds remain available. Some programs may elect to continue receiving applications past this date. If so, they will establish a later application deadline and their applicants will be eligible for program-based funding. Please contact the program to which you are applying for specific deadline information. Students seeking admission for the spring semester should file applications no later than October 15 (September 15 for international applicants).

Application Fee
Applications must be accompanied by a non-refundable $65 fee for each program. The fee can be paid online by credit card, or by personal check or money order (international applicants use international money order) - no cash - made payable to the University of North Carolina at Chapel Hill. Applications submitted without the required fee will remain on file, unprocessed. If someone submits payment for you, please make sure your name is clearly noted as the intended applicant.

Application Fee Waiver
Fee waiver requests are considered for permanent full-time UNC-Chapel Hill employees and U.S. citizens who (1) are currently enrolled in a degree program with no breaks in enrollment from the point of entry at the undergraduate level, (2) have continuously received need-based aid, and (3) have had no breaks in financial support since the onset of the support. An original letter (not a form letter) from a financial aid officer is required, verifying items 1, 2, and 3 above. The Graduate School is unable to waive the application fee for international applicants. For more information on application fee waivers, please visit www.gradschool.unc.edu/students_prospective.html.

Decision Notification
Although individual programs may notify applicants of their recommendation regarding admission, official notification of the decision will come directly from The Graduate School. As a member of the Council of Graduate Schools, the UNC Graduate School has agreed to honor the April 15 deadline applicants are given for responding to full offers of admission. Every effort will be made to give sufficient notice regarding admission decisions prior to this deadline. Where an early decision is not possible, applicants can expect final notification regarding their application no less than two months before the beginning of the relevant semester.

Major/Degree Intent
Some graduate programs offer the master's degree only (i.e., terminal master's) while others offer both master's and doctoral degrees, and occasionally the doctoral degree only. Programs that offer the doctoral degree vary in admission practices; some admit students without a master's degree directly into their doctoral program while others require initial enrollment at the master's level. Consult with the intended program regarding appropriate degree intent to specify on the application. An individual who wishes to enroll in a specific program without pursuing a degree may apply for admission as a non-degree student. Enrollment at this status is limited to one year. If the student is later admitted to a degree program, credit earned while he or she is in the non-degree status is subject to the transfer credit limits described later.

Term of Entry
Most programs admit students for the fall semester only. Some programs allow spring admission and a few begin in one of the summer sessions. Contact the intended program for the appropriate term of entry for the application. Registration for that term is required. Admission is only valid for the term stated in the admission letter. Policies regarding deferment vary by program. The Graduate School will, upon the program's recommendation, defer admission once (for up to one year) without requiring reapplication.

Time-to-Degree Limitations
A master's student has five years from the date of first enrollment at the master's level to complete the degree. A doctoral student has eight years from first enrollment at the doctoral level to complete the degree.

Transfer of Credit
Upon recommendation of the major program, and approval of The Graduate School, a master's student may transfer a maximum of 20 percent of total credit hours required for the degree from another accredited institution or from courses taken at this institution prior to
admission to a degree program in The Graduate School (e.g., non-degree student, Continuing Studies, Summer School, etc.). Upon recommendation of the major program, and approval of The Graduate School, a doctoral student may transfer an unlimited amount of credit from another accredited institution. No doctoral credit may be transferred from an institution that gives the master's degree as its most advanced degree. All work, whether taken at this university or transferred in from elsewhere, is held in the same regard, and students will be accountable for the contents. Transfer credits do not reduce the minimum residence requirements for either master's or doctoral students (two and four semesters, respectively). Correspondence courses are not accepted for graduate credit at this institution. Inquiries regarding the transfer of graduate credit should be directed to the individual program or department.

**Required Application Material**

The admission process is designed to collect credentials that will help determine which applicants have the academic preparation, intellectual ability, experience, and motivation to undertake a rigorous program of study. The application materials of each prospective student receive individual attention and thorough review by the intended program. In addition to the application itself, the following official documents must be submitted before an application can be considered complete and ready for evaluation by the intended program. All material submitted as part of an application becomes a part of the University's official record and cannot be returned.

**Letters of Recommendation**

Three letters of recommendation from persons qualified to evaluate an applicant's academic and professional qualifications are required. Recommendations should be requested from individuals who are familiar with the applicant's academic achievement and potential. Recommendations from former professors are preferred, but letters from other individuals who can address an applicant's achievement and potential will be accepted. The recommendations should be returned in a sealed envelope, with the recommender's signature over the flap, for submission with the application materials to be sent directly to the intended program. Although it is extremely helpful if these letters are sent with the program material, some recommenders prefer to send letters separately. They need to be informed of the appropriate application deadline so that they can submit the recommendation before that date.

**Transcripts**

Two official transcripts of all post-secondary education, bearing the signature of the registrar and the seal of the institution, are required. One should be mailed in a sealed envelope to the program and one to The Graduate School. Transcripts that bear the statement "Issued to Student," or that do not arrive in sealed envelopes, are not considered official. International applicants must also submit a certified English translation of transcripts. To prevent delays in review of an application, you should request transcripts before mid-year grades are posted. However, you are still responsible for assuring that a final transcript is received, showing award of the degree. Transcripts submitted to the program and The Graduate School become part of the applicant's permanent record and cannot be re-released to another institution, employer, or the applicant personally.

**Standardized Test (GRE, GMAT, TOEFL, etc.) Scores**

Current (no more than five years old) standardized test scores, usually the GRE General Test, are required for applicants to all programs except studio art, dentistry (except oral biology), and dramatic art. Some programs also require a subject test, while others have established practices for accepting scores other than the GRE, such as MCAT, GMAT, or LSAT scores. In addition to the standardized test scores mentioned above, all international applicants, except those from countries where English is the official language of instruction or those who have received a degree from a university in the United States (excluding trust territories), must also submit an acceptable, official TOEFL score.

The Graduate School's accreditation requires that official reports (reported directly from ETS) of all required standardized test scores be submitted as part of the application. While photocopies of score reports will be accepted for informal evaluation, an official agency report of all required scores must follow. GRE/GMAT scores are reportable for a period of five years from the date of the exam. TOEFL scores are reportable for two years from the date of the exam. The Graduate School keeps the scores for one year.

The paper versions of standardized exams are no longer widely available, if at all. Instead, the computerized versions are offered, without prior registration, four days a week at Sylvan Learning Centers throughout the country. For information on computerized testing call (800) 967-1100. Four to six weeks are required for test scores to be reported to institutions; the exam should be taken no later than October for fall admission consideration. If the UNC-Chapel Hill Graduate School is not specified as a score recipient at the time of the exam, the Educational Testing Service will need to send the scores to The Graduate School of the University of North Carolina at Chapel Hill (Institution Code #5816).

**Supplemental (Program-Specific) Application Material**

Many programs require statements of purpose, supplemental applications, essays, portfolios, etc. The intended program should be contacted regarding their requirements before an application is submitted. An application cannot be considered complete until all required material is submitted.

**Special Information for International Applicants**

The University of North Carolina at Chapel Hill encourages a diverse student body and welcomes applicants from all over the world. Please be aware that there may be limited financial resources available to support international students, and an on-site admissions interview may be required. Early contact with the intended program is essential before submitting an application since the application process itself is expensive.

All applicants must pay a non-refundable application fee of $60 for each program. The fee can be paid online by credit card, or by check (drawn on a U.S. bank) or money order — no cash — made payable to the University of North Carolina at Chapel Hill. This fee cannot be waived. If someone other than the applicant is paying the fee, the applicant's name must be clearly indicated on the check or money order. Applications arriving without the required fee will remain on file, unprocessed, pending receipt of the fee. Notification that an application was received will only occur once the fee has been paid and the application has been processed.

For more information regarding international applicants, please visit www.gradschool.unc.edu/applicant_intl.html.

In addition to the material required of all applicants, international applicants must also submit the following:

**Test of English as a Foreign Language (TOEFL)**

All international applicants, except those from countries where English is the official language of instruction or those who have received a degree from a university in the United States (excluding trust territories), must also submit an acceptable official (reported directly by ETS) TOEFL score. The
required minimum total score on the paper-based TOEFL test is 550, with a minimum of 50 in each section, or 213, with a minimum of 18 on each section of the computer-based exam. Some programs require a higher score; The Graduate School honors that requirement. TOEFL scores are reportable for two years from the date of the exam. ETS will not report scores more than two years old, and thus we cannot consider them. We will keep TOEFL scores on file for only one year. When registering for the test, applicants should indicate the University of North Carolina at Chapel Hill Graduate School (institution #5816) as a score recipient. If it is not specified at the time of taking the TOEFL that the UNC-Chapel Hill Graduate School is to receive the scores, the applicant must ask Educational Testing Service (ETS) to send the scores to The Graduate School of the University of North Carolina at Chapel Hill (institution #5816). Their address is TOEFL, CNG151, Princeton, NJ 08541-6151. While photocopies of score reports will be accepted for informal evaluation, admission cannot be offered until the official report arrives.

Financial Certificate
In order to meet U.S. Immigration requirements for entry into the United States and to receive visa documents, international applicants must provide proof of sufficient financial resources to cover educational and living expenses for the duration of the intended program. Along with the application for admission, a completed Financial Certificate outlining financial support available, along with original evidence to support the amounts reflected (bank statements, scholarship letters, etc.), must be submitted. This form is also required for international students currently residing in the United States. The University does not have special travel or study scholarships for international students.

Transcripts
Academic records must be issued in the original language and be accompanied by a certified English translation. The record must bear the signature of the registrar or other academic official, and the official seal of the issuing institution. The prospective student must hold the degree of bachelor of arts, bachelor of science, or its equivalent - based on a four-year curriculum - in a foreign institution.

Information concerning a visa, United States immigration, or the financial certificate, can be obtained by contacting the UNC-Chapel Hill International Center at (919) 962-5661 or by visiting their Web page at www.unc.edu/depts/intcenter.

Funding Opportunities
The Graduate School offers a variety of funding opportunities to assist graduate students in funding their graduate studies from admission through graduation. The Graduate School provides information and support to students applying for external fellowships, as well as providing fellowships and other direct financial support to graduate students, which supplements what the individual department provides.

Awards are made from The Graduate School, the various academic departments, the Office of Scholarships and Student Aid, and from external private and public sources. To receive full consideration for a Graduate School award, applicants should submit a complete application for admission by January 1. However, applications received after the January 1 deadline will be considered for fellowships as funds remain available. To receive financial assistance, students must continue to be enrolled, making satisfactory progress toward their degree.

University Competitive, Merit-Based Awards
A number of merit-based awards are available through The Graduate School. Prospective students cannot apply for these awards directly, but may indicate when applying that they wish to be considered for these awards. To ensure full consideration for these competitive awards, it is recommended that prospective students submit a complete application for admission by January 1. Departments, curricula, and schools nominate a limited number of their most promising applicants into a University-wide competition. The Graduate School selects the top candidates to receive offers for University fellowships and merit assistantships. Announcements of Graduate School awards are made by early March. The following fellowships and assistantships are competitively awarded from The Graduate School:

The Royster Society of Fellows
The Royster Society of Fellows is a highly competitive group of fellows created through the generosity of private donors, most significantly Dr. Thomas and Mrs. Caroline Royster. In addition to the financial award, the Society of Fellows supports and nurtures members through the mentoring of senior faculty, interdisciplinary learning, and leadership development opportunities.

Fellows will receive a competitive stipend, tuition, fees, and student health insurance each year for five years. The first and last years are non-service awards, but Fellows may perform teaching and research activities for their departments in the intervening years. Fellows receive additional travel funds to present research findings at national conferences. Fellows have the opportunity to develop mentoring relationships with senior faculty and to engage in interdisciplinary forums and discussions.

The Royster Society of Fellows includes dissertation completion awards named in honor of Carolina H. and Thomas S. Royster Jr., Thomas S. and Helen Borda Royster and Snowden and Elspeth Merck Henry, Lovick P. Corn, Henry H. Dearman, Jessie Ball duPont (Adolescent Studies), Paul C. Hardin, Lyle V. Jones, Ross and Charlotte Johnson, and others. These fellowships support students in the final phase of their doctoral dissertations.

Fellows receive a competitive stipend for one academic year, plus tuition, fees, student health insurance, and travel funds to present their research at national conferences.

University Fellowships
(Named in honor of Joseph E. Pogue, William R. Kenan Jr., William N. Reynolds, and Mrs. Victor Humphreys.) The Graduate School offers privately funded named fellowships to exceptional new graduate doctoral students. In addition to a very competitive financial award, a University Fellowship within the Society of Fellows supports and nurtures members through the mentoring of senior faculty, interdisciplinary learning and leadership development opportunities.

University Merit Assistantships
Merit assistantships are one-year awards which provide a competitive stipend for entering master's doctoral students and students entering professional, terminal-degree master's programs. Full tuition and student health insurance are provided. Students pay only fees. Students awarded University merit assistantships will assist with teaching or research activities, not to exceed twenty hours per week, within their department.

Minority Doctoral Fellowships
The state of North Carolina offers the Minority Presence Fellowships as one mechanism to increase the diversity of the graduate student body engaged in doctoral study within the UNC system. Diversity is broadly
defined, including consideration of 1) educational preparation, 2) life experiences, 3) factors that may contribute to diversity of presence, 4) demonstrated ability and motivation to overcome disadvantage or discrimination, 5) desire and ability to extend knowledge-based services to enhance the quality of life of all citizens, and 6) motivation and potential to make a positive contribution to the educational environment of the University. Recipients must be residents of North Carolina (for tuition purposes) and pursuing a doctoral degree. Awards provide a competitive stipend plus tuition and student health insurance.

Incentive Scholarship and Grant Program for Native Americans
The state of North Carolina offers the Native American Incentive Fellowship as one mechanism to increase the number of minorities engaged in doctoral study within the UNC system. Recipients must be 1) Native Americans who maintain cultural identification as Native Americans through membership in an Indian tribe recognized by the state of North Carolina or by the federal government or through tribal affiliation or community recognition; 2) residents of North Carolina; and 3) pursuing a doctoral degree. These non-service awards provide a competitive stipend plus tuition and student health insurance, as funds available from the state of North Carolina allow.

Interdisciplinary Awards
Weiss Urban Livability Fellowships and Program
Endowed through a generous gift from Professors Emeriti Charles and Shirley Weiss, this program gives students with an interest in urban livability issues an opportunity for advanced study within an interdisciplinary program at the University of North Carolina at Chapel Hill. All are designated as fellows within the Weiss Urban Livability Program. Doctoral and master's students receive a competitive stipend, tuition, and health insurance. The Weiss Urban Livability Fellows meet regularly within an interdisciplinary forum to discuss and collaborate on topics of mutual interest. Guest lecturers and senior faculty from various departments meet with and provide mentoring for the fellows throughout the year.

Scholars for Tomorrow
Scholars for Tomorrow is a new, innovative cross-disciplinary fellowship program that offers students an educational opportunity that includes interdisciplinary education, cutting-edge research, and discovery. This fellowship program allows the Graduate School to bring together diverse students around a general theme of mutual interest and importance in society. Over time Scholars for Tomorrow will address a variety of themes. Theme areas include aesthetics in society, computational sciences, global studies, and health care ethics. Students awarded this fellowship are designated as fellows within the Scholars for Tomorrow Fellowship Program. Doctoral and master's students receive a competitive stipend, tuition, and health insurance.

The Scholars for Tomorrow Fellows meet regularly within an interdisciplinary forum to discuss and collaborate on topics of mutual interest. Guest lecturers and senior faculty from various departments meet with and provide mentoring for the fellows throughout the year.

Dissertation Support for Continuing Students
These nonservice awards support doctoral students engaged in research and writing toward the completion of their dissertations. The University Dissertation Completion Award supports students in the final phase of their doctoral dissertations. Awards provide a competitive stipend, tuition, fees, and student health insurance for one academic year. The off-campus dissertation award assists students conducting research away from the Chapel Hill campus. Awards provide a competitive stipend, tuition, fees, and student health insurance for one academic semester. A limited number of fellowships are also available for doctoral dissertation research in specific countries: the Werner P. Friedrich Fellowship in the Humanities for study in Switzerland, and the Georges Lurey Fellowship for study in France.

Departmental Awards
Teaching and Research Assistantships
The majority of assistantships available to graduate students are awarded by academic departments. Approximately 2,500 graduate, research, and teaching assistantships are available through specific departments. Graduate assistantships also are available through the University's various research institutes and centers. Selection criteria and application and notification procedures vary from department to department. Applicants should discuss with the program to which they are applying the specific funding opportunities available through that department.

Federal/State Fellowships and Traineeships
A number of state and federally funded fellowships and traineeships are available in some departments. Students must be pursuing graduate training in specified fields of study to be eligible for these awards. Interested students should request additional information from their academic departments.

Government and Foundation Fellowships to Individual Students
For many funding opportunities, students apply directly to the national private foundation or government agency. Many of these competitive awards are portable; students may use the funds at any accredited university. Since recipients are chosen through competitions held by each individual funding agency or foundation, the criteria and process for application vary.

Information about external funding opportunities is provided by the UNC-Chapel Hill GrantSource Library, which includes information from nearly ten thousand documents available from major funding sources. The University assists students in making application to external funding sources through workshops and individual consultation. Application materials for major funding competitions are usually available at www.gradschool.unc.edu/fellowships_and_funding/index.html or from the Graduate School Fellowship Office, located in 218 Bynum Hall, or at the GrantSource Library, 307 Bynum Hall.

Additional Current Funding Information
Additional and up-to-date information regarding funding opportunities for graduate students at the University of North Carolina at Chapel Hill may be found on the Web at www.gradschool.unc.edu/fellowships_and_funding/index.html.

Research Funds
The Smith Graduate Research Funds are provided to assist with some expenses necessary for the preparation of a thesis or dissertation, such as database acquisition, microfilms, special software for analyzing data, and certain other expenses. Grants may be received only once and cannot be used for costs accrued prior to the date of an award. Research travel is not supported. A limited number of Graduate School travel grants, for travel expenses only, are available for doctoral and master's students presenting research papers at international, national, or regional academic conferences.
or meetings of professional societies. Students may receive these grants only once. Information and application forms for these grants are available from The Graduate School, 218 Bynum Hall, or may be found on the Web at www.gradschool.unc.edu/fellowships_and_funding/index.html.

**Financial Aid**

The Office of Scholarships and Student Aid works with graduate students who need financial aid to meet the costs of attending the University. Financial support may be available through small grants, from federal or private lender loan programs, and from the federal work-study program, in the form of either hourly paid campus jobs or teaching/research assistantships.

To be eligible for financial aid programs administered by the Office of Scholarships and Student Aid, a student must be enrolled in a degree program on at least a half-time basis; a United States citizen or permanent resident; making satisfactory progress toward completion of the academic program; and, if applicable, registered for Selective Service. The student may not be in default on a loan previously received for college expenses nor owe a refund on a scholarship, grant, or loan from a previous enrollment period.

Graduate students who wish to apply for financial aid to meet the costs of attending the University must complete the Free Application for Federal Student Aid (FAFSA). The application should be completed online at www.fafsa.ed.gov. However, a paper application may be obtained from high schools, most college financial aid offices, or in person at the Office of Scholarships and Student Aid. In completing the FAFSA, the student must list UNC-Chapel Hill, code number 002974, as one of the schools to receive the FAFSA information. The information on the FAFSA will be analyzed by an agency contracted by the federal government. The agency will send information and an analysis of the student's eligibility for financial aid funds to both the student and to the Office of Scholarships and Student Aid.

A student should not wait for admission to a graduate program before applying for aid. An applicant should submit the FAFSA by February 15. If additional documentation is needed to complete a student's application for financial assistance, the Office of Scholarships and Student Aid will notify the student. A student who completes the file promptly can expect to receive notice of an award decision early in June.

Additional information about financial aid procedures and programs can be obtained from the Office of Scholarships and Student Aid, 300 Pettigrew Hall, P.O. Box 1080, Chapel Hill, NC 27514. The office is open from 8:00 a.m.-5:00 p.m. Monday-Friday. The telephone number is (919) 962-8396; telephone hours are 9:00 a.m.-4:00 p.m. Monday-Friday. More detailed information is also available at www.assist.unc.edu/ssa.
Student Affairs Information

Students are at the center of the Carolina learning community. To ensure a successful learning experience, graduate and professional students are encouraged to take advantage of a variety of programs and services offered by the University through the Division of Student Affairs, The Graduate School, and individual schools and departments. Student Affairs oversees services intended for the entire University student community, and offers programs designed primarily for undergraduate students. The Graduate School, on its own and in conjunction with various Student Affairs offices, offers programs and services intended to specifically address the needs of graduate and professional students.

The Graduate School

The Graduate School is committed to improving and facilitating the integration of graduate and professional students’ academic, professional, and personal development, as well as to assist students to make the most of their Carolina experience. To further these aims, the staff of The Graduate School includes two assistant deans, one for student affairs and one for academics. These staff positions are responsible for creating and implementing programs and services that specifically address the needs of graduate and professional students. Some of these programs are listed below. These staff members are also available to all graduate and professional students as a source of information and referral for questions involving student services, academic procedures, policies, and grievances.

Phone: (919) 966-2611
Web: gradschool.unc.edu

Grievances

The procedure for grade appeals is outlined in The Graduate School Handbook. The last level of appeal is the Administrative Board of The Graduate School, and their decision is final.

Orientation

Graduate and professional programs conduct a department-based orientation for new students; information on these activities is available in departmental offices.

The Graduate School sponsors a University-wide orientation program. It begins with a letter of welcome from the dean of The Graduate School and a reference guide to campus and Chapel Hill community resources. Upon arrival, new students receive a Graduate School Orientation Binder containing The Graduate School Handbook, Academic Integrity and Ethics, A Guide to Theses and Dissertations, copies of University policies, and other helpful campus and community publications that are intended to be used throughout the students’ graduate careers.

In addition, The Graduate School maintains an orientation and relocation information Web site and the office in Bynum Hall is open year-round to answer questions and help students find the resources they need to make the most of their Carolina experience.

Professional Development in Graduate Education

The University of North Carolina at Chapel Hill is committed to providing students with the highest quality graduate education. While this clearly entails academic training, it also includes a commitment to providing students with resources and services to enhance their graduate experience and prepare them for their post-student careers.

The cornerstone of professional development at Carolina is a series of one-credit-hour courses. These courses cover topics designed to promote graduate students’ academic, professional, and personal growth. Course are designed to provide students with the opportunity to develop five areas of professional competency: communication, leadership, teaching and instruction, professional adaptability, and self-awareness. Each one-credit-hour course addresses one or more of the five competencies, graded pass/fail, and does not count toward degree requirements. It may also be audited with the permission of the instructor.

For more information, visit the Web site at www.gradschool.unc.edu/profdev/index.html.

Graduate Student Foreign Language Proficiency Assessment

The departments of Romance languages, Germanic languages, and classics offer foreign language proficiency assessments in French, German, Spanish, and Latin (classical or medieval) for graduate students needing to satisfy a departmental foreign language requirement. This service is offered once each semester, during the final week of classes. The Graduate School administers registration for the assessments.

Division of Student Affairs

Office of the Vice Chancellor for Student Affairs

The Office of the Vice Chancellor for Student Affairs (104 Steele Building) coordinates the division’s programs and provides guidance and leadership for its departments. The office also acts in a consulting role for faculty, administrators, and students who wish to raise issues that concern the University community, with a particular focus on student needs. Members of the Office of the Vice Chancellor also serve on various University committees to represent the division’s several constituencies.

Students are encouraged to explore the opportunities offered by the Division of Student Affairs throughout their University career, either directly through the respective departments, or through the Office of the Vice Chancellor.

Phone: (919) 966-4045
Web: studentaffairs.unc.edu

Office of the Dean of Students

The Office of the Dean of Students, located in the basement of Steele Building, provides a variety of direct student services and works closely with a wide range of student programs. The Office of the Dean of Students is the contact and information point for students regarding the University’s
policies on racial and sexual harassment and discrimination based on sexual orientation. In addition, staff members provide counseling and general advisement to students and assist students, parents, and members of the University staff in dealing with crisis situations or other problems affecting student life. Staff members of the Office of the Dean of Students also work with programs that have a specific focus, such as the Student Activity Fund Office (SAFO). In addition to providing the administrative coordination of the student judicial system, staff also work with leaders of a variety of extracurricular organizations.

Phone: (919) 966-4041
Web: deanofstudents.unc.edu

Campus Y
Since its founding in 1860, the Campus Y has been a starting point for the development of many programs responding to students' concerns. The mission of the Campus Y is the pursuit of social justice through the cultivation of pluralism. In particular, the Y serves as a bridge between the University and the local community by addressing the needs of both groups. Y-sponsored committees include community outreach (such as the Big Buddy, Elderly Exchange, and Tutoring programs), social issues (such as Women’s Issues and Human Rights Week), global action (such as Hunger Action and the South African Scholarship Fund) and fund-raising programs (such as the Footfalls Road Race). Students can also serve on the Y Student Executive Committee, for which elections are held in the spring. All students are welcome to visit the Campus Y office (in Room 102 of the Campus Y Building) to learn about volunteer service and University, local, and global issues.

Phone: (919) 962-2333
Web: campus-y.unc.edu

University Career Services
Services for graduate students include workshops on writing résumés and curriculum vitae, interviewing, and job-seeking; résumé referral to employers; individual career advising and career interest assessment; on-campus interviewing; job listings via the Web; and a reference file for students in selected curricula. Some services are limited to students who are in a UNC-Chapel Hill degree or certificate program and who are within two semesters of graduation.

Additional resources and programs include occupational and employer information, career panels, career and professional school fairs, an automated alumni network service, various employer databases, and a UCS home page.

Students in MBA, MAC, law, dentistry, and medicine are served by career services in their departments, rather than by UCS.

University Career Services is located in 211 Hanes Hall. Office hours are from 8:00 a.m.-5:00 p.m. Monday through Friday. Resource Room hours are 8:00 a.m.-8:00 p.m. Monday through Thursday.

E-mail: UCS@unc.edu
Home page: careers.unc.edu

Counseling and Psychological Services
Counseling and Psychological Services (CAPS) provides free, confidential psychological counseling to help students solve personal, academic, and career problems. CAPS specializes in individual evaluations, counseling, psychotherapy, and career counseling. A variety of counseling, testing, developmental, and informational services are offered to all students. Counseling services for individuals or groups focus on academic success, including test anxiety and time management; career decisions, including selecting or changing a major and choosing a career; relationships, including loneliness, shyness, roommate conflicts, dating relationships, and family problems; and cultural issues, including cultural identity, gay and lesbian issues, racism, and women's issues. Also available are dissertation and thesis support groups; training and development programs; stress management and biofeedback; and communication skills training, including assertiveness training and guidance in how to overcome speech anxiety.

CAPS is located on the third floor of the James A. Taylor Student Health Services building.

Phone: (919) 966-3568
Web: www.unc.edu/depts/unc_caps

Disability Services
The Department of Disability Services is responsible for assuring that programs and facilities are accessible to all members of the University community. Students with disabilities/medical conditions may receive accommodations and services that are designed to remove barriers, so that they may independently meet the demands of University life. Accommodations and services, which may include, but are not limited to, note-takers, alternative testing, accessible class materials, and interpreters, are provided on an individual-needs basis. There is no charge for any accommodation or service. Students will be asked to provide documentation of the disability/medical condition from an appropriate primary care provider.

Phone: (919) 962-8300 (Voice/TDD)
Web: disabilityservices.unc.edu

Learning Disabilities Services
Learning Disabilities Services (LDS) is the University's designated service provider to students with documented learning disabilities (LD) and attention-deficit/hyperactivity disorders (ADHD). LDS also meets the needs of students with Acquired Brain Injury (ABI) in conjunction with the Department of Disability Services, which is the campus office that works with students with disabilities other than LD and ADHD.

Phone: (919) 962-7277
Web: www.unc.edu/depts/lds

Housing
The Department of University Housing, consistent with the academic mission of the University, endeavors to provide eligible students a supportive environment within which to live. The department maintains the physical quality and the integrity of its buildings at a level conducive to security and comfort, and does so in the belief that providing a safe and healthy living environment supports and contributes to the learning process. The University of North Carolina follows the principle that all persons shall have equal opportunity and access to facilities in any phase of University activity without regard to handicap, sex, race, creed, color, age, sexual orientation, or national origin. Under this principle, educational, cultural, social, housing, extracurricular, and employment opportunities are available on an equal basis. However, receipt of the application by and advance payment to the Department of University Housing does not guarantee admission to the University or to a residence hall. The Department of University Housing reserves the right to refuse for just cause any application for space and to return any advance payment within two weeks of receipt of the completed application. Early application is encouraged.

Phone: (800) UNC-5502
E-mail: housing@unc.edu
Web: housing.unc.edu
Graduate Student Housing

The Department of Housing recognizes that the living needs of graduate and professional students are usually different from those of undergraduates. At Carolina, graduate and professional students can enjoy the benefits of being affordably close to classes, facilities, and events, and living in a community of fellow graduate students where the atmosphere is characterized by early quiet hours and respect for personal time and space.

Whitehead Residence Hall is Carolina's on-campus community for graduate students. It is conveniently located in the middle region of campus just a 10-minute walk to the center of campus. Whitehead attracts a diverse and strongly international group of students. Its quiet, yet friendly, atmosphere lends itself to graduate student interests and study. Whitehead is located near the libraries, Kenan Stadium, and student athletic facilities. Parking is generally available for residents, and a fare-free campus "U" bus service offers several routes that connect the north, middle, and south regions of campus. Whitehead features a suite-style arrangement in which four rooms (single and double) share a bathroom. In addition, every room is equipped with basic furnishings including twin-size bed, desk and chair, dresser space, window coverings, telephone outlet, cable TV outlet, and computer network outlet. Residents share a laundry room, kitchen, TV lounge, and study room. Students may elect to eat an occasional meal or all meals at Chase or Lenoir Dining Halls.

Generally, demand for on-campus housing for graduate students exceeds the supply. On-campus housing is not guaranteed for graduate students, although every effort is made to offer a space to all applicants. Returning residents have priority to re-sign up for the following academic year before spaces are offered to new graduate students. Please visit the Web site at housing.unc.edu for additional information.

Student Family Housing

Student Family Housing is available in Odum Village for married students and their dependents and for single parents with children who meet University requirements for full-time student status. The community is located in the southern region of campus near the UNC Hospitals and medical and dental schools. Apartments feature one- and two-bedroom unfurnished units with shared laundry facilities. Utilities are included in the monthly rent, with the exception of long distance telephone charges and cable charges.

The Student Family Housing community is dynamic, diverse, and energetic. A variety of programs and activities offer ample opportunities to become involved. Interested students should apply for an apartment in Odum Village as far in advance of their projected enrollment date as possible. Contact the Student Family Housing Office at (919) 962-3401, and visit the Web site at housing.unc.edu for additional information.

Off-Campus Housing

Off-campus housing refers to any housing not owned and operated by the University of North Carolina at Chapel Hill. This category includes small group housing, such as fraternities and sororities, as well as apartments, houses, and rooms. Two-thirds of the University's students live in the off-campus market. Some units are furnished and within walking distance to campus. Other off-campus housing consists of large, unfurnished apartment complexes, located throughout Chapel Hill and Carrboro. More specific information and listings of off-campus housing resources may be accessed on the Department of Housing's Off-Campus Housing Web page at housing.unc.edu/get_room/off-campus/index.html.

International Student and Scholar Services

International Student and Scholar Services, located in the Frank Porter Graham Student Union, is the main administrative office for all international students, research scholars, and visiting professors. The center issues and helps maintain visa documentation, provides advising related to immigration matters and adjustment to life in the United States, and serves as a liaison between international students and scholars and their departments and governmental and private agencies involved in international education exchange. In addition to administrative and advising services, the center provides programming that helps international students and scholars maximize their experience at UNC-Chapel Hill. Programs include orientation, tax seminars, and various cultural programs. The office is a focal point for community service organizations, including the Host Family Program, Conversation Partner Program, Speakers' Bureau, and International Women's English Conversation Group. It also administers the UNC Class of '38 Summer Study Abroad Fellowships. More information is available on the Web at www.unc.edu/depts/intercr.

Student Health Service

The Student Health Service (SHS), located next to Kenan Stadium in the James A. Taylor Student Health Services Building, provides a broad range of ambulatory, primary care, and prevention services. Specialty care services are also available, including orthopedic, obstetrics and gynecology, dermatology, travel information and immunization, and allergy management. For convenience, in-house laboratory, radiology, pharmacy, and physical therapy services are also available.

Any student who has paid the student health fee for the current semester or summer session is eligible for health care at the SHS. The fee covers the cost of most services provided by SHS professionals, including physicians, physician extenders, nurses, physical therapists, and health educators. Additional charges are made for after-hours care, drugs, and miscellaneous supplies. Laboratory and X-ray studies at SHS require a co-payment by the user. There also may be additional charges for specialty services. Spouses not enrolled in the University as students become eligible to receive the same services as students by demonstrating appropriate insurance coverage and by paying the student health fee at SHS.

Hours of operation vary according to the academic calendar. Please call to verify hours of operation Monday through Friday and on the weekends. Preferred SHS office hours are 9:00 a.m. to 4:30 p.m., Monday through Friday, when students are seen on an appointment basis. For convenience, students are encouraged to call 966-2281 for an appointment. After hours care is available from 4:30 p.m. to 11:00 p.m. Monday-Friday and 8:00 a.m. to 5:00 p.m. on weekends. Physician extenders are available with medical and psychiatric back up. Services are considered a premium service with a visit charge during these times. If other ancillary services are required an additional fee will apply. Major problems may be referred to the UNC Hospital Emergency Department by the SHS staff when open or by the HealthLink nurse (966-2281) when the SHS is closed. Students should be aware that the student health fee does not cover medical care at UNC Hospitals or other facilities. Students will be responsible for charges incurred at the UNC Hospital Emergency Department at any time that they use those services.

Because the health fee does not cover hospitalization, surgery, and intensive care, it is strongly recommended that students have additional health insurance. The University has made arrangements with Blue Cross/Blue Shield.
Shield/North Carolina to offer group health insurance coverage including major medical benefits to enrolled single and married students, their spouses, and children. For information, contact Hill, Chessen, and Woody (Insurance Brokers), PO. Box 3666, Chapel Hill, NC 27515; telephone (919) 967-5900 or access their Web site at www.hilchesson.com.

North Carolina law mandates that all new students at the University document the completion of immunization requirements. Failure to comply results in cancellation of registration thirty days after classes begin. Vaccines are offered at the Student Health Service at reduced rates for students who need to complete their immunization requirement. For additional information on the SHS, access the Web site at studentshealth.unc.edu.

Carolina Union

The Carolina Union is an organization of students, professional staff, and part-time student staff who provide programs, services, and facilities for all members of the campus community. The Union contributes to the educational mission of the institution through the provision of cultural, social, educational, and entertainment programs sponsored by the Carolina Union Activities Board and the Carolina Union Performing Arts Series. The many cocurricular programs offered impact the intellectual environment of the campus and create opportunities for campus members to engage in debate, conversation, and interaction around the issues of the time.

Students play an important role in determining needs, setting programming and financing goals, and evaluating all aspects of the Union. Student employees also provide and maintain the many services offered in the Frank Porter Graham Student Union and other campus locations.

The Carolina Union Board of Directors reviews and approves Union finances, provides long-range planning for the Union, and selects the Union president from student volunteers each year. The Carolina Union Activities Board is a student organization that plans and carries out social, cultural, recreational, and educational programs for the entire student body. Programs range from informal stage performances and workshops on current issues to major speakers and popular and cultural concerts.

In addition to providing office and meeting space and services for student organizations, the Union also offers lounge space, food services, bowling, billiards, and games for all UNC students.

Employment opportunities are available in many of the Union's service areas, such as the information desk, ticket office, and technical services. (For more information, contact the administrative office in Room 201.)

More information about the Union is available on the Web: www.unc.edu/depts/union/union.htm.

Cocurricular Student Organizations

The University requires that cocurricular student organizations be officially recognized each academic year. This recognition process is designed to ensure that student organizations affiliated with the University do not discriminate on the basis of race, religion, national origin, disability, age, veteran status, sex (as defined by law), or sexual orientation. In addition, official recognition provides student groups with the following benefits: applying for use (through reservation) of specified University facilities, property, services, or equipment pursuant to the Facilities Use Policy; use of the University's name in the organization's title; and, as long as University sponsorship is not implied or stated, the privilege of applying for funding from the Student Activity Fee which is legislatively appropriated by the Student Congress; and the assistance of University staff. Applications for official University recognition must be completed annually, in order to ensure that active students are aware of University policies and to provide staff with information concerning University-recognized student organizations.

Applications are available in Room 201 of the Frank Porter Graham Student Union Building. All information included with the application is considered public information upon the granting of recognition.

A full list of active student organizations (there are currently more than 450) is available on the Web at www.unc.edu/depts/union/student/listintrl.htm.

Student Government

The Graduate and Professional Student Federation (GPSF) is the official representative of graduate and professional students, and is organized on the basis of school, departmental, and curricular organizations. The GPSF provides communication between graduate and professional students, represents graduate and professional students both within and outside the University community, and provides structures capable of dealing with ongoing issues and concerns. It also allocates and administers the funds appropriated to it from student fees. Every duly enrolled graduate and professional student is a member of GPSF.

Web: www.unc.edu/student/orgs/gpsf.

Graduate students, whether as a result of individual interest or because of teaching assistantships, may want to learn more about student government at Carolina. Information is available at www.ibibliography.org.sg/index.php.

I. Executive Branch

A. Officers-President, Vice President, Treasurer, Secretary, Executive Assistants, Elections Board Chair

B. Current committees that address various areas of student concern:
   - Academic Affairs
   - External Relations
   - Human Relations
   - Info-Tech
   - Public Service
   - Student Services

II. Judicial Branch

Student Courts (both Undergraduate and Graduate). These bodies maintain original jurisdiction with respect to all violations of the Code of Student Conduct.

Student Attorney General's Staff: The staff investigates alleged violations of the Code of Student Conduct and brings to trial those charges sufficiently supported by evidence; the staff also advises and assists students accused of violations.

University Hearing Board. This court has original jurisdiction in cases deemed inappropriate for hearing within another court and appellate jurisdiction with respect to cases appealed from student courts.

III. Legislative Branch

The Student Congress (SC). The legislative branch of the student government is unicameral (one house), consisting of thirty-seven representatives elected by the student body, with the presidents of the student body and the Graduate and Professional Students Federation serving as nonvoting ex officio members. The Speaker of the SC is elected from among the representatives. Graduate and professional students and on- and off-campus undergraduates are proportionally represented in the congress. Graduate and professional students represent districts composed of several schools grouped together, while undergraduates represent geographical areas.
The congress handles a vast amount of legislation; one of its primary responsibilities is to appropriate student fees for recognized student organizations. It controls approximately $200,000 of student activity fees. Congress also approves appointments, serves as a student advocate, and legislates changes to the Student Code.

The representatives are elected in the spring for one-year terms, and each member serves on one of three standing committees: Finance, Rules and Judiciary, and Student Affairs.

Other Services

Campus Safety

The University publishes a report of activities requiring intervention by campus security. It also includes campus security policy and procedures. This report may be obtained by contacting the office of the Associate University Counsel at (919) 962-3031 or via the Web at www.dps.unc.edu/dps.

Student Dining Service

Carolina Dining Services operates six separate dining facilities at UNC-Chapel Hill. Meal purchases can be made with the UNC One Card using a meal plan, à la carte, expense, or cash. All meal purchases made with the UNC One Card are not subject to the 6 percent North Carolina sales tax. Cash purchases are taxable. To find out more information about acquiring your UNC One Card, visit the One Card Office Web site at www.onecard.unc.edu.

Carolina Dining Services offers several meal plans that offer the convenience and value of purchasing meals on campus ahead of time. To find out more about the different meal plan options, visit the Web site at www.dining.unc.edu/home.aspx?js=1.

Sonja Haynes Stone Center for Black Culture and History

The Sonja Haynes Stone Center for Black Culture and History (SHSCBCH) was founded in July, 1988 and is named for Dr. Sonja Haynes Stone, a member of the UNC-Chapel Hill family for more than seventeen years.

The SHSCBCH is located in the Frank Porter Graham Student Union. It is a major resource of cultural, historical, and social programming for the UNC-Chapel Hill community. As a focal point for Black cultural expression, the center sponsors concerts, poetry readings, lectures, group discussions, and presentations in drama and dance. Its permanent programs include saun mpya (the center's literary journal), Communion (community Saturday school), and the Cross Cultural Communications Institute (CCHC).

The center's mission is to assist in the University effort to enhance the educational experience of its students, faculty, and staff. Web: lib.hio.org/shscbch.
Academic Resources

Scholarly Journals
The University has published scholarly journals since 1884, when Journal of the Elisha Mitchell Scientific Society first appeared.

The following list contains some of the publications currently produced by the University's graduate and professional programs.


Annali d'Italians. The mission of this publication is to promote the study of Italian literature in its cultural context, to foster scholarly excellence, and to select topics of interest to a large number of Italianists. www.lib.biblio.org/annali

Carolina Papers in International Health and Development. A series of UNC-Chapel Hill graduate student working papers designed to promote scholarship in the fields of health and development and to raise awareness of such issues among international studies specialists. www.ucis.unc.edu/about/pubs/index.html

The Carolina Quarterly. Since 1948, The Carolina Quarterly has printed creative writing by established and emerging writers and poets along with penetrating reviews and fascinating features. www.unc.edu/depts/cqonline

Endeavors. Features outstanding research and creative work undertaken by faculty and students at the University. Distributed free, the magazine reaches 8,600 on- and off-campus readers in an effort to engage others in Carolina research. www.research.unc.edu/endavors

North Carolina Law Review. Published by the School of Law to stimulate research and publication by faculty and students. www.unc.edu/student/orgs/ncr

Studies in Romance Languages and Literatures. For sixty years, this publication has supported and disseminated scholarship in the romance literatures. www.unc.edu/~cldcr

The Technology Source. A peer-reviewed bimonthly periodical, whose purpose is to provide thoughtful, illuminating articles that will assist educators as they face the challenge of integrating information technology tools into teaching and into managing educational organizations. ts.mivu.org/default.asp


In addition, the University of North Carolina Press publishes the following journals (unpress.unc.edu/bm-journals.html):

Social Forces, one of the best known journals in sociology and related fields.

The High School Journal, for educational practitioners and theorists nationwide.

Studies in Philology, publishing articles on British literature before 1900 and articles on relations between British literature and works in the classical, Romance, and Germanic languages.

Southern Literary Journal, edited by Department of English faculty.

Southern Cultures, dedicated to the exploration of what makes the South the South.

The University of North Carolina Press
Web: unpress.unc.edu/default.htm

The University of North Carolina Press is the primary publishing arm of the University in the scholarly field. In addition to its publication of the journals of research, it carries on a book publishing program of about eighty new titles a year. Although these books are the work of scholars from all parts of the world, the presence in the University of a professionally staffed book publishing organization, with facilities for the international distribution of works of scholarship, is a stimulus to research and writing by members of the University community. The press's program is an important contribution to the development of that aspect of the University's service which has to do with the advancement of learning.

Libraries

The University Libraries
The main humanities and social sciences collections of the Academic Affairs Library are housed in the Walter Royal Davis Library. Davis Library includes more than 900 open and closed carrels for assignment to graduate students, and an additional 1,900 lounge, carrel, and table seats for general use. The building also houses group study rooms, eleven lounges, a computer lab, and a number of special study areas. All students are also welcome to use the Louis Round Wilson Library, home of the University's special collections, as well as the Robert B. House Undergraduate Library and any of the specialized departmental libraries.

The University Libraries hold over five million bound volumes and nearly 4.5 million microforms, constituting one of the most important collections in the South. Additional information about the libraries, as well as access to the online catalogs and to many electronic resources, is available at www.lib.unc.edu. Reference librarians at any of the UNC-Chapel Hill libraries are available to help graduate students locate materials, use print or online library resources, or tackle any question from the most basic to in-depth advice on research projects.

The University Libraries receive nearly 44,000 periodicals and other serials annually, including the publications of professional associations and learned societies. The Academic Affairs Library also receives the publications of such organizations as the Smithsonian and Carnegie institutions, the Rockefeller Foundation, the Hispanic Society of America, and the Russell Sage Foundation, and of many universities, including foreign universities and academies.

The government document collections comprise a rich body of resources. The Academic Affairs Library is a regional depository for United States government documents and United Nations publications, as well as selected foreign government documents. Particularly rich are its files of federal and state publications; state legislative journals, laws, collected documents, colonial and state records; and records of constitutional conventions.
The libraries provide access to a wide array of online resources including indexes and abstracts, statistical materials and government data, and full text titles. Many titles may be accessed from home by members of the University community. The Davis Library Information Commons makes available state-of-the-art workstations for library research.

Departmental libraries containing collections for study and research are assigned to art, biology (botany and zoology), chemistry, city and regional planning, geological sciences, Institute of Government, information and library science, mathematics/physics, and music. The Law Library, containing more than 300,000 volumes, is located within the School of Law at Van Hecke-Wettach Hall. It contains material useful to students of history and government.

In addition to the collections available in-house, the libraries provide access to a multitude of external resources. Materials that the libraries do not own may be borrowed through interlibrary borrowing. UNC-Chapel Hill students may obtain a Triangle Research Libraries Network card allowing them to borrow materials from Duke, North Carolina State, and North Carolina Central Universities. The valuable manuscripts of the State Department of Archives and History and the collections of the State Library at Raleigh are also nearby.

Special Collections (Wilson Library)
The North Carolina Collection holds books, pamphlets, maps, newspapers, serials, broadsides, microforms, documents, recordings, and other materials relating to the state and its people, and ranging in date from the sixteenth century to the present. Two of its prominent collections are the Sir Walter Raleigh Collection, relating to the courtier and the era of Elizabethan exploration, and the Thomas Wolfe Collection of manuscripts and published items by and about the University’s well-known literary alumnus. The Photographic Archives provide a visual record of people, places, and events throughout the state in negatives, prints, and postcards, including examples of all formats beginning with daguerreotype of the 1840s. The North Carolina Collection Gallery exhibits artifacts, art, and furnishings related to the history and culture of the state and the University.

The Manuscripts Department consists of several units. The Southern Historical Collection preserves private papers of letters, diaries, account books, broadsides, photographs, taped interviews, video documentation, etc., of individuals, families, and organizations of the region. University Archives houses the official unpublished records of the University created since its charter in 1789. The General and Literary Manuscripts Collection includes documents related to notable British writers and literary enterprises and to American writers from outside the South. The Southern Folklife Collection houses extensive recorded music, field tapes, photographs, movie film, and other materials related to study and research in the field of folklore and popular culture, with emphasis on materials about the region.

The Rare Book Collection includes books, pamphlets, broadsides, medieval and Renaissance manuscripts, and graphic images. Of particular interest are the Esterine Imprint Collection, the Bernard J. Flutow Collection of the Cronistas, the George Harper Collection of W. B. Yeats, the Archibald Henderson Collection of George Bernard Shaw, the William Henry Hoyt Collection of French History, the Bill Morgan Collection of Beat Literature, the William A. Whitaker Collection of Samuel Johnson and His Circle, and an array of collections supporting the study of nineteenth-century British, Irish, and American literature.

Health Sciences Library
The Health Sciences Library is the primary library for the University of North Carolina Schools of Dentistry, Medicine, Nursing, Pharmacy, and Public Health, and the University of North Carolina Hospitals. It also serves the health and biomedical information needs of the entire University of North Carolina at Chapel Hill, the North Carolina AHEC system, and health personnel and researchers throughout the state.

Collections
The library has an excellent collection to support curricular, research, and patient care information needs, consisting of more than 300,000 volumes and more than 3,500 serial titles, and over 1,300 electronic resources. The Health Sciences Library provides a growing collection of computer-based multimedia coursework, CD-ROMs, and customized computer-assisted instruction, and offers electronic reserves. Information about the collection is accessible through the Triangle Research Libraries Network online catalog (www.trln.org). UNC affiliated users have free access to the majority of the library's collections, wherever and whenever they are needed.

Borrowing
Faculty, students, researchers, and staff of the University of North Carolina at Chapel Hill and the University of North Carolina Hospitals, as well as area health professionals, receive borrowing privileges upon application. The library provides photocopy services, article delivery service, and interlibrary loan service for materials not available on campus. Borrowing privileges are also available to any North Carolina resident for a small fee.

Information Services
Librarians are available to aid users in locating information, to instruct in the use of library resources, and to provide additional help. Online search services, with access to MEDLINE and about a hundred other databases, are also provided. Direct access to databases and full text journals is offered through the library Web site (www.hsl.unc.edu) free of charge. From this site, users can search MEDLINE, nursing and allied health literature, international pharmaceuticals abstracts, public health community papers, and other databases from their workstations on and off-campus. These and other databases are also available in the library.

The Health Sciences Library coordinates the Area Health Education Centers (AHEC) Library and Information Services Network. This is a statewide network that supports information services for community-based health professions education. Students, faculty off-campus, and preceptors receive a variety of help through the Information Connection Service.

Help in using the library’s services and collections is available online, via e-mail, by telephone, and by appointment. Consultation services can be used to make an appointment with a library staff member to develop a search strategy for a thesis topic, to learn advanced literature search techniques, or to receive any other in-depth help needed. In addition, education services faculty offer a variety of instructional programs, including orientation, workshops, and course lectures, designed to teach information-management skills.

Facilities
The current library building was completed in 1982, and is undergoing a total renovation to upgrade infrastructure and enhance user and collection space needs. The library remains open and fully operational during the renovation, which is scheduled to be complete in fall 2004. The renovated
library will have seating for more than seven hundred users, wireless and
wired connections, group study rooms, high-tech classrooms, computer
labs, media kitchens for the creation of new teaching and learning modules,
a center for the history of the health sciences, and a cyber café for informal
interdisciplinary and intellectual discourse. An electronic information cen-
ter on the first floor of the library has multiple workstations that can access
online databases and full text journals, the catalog, and other information
resources.

**Information Technology Services**

Web: its.unc.edu

UNC-Chapel Hill's campus computing services are organized under a
central office — Information Technology Services (ITS), comprising
Academic Technology and Networks (ATN), Administrative Information
Services (AIS), ibiblio, knowledgeFoundry, and Systems and Procedures.

Most graduate students have their main contact with ITS through ATN,
which manages academic computing, electronic mail (e-mail), public
microcomputing labs, interactive media presentation, database access, exam
scoring, networking, and video and multimedia classroom support. The IT
Response Center (ITRC), Carolina's help desk, assists students, staff, and
faculty in using IT services across campus. Visit the online help site at
help.unc.edu for self-help options or to contact the ITRC, or call (919)
962-HELP for assistance.

All enrolled students at UNC-Chapel Hill are eligible for a login ID,
called an Onyen (Only Name You'll Ever Need), that can be used for e-
mail and other IT services at UNC. After creating an Onyen at
onyen.unc.edu, students are able to create personal Web pages, download
shareware software, check grades, and set up their computers to access the
campus wired or wireless network.

With the Onyen, a number of online services are available, including e-
mail, listservs, access to online courses in BlackBoard, and access to
MyUNC, Carolina's portal (my.unc.edu). Through the portal, students can
access their class lists, grades, financial information, and other relevant sites,
all with a single login.

Off-campus students may want to consider subscribing to an Internet
service provider (ISP) or learn about other ways to remotely access the
University networks. Detailed information can be found on the help site at
help.unc.edu.

ATN-supported public microcomputer labs can be found throughout
campus. Each lab has Microsoft Windows machines as well a variety of
software applications for student use. Additionally, all lab machines have
Internet connections, so students can check their e-mail or access the Web.
There are also laser printers for student use in each lab. Lab hours vary
according to usage patterns and location; check the help site at
help.unc.edu for information on lab locations and hours of operation.
Research Resources

The intellectual life of the University and the research activities of graduate students and faculty alike receive valuable encouragement and support from the various institutes and centers listed below. These institutes do not operate as instructional agencies within the University; rather, they serve to obtain financial and organizational assistance for the scholars who constitute their membership. Many of the institutes provide opportunities for graduate student training.

Research Institutes

Carolina Environmental Program
The Carolina Environmental Program (CEP) is an interdisciplinary initiative of the University of North Carolina at Chapel Hill. Its mission is to promote innovative approaches to the study of the environment and to lead the UNC-Chapel Hill community in addressing the environmental issues of the state, the nation, and the world. CEP crosses the traditional boundaries between Academic and Health Affairs to involve faculty, students, and staff from more than two dozen participating units. It promotes degree programs in environmental science and studies and encourages interested students majoring in other disciplines to enrich their studies by taking environmental courses and participating in related activities. CEP brings together diverse teams of researchers to work on large-scale, multifaceted environmental problems. It also serves the public by providing technical assistance, training, and up-to-date information on environmental issues.
www.cep.unc.edu

Child Development Institute
(see Frank Porter Graham Child Development Institute)
www.fpg.unc.edu

Early Childhood Research Institute on Service Utilization
The Early Childhood Research Institute on Service Utilization (ECRI) is conducting a longitudinal study designed to identify and understand the factors that significantly influence service availability, provision, and utilization for young children with vulnerabilities and disabilities and their families as well.
www.fpg.unc.edu/ecri

Howard W. Odum Institute for Research in Social Science
Howard W. Odum Institute for Research in Social Science promotes and supports social science research at UNC-Chapel Hill. Founded in 1924, the Odum Institute houses one of the nation’s largest social science and cens-sus data archives, maintains a state-of-the-art computing and GIS lab for faculty and student research, offers advanced quantitative and qualitative statistical software and consulting support for social science and survey research design and analysis, offers short courses and seminars on research topics, and sponsors sixteen ongoing faculty work groups.
www.odum.unc.edu

Institute for the Arts and Humanities
The institute’s mission is to provide time and common space for faculty in the College of Arts and Sciences to work on projects that will advance their careers and benefit their students. The institute provides funds for faculty during the academic year or summer (Faculty Fellows Program) so that faculty may spend their time on scholarly or research activities.
(919) 962-0249
www.iah.unc.edu

Institute for Environmental Studies
(see Carolina Environmental Program)
www.cep.unc.edu

Institute for Research in Social Science
(see Howard W. Odum Institute for Research in Social Science)
www.irrs.unc.edu

Institute of African American Research
The Institute of African American Research (IAAR) is the research component of the Sonja Haynes Stone Center for Black Culture and History. The mission of the institute is to promote the scholarly investigation of the culture and thought of African Americans, as well as Blacks in the Diaspora. The aim of the institute is to support intellectual productivity across far-reaching investigative interests and academic disciplines that are committed to research in Black studies. The institute supports projects that examine the impact of the African Diaspora on Black life and culture in the United States.
www.unc.edu/depts/iaar

Institute of Government
The Institute of Government within the School of Government is devoted to teaching, research, and consultation in state and local government. Over the years the institute has served as the research agency for numerous study commissions of the state and local government.
(919) 966-5381
ncinfo.ig.unc.edu

Institute of Latin American Studies
The Institute of Latin American Studies (ILAS) was created in 1940. The major functions of the institute are: (1) to encourage and stimulate study and research on Latin America at UNC-Chapel Hill; (2) to serve as a campus hub for interdisciplinary communication on Latin America, including the sponsorship of a wide variety of activities that bring together interested faculty and students from a large number of academic disciplines; and (3) to promote the exchange of scholars and students and to encourage close collaborative relationships between the University and institutions of higher learning in Latin America and the Iberian Peninsula.
(919) 966-1484
www.unc.edu/depts/ilas
Institute of Marine Sciences
The institute's mission is to serve the state and nation through the conduct of high quality basic and applied marine science research.
(252) 726-6841
www.marine.unc.edu

Institute of Outdoor Drama
Established in 1863, the Institute of Outdoor Drama is a public service agency of UNC-Chapel Hill. It is the only advisory and research organization in the United States dedicated to the advancement of the outdoor drama movement, and serves as a resource for groups, government agencies, and individuals who wish to create new outdoor dramas or who are seeking information on the field.
(919) 962-1328
www.unc.edu/depts/outdoor

Institute on Aging
Mission
The North Carolina General Assembly created the Institute on Aging in August 1996, placed it under the general umbrella of the 16-campus University of North Carolina System, and based it at the UNC-Chapel Hill campus. The institute's mission is to enhance the well-being of older people in North Carolina by fostering state-wide collaboration in research education, and service. Its mandate is to:
1. Promote collaborative applied and basic gerontological research
2. Develop innovative programs of interdisciplinary gerontological education and practice
3. Provide state-of-the-art information to policy makers, program managers, service providers, clinicians, and the general public.
www.aging.unc.edu

Jordan Institute for Families
Created in 1996, the Jordan Institute for Families is the research, training, and technical assistance arm of the School of Social Work at The University of North Carolina. Cutting across traditional disciplinary lines, the Jordan Institute develops knowledge and promotes practices and policies that build supportive families and stable communities. The Jordan Institute addresses family issues across the life span that threaten to undermine some families—such as poverty, abuse, mental illness, school failure, and substance abuse—as well as challenges that confront most families, such as providing for aging family members and caring for young children.
www.jif.org

Kenan Institute of Private Enterprise
The Frank Hawkins Kenan Institute of Private Enterprise, an affiliate of the Kenan-Flagler Business School, encourages cooperation among business, academia, and government to foster private-sector development and to utilize the private sector to serve the public interest in the United States and worldwide. The Kenan Institute develops innovative public-private and private-private partnerships that build the capacity of people, business, and communities to prosper in market-based environments. These programs are anchored in research that provides the basis for replicating and extending these outreach programs nationally and internationally. The Kenan Institute was established in 1985 by a series of gifts from the William R. Kenan Jr. Charitable Trust and the William R. Kenan Jr. Fund. The institute operates from two locations—the Kenan Center at the University of North Carolina at Chapel Hill and Washington, DC. A sister institute in Thailand, Kenan Institute Asia, has been established to provide a physical and institutional presence.
www.kenaninstitute.unc.edu

Oak Ridge Institute for Science and Education
Since 1946, students and faculty of the University of North Carolina have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 85 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education (ORISE), the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science- and engineering-related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available at www.orau.gov/orise/educ.htm, or by calling either of the contacts below.

ORAU's Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU's members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scholars Program, consortium research funding initiatives, faculty research, and support programs as well as services to chief research officers.

For more information about ORAU and its programs, contact:
Robert P. Lomwan, Director, Office of Research Services
ORAU Counselor for the University of North Carolina
Monnie E. Champion
ORAU Corporate Secretary (865) 576-3306; or Visit the ORAU home page (www.orau.org)

Office of Economic Development
The Office of Economic Development sponsors applied research, strategic planning and policy analysis, and technical assistance activities on urban, regional, rural, and international economic development issues. Graduate students are involved in these activities and receive financial support through research assistantships and internships.
Professor Michael Lugr, Director
mlugr@email.unc.edu
www.kenan-flagler.unc.edu/KI/econDevelopment/econDev.cfm
Triangle Institute for Security Studies
The object of TISS is to promote communication and cooperation among faculty, graduate students, and the public across disciplines and beyond the confines of each university in order to advance research and education concerning national and international security, broadly defined.
(919) 684-5162
www.duke.edu/web/iss

Water Resources Research Institute
The Water Resources Research Institute was established in 1964 to strengthen research and graduate education in water resources.
(919) 515-2815
www.ncsu.edu/ncsu/wrri/inst

Research Centers

Bowles Center for Alcohol Studies
The mission of the Bowles Center for Alcohol Studies is to conduct, coordinate, and promote basic and clinical research on the causes, prevention, and treatment of alcoholism and alcohol abuse.
(919) 966-5678
www.med.unc.edu/alcohol

Carolina Cardiovascular Biology Center
The mission of the Carolina Cardiovascular Biology Center is to advance the care of patients with diseases of the heart, blood, and circulation by encouraging basic, preclinical, and applied research to unravel the causes of cardiovascular disease and to provide new tools for diagnosis and treatment to promote the well-being of its patients.
Cardiovascular diseases are the most common cause of death and disability in the state of North Carolina and in the United States as a whole. The spectrum of cardiovascular diseases is enormous. At one extreme, there are strictly genetic diseases such as sickle cell anemia and coagulation disorders that often severely affect otherwise healthy young individuals. At the other extreme lie common diseases such as hypertension and atherosclerosis (the most common cause of heart attacks) that afflict over half of the population and that have environmental and poorly understood genetic components.
Although members of the Carolina Cardiovascular Biology Center study many different diseases, the unifying features of the center are the application of advanced biomedical technologies and the close interactions between clinicians and basic scientists to share information that will provide benefits to patients now and in the future. Specific research programs are organized within the center in the areas of thrombosis and hemostasis, vascular biology, and clinical trials and translation research. The goals of this multidisciplinary center are to:
• Address fundamental issues in cardiovascular science that will directly impact the medical care of patients with all cardiovascular diseases
• Establish and maintain a leadership role for UNC-Chapel Hill in determining the direction of cardiovascular research at the international level
• Provide a basis for interactions between basic science and clinical departments to facilitate cardiovascular research
• Educate the University and local communities about advances and emerging issues in cardiovascular research
• Service the cardiovascular research community with an efficient and organized administrative staff

• Develop training programs and career development tracks to instruct the next generation of cardiovascular scientists
(919) 943-4591
ccbc.unc.edu/mission.htm

Carolina Center for Public Service
Mission
The Carolina Center for Public Service leads the University's engagement efforts and service to the state of North Carolina and beyond by linking the expertise and energy of faculty, staff, and students to the needs of the people.
In all its efforts, the Carolina Center for Public Service seeks to build partnerships throughout the University and the state as it:
• advances the quality and sustainability of efforts through effective practices
• recognizes and celebrates exemplary service
• shares information, strategies, and outcomes of UNC's service endeavors
• facilitates community-based scholarship in addressing community issues
As the first public university, Carolina has a proud history of changing lives through educating scholars and leaders dedicated to forging a brighter future for the state, nation, and the world. The University of North Carolina at Chapel Hill is committed to expanding its tradition of engagement and responsiveness through the Carolina Center for Public Service.
www.unc.edu/cps

Carolina Population Center
The Carolina Population Center exists to serve the research and research training needs of faculty at The University of North Carolina at Chapel Hill who have interests in the population field. The center is rich in its diversity. Its fifty-six faculty fellows have their primary appointments in sixteen departments in five schools or colleges within the University. The postdoctoral, predoctoral, and undergraduate training programs also reflect the diversity of the center.
(919) 966-2157
www.cpc.unc.edu

Cecil G. Sheps Center for Health Services Research
The Cecil G. Sheps Center for Health Services Research organizes interdisciplinary research on the structure and impact of the health care system. A fundamental interest of the center has been the interaction between the medical care system and vulnerable populations, such as the poor, the elderly, rural residents, minority groups, the chronically ill, children, and the mentally ill.
(919) 966-5011
www.shepscenter.unc.edu

Center for Aging and Diversity
The Center for Aging and Diversity addresses, through research and training, health disparities in later life, provides a forum in which to discuss and examine ethnic, racial, and cultural variation in life course processes, and disseminates research findings to the academic and lay community on the health of older diverse populations.
www.aging.unc.edu/cad/index.html
Center for Aging Research and Educational Services
The Center for Aging Research and Educational Services is dedicated to serving social work practitioners and decision makers who work with older adults and their families.

gmnelson@email.unc.edu
swv.unc.edu/cares/cares.htm

Center for AIDS Research
The purpose of the UNC Center for AIDS Research (CFAR) is to provide infrastructure to support investigation of the HIV/AIDS epidemic using clinical research, behavioral research, research into HIV biology and pathogenesis at the molecular level, and educational outreach. The UNC CFAR is a consortium of three complementary institutions: The University of North Carolina at Chapel Hill, Research Triangle Institute, and Family Health International.

www.cfar.unc.edu

Center for Community Capitalism
The center examines ways that government, nonprofits, and the private sector can work together through innovative public-private community development partnerships to strengthen inner cities. The center works to create public policies that will make capitalism work better in distressed communities and focuses on ways government policy can bring the energy of private enterprise to lift inner-city residents out of poverty. It views inner cities as untapped markets with considerable financial and human resources and profit potential for enterprising businesses.

www.kenan-flagler.unc.edu/KJ/home/index.cfm

Center for Developmental Science
The Center for Developmental Science is an interdisciplinary and inter-institutional center for the advanced study of human development. The mission of the CDS is to provide an environment that transcends the ordinary boundaries of disciplines and institutions in order to facilitate multidisciplinary, collaborative explorations of new frontiers in developmental research and training based on the principles of developmental science.

Goals of the CDS are:
- To transcend traditional barriers to scholarship by drawing developmental investigators from a wide variety of disciplines and institutional affiliations
- To support research about human development that aims to understand the basic processes of behavioral, emotional, physical, and cognitive development, and the mechanisms that affect development across the life span
- To develop, apply, critique, and revise developmental theory and methods such as longitudinal design and data analytic techniques that are sensitive to developmental processes
- To translate basic science research into practice in a variety of venues in order to improve the health and developmental outcomes of individuals across the life span
- To develop and support a strong cohort of developmental researchers through the establishment of a unified and integrated research environment in which faculty collaborate and work closely with each other and with doctoral students and postdoctoral fellows to prepare the next generation of developmental researchers.

Funded by grants from the National Institute of Health and other sources, the CDS administers a pre- and post-doctoral training program, sponsors a weekly consortium series, supports workshops and special institutes on critical topics, and provides support for visiting faculty.

(919) 962-0333
www.cds.unc.edu

Center for Environmental Medicine and Lung Biology
The Center for Environmental Medicine, Asthma and Lung Biology of the School of Medicine was established in 1979 and is broadly concerned with environmental impacts on human health and on respiratory health in particular.

(919) 962-0126
www.med.unc.edu/envlung/WEBPAGE1.html

Center for European Studies
The mission of the Center for European Studies is to advance understanding of the social, political and economic events that shape contemporary Europe. It does this primarily by supporting faculty and graduate student research through its roles as a National Resource Center funded by Title VI grants and a European Union Center funded by the European Commission. At the same time, the center disseminates knowledge about contemporary Europe by enriching the University’s work in graduate and undergraduate education and in outreach programs with public schools. One major new initiative in the center’s educational functions has been the establishment of the Trans-Atlantic Master’s Program (TAM). Another is its present effort to institute a new major in contemporary European studies.

www.unc.edu/depts/europe

Center for Gastrointestinal Biology and Disease
The Center for Gastrointestinal Biology and Disease promotes research and teaching on all aspects of gastrointestinal biology, physiology, and epidemiology, with special emphasis on inflammatory bowel disease. Resources at the center’s disposal include investigators and core laboratories at two constituent members of North Carolina’s university system — The University of North Carolina at Chapel Hill, where the activities are based largely at the School of Medicine, and North Carolina State University, where the activities are based largely at the School of Veterinary Medicine. The level of cooperation between these different but complementary institutions makes the center unique.

(919) 966-1757
www.med.unc.edu/wkunias/3ctrpmg/gibiolg

Center for Health Statistics Research
The Center for Health Statistics Research (CHSR) opened its doors in the fall of 1999 with the mission of providing the infrastructure and relevant expertise to address important statistical design and analysis issues tied to research focusing on high-risk populations, especially that which leads to new insights in health promotion and disease prevention. This is accomplished by (1) focusing the center’s attention on methodological issues that arise in conjunction with existing substantive research efforts, and (2) conducting this statistical research parallel to and in collaboration with the efforts of researchers in various settings of the health research landscape in North Carolina.

(919) 962-3282
www.sph.unc.edu/chr
Center for Home Visiting

The center’s mission addresses the following goals through collaborative efforts with researchers, educators, evaluators, trainers, practitioners, and policy makers: to promote interdisciplinary research and evaluation efforts, to promote interdisciplinary training efforts at the college and university level, to promote interdisciplinary efforts in ongoing professional activities, and to advance the knowledge base concerning practice and training.

(919) 962-9197
www.unc.edu/-unchev

Center for Instructional Technology

The mission of the Center for Instructional Technology (CIT) is to assist UNC-Chapel Hill faculty, staff, and graduate instructors in achieving their instructional, research, and other professional objectives by providing support for commonly used and emerging information technologies. To fulfill that mission, the CIT works collaboratively with staff in Information Technology Services (ITS) and other service providers on campus to coordinate, promote, and support campus-wide instructional technology-related services.

www.unc.edu/cit

Center for the Integrated Study of the Environment

The Center for the Integrated Study of the Environment (CISE) studies the theoretical and computational modeling of spatial-temporal physical and biological systems; flow, transport, and reaction phenomena in complex subsurface systems, through modeling and experimentation; modern geostatistics; mathematical toxicokinetics; environmental monitoring and control; exposure analysis and health effects; risk assessment; and environmental epidemiology.

(919) 966-1767
www.sph.unc.edu/envr/cise

Center for Mathematics and Science Education

The Center for Mathematics and Science Education applies the resources of UNC-Chapel Hill to improve mathematics and science education in North Carolina. The center is affiliated with the North Carolina Mathematics and Science Education Network (NC MSEN). The center implements its mission by offering:
1. professional development activities for teachers of mathematics and science;
2. collaborative professional development and curriculum improvement projects supporting the reform efforts of local school systems;
3. the NC MSEN Pre-College Program, a student encouragement program in mathematics and science serving students of grades 6-12 in the Alamance-Burlington, Chapel Hill-Carrboro, Durham, and Orange County school systems; and
4. support for School of Education degree and non-degree programs for new teachers and for experienced teachers.
www.unc.edu/depts/cmse

Center for Pharmaceutical Outcomes Research

The mission of the Center for Pharmaceutical Outcomes Research is to improve patient health outcomes, primarily those associated with the use or potential use of pharmaceuticals. The center will advance the field of health outcomes through methodology development, evaluative research, and the translation of research findings to clinical practice and pharmaceutical education.

Center for Public Television

The University of North Carolina Center for Public Television operates a statewide network of eleven digital transmitters with a commitment to inform, enrich, and educate viewers. Each transmitter broadcasts four channels of standard definition programming and one channel of high definition programs. In addition to UNC-TV they are: UNC-KD, a children’s channel, UNC-ED, an educational channel, UNC-HD, a high definition channel, and UNC-NC, a channel that eventually will be dedicated entirely to local content.

UNC-TV also supports a wide variety of outreach activities, including partnerships with educational and social service agencies; college telecourses for credit to more than 17,500 adults yearly; educational support for teachers; and a comprehensive Web site. UNC-TV actively seeks partnerships with others to bring greater focus to the key cultural and social issues in North Carolina.

www.uncvt.org

Center for Research on Chronic Illness

CRCI provides central resources and facilities to both seasoned and novice investigators actively conducting research to assist individuals and groups to establish and maintain favorable health behaviors. Individuals and groups at high risk, or vulnerable, for developing or incurring chronic health problems are the major focus of CRCI research. Vulnerable people include the poor, marginalized communities, those at critical development stages of life (childhood, adolescence, or old age), and residents of rural or underserved areas.

(919) 966-0453
www.unc.edu/depts/crci

Center for Slavic, Eurasian, and East European Studies

Inasmuch as the mission of the University is the generation, preservation, transmission, and dissemination of useful knowledge, the mission of the Center for Slavic, Eurasian, and East European Studies is entirely coherent with that mission, particularly honed to the subset of knowledge pertaining to the languages, cultures, and political systems of the Slavic, Eurasian, and East European peoples and countries.

(919) 962-0901
www.unc.edu/depts/slavic

Center for Stochastic Processes

The Center for Stochastic Processes, within the Department of Statistics, provides a framework for substantial research activity in the areas of stochastic processes and related probability for significant interaction among the permanent faculty, senior, and junior visitors. The weekly Stochastic Process Seminar is a forum for exchange of current research ideas, and the center’s Technical Report Series contains the research produced by permanent and visiting staff prior to publication in the scientific literature. A centerpiece of the program was the incorporation of visiting faculty — with a careful balance of new research scholars and established senior workers. This has naturally resulted in extensive research production, as may be seen from the technical reports of the center and the published papers.

(919) 962-1048
www.stat.unc.edu/center.html
Center for Study of the American South
The Center for Study of the American South affirms the commitment of the University of North Carolina at Chapel Hill to the study of the South, to teaching about the region, and to a tradition of service spanning two centuries. Through myriad programs, publications, and conferences the center seeks to sponsor a broad public dialogue that addresses the central challenges to public life in the South. What is this shared Southern history and culture that both divides and unites Southeasterners? What threats to the region are posed by persistent poverty, a decline in civility, and the fragmentation of communities by racism and migration? How are recent changes to the region redefining opportunity in a global economy, transforming landscapes, and radically reshaping communities? The center brings the University's vast resources to bear on these questions.
(919) 962-5665
www.unc.edu/depts/csas

Center for Teaching and Learning
The mission of the Center for Teaching and Learning (CTL) is to support teaching and learning at all levels and in all contexts in which instruction occurs in the University. In pursuing this goal, the center works to enhance the intellectual climate and promote open and ongoing dialogue among all members of the University community, and serves as an advocate for academic initiatives, such as these enterprises relate to teaching and learning. CTL serves the University community as the primary academic development unit for faculty, departments, and curricula; it is strategically placed in the Office of the Executive Vice Chancellor and Provost to promote continuous improvement in teaching and learning for all instructors across the UNC campus.
CTL promotes undergraduate and graduate professional education in a wide variety of ways. The center is actively involved in the day-to-day instructional activities of hundreds of faculty members, graduate teaching assistants, and their academic departments campus-wide. CTL programs target the development of teaching skills of instructional personnel, curriculum development and renewal, course development, equipment and materials support for in-class instruction, the use of technologies in teaching and evaluation of instructional offerings. Through these activities, CTL indirectly contributes to the education of every undergraduate and graduate student on campus.
Professional staff in the Graduate Teaching Assistant (GTA) Development Program are responsible for helping graduate students develop their pedagogical skills and document their teaching practices from the time they receive their appointments as teaching assistants throughout their tenure at UNC-Chapel Hill. CTL consultants also help graduate students without GTA appointments develop the instructional skills that they need for their professional responsibilities in adult education, patient education, etc. GTA development is accomplished by individual consultations, open-enrollment workshops, meetings with GTAs and faculty on departmentally defined issues, support for comprehensive programs with departments that utilize GTAs, teaching courses on college teaching, and collaborative programs with The Graduate School. Through these activities, CTL contributes directly to the education of virtually every graduate student at UNC-Chapel Hill who receives a teaching assignment, and a significant number of those who will teach in other settings.
(919) 966-1289
www.unc.edu/depts/ctl

Center for Urban and Regional Studies
The center's mission is to promote and support within UNC-Chapel Hill, high quality basic and applied research on urban, regional, and rural planning and policy issues. The center seeks to generate new knowledge of urban and regional processes and problems and ultimately to improve living conditions in our communities. This is done by involving the University's faculty and graduate students in large, multidisciplinary research projects and smaller, more narrowly focused projects. The center's mission also includes promoting the use of the research it facilitates.
(919) 962-3074
www.unc.edu/depts/curs

Clinical Center for the Study of Development and Learning
The Clinical Center for the Study of Development and Learning (CCDL) is a multidisciplinary research, technical assistance, and leadership training center. The center is dedicated to improving the lives of individuals with developmental disabilities. Its work covers the broadest range of dysfunctions and handicaps, from learning disorders and attention deficits to mental retardation and multiple handicapping conditions.
(919) 966-5171
cdl.unc.unc.edu

Collaborative Studies Coordinating Center
The Collaborative Studies Coordinating Center (CSCC) is a division within the Department of Biostatistics of the School of Public Health at the University of North Carolina at Chapel Hill. As the coordinating center for a number of multicenter public health and medical studies, it provides statistical, data management, quality assurance, and study management services. The organization includes professional personnel from biostatistics, epidemiology, computer science/data management, medicine, pharmacy, and nutrition. The professional personnel are supported by staff with training and experience in all of these fields as well as in study management, office management, and communication.
www.cscc.unc.edu/

Comprehensive Center for Inflammatory Disorders
Established in 1999, the Comprehensive Center for Inflammatory Disorders (CCID) is one of six National Comprehensive Oral Health Research Centers of Discovery created by the National Institute of Dental and Craniofacial Research to improve the oral health of Americans. The CCID faculty conducts basic, clinical epidemiological, and community-based research on inflammatory disorders such as periodontal disease, cardiovascular disease, and diabetes, and on at-risk pregnant women. The center also provides comprehensive specialized oral health care to patients with periodontal disease, diabetes, and cardiovascular disease, and on patients with at-risk pregnancies. Finally, the center provides educational opportunities for scientists, professionals, and the public on the links between inflammation and systemic medical conditions.
(919) 966-1455
www.dent.unc.edu/research/ccid

Cystic Fibrosis Pulmonary Research Center
The Cystic Fibrosis Pulmonary Research and Treatment Center is a large, multidisciplinary group focused on the pathogenesis and therapy of cystic fibrosis and other lung diseases.
(919) 966-1077
www.med.unc.edu/wrkunits/3ctrpgm/cystfib
Dental Research Center

The Dental Research Center provides a central base for the research carried out by the Dental School by making available well-equipped laboratories and core research support facilities. The center fosters collaborative research relationships for faculty throughout the University and offers opportunities in graduate research training for basic sciences and clinical specialty students.

www.dent.unc.edu/research

Frank Porter Graham Child Development Institute

The research mission of the Frank Porter Graham Child Development Institute is to create new knowledge to enhance the lives of young children and their families. Emphasis has and will be placed on the study of vulnerable populations, such as those at risk, the disabled, or the disadvantaged.

(919) 966-2622
www.fpg.unc.edu

General Clinical Research Center

The mission of the General Clinical Research Center (GCRC) is to provide an optimal setting for investigation of both normal and abnormal body function; to create facilities where the cause and the natural history of human illness can be defined and where disease progression, prevention, control, and cure can be studied; to encourage, develop, and maintain a national core of expert clinical investigators; to create an environment where all types of health professionals can be trained in the many aspects of clinical research; and to expedite the translation of advances in basic scientific knowledge into new or improved methods for patient care.

(919) 966-1435
vcme.med.unc.edu

Gene Therapy Center

The University of North Carolina School of Medicine created the Gene Therapy Center in 1993 with the goal of merging molecular genetics research with healthcare delivery. The Gene Therapy Center provides important resources to academic investigators through two core facilities created to support preclinical and clinical gene therapy studies. These facilities, the Vector Core and the Human Applications Laboratories, were created to ensure that investigators would have promising gene vectors available in the quality and quantities needed for preclinical or clinical studies. Research in the laboratory has centered on the molecular biology of adeno-associated virus (AAV) in order to exploit the unique features of this virus to develop an efficient viral vector system for use in human gene therapy. Continued efforts in understanding the mechanism of viral replication and integration for both wild-type and recombinant AAV are being pursued in order to create more efficient gene transfer vectors. The ultimate goal of the Gene Therapy Center is to facilitate the progression and translation of gene therapy research from the laboratory bench into Phase I clinical trials for the treatment of human disease.

(919) 962-3285
www.med.unc.edu/genether

Highway Safety Research Center

The Highway Safety Research Center (HSRC) is dedicated to improving transportation safety, with a major emphasis on highway safety. Its fundamental mission is to conduct basic and applied research that increases knowledge and contributes to reducing death, injury, and the related societal costs. HSRC translates developed knowledge into practical interventions that can be applied at local, state, national, and international levels.

(919) 962-2202
www.hsric.unc.edu

Injury Prevention Research Center

Injury is a major, but under-recognized, public health problem worldwide. In the United States alone, about 150,000 people die of injuries each year, resulting in more years of life lost before age 65 than any other single health problem. In addition to loss of life, the pain, suffering, and long-term disability associated with injuries are enormous. Most of these injuries are preventable, but there is much to learn. More must be understood about the factors that influence when, how, where, and to whom injuries will occur, and effective and appropriate intervention strategies must be designed and implemented.

The UNC Injury Prevention and Research Center (IPRC) envisions a world in which injuries are reduced as a result of important discoveries made and disseminated in a scholarly manner to guide policies and program development. Its vision includes a leadership role for UNC IPRC in effecting change both nationally and internationally.

The mission of the IPRC is to build the field of injury prevention and control through a combination of interdisciplinary scholarly approaches to research, intervention, and evaluation as well as through the training of the next generation of researchers and practitioners.

The UNC IPRC strives to be an innovative, nurturing, efficient, highly productive, and versatile organization that believes in:
- promoting rigor and integrity in all aspects of its work;
- identifying, creating, and seizing opportunities to enhance scientific progress and application of knowledge to prevent injury;
- creating an intellectual home in which faculty, staff, and students find collegiality, mentoring, and assistance in realizing their professional and academic goals;
- embracing new ideas with enthusiasm while planning strategically for the future;
- nurturing an atmosphere of open communication, sharing of ideas, and interdisciplinary collaboration in which good science and practice merge;
- supporting forward-thinking leadership that brings national and international perspectives;
- providing high quality service to affiliated faculty, staff, and students for project development management and dissemination;
- ensuring that all are clear about their roles and responsibilities and do what they are supposed to do;
- fostering synergies among ideas, individuals, and functions such that all engaged with the center contribute fully based on their unique and complementary roles; and
- being adaptable to shifts in leadership, staffing, and external conditions while maintaining organizational stability.

(919) 966-2251
www.sph.unc.edu/iprc

Kenan Center for the Utilization of Carbon Dioxide in Manufacturing

The Kenan Center for the Utilization of Carbon Dioxide in Manufacturing is dedicated to this sustainable vision of technological, scientific, and educational advances in processing systems. The elucidation of the fundamental science and engineering principles that will make these possibilities become
reality, in collaboration with industrial partners, is the mission of the Kenan Center. The center is comprised of chemists, chemical engineers, and materials scientists from the University of North Carolina at Chapel Hill and North Carolina State University. More than twenty faculty and forty students and post-doctoral associates participate in Kenan Center research. National Laboratory partners at Oak Ridge, Los Alamos, and Pacific Northwest allow use of their facilities for Kenan Center investigations, and industrial members provide financial support and guidance.

www2.ncsu.edu/champagne

National Center for Catastrophic Sport Injury Research
The National Center for Catastrophic Sport Injury Research collects and disseminates death and permanent disability sports injury data that involve brain and/or spinal cord injuries. The research is funded by a grant from the National Collegiate Athletic Association, the American Football Coaches Association, and the National Federation of State High School Associations. This research has been conducted at The University of North Carolina at Chapel Hill since 1965.

(919) 962-5171

www.unc.edu/depts/nccsi

Neurodevelopmental Disorders Research Center
The National Institute of Child Health and Development created the Neurodevelopmental Disorders Research Center in 1967. The center, one of only twelve such research centers in the country, studies mental retardation and other developmental disorders. Its primary mission is to promote research and research training in the pathogenesis and treatment of neurodevelopmental disorders.

(919) 843-8641

www.ndrc.unc.edu

Neuroscience Center
The mission of the Neuroscience Center is to promote neuroscience research with a specific emphasis on developmental, cellular, and disease-related processes.

www.neuroscience.unc.edu

North Carolina Center for Nanoscale Materials
The North Carolina Center for Nanoscale Materials (NCCNM) was officially established in April 1998. Major funding is provided by the Office of Naval Research, UNC-Chapel Hill, and (North Carolina State University (NCSU). The center currently has fifteen associate faculty members from several academic units at UNC-Chapel Hill and NCSU, and supports eight postdoctoral fellows and fifteen graduate research assistants. The research activities in the center are directed toward understanding the fundamental science of nanoscale materials and utilizing their unique properties for commercial applications.

www.physics.unc.edu/~zhou/muri

North Carolina Occupational Safety and Health Education Research Center
The North Carolina Occupational Safety and Health Education and Research Center (NCOHSERC) is an inter-institutional, multidisciplinary organization committed to graduate education and continuing education training of occupational health and safety professionals.

(888) 235-3320, (919) 962-2101, oshecww@sph.unc.edu

www.sph.unc.edu/oshec

NSF Science and Technology Center for Environmentally Responsible Solvents and Processes
More than 30 billion pounds of organic and halogenated solvents are used worldwide each year as process aids, cleaning agents, and dispersants. Considerably more water is used and contaminated in related processes. In the twenty-first century, manufacturing and service industries must increasingly attempt to avoid production, use, and subsequent release into the environment of contaminated water, volatile organic solvents, chlorofluorocarbons, and other noxious pollutants. Technological breakthroughs of the last decade now indicate that liquid and supercritical carbon dioxide (CO2) could become a very commonly used solvent in overcoming these environmental problems. The S&T Center for Environmentally Responsible Solvents and Processes, established in 1999, has as its goal to develop the scientific fundamentals necessary to enable liquid and supercritical CO2 to replace aqueous and organic solvents in a key processes in the nation's manufacturing sector. Three key focus areas identified to date are macromolecular synthesis/engineering, microlithography, and nanostructures. This is a multidisciplinary effort with participants from five academic centers and two national laboratories: the University of North Carolina at Chapel Hill, North Carolina State University, North Carolina A&T University, University of Texas at Austin, and Georgia Institute of Technology in partnership with Sandia National Laboratory and Oak Ridge National Laboratory.

(919) 962-5468

www.nfsfsc.unc.edu

Program on Health Outcomes
The health care industry faces growing imperatives to improve quality, effectiveness, and value in the application of health services and technologies to the health problems of individuals and populations. These imperatives, with urgency in both domestic and global markets, hinge on the ability to measure and improve the outcomes of health services and to demonstrate these improvements to consumers, providers, purchasers, and policymakers. Recognizing the need for a focus of excellence and innovation in the area of health outcomes, the multidisciplinary Program on Health Outcomes has been created at the University of North Carolina at Chapel Hill to lead and coordinate health outcomes studies and educational initiatives at UNC, in partnership with other organizations and individuals in the health care industry. The program is a focused, visible, and accessible resource within UNC-Chapel Hill where government and private health organizations can obtain expertise in health outcomes for a wide range of applications. In providing these services, it capitalizes on the critical mass of skills and resources in outcomes research in the schools of Public Health, Medicine, Pharmacy, Nursing, and Dentistry; the Cecil G. Sheps Center for Health Services Research; other academic units; the UNC health care system; and outside partners.

(919) 843-9477

www.sph.unc.edu/health-outcomes/index.htm

Research Support Center
The School of Nursing's Research Support Center (RSC) facilitates faculty and student research endeavors with particular emphasis on expanding the research base in the School of Nursing, increasing external funding for research, and developing new scholars and their programs of research. The center provides a broad array of research support services, including consultation in the areas of research design, advanced statistical support including and measurement; and statistical analysis and analysis programming.
preparation of research grant proposals; assistance with institutional grant processing; editorial assistance; computer short courses for faculty and students of the School of Nursing; and grant fiscal management. The RSC maintains information on funding sources, research conferences, and faculty research interests, and publishes a newsletter highlighting grant and conference opportunities, research and computing news, and faculty research activities. The RSC also manages school-awarded small grants programs.

(919) 966-5803
www.unc.edu/depts/rsc

Sheps Center for Health Services Research
(see Cecil G. Sheps Center for Health Services Research)
www.shepscenter.unc.edu

Sonja Haynes Stone Center for Black Culture and History
Mission: To encourage and support the critical examination of all dimensions of African American and African diaspora cultures through sustained and open discussion, dialogue, and debate, and to enhance the intellectual and sociocultural climate at the University of North Carolina at Chapel Hill.

(919) 962-9001
ibiblio.org/shsc

Thurston Arthritis Research Center
Independence is an American right. Self-sufficiency is an American ambition. Freedom of movement is an American assumption. The Thurston Arthritis Center draws from the spirit of this national psyche to create powerful instruments to lessen the suffering and immobility of those with arthritis-related diseases and to enhance the miracles of scientific vision.

(919) 966-4191
www.med.unc.edu/wrkunits/3ctrpgm/mac

Tissue Culture Facility
The mission of the Tissue Culture Facility is to provide the members and colleagues of the UNC Lineberger Comprehensive Cancer Center with the highest quality research services and products available and to support and expand the science of cancer and medical research with professionalism and dedication.

www.unc.edu/depts/tcf/info.html

UNC Center for Functional GI and Motility Disorders
Mission: Advancing the biopsychosocial understanding and care of patients with functional gastrointestinal (GI) and motility disorders through research, training, and education.

The center's goals are:
Research: conducting studies on the physiological and psychosocial mechanisms underlying the functional GI and motility disorders, their impact on quality of life, health outcome, and their treatment
Professional Training and Education: providing multidisciplinary training and education in clinical and research skills with emphasis on patient-centered care and advanced research methods
Evaluation and Treatment: applying up-to-date evaluation and treatment for a full range of functional GI and motility disorders

General Center Information: (919) 966-0144;
Center Coordinator: (919) 843-0821
www.med.unc.edu/medicine/lgidc/welcome.htm
Or www.med.unc.edu/lhs

UNC Lineberger Comprehensive Cancer Center
The UNC Lineberger Comprehensive Cancer Center of the School of Medicine of the University of North Carolina at Chapel Hill is the public cancer center for North Carolina. The UNC Lineberger center is the focal point for cancer research and cancer-related activities at UNC-Chapel Hill. It has an organized program for postdoctoral training of basic science and prevention and control cancer research. Curricular goals of the UNC Lineberger Comprehensive Cancer Center are implemented through academic departments. Cancer center members direct or participate in a wide variety of training programs. The center's activities are interdisciplinary, and its two hundred and thirty-five members are drawn from more than twenty-five departments in the UNC School of Medicine, the School of Public Health, the schools of Dentistry, Nursing, Pharmacy, and the College of Arts and Sciences. The UNC Lineberger Center features nine research programs that are organized in three areas: basic science, clinical science, and population sciences. Basic scientists study various aspects of cancer development and progression at the molecular level. Programs include cancer cell biology, immunology, molecular carcinogenesis, molecular pharmacology, virology, and cancer genetics. A clinical research program focuses on developing novel approaches to cancer diagnosis and treatment. The population sciences programs include cancer prevention and control research and cancer epidemiology which seek to understand the causes of cancer in human populations and to develop, test, and disseminate interventions to reduce cancer risk, increase early detection, enhance cancer survivorship, and reduce mortality from cancer.

(919) 966-3036
www.cancer.med.unc.edu

University Center for International Studies
Established in 1993 as a pan-University center, the University Center for International Studies (UCIS) brings leadership and innovation to the goal of broadening the University's international presence and global perspective. UCIS bridges intellectual communities by developing interdisciplinary initiatives in international education, research, and public service. The center offers numerous funding opportunities for students, including pre-dissertation research, language training, and internships.

Special emphasis is placed on three programmatic themes: Development and Human Rights, Globalism and Localism, and Global Citizenship.

While the basic operating budget for UCIS comes from the Office of the Provost, most of its programs are funded through external grants - $16 million to date - from such sources as Ford, Freeman, MacArthur, Mellon, National Science Foundation, Z. Smith Reynolds, Rockefeller, Rotary International, and U.S. Agency for International Development.

Of special note is that UCIS is one of only eleven international centers in the country designated by the U.S. Department of Education as a Title VI National Resource Center. It is also one of only seven Rotary Centers for International Studies in the world.

(919) 962-3094
www.ucis.unc.edu

Research Laboratories
Baiyti Air Engineering Laboratory
The Baiyti Air Engineering Laboratory is one of the premier industrial hygiene, air pollution control, and aerosol science research facilities in the country. The laboratory is part of the Department of Environmental Sciences and Engineering at The University of North Carolina at Chapel
Hill. It includes a 2,000-square-foot bay for testing air pollution control
devices with a 3-ton overhead crane on a 25-foot ceiling. The laboratory
also contains a 200-cubic-foot wind tunnel, fans capable of moving 10,000
cfm, an aerosol physics laboratory, a chemistry laboratory, and office space.
In addition, high bay space and analytical laboratories are available to con-
duct pilot scale experiments on water quality. The Batty Laboratory is
housed in its own building adjacent to the UNC School of Public Health.
www.sph.unc.edu/battylab

Macromolecular Interactions Facility
The goals and mission of the UNC Macromolecular Interactions Facility
are to provide instrumentation and resources for the biophysical character-
ization of interactions among biological macromolecules. The
Macromolecular Interactions Facility strives always to provide excellent
instruction in the use and care of facility instrumentation, recommenda-
tions regarding the best instrumentation for a particular biochemical appli-
cation, and assistance in experimental design.
macinfac.bio.unc.edu

Research Laboratories of Archaeology
The Research Laboratories of Archaeology were established in 1939 to con-
duct studies in archaeology and related fields such as ethnography, physical
anthropology, and ethnohistory. Today, the research laboratories' interde-
partmental program pursues research in such areas as North American pre-
history and history (with a focus on the Native American cultures of North
Carolina), Latin American prehistory, Old World archaeology, paleo-eth-
nohistory, and human osteology. Rigorous field and laboratory training is
provided for graduate and undergraduate students. The Research
Laboratories of Archaeology also curate one of the nation's finest collections
of southeastern archaeological materials, including more than 6,000,000
artifacts, extensive photographic collections dating from the 1930s, and
smaller archaeological and ethnographic collections from Latin America,
Europe, and Japan.
rla.unc.edu

Thurstone Psychometric Laboratory
The mission of the L. L. Thurstone Psychometric Laboratory is to support
the faculty and students of the laboratory in the development and applica-
tion of quantitative methods for psychological research. The laboratory
seeks to create an active and vital intellectual atmosphere for its members so
as to facilitate a high level of scholarly effort and interaction. Toward this
end, the laboratory secures and manages resources that support these
research activities and goals. This support takes a variety of forms, includ-
ing financial, administrative, and logistical. Laboratory resources are
expended for purposes such as financial support of graduate students,
upgrading of facilities and equipment, funding of student travel to confer-
ences or workshops, sponsoring of visiting speakers, and sponsoring and
hosting of academic conferences.

The laboratory also seeks to establish and promote productive associ-
tions with other academic units at the University of North Carolina. These
include the Departments of Statistics, Biostatistics, Linguistics, and
Computer Science, as well as the Howard W. Odum Institute for Research
in Social Science (IRSS), the Center for Developmental Science, and the
Frank Porter Graham Child Development Institute. Each of these units is
engaged in research and teaching relevant to members of the laboratory.
Faculty of the laboratory collaborate in research with faculty in these units,
and the laboratory's graduate students often take courses in these depart-
ments and become involved in research activities.
www.unc.edu/depts/qua/psych/thurstone

Triangle Universities Nuclear Laboratory
The Triangle Universities Nuclear Laboratory (TUNL) is a cooperative
research laboratory located on the Duke University campus and supported
by Duke University, North Carolina State University, and the University of
North Carolina at Chapel Hill. Fifty faculty and graduate students from the
three universities use the facilities. TUNL is the largest university-based
nuclear physics laboratory in the southeast, and one of the largest such lab-
oratories in the United States. The major research interests of TUNL are
studies of fundamental symmetries and studies of nuclear interactions at
low to medium energies in the one to twenty million-electron-volt range.
sen@tunl.duke.edu
www.tunl.duke.edu
University Regulations and Policies

The Honor Code

Persons enrolled in The Graduate School are members of the student body of the University of North Carolina at Chapel Hill, and are held responsible for conducting themselves in conformity with the moral and legal restraints found in any law-abiding community. They are, moreover, subject to the regulations of the Honor Code.

The Honor Code is the heart of integrity at Carolina. In brief, the Honor Code states that all students shall "refrain from lying, cheating, or stealing," but the Honor Code imparts much more. It is the guiding force behind the responsible exercise of freedom, the foundation of student self-governance at UNC. By abiding by the Honor Code, students can be assured that their individual rights and academic work will be respected.

Mutual Responsibilities of the Faculty and Students

Academic work is a joint enterprise involving faculty and students. Both have a fundamental investment in the enterprise and both must share responsibility for ensuring its integrity. In relation to the Honor Code, therefore, specific responsibilities of the faculty which parallel the responsibilities of the students have been formally adopted by the Faculty Council.

Responsibilities of the Faculty

I. Awareness: To assure that community-wide expectations regarding academic integrity are understood and communicated, and that students are held accountable for conforming their conduct to such expectations.

II. Communicating Expectations and Administering Examinations: To assist students in complying with their responsibilities relating to academic integrity, faculty members, teaching assistants, and other instructional personnel should:

A. Use good judgment in setting and communicating clear ground rules for academic work conducted under their supervision.

B. Require students to sign the honor pledge as a condition of submitting academic assignments.

C. Take steps to prevent unauthorized access to examinations during development, duplication, and administration.

D. Avoid re-using prior examinations in whole or part to the extent possible.

E. Take all reasonable steps consistent with physical classroom conditions to reduce the risk of cheating during the administration of examinations.

F. Maintain proper security during the administration of examinations including as appropriate overseeing distribution and collection of examinations and proctoring the examination session.

III. Oversight: In the event of student misconduct that appears to violate the requirements of the Honor Code, faculty members, teaching assistants, and other instructional personnel should:

A. Report to the appropriate Student Attorney General any instance in which the instructor has reasonable basis to conclude that a student under the faculty member's supervision has engaged in academic dishonesty or substantially assisted another to do so in connection with academically related work.

B. In the instructor's discretion, notify the student of the instructor's intention to report the suspected academic dishonesty and permit the student to provide relevant further information if the student chooses to do so.

C. Refrain from taking unilateral punitive action as to a student rather than reporting conduct in suspected violation of the Honor Code.

D. Cooperate with representatives of the Honor System in conducting necessary investigation, providing testimony or other evidence recommending appropriate sanctions, or otherwise bringing the matter to prompt conclusion.

IV. Involvement: To bring to bear requisite faculty judgment regarding the nature and importance of academic integrity, and to nourish a strong campus-wide understanding and commitment to associated intellectual and personal values, faculty members, teaching assistants, and other instructional personnel should:

A. Explore issues of integrity in connection with instructional activities where relevant and appropriate.

B. Encourage their academic units to take matters of academic integrity seriously, become informed regarding related problems and advisable means of preventing problems from arising, and provide requisite training and support to instructional personnel.

C. Participate upon request as part of educational initiatives, faculty advisory panels, and University Hearing Boards designed to create, nurture, and enforce high standards of academic integrity within the University community.

Responsibilities of Students

In order to ensure effective functioning of an Honor System worthy of respect in this institution, students are expected to:

I. Conduct all academic work within the letter and spirit of the Honor Code, which prohibits the giving or receiving of unauthorized aid in all academic processes.

II. Consult with faculty and other sources to clarify the meaning of plagiarism, to learn the recognized techniques of proper attribution of sources used in the preparation of written work, and to identify allowable resource materials or aids to be used during examination or in completion of any graded work.

III. Sign a pledge on all graded academic work certifying that no unauthorized assistance has been received or given in the completion of the work.

IV. Comply with faculty regulations designed to reduce the possibility of cheating—such as removing unauthorized materials or aids from the room and protecting one's own examination paper from the view of others.

V. Maintain the confidentiality of examinations by divulging no information concerning an examination, directly or indirectly, to another student yet to write that same examination.
VI. Treat all members of the University community with respect and fairness.

VII. Report any instance in which reasonable grounds exist to believe that a student has given or received unauthorized aid in graded work or in other respects violation the Honor Code. Such report should be made to the Office of the Student Attorney General, the Office of the Dean of Students, or other appropriate officer or official of their college or school.

VIII. Cooperate with the Office of the Student Attorney General and the defense counsel in the investigation and hearing of any incident of alleged violation, including the giving of testimony when called upon.

Alcoholic Beverages Policy
(For complete alcoholic beverages policy, see appendix.)
A policy on student possession and consumption of alcoholic beverages in facilities of the University of North Carolina at Chapel Hill has been promulgated by the vice chancellor for Student Affairs, with the approval of the chancellor, to inform students of the conditions under which alcoholic beverage use consistent with federal, state, and local laws and ordinances is permitted in University facilities and on University property. Copies of the policy may be obtained from the Office of the Dean of Students or the Office of the Vice Chancellor for Student Affairs; both are located in Searle building. The text of the policy can be accessed on the World Wide Web at studentaffairs.unc.edu/who_we_are/dos/policies/alcohol.html.

Drug Policy
(For complete drug policy, see appendix.)
Students, faculty members, administrators, and other employees of the University of North Carolina at Chapel Hill are responsible, as citizens, for knowing about and complying with the provisions of North Carolina law that make it a crime to possess, sell, deliver, or manufacture those drugs designated collectively as 'controlled substances' in Article 5 of Chapter 90 of the North Carolina General Statutes. Any member of the University community who violates that law is subject to prosecution and punishment by the civil authorities and to disciplinary proceedings by the University. Also, recent federal legislation requires, as a condition of employment, that any faculty or staff member engaged in the performance of a federal grant or contract must abide by the University's Drug Policy and must notify his or her dean, director, or department chair of any criminal drug statute conviction for a violation occurring in the work place not later than five days after the conviction.

Disciplinary Proceedings against a student, faculty member, administrator, or other employee will be initiated when the alleged conduct is deemed to affect the University's interests. Penalties will be imposed for violation of the policies of the University only in accordance with procedural safeguards applicable to disciplinary actions against students, faculty members, administrators, and other employees. The penalties that may be imposed range from written warnings with probationary status to expulsions from enrollment and discharges from employment.

Every student, faculty member, administrator, and other employee of the University is responsible for being familiar with and complying with the terms of the Policy on Illegal Drugs adopted by the Board of Trustees. Copies of the full text of that policy are available from each student's dean, director, or department chair, or from the Office of the Dean of Students or the counseling service of the Office of Human Resources.

Smoking Ban
Legislation enacted by the General Assembly of North Carolina regulates smoking in public places. The Orange County Board of Health adopted smoking control rules that prohibit smoking in (among other places) higher education, employment, and sports facilities. Accordingly, in compliance with state and local authorities, smoking is prohibited in University facilities, including residence hall rooms.

Disciplinary Records
Disciplinary files and records of cases that resulted in "not guilty" findings will be destroyed immediately after the hearing that rendered the "not guilty" verdict. Disciplinary files and records on other adjudicated cases will be maintained for ten years after all appeal rights have expired or have been exhausted, and then destroyed. Files on pending cases will be maintained indefinitely.

Release of information contained in a student's disciplinary file or other records is governed by the provisions of the 1974 Family Educational Rights and Privacy Act.

Nondiscrimination Policy
The University of North Carolina at Chapel Hill is open to people of all races, is committed to equality of educational opportunity, and does not discriminate against applicants, students, or employees based on age, race, color, sex, national origin, religion, and disability. It is the policy of the University of North Carolina at Chapel Hill that sexual orientation be treated in this same manner. Any complaints alleging failure of this institution to follow this policy should be brought to the attention of the General Counsel.

Amorous Relationships
It is the policy of the University of North Carolina at Chapel Hill that faculty members or other instructional staff shall not initiate, pursue, or be involved in any amorous or sexual relationships with any student whom they are in a position to evaluate or supervise by virtue of their teaching, research, or administrative responsibilities.

Friendships or mentoring relationships between faculty or instructional staff and students are not proscribed by this policy. Nor is it the intent of this policy that such nonamorous relationships be discouraged or limited in any way. Copies of the full text of this policy are available from each student's dean, director, or department chair, or from the Office of the Dean of Students or the counseling service in the Office of Human Resources.
Racial Harassment

Discrimination on the basis of race is unacceptable at the University of North Carolina at Chapel Hill. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail if the University is to fulfill its purposes.

Because there may be conflict among freedom of speech, the right of individuals to be free from injury caused by discrimination, and the University's duty to protect the educational process, the enforcement of procedures shall recognize that it may be necessary to have varying standards depending upon the place of the conduct in question. Thus a distinction may be drawn among public forums, educational and academic centers, and housing units. Copies of the full text of this policy are available from each student's dean, director, or department chair, or from the Office of the Dean of Students or the counseling service in the Office of Human Resources.

Sexual Harassment

Sexual harassment constitutes unlawful discrimination on the basis of sex. Sexual harassment violates both law and University policy, and will not be tolerated in the University community.

Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by one in an official University position or by a fellow University employee constitute sexual harassment when: submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or academic standing, or submission to or rejection of such conduct by an individual is used as a basis for an employment or academic decision affecting that individual, or such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance, or creating an intimidating, hostile, or offensive environment.

Copies of the full text of this policy are available from each student's dean, director, or department chair, or from the Office of the Dean of Students or the counseling service in the Office of Human Resources.

Policy on Sexual Orientation Nondiscrimination

The University has adopted an internal policy on nondiscrimination on the basis of sexual orientation. That policy provides that educational and employment decisions should be based on individuals' abilities and qualifications and should not be based on irrelevant factors or personal characteristics that have no connection with academic abilities or job performance. Among the traditional factors that are generally "irrelevant" are age, race, color, sex, religion, national origin, and disability. It is the policy of the University of North Carolina at Chapel Hill that an individual's sexual orientation be treated in the same manner. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied. This policy prohibiting discrimination on the basis of sexual orientation does not apply to the University's relationships with outside organizations, including the federal government, the military, ROTC, and private employers. Copies of the full text of that policy are available from each student's dean, director, or department chair, or from the Office of the Dean of Students or the counseling service in the Office of Human Resources.

Transportation and Parking

Parking

Every student at UNC-Chapel Hill and UNC Hospitals who parks an automobile between 7:30 a.m. and 5:00 p.m. on weekdays in the University's designated reserved parking is required by the Department of Public Safety to obtain and display a parking permit. Parking permit holders must park only in specific zones as indicated on their parking permits. After 5:00 p.m. on weekdays, however, students may park in any unreserved space except those in resident student lots, which are reserved until 9:00 p.m.

Motor vehicle parking permits may be applied for during normal registration procedures at the Department of Public Safety. Vehicles found parked illegally may be cited by the Department of Public Safety's Parking Control Division, and subsequent violations may result in further citations, immobilization ("booting"), or towing of the vehicle. Citations may be appealed through the Department of Public Safety's Appeals Office. Appeals also can be entered by telephone by calling the Appeals Office at 962-3953, Monday through Friday, from 7:30 a.m. until 5:00 p.m.

The Parking Control Division also operates the Motorist Assistance Program (MAP), offering jumpstarts or lock-out key retrieval to any vehicle on campus. Contact MAP at the Parking Control Office at 962-8006 between 7:00 a.m. and 9:00 p.m. or by calling UNC Police at 962-8100 between midnight and 7:00 a.m.

Alternatives to Parking

The UNC-Chapel Hill Department of Public Safety sponsors many programs offering viable alternatives to parking on campus, such as:

Transit

All Chapel Hill Transit routes, including service to and from campus and area park and ride lots, are fare-free. The exchange of money, coupons, or display of a bus pass is not needed when boarding. Campus "U" route and "Reverse U" shuttles run continuous routes serving nearly every area on campus. Consult the Chapel Hill Transit Guide for information on specific routes.

A new student run program called "Safe Ride" aims to provide increased mobility during late-night hours. The Safe Ride bus systems "Safe Ride J Route" links the campus along Franklin and Rosemary streets with points west, including University Commons, Rock Creek Apartments, Highland Hills, Laurel Ridge, and other points in Carrboro along Merritt Mill and Smith Level Roads, and Greensboro Street. The "Safe Ride T Route" links points along Franklin and Rosemary Streets with locations to the north of campus, including housing communities along Airport Road all the way to Weaver Dairy Road.

Regional transit (to and from RDU, Raleigh, and Durham) is available aboard Triangle Transit Authority (TTA) buses. For more information, call TTA at (919) 549-9999.

The Commuter Alternatives Program

The Commuter Alternatives Program (CAP) is an initiative with the goal of reducing campus traffic congestion and parking demand through the promotion and management of viable alternatives to single-occupancy vehicle use at UNC. It is a free program designed to reward campus community members for their use of bicycling, walking, transit and park and
ride services, and ridesharing. CAP requires only that a registrant commute to UNC and not be registered for a parking permit. To request a CAP brochure, call the Department of Public Safety or visit the department’s Web site at www.dps.unc.edu.

UNC Bicycle Registration

The Department of Public Safety offers a bicycle registration program for bicycles stored or traveling on campus. The program serves as a deterrent to crime, aids in the identification of lost or stolen bicycles, and enables the department to better plan for improved bicycle parking facilities around campus in the future.

Point-to-Point

Point-to-Point Transportation (P2P) offers fare-free fixed-route service aboard their P2P Express minibuses, operating on a continuous loop around campus during evening hours, 7:00 p.m. until 3:00 a.m., seven nights a week during Fall and Spring academic semesters. Students must show their UNC ONE Card to board the P2P Express. P2P also offers fare-free demand-response transportation service to disabled students and students going to or from Student Health Services 24 hours a day. After dark, this service can be accessed by students in areas which are not served by the P2P Express route.

A P2P Library Safe Ride Shuttle runs continuously between 12:00 a.m. (midnight) and 3:00 a.m., Monday through Thursday. It links the Student Union (South Road entrance) with campus housing locations (including Granville Towers and fraternities and sororities close to campus).

For More Information

Visit the Department of Public Safety during regular business hours (weekdays, 7:30 a.m.-5:00 p.m.), in the Public Safety Building via Morrison Drive (just off Manning Drive) on south campus. For more information on Parking and Transportation at UNC-Chapel Hill, log onto the Department of Public Safety’s Web site at www.dps.unc.edu. Concerns may be addressed at the following campus telephone numbers:

- General Information 962-3951, 3952
- Police Emergencies 911
- Police Non-emergencies 962-8100
- Parking Enforcement 962-8006
- Accounts Receivable 962-3097, 7143
- Parking Appeals 962-3953
- 24-hour Parking Information 558-5960
- 24-hour Special Event Information 558-5961
- Visitor Pay Operations Parking 966-4424
- Point-to-Point Shuttle Dispatcher 962-7867 (962-"P-TO-P")
- Commuter Alternatives Program 843-4414

Students with temporary physical handicaps or other hardships requiring special consideration should contact the Department of Disability Services.
2004 – 2005 Academic Year
Academic Calendar

(During the 2005-2006 Academic Year, visit the Registrar's Web site for an updated calendar: regweb.ott.unc.edu/calendars.html)

FIRST SUMMER SESSION 2004
Course listing available over the Web for courses offered during First and Second Summer Sessions. Tuesday, December 9, 2003
Students registered for the 2004 Spring term will be ACTIVATED into the 2004 Summer and Fall terms in preparation for registration. Saturday, February 28, 2004
Early registration begins according to registration schedule. Friday, March 19
Billing dates. Friday, April 2 – Wednesday, April 7
Early registration closes at 5 p.m. Wednesday, April 7
Tuition and fees due for all students. Tuition and fees due for all students. (Students who register during early registration must pay or defer tuition and fees by this date or their schedule will be cancelled and all their courses dropped.)
Term registration begins for all students. Residence halls open at 9 a.m.
Classes begin for all students. Late registration begins. $20 fee charged for late registration.
Term course add ends at 5 p.m. This is the last day for all students to add a course or late register through the Web registration system. This is also the last day for schools/departments to add students online.
Last day to reduce course load, but not drop all courses, and have tuition adjusted. (Note: Dropping all courses requires processing a withdrawal of enrollment from the University and follows a different prorated refund policy. See Withdrawal Policy.)
Term course drop ends at 5 p.m. This is the last day for all students to drop a course through the Web registration system. This is also the last day for schools/departments to drop students online.

Verification class rolls distributed. Wednesday, May 19
Last day for undergraduate students to drop courses. Monday, May 24
HOLIDAY, Memorial Day. Monday, May 31
Last day to withdraw for credit on student's financial account. (Prorated over three weeks.) Tuesday, June 1
Verification class rolls due to Registrar's Office. Wednesday, June 2
Last day for graduate students to drop courses. Friday, June 4
Last day to withdraw without any tuition credit. Thursday, June 10
First Summer Session classes end. Friday, June 11
Absences (AB's) and Incompletes (IN's) from First Summer Session 2003 change to F* for graduate students. Friday, June 11
Official class rolls and grade reports distributed. (Official class rolls and grade reports are due to the University Registrar's Office 72 hours after the exam is given.)
First Summer Session examinations begin. Monday, June 14
First Summer Session examinations end. Tuesday, June 15
Residence halls close at 6 p.m.
Last day for graduate and undergraduate students to file a degree application with their dean's office for degree to be awarded in August.
HOLIDAY, Independence Day. Monday, June 28
Final signed copies of doctoral dissertations and master's theses for August graduation candidates must be filed in The Graduate School by 4 p.m.
Degree award date recorded for First Summer Session degree recipients. Monday, July 5

SECOND SUMMER SESSION 2004
Course listing available over the Web for courses offered during First and Second Summer Sessions. Tuesday, December 9, 2003
Students registered for the 2004 Spring term will be ACTIVATED into the 2004 Summer and Fall terms in preparation for registration. Saturday, February 28, 2004
Early registration begins according to registration schedule. Friday, March 19

Monday, May 17
Monday, May 17
Monday, May 17
Monday, May 17
Monday, May 17
Billing dates. Friday, May 7 – Wednesday, May 12
Early registration closes at 5 p.m.

Tuition and fees due for all students.
(Students who register during early registration must pay or defer tuition and fees by this date or their schedule will be cancelled and all their courses dropped.)

Wednesday, May 12

Term registration begins for all students.

Tuesday, June 1

Residence halls open at noon.

Friday, June 11

Classes begin for all students.
Late registration begins. $20 fee charged for late registration.

Wednesday, June 16

Term course drop ends at 5 p.m.
This is the last day for all students to drop a course through the Web registration system. This is also the last day for schools/departments to add students online.

Thursday, June 17

Last day to reduce course load,
but not drop all courses, and have tuition adjusted. (Note: Dropping all courses requires processing a withdrawal of enrollment from the University and follows a different promtied refund policy. See Withdrawal Policy.)

Friday, June 18

Term course drop ends at 5 p.m.
This is the last day for all students to drop a course through the Web registration system. This is also the last day for schools/departments to drop students online.

Wednesday, June 23

Official University enrollment reporting date (census date).

Wednesday, June 23

Verification class rolls distributed.

Friday, June 25

Last day for graduate and undergraduate students to file a degree application with their dean’s office for degree to be awarded in August.

Monday, June 28

Last day for undergraduate students to drop courses.

Wednesday, June 30

HOLIDAY, Independence Day.

Monday, July 5

Last day to withdraw for credit on student’s financial account. (Prorated over three weeks.)

Wednesday, July 7

Verification class rolls due to Registrar’s Office.

Thursday, July 8

Last day for graduate students to drop courses.

Tuesday, July 13

Final signed copies of doctoral dissertations and master’s theses for August graduation candidates must be filed in The Graduate School by 4 p.m.

Friday, July 16

Last day to withdraw without any tuition credit.

Monday, July 19

Second Summer Session classes end.

Tuesday, July 20

Absences (ABs) and Incompletes
(IN’s) from Second Summer Session 2003 change to P* for graduate students.

Tuesday, July 20

Official class rolls and grade reports distributed.
(Official class rolls and grade reports are due to the University Registrar’s Office 72 hours after the exam is given.)

Wednesday, July 21

Second Summer Session examinations begin.

Thursday, July 22

Second Summer Session examinations end.
Residence halls close at 6 p.m.

Friday, July 23

Degree award date recorded for
Second Summer Session degree recipients.

Monday, August 16

FALL SEMESTER 2004

Course listing available over the Web.

Monday, February 23, 2004

Students registered for the 2004
Spring Term will be ACTIVATED
into the 2004 Summer and Fall Terms
in preparation for registration.

Saturday, February 28

Early registration begins according to
registration schedule.

Saturday, March 20

Billing date for all students who have
registered by this date. (See registration
information for new first year and transfer
undergraduates for billing dates.)

Friday, July 2

Early registration closes at 5 p.m.

Friday, July 2

Tuition and fees due for all students
who have registered during Early Registration
or during CTOPS/TSOPS. (Students who
register during Early Registration must pay
or defer tuition and fees by this date or their
schedule will be cancelled and all their
courses dropped.)

Friday, August 6

Fall semester opens.

Thursday, August 19

Term registration begins for all students.

Saturday, August 21

Residence halls open for new graduates,
first year undergraduates, and transfer
students at 9 a.m.

Saturday, August 21

Orientation.

Sunday, August 22

Residence halls open for returning students at 9 a.m.

Sunday, August 22

First-Year Initiative class meetings.

Monday, August 23

Classes begin for all students.
Late registration begins.
$20 fee charged for late registration.

Tuesday, August 24

Term course drop ends at 5 p.m.
This is the last day for all students to add
a course or late register through the Web
registration system. This is also the last day
for schools/departments to add students online.

Monday, August 30
HOLIDAY, Labor Day. Monday, September 6

Last day to reduce course load, but not drop all courses, and have tuition adjusted. (Note: Dropping all courses requires processing a withdrawal of enrollment from the University and follows a different prorated refund policy. See Withdrawal Policy.) Tuesday, September 7

Term course drop ends at 5 p.m. This is the last day for all students to drop a course through the Web registration system. This is also the last day for schools/departments to drop students online.

Official University enrollment reporting date (census date). Tuesday, September 7

First year undergraduates Early Warning Rolls distributed. Monday, September 13

First year undergraduates Early Warning Rolls due to General College. Monday, September 27

Last day for undergraduates to drop courses. Monday, October 4

Last day for graduate and undergraduate students to submit pass/fail declarations. Monday, October 4

Verification class rolls distributed. Wednesday, October 6

Last day for graduate and undergraduate students to file a degree application with their dean’s office for degree to be awarded in December. Friday, October 8

University Day. Tuesday, October 12

First year undergraduates mid-term grade rolls distributed. Tuesday, October 12

FALL RECESS

Instruction ends 5 p.m. Wednesday, October 13

Instruction resumes 8 a.m. Monday, October 18

Incompletes (IN's) from prior terms (Spring and Summer 2004) change to F* for undergraduate students. Monday, October 18

First year undergraduate mid-term grade rolls due. Tuesday, October 19

Last day to withdraw for credit on student’s financial account. (Prorated over nine weeks.) Monday, October 25

Verification class rolls due to Registrar’s Office by 4 p.m. Monday, November 8

Last day for undergraduate students to drop courses. Monday, November 22

Final signed copies of doctoral dissertations and master’s theses for December graduation candidates must be filed in The Graduate School by 4 p.m. Monday, November 22

Residence halls close at 6 p.m. Wednesday, November 24

THANKSGIVING RECESS

Instruction ends 1 p.m. Wednesday, November 24

Instruction resumes 8 a.m. Monday, November 29

Residence halls open at 9 a.m. Sunday, November 28

Fall semester classes end. Monday, December 6

Absences (AB’s) from prior terms (Spring and Summer 2004) change to F* for undergraduate students. Monday, December 6

Absences (AB’s) and Incompletes (IN’s) from Fall Semester 2003 change to F* for undergraduate students. Monday, December 6

Official class rolls and grade reports distributed. (Official class rolls and grade reports are due to the University Registrar’s Office 72 hours after the exam is given.) Tuesday, December 7

Reading days. Tuesday, December 7 and Saturday, December 11

Fall semester examinations begin. Wednesday, December 8

Fall semester examinations end. Thursday, December 16

Residence halls close for nongraduating students at 6 p.m. Thursday, December 16

Residence halls close for graduating students at 6 p.m. Sunday, December 19

Mid-year commencement. Sunday, December 19

Degree award date recorded for Fall degree recipients. Thursday, December 30

The Fall Semester 2004 calendar includes 42 class periods of 50 minutes each on MWF and 28 class periods of 75 minutes each on TTh for a total of 70 days.

Days of Instruction
14 - "Mondays
15 - Wednesdays
13 - Fridays
42 - Total
(2,100 minutes)
(*Monday, August 23, First Year Initiative Instructional Day)

SPRING SEMESTER 2005

Course listing available over the Web. Friday, September 17, 2004

Students registered for the 2004 Fall term will be ACTIVATED into the 2005 Spring term in preparation for registration. Saturday, September 25

Early registration begins according to registration schedule. Saturday, October 9

Billing dates.

Early registration closes at 5 p.m. Wednesday, November 10
Tuition and fees due for all students. (Students who register during early registration must pay or defer tuition and fees by this date or their schedule will be cancelled and all their courses dropped.)

Term registration begins for all students.

Spring semester opens.

Residence halls open at 9 a.m.

Classes begin for all students.

Late registration begins. $20 fee charged for late registration.

HOLIDAY, Martin Luther King Jr. Day. (Registration period closed.)

Term course add ends at 5 p.m.

This is the last day for all students to add a course or late register through the Web registration system. This is also the last day for schools/departments to add students online.

Last day to reduce course load, but not drop all courses, and have tuition adjusted. (Note: Dropping all courses requires processing a withdrawal of enrollment from the University and follows a different prorated refund policy. See Withdrawal Policy.) Term registration closes at 5 p.m. (Last day for schools/departments to drop courses online.)

Term course drop ends at 5 p.m.

Last day for all students to drop a course through the Web registration system. Also the last day for schools/departments to drop students online.

Official University enrollment reporting date (census date.)

First year undergraduates early warning rolls distributed.

Last day for graduate and undergraduate students to file a degree application with their dean's office for degree to be awarded in May.

First year undergraduates early warning rolls are due to General College.

Last day for undergraduate students to drop courses.

Last day for graduate and undergraduate students to submit pass/fail declarations.

Verification class rolls distributed.

Incompletes (INs) from prior term (Fall 2004) change to F* for undergraduate students.

Residence halls close at 6 p.m.

SPRING RECESS

Instruction ends 5 p.m.

Instruction resumes 8 a.m.

Last day to withdraw for credit on student's financial account. (Pro-rated over nine weeks.)

Residence halls open at 9 a.m.

Verification class rolls due to Registrar's Office by 4 p.m.

HOLIDAY

Last day for graduate students to drop courses.

Final signed copies of doctoral dissertations and master's theses for May graduation candidates must be filed in The Graduate School by 4 p.m.

Spring semester classes end.

Absences (AB's) from prior term (Fall 2004) change to F* for undergraduate students.

Absences (AB's) and Incompletes (INs) from Spring 2004 change to F* for graduate students.

Reading day.

Official class rolls and grade reports distributed. (Official class rolls and grade reports are due to the University Registrar's Office 72 hours after the exam is given.)

Spring semester examinations begin.

Reading day.

Spring semester examinations end.

Residence halls close for nongraduating students at 6 p.m.

Doctoral Hooding Ceremony.

Residence halls close for graduating students at 6 p.m.

Spring commencement.

Degree award date recorded for Spring degree recipients.

The Spring Semester 2005 calendar includes 42 class periods of 50 minutes each on MWF and 29 class periods of 75 minutes each on TTH for a total of 71 days.

Days of Instruction

13 – Mondays
15 – Wednesdays
14 – Fridays

42 – Total
29 – Total

(2,100 minutes)
(2,175 minutes)
Degrees Offered

Anthropology - PhD
Art -
  History - MA, PhD
  Studio Art - MFA
Audiology - AuD
Biochemistry and Biophysics - MS, PhD
Biology - MA, MS, PhD
Biomedical Engineering - MS, PhD
Biostatistics - MS, DrPH, PhD, MPH
Business - PhD
Cell and Developmental Biology - PhD
Cell and Molecular Physiology - PhD
Chemistry - MA, MS, PhD
City and Regional Planning - MRP, PhD
Classics - MA, PhD
Communication Studies - MA, PhD
Comparative Literature - MA, PhD
Computer Science - MS, PhD
Dentistry -
  Dental Hygiene - MS
  Endodontics - MS
  Operative Dentistry - MS
  Oral Biology - MS, PhD
  Oral and Maxillofacial Surgery - MS
  Oral Radiology - MS
  Orthodontics - MS
  Pediatric Dentistry - MS
  Periodontology - MS
  Prosthodontics - MS
Dramatic Art - MFA
Ecology - MA, MS, PhD
Economics - MS, PhD
Education -
  Master's/Doctorate in Education - MA, PhD
  Educational Psychology - MEd
  Master of Arts in Teaching - MAT
  School Counseling - MEd
  School Psychology - MA, MEd, PhD
English - MA, PhD
Exercise and Sport Science - MA
Folklore - MA
Genetics and Molecular Biology - PhD
Geography - MA, PhD
Geological Sciences - MA, PhD
Germanic Languages - MA, PhD
History - MA, PhD
Human Movement Science - MS, PhD
Information and Library Science - MSIS, MSLS, PhD
Interdisciplinary Biomedical Sciences - PhD
Journalism and Mass Communication - MA, PhD
Linguistics - MA, PhD
Marine Sciences - MS, PhD
Materials Science - MS, PhD
Mathematics - MA, MS, PhD
Microbiology and Immunology - PhD
Music - MA, PhD
Neurobiology - PhD
Nursing - MSN, PhD
Occupational Science - MS
Operations Research - MS, PhD
Pathology - PhD
Pharmacology - MS, PhD
Pharmaceutical Sciences - MS, PhD
Philosophy - MA, PhD
Physical Therapy - MPT, DPT
Physics - MS, PhD
Political Science - MA, PhD
Psychology - PhD
Public Administration - MPA
Public Health - MPH
  Biostatistics - DrPH, MPH, MS, PhD
  Environmental Sciences and Engineering - MPH, MS, MEng, MSPH, PhD
  Epidemiology - MPH, MSPH, PhD
  Health Behavior and Health Education - DrPH, MPH, PhD
  Health Policy and Administration -
    Residential - DrPH, MHA, MPH, MSPH, PhD
    Executive - MHA, MPH
  Maternal and Child Health - DrPH, MPH, MSPH, PhD
  Nutrition - DrPH, MPH, MS, PhD
  Public Health Leadership - MPH
Public Policy - PhD
Rehabilitation Psychology and Counseling - MS
Religious Studies - MA, PhD
Romance Languages - MA, PhD
Russian and East European Studies - MA
Slavic Languages and Literatures - MA, PhD
Social Work -
  Residential - MSW, PhD
  Off Campus - MSW
Sociology - MA, PhD
Speech and Hearing Sciences - MS, PhD
Statistics - MS, PhD
Toxicology - MS, PhD
Certificate Programs

CENTER FOR SLAVIC, EURASIAN, AND EAST EUROPEAN STUDIES

Graduate Certificate Program in Russian/East European Studies
www.unc.edu/depts/slavic/programs/certificate.htm

Graduate students at UNC-Chapel Hill working toward any graduate degree (except the MA in Russian/East European studies) can earn a graduate certificate in Russian/East European studies, thereby documenting their specialization in the region.

Requirements for the Certificate
• A minimum of two semesters in residence at UNC-Chapel Hill.
• Competence in a language of Russia, the former Soviet Union, or Eastern Europe. Competence is defined as two years of college study or the equivalent. A certification of completion of the foreign language requirement for the graduate certificate in Russian/East European studies must be authorized by a UNC-Chapel Hill faculty member affiliated with the Center for Slavic, Eurasian, and East European Studies.
• Four graduate courses, at least two of which must be taken outside the student’s home department, on Russian or East European topics.
• A thesis, dissertation, or a major research paper on a topic related to Russian/East European studies.

Graduate students who are interested in obtaining a graduate certificate in Russian/East European studies should consult with the administrative director of the Center for Slavic, Eurasian, and East European Studies to construct a plan for completion of the requirements. One month prior to graduation, candidates should submit to the director documentation demonstrating that the requirements have been met. Certificates are issued twice each year, in January and in June.

CENTER FOR TEACHING AND LEARNING

Certificate in Postsecondary Faculty Development

Issued jointly by the Center for Teaching and Learning and The Graduate School, the certificate in postsecondary faculty development enables graduate students to develop and document their professional development expertise in all areas appropriate for an initial formal academic appointment and future employer recognition. Graduate students who wish to pursue a certificate must identify a tenured faculty member from his/her home department to serve as a sponsor and mentor for the duration of the program.

To earn a certificate a graduate student must: 1) acquire, demonstrate, and document proficiencies in the fundamentals of college teaching; 2) demonstrate competence in research and communication; 3) give evidence of his/her experience in service to members of the campus community; 4) exhibit a working knowledge of current issues in academic leadership; and 5) submit a final portfolio for review by the Center for Teaching and Learning, The Graduate School, and the faculty sponsor from the student’s home department.

The certificate program is open to any academically eligible master’s or PhD candidate currently enrolled in The Graduate School. The award of the certificate will be registered on the student’s transcript.

For more information, contact:
Iola Peed-Neal, Associate Director
Center for Teaching and Learning
CB# 3470, 316 Wilson Library
UNC-Chapel Hill
Chapel Hill, NC 27599-3470
iola.peed-Neal@unc.edu or cntl_unc@unc.edu
(919) 966-1289 (voice)
(919) 962-5236 (fax)

INSTITUTE OF LATIN AMERICAN STUDIES

Graduate Certificate in Latin American Studies
www.unc.edu/depts/ias/gradcert.html

Although the University of North Carolina at Chapel Hill does not grant an interdisciplinary postgraduate degree in Latin American studies, graduate students seeking to document their area of expertise are encouraged to earn a certificate in Latin American studies in conjunction with any advanced degree in any University graduate program.

Requirements for the Certificate
• A minimum of two semesters of residence at UNC-Chapel Hill.
• Language competence in Spanish or Portuguese. For non-native speakers, a certification of completion of foreign language requirement must be authorized by a member of the faculty of the Department of Romance Languages.
• Four graduate courses on Latin American topics.
• A thesis on a topic related to Latin America. For exceptions, see (5).
• An oral defense of the thesis. For students in professional schools or departments that do not require defense of a thesis, a letter from the student’s adviser indicating that a major research project on a Latin American topic was successfully completed is sufficient to waive the requirement.

Graduate students who are interested in obtaining a certificate in Latin American studies should contact the director of the Institute of Latin American Studies. Documentation should include a cover letter, a copy of UNC-Chapel Hill graduate transcripts, certification of completion of foreign language requirement (if needed), and a photocopy of signed title page of thesis or a letter from the adviser.

Certificates are issued twice each year, in January (deadline December 15) and June (deadline May 15).

For more information, contact Robert Anderson, (919) 962-2418, or write to:
Institute of Latin American Studies
The University of North Carolina at Chapel Hill
223 E. Franklin St., CB# 3205
Chapel Hill, NC 27599-3205
INSTITUTE ON AGING

Interdisciplinary Certificate in Aging
www.aging.unc.edu/certificate/index.html

The certificate in aging is a campus-wide program drawing on the University's rich set of resources to offer graduate students and community professionals gerontological knowledge essential for work in an aging society. The curriculum includes both knowledge base and skills development, allowing participants to prepare for either clinical or scholarly work or both. Students will be encouraged to have contact with older persons and/or with organizations that address the needs of older persons, and/or to be involved in activities addressing policy issues that affect an aging society. Courses in the certificate program relate to health, mental health, policy and practice, and explore the heterogeneity of today's aging Americans and the resource they represent for our society.

For more information, visit the Web site or contact:
Sheryl Zimmerman, Program Director
szimmer@email.unc.edu
(919) 962-6417 (voice)

PROGRAM ON HEALTH OUTCOMES

Certificate in Health Outcomes and Quality of Care
www.sph.unc.edu/health-outcomes

This certificate is available to all graduate and professional students who wish to demonstrate academic training in health outcomes and quality of care. For general purposes, "health outcomes" is defined as the end results of the provision of health services to patients and their families. Health outcomes include a broad range of phenomena, from morbidity and death, to health status and functional status, to patient satisfaction and health-related quality of life. "Quality of care" is defined as the degree to which health services for individuals and populations increased the likelihood of desired health outcomes and are consistent with current professional knowledge.

Requirements for the Certificate

• A core seminar, currently named and numbered HPAA 265, offered in the fall semester.
• Six hours from the approved certificate course list, but these courses may not include any core courses in the aspirant's degree program.

For more information, contact:
Sue Tolston-Rinehart, PhD
Program Administrator, UNC Program on Health Outcomes Administrator, UNC Center for Education and Research on Therapeutics CB# 7400, 269 Rosenau Hall
UNC-Chapel Hill
Chapel Hill, NC 27599-7400
suer@unc.edu
(919) 843-9477 (voice)
(919) 966-0981 (fax)

SCHOOL OF SOCIAL WORK

Nonprofit Leadership Certificate Program
sw.unc.edu/swsce/nonprof.htm

The Nonprofit Leadership Certificate program prepares graduate students for leadership roles in North Carolina's rapidly growing nonprofit sector.

The program provides an in-depth examination of leadership issues within human services, education, the arts, and other nonprofit organizations. Emphasis is on education and skill building at the executive and policy levels: board development, board-staff relations, nonprofit law, financial management, human resource management, strategic planning, marketing and fundraising, media relations, and advocacy.

For more information, contact:
Daniel Lebold, MSW
Program Coordinator
Nonprofit Leadership Certificate Program
UNC-CH School of Social Work
301 Pitresboro St., CB 3550
Chapel Hill, NC 27599-3550
debold@email.unc.edu
(919) 962-6467 (voice)

UNC-DUKE COLLABORATIVE GRADUATE CERTIFICATE PROGRAM IN DEVELOPMENTAL PSYCHOLOGY

www.psych.duke.edu/developmental/devcertficateprog.html

The study of human development is a rich domain of scholarly activity at both UNC-Chapel Hill and Duke University. The UNC-Duke Collaborative Graduate Certificate Program in Developmental Psychology offers students at UNC-Chapel Hill and Duke greater training opportunities than either institution alone can provide (i.e., courses, research experience, mentoring) an strengthens ongoing collaborations between faculty at UNC-Chapel Hill and Duke. Students may join the program at any point in their graduate training.

Requirements for the Certificate

Students must meet at least three of the following:
• A minimum of two developmentally relevant psychology courses must be taken for credit at the student's non-home institution.
• At least one of the student's major committees (e.g., advisory committee, comprehensive exam committee, dissertation committee) must have at least one member who is on the developmental faculty of the non-home institution.
• Each student must participate in a research activity with a developmental faculty member from the non-home university.

For more information, contact:
Dr. J. Steven Reznick
Director, Program in Developmental Psychology
CB# 3270
UNC Psychology Department
Chapel Hill, NC 27599-3270

UNIVERSITY CENTER FOR INTERNATIONAL STUDIES

Graduate Certificate in International Development and Social Change
www.ucts.unc.edu/programs/certificates.htm

The University of North Carolina at Chapel Hill offers a graduate certificate in international development and social change. The certificate is available to graduate students in all departments who wish to acquire a specialization in international development issues. The certificate may be awarded
to students at either the master's or doctoral level. For students in the
School of Public Health, the certificate in international development and
social change is cosponsored by the Office of Global Health.

Requirements for the Certificate

• Four graduate courses at UNC-Chapel Hill, or at any university with
which UNC-Chapel Hill has a formal consortial arrangement, on a topic
related to international development and social change. At least two of
the courses must be taken outside the student's home department. One
of the courses must be the integrative capstone seminar designed for the
certificate: PLAN 270, offered every spring. Students are encouraged to
take this course after they have completed the other course work for the
certificate.

• A thesis, dissertation, or major seminar paper on a topic related to inter-
national development and social change.

In addition, language or technical training is strongly encouraged if it is
appropriate to the student's field. Students should consult with a member
of the Faculty Steering Committee to determine the applicability of this
training.

For more information, contact:
Dr. Niklaus Steiner
Associate Director
University Center for International Studies
CB# 5145
223 E. Franklin Street
Chapel Hill, NC 27599-5145
nsteiner@unc.edu
(919) 962-5374 (voice)
Academic Program Listings
of Graduate Faculty and Courses

Appointment to the Graduate Faculty
Graduate faculty members whose appointments are current as of the publication date of this Record are listed by academic rank in the department(s) in which they serve. Following the faculty member's name is a section number that students should use when registering for independent studies, reading, research, and thesis and dissertation courses with that particular professor. Areas of specialization are listed for each faculty member following the section number.

Course Numbers and Credit
Courses numbered 100 through 199 are for advanced undergraduates and graduates; courses numbered 200 through 299 are for graduates only. Courses numbered 300 through 399 are seminar and research courses and are limited to graduate students.

The unit of measurement in meeting degree requirements is the semester hour - that is, one hour of lecture or at least two hours of laboratory or field work a week per semester. The number in parentheses following the course title in the sections “Courses for Graduates and Advanced Undergraduates” and “Courses for Graduates” indicates the value of the course in semester hours.

DEPARTMENT OF ANTHROPOLOGY
PAUL LESLIE, Chair

Professors
Carole L. Creamley (22) Historical Ecology, State Societies, Complex Systems Theory, Global Environment Change, Ethnography, Ethnohistory, and Archaeology of Europe
Arturo Escobar (54) Anthropology of Development, Social Movements, Science and Technology, Political Ecology, Latin America
Terence M. S. Evarts (5) Social Anthropology, Social Theory, Phenomenology, Ethics, Philosophical Anthropology, Collectivist Settlements
Judith B. Faquhar (33) Medical Anthropology, Post-Structuralist Theory, Cultural Studies, Contemporary China
Kaja Finkler (32) Medical Anthropology, Gender and Health, Peasants, Latin America
Dorothy C. Holland (16) Identity and Social Movements, Anthropology of Schooling and Work, Cultural Studies, Gender, the United States and Nepal
Norris B. Johnson (25) Architecture, Art and Aesthetics, Religious Landscapes, Japan
Paul W. Leslie (37) Biological Anthropology, Human Ecology, Demography, Population Genetics, Reproduction, East Africa
Donald M. Nonini (34) Historical Anthropology, Critical Theory, Political Economy, Southeast Asia
James L. Peacock (11) Culture, History, and Self, Southeast Asia and the United States
Vincas P. Steponaitis (2) Archaeology, Complex Societies, Southeastern United States

Associate Professors
Robert E. Daniels (4) Social Anthropology, Culture and Personality, Africa
Glenn D. Hinson (36) Folklore, Ethnography of Communication, Belief Studies, Southern United States
Dale Hutchinson (63) Bioarchaeology, Human Osteology, Forensic Anthropology, Paleopathology, Health and Nutrition, Agricultural Origins and Consequences, Southeastern and Mid-Atlantic United States, South America
C. Margaret Scarff (48) Palaeoethnobotany, Archaeological Theory and Method, Eastern United States
Margaret J. Wiener (47) History and Memory, Colonialism and Postcolonial Theory, Anthropology of Knowledge, Science Studies, Material Culture, Poststructuralism, Indonesia, Southeast Asia

Assistant Professors
Brian Billman (51) Archaeology of Chiripos and States, Political Economy, Settlement Pattern Analysis, Households Archaeology, Heritage Preservation, Andes and Southwestern United States
Valerie Lambert (59) American Indians, Ethnography, Political and Legal Anthropology, Sovereignty, Identity, Race and Racism, Elites, United States
Christopher Nelson (664) History and Memory, Everyday Life, Ethnography, Critical Theory, Storytelling, Ritual and Performance, Japan and Okinawa
Charles Price (862) Black Identity, Social Identity, Welfare and Higher Education Policies, Oral History, Advocacy Research, Jamaica and the Anglophone Caribbean, the United States
Peter Redfield (53) Anthropology of Science and Technology, Colonial History, Anthropology and History, Space, Global Humanism and Ecology, Europe, the Caribbean
Patricia Sawin (52) Narrative, Festival, Ethnography of Speaking, Gender Theory, Performance and Poetics, Ethnography of Speaking, Poetry of Culture, Appalachia, Francophone Southwest Louisiana
Katalin Slocum (56) Global/Local Studies, Social Movements, Agency, Development, Gender, Applying Anthropology, Caribbean
Mark Sorenson (67) Biological Anthropolgy, Health and Culture Change, International Health, Adaptability, Nutrition, Russia, Siberia
Silvia Tomaskova (57) Archaeology, Paleolithic Europe, Archaeological Method and Theory, History of Science, Gender and Science, Hunter-Gatherer and Forager Studies

Adjunct Professors
R. P. Stephen Davis (40) Archaeology
Sue E. Estoff (31) Medical, Psychiatric Anthropology, Chronic Illness, Health Policy as a Cultural System

Adjunct Associate Professors
Lorraine Aragon, Religion and States, Ethnovisionary Conflicts, Land Use and Place Identities, Arts, Linguistic Anthropology, Southeast Asia, Indonesia
Debra G. Skinner (46) Culture and Human Development, Disability Studies, Cultural Production and Identity, Anthropology of Schooling, Nepal, United States

Adjunct Assistant Professors
Gary Hauman, Science, Technology, and Society, Anthropology of the Body, History and Anthropology, Globalization, South Asia
Graduate students may, in accordance with the regulations of the Graduate School, take courses offered by other departments or neighboring universities. Courses in anatomy, biology, ecology, epidemiology, folklore, history, cultural studies, genetics, geography, linguistics, philosophy, psychology, or sociology are often particularly appropriate. Departmental policy is to help the student select courses that supplement and strengthen the specialization in anthropology.

The Department of Anthropology works closely with the Curriculum in Ecology, the Odum Institute, the Curriculum of International Studies, University Center for International Studies, the Institute of Latin American Studies, the Carolina Population Center, the University Program in Cultural Studies, and the Research Laboratories of Archaeology, and has various active training and research interests in conjunction with other departments and schools of the University.

Up-to-date lists of Anthropology faculty and courses, along with additional information about the graduate program, faculty research projects, and other information, are available on the department's Web site: http://www.unc.edu/depts/anthro.

Courses for Graduates and Advanced Undergraduates

102 ARCHAEOLOGICAL GEOLOGY (GEOI 102) (3). Prerequisite, permission of the instructor. Archaeological geology is the application of geological principles and techniques to the solution of archaeological problems. Geological processes and deposits pertinent to archaeological sites, geological framework of archaeology in the southeastern United States, and techniques of archaeological geology and site analysis are studied. Students make field trips to three or more sites in the Southeast and write required reports on geological aspects of the sites. Three lecture hours a week. Staff.

105 ANTHROPOLOGY OF THE SOUTH (3). Anthropological materials and insights bearing on modernization and other current trends in southern culture; research problems in the South. Peacock.

110 PRINCIPLES OF ARCHAEOLOGY (3). An examination of archaeology as a set of techniques and a subfield of anthropology, including history of archaeology, survey and excavation techniques, laboratory treatment of remains, archaeological analysis, historical and processual inference. Billman.

111 LABORATORY METHODS IN ARCHAEOLOGY (3). An examination of the lab techniques used by archaeologists to analyze artifacts and organic remains, including the analysis of stone tools, pottery, fauna, botanical remains, and human remains. Billman, Scarry, Tomsakova.


114 HUMAN OSTEOMETRY (3). Lectures and laboratory sessions are devoted to an intensive examination of the human skeleton. Emphasis is on analysis of skeletal material in the field and in the laboratory. Hutchinson.

115 HUMAN GENETICS AND EVOLUTION (ANAT 115) (GNET 115) (3). Fundamental principles of genetics; population genetics; factors of evolution; race and species formation; evolution of primates and humans. The interaction of genetics and culture in human behavior, society, and evolution. Leslie.

116 BIOARCHAEOLOGY (3). Study of human remains from archaeological settings. How human remains inform our understanding of life history, both at the individual and population levels. Focus is placed on the relationship between biology, culture, and behavior. Hutchinson.

117 EVOLUTIONARY PERSPECTIVES ON HUMAN ADAPTATION AND BEHAVIOR (3). Critical, partially historical discussion of evolutionary theories, including Darwinism, neo-Darwinism, and ethnology and sociobiology and their social science analogs. Relevance and limitations of these theories for anthropologists is focal. Fall. Holt.
119 GLOBAL HEALTH (INTS 119) (3). This class explores some of the historical, biological, economic, medical, and social issues surrounding globalization and health consequences. Hutchison, Sorensen.

120 ANTHROPOLOGY OF DEVELOPMENT (INTS 120) (3). Course introduces students to critical analysis of Third World development by examining the various ways in which "development" has been understood from the 1950s to the present. Explores the relation among modernity, globalization, and post-development.

121 CULTURE AND PERSONALITY (3). Broad survey of methods and problems connected with studying personality features characteristic of tribes and modern nations, child training and personality, and the relationship of culture to mental illness. Daniels.

122 ANTHROPOLOGY AND HUMAN RIGHTS (3). This course examines human rights from an anthropological perspective, addressing the historical formation of rights, their cross-cultural context, and the emergence of humanitarian organizations. Redfield.

123 MAGIC, RITUAL, AND BELIEF (FOLK 123) (3). Prerequisite, permission of instructor. An intensive, intellectual examination of key anthropological theories of "magico-religious thought and practice. Starting with 19th century, the course discusses major anthropological approaches to understanding magico-religious thought and practice, and proceeds to offer an approach of its own. Evans.

125 EMOTIONS AND SOCIETY (3). Survey of the relationship between emotional experience and social systems, especially including gender relations. Emotions as learned, culturally variable understandings and behaviors.

129 CULTURE AND POWER IN SOUTHEAST ASIA (ASIA 129) (3). The formation and transformation of values, identities, and expressive forms in southeast Asia over time, especially the impact of global/national interests. Wieter. BA-level Non-Western Comparative Perspective.

130 AMERICAN INDIAN SOCIETIES (FOLK 130) (3). A broad survey of contemporary American Indian societies and cultures. Film, autobiography, literature, current issues, archaeological evidence and history help expose the multiple perspectives that characterize American Indian life today. Lambert.

131 ARCHEOLOGY OF SOUTH AMERICA (3). The development of native South American cultures according to archaeological and early ethnohistorical records. Billman.


135 CONSCIOUSNESS AND SYMBOLS (FOLK 135) (CMPL 135) (3). Symbolizing as exemplified in the arts, religions, languages, and worldviews of various cultures. Emphasis is on the relation of symbolizing to social process as analyzed by theorists such as Durkheim, Weber, and Levi-Strauss. Peacock.

136 GENDER AND SCIENCE (WMST 136) (3). See WMST 135 for description, Tomaskova.

137 GENDER AND PERFORMANCE (FOLK 137) (3). Examines the cultural constitution of gender identity by the gender-specific assignment of artistic forms and performance roles in various parts of the world. Savin.

138 RELIGION, NATURE, AND ENVIRONMENT (RELI 130) (3). Concepts of nature within religions and a variety of worldwide spiritual traditions. Emphasis on sacred space, place, and pilgrimage as a vital intersection of religion and nature. Johnson.

139 ENVIRONMENTAL ANTHROPOLOGY (3). The general nature of interrelationships between people and environment. The course examines biological versus cultural adaptation, archaeological evidence of ecological relationships, adaptation in the ethnohistoric present, and environmental alteration. Holt.

140 GENDER AND CULTURE (WMST 140) (3). Cross-cultural perspectives on the social uses of gender distinctions. Focus on women's lives outside the United States and Europe. Comparison with students' social context.

141 THE ANTHROPOLOGY OF GENDER, HEALTH, AND ILLNESS (3). This course explores the social and cultural patterns and practices that differentially influence health and illness among women and men. Finletter and staff.

142 RELIGION AND ANTHROPOLOGY (FOLK 142) (RELI 142) (3). Religion studied anthropologically as a cultural, social, and psychological phenomenon in the works of classical and contemporary social thought. Peacock, Tyson.

145 POLITICS OF CULTURE IN CHINA (ASIA 145) (3). Examines struggles to define culture and the nation in twentieth-century China, comparing these processes of cultural production with the politics of culture in the United States. Farquhar.

146 INTRODUCTION TO FOLKLORE (FOLK 146) (3). (See FOLK 146 for description.) Staff.


148 ANTHROPOLOGY AND PUBLIC INTEREST (3). Explores ways that anthropological theory and method can be used to impact or participate in policy debates regarding contemporary social problems. Considers professional and internship options in public service fields. Slocum.

149 ANTHROPOLOGY AND MARXISM (3). Examination of major writings within the Marxist critical tradition, focusing on writings that have illuminated central problems within anthropology as theoretical discourse and discipline. Introduction to recent important research in Marxist anthropology. Nonini.

150 ARCHAEOLOGY OF NORTH AMERICAN INDIANS (3). The history of North American Indian cultures from 10,000 B.C. to the time of European invasion, as reconstructed from archaeological evidence. Special emphasis on the eastern woodlands and the Southwest. Steponaitis.

151 FIELD SCHOOL IN ARCHAEOLOGY (6). Prerequisite, permission of the instructor. Intensive training in archaeological field methods and techniques. Students participate in excavation, recovery, and interpretation of archaeological remains; artifact recording, photography, flotation recovery, and other research procedures. Summer. Staff.

152 PREHISTORIC FOODWAYS (3). Archaeological investigations of prehistoric and historic foodways. Surveys the questions asked, the data and methods used to answer those questions, and the contributions of subsistence studies to archaeological knowledge. Scarry.

153 FIELD SCHOOL IN SOUTHERN AMERICA ARCHAEOLOGY (6). Prerequisite, permission of instructor. Taught in Peru. Training in excavation, laboratory methods, research design, archaeology. Students participate in excavation, total station mapping, photography, flotation recovery, and other research procedures. Summer. Billman.

154 ENVIRONMENTAL CONSCIOUSNESS AND ACTION (3). Explores anthropological perspectives on environmental issues, examining especially their shaping by structures of power and privilege, discourses of the public sphere, and public actions and reactions, rooted in place and social position. Holland. Arts and Sciences Special Science Perspective.

155 ETHNOHISTORY (FOLK 155) (3). Integration of data from ethnographic and archaeological research with pertinent historic information. Familiarization with a wide range of sources of ethnographic and historical data and practice in obtaining and evaluating information. Pertinent theoretical concepts are explored. Crumley.

156 ARCHAEOLOGY AND ETHNOGRAPHY OF SMALL-SCALE SOCIETIES (3). Archaeological and ethnographic approaches to small-scale hunter-gatherer and farming societies, including method and theory for investigating economy, ecology, social relations, ideology. Scarry.
158 ARCHAEOLOGY OF SEX AND GENDER (3). Exploration of gender relations in past and gendered archaeological practice in present, including relevance of gender to general social theory in archaeology, and development of research designs addressing gender meanings and practices, childhood, identity, sexuality. Scarry.

159 EUROPEAN PREHISTORY. A survey of cultures on the European continent from the emergence of first humans to the rise of civilization and the Roman conquest. Tomaskova.

160 HISTORICAL ECOLOGY (ENST 160) (3). Historical Ecology is the framework for integrating physical, biological, and social science data with insights from the humanities to understand the reciprocal relationship between human activity and the Earth system. Crumley.

165 ECONOMIC ANTHROPOLOGY (3). An intensive survey of theoretical and empirical concerns of the subfield of economic anthropology. Cross-cultural analysis of tribal, peasant, and modern economic formations.

166 KINSHIP, REPRODUCTION, REPRODUCTIVE TECHNOLOGY, AND THE NEW GENETICS (WMST 166) (3). Combines traditional anthropological concern with family, kinship, and the meaning of women's reproductive and genetic inheritance in contemporary modern society. Examines debates in kinship, reproductive technologies, genetics, ethical moral dilemmas. Finkler.

167 URBAN ANTHROPOSOPY (3). Emphasis on the social systems and modernization processes of contemporary cities in the third world. Also considered: problems and opportunities of American anthropologists studying American industrial cities. Staff.

168 STATE FORMATION (3). Prerequisite, permission of instructor. Integration of ethnohistorical, ethnographic, and archaeological data on the topic of state formation. Definitions of the state are analyzed and the determining factors relative to increasing cultural complexity discussed. Crumley, Nonini.


171 SOCIOLINGUISTICS (LING 170) (3). Prerequisite, LING 30, 100, or permission of instructor. This course in sociolinguistics treats the microsociolinguistics of everyday interactions, dialect differences, language and sex, language and power, minority rights, and the politics of pornography.

173 ANTHROPOSOPY OF THE BODY AND THE SUBJECT (FOLK 173) (3). Prerequisite, ANTH 170 or permission of the instructor. Anthropological and historical studies of variation in cultural constructions of bodily experience and personal subjectivity are reviewed, with special emphasis on the genesis of the modern individual and cultural approaches to gender and sexuality. Farquhar.

174 CHINESE WORLD VIEWS (RELI 174) (ASIA 174) (3). An approach to Chinese history, literature, science, and society through an exploration of a few pervasive cultural themes. Chinese sources in translation and Western anthropological and philosophical sources are used. Farquhar.

175 ETHNOGRAPHIC METHOD (3). Intensive study of and practice in many of the most commonly used anthropological data-collection techniques. Staff.

177 EUROPEAN SOCIETIES (3). The course employs a multicultural and multi-temporal approach to explore facets forming the European identity. As the European Economic Community, the exploration of unifying cultural themes is particularly timely. Crumley.

178 THE CHINESE DIASPORA IN THE ASIA PACIFIC (ASIA 178) (3). Examination of the histories, social organizations, and cultures of the Chinese Diaspora in the Asia Pacific region, focusing on contemporary issues in the cultural politics and identities of "overseas Chinese." Nonini. Approved to fulfill a BA-level Non-Western/Comparative Perspective.

179 INTRODUCTION TO GENERAL LINGUISTICS (LING 100) (3). (See LING 100 for description.)

180 LINGUISTIC PHONETICS (LING 120) (3). (See LING 120 for description.)

181 INTRODUCTION TO COMPARATIVE AND HISTORICAL LINGUISTICS (LING 101) (3). (See LING 101 for description.)

182 CONTEMPORARY CHINESE SOCIETY (ASIA 182) (3). No prerequisites. This course draws on recent sociological and anthropological research in the People's Republic of China. Auto biography, film, and fiction are used to explore contemporary Chinese society and culture. Farquhar.

183 PHONOLOGY I (LING 123) (3). (See LING 123 for description.)

184 LANGUAGE AND CULTURE (LING 184) (FOLK 184) (3). The relationship of language to other aspects of culture for the analysis and description of cognitive and affective features of the semantic component of languages. Holland.

185 ANTHROPOSOPY OF SCIENCE (3). Cultural perspectives on science and technology in Western society, including research settings and social applications of science; relations between scientific worldview and power in social institutions and the popular imagination.

186 SCHOOLING AND DIVERSITY: ANTHROPOSOPICAL PERSPECTIVES (3). Anthropological approaches to issues of schooling and cultural diversity including their relationship to gender, race, and class. Critical review of theory and method in the study of the reproduction of these divisions. Holland.

188 OBSERVATION AND INTERPRETATION OF RELIGIOUS ACTION (FOLK 188) (RELI 288) (3). Prerequisite, permission of instructor. Exercises (including field work) in learning to read the primary modes of public action in religious traditions: sermons, testimonies, rituals, and prayers. Primary focus on construction and interpretation of text from field observation. Peacock.

189 LANGUAGE MINORITY STUDENTS: ISSUES FOR PRACTITIONERS (EDUC 150). (See EDUC 150 for description.)

190 SYNTAX I (LING 130) (3). (See LING 130 for description.)

192 LINGUISTIC HYBRIDIZATION (3). Investigation of pidginization, creolization, settlers' dialects, and interlanguage. Case studies from Afikrans, Virgin Islands Dutch Creole, Pidgin German, Yiddish, Foreign Workers' German, Tok Pisin. Roberge.

193 SYNTAX II (LING 133) (3). (See LING 133 for description.)

196 THE GARDENS, SHRINES, AND TEMPLES OF JAPAN (ART 192) (ASIA 190) (3). The religious landscape and built environments of Japan. Attention to palace, courtyard, and teahouse architecture, and gardens, with emphasis on Shinto shrines and the Zen Buddhist temple and garden. Johnson. BA-level Aesthetic Perspective.

197 ETHNOGRAPHY AND CULTURE AFTER EMPIRE (3). Recent critiques of and new approaches to sociocultural anthropology, with special attention to colonialism and power; fieldwork and ethnography; making and remaking the material world and subjectivities through discourses and practices. Wiener.

199 SPECIAL TOPICS (Var). Examined selected topics from an anthropological perspective. Course description for a particular semester is available in the departmental office. Staff.

Courses for Graduates

201 SOCIOCULTURAL THEORY AND ETHNOGRAPHY (3). Prerequisite, permission of instructor. Development of a critical understanding of the anthropological study of society and culture through discussion of problems and issues expressed in classic theoretical and ethnographic literature. Fall. Staff.

202 SOCIOCULTURAL THEORY AND ETHNOGRAPHY (3). Prerequisite, ANTH 201 or permission of instructor. Spring. Staff.
203 EVOLUTION AND ECOLOGY (3). Prerequisite, permission of instructor. Development of a critical understanding of anthropological approaches to evolution and ecology in palaeontological, archaeological, and present-day cross-cultural contexts through the historical and comparative study of theory, method, and content. Fall. Staff.

204 EVOLUTION AND ECOLOGY (3). Prerequisite, ANTH 203 or permission of instructor. Spring. Staff.

205 SEMINAR IN ARCHAEOLOGICAL THEORY (3). Review of the recent history of archaeology and contemporary approaches to archaeological interpretation. Spring. Staff.

210 WRITING AND PUBLISHING IN ANTHROPOLOGY (3). A seminar on the peer review and analysis of student writing. Training in writing for academic publication. Spring. Staff.

215 FEMINISM AND SOCIETY (3). Selected topics in feminist analysis of social life, with materials drawn from a global range of societies.

217 ADVANCED STUDIES IN ART AND ARCHITECTURE (3). Prerequisites, ANTH 134 (ART 174/FOLK 134) or permission of the instructor. Intensive study of selected topics and issues in the analysis and interpretation of prehistoric and cross-cultural art, architecture, and other aesthetic forms. Johnson.

222 RESEARCH METHODS IN ARCHAEOLOGY (3). A study of the basic principles underlying archaeological study of prehistoric sites. Field trips and laboratory work. Staff.

223 SEMINAR IN ANTHROPOLOGICAL LINGUISTICS (LING 223) (3). Selected topics from general linguistics and sociolinguistics, special emphasis on methods and problems involved in analysis and description of semantic structure of language and its relation to the rest of culture. Holland.

224 SEMINAR IN ANTHROPOLOGY AND CYBERNETICS (3). Examination of systems theory, or cybernetics; evaluation of previous applications of cybernetic models in anthropology; and original analysis of anthropological data in these terms by students. Fall. Daniels.

225 QUANTITATIVE METHODS IN ANTHROPOLOGY (3). Survey of standardized data-gathering techniques, problems in research design, and methods of quantitative analysis encountered in anthropological research. Holland.

226 QUANTITATIVE METHODS IN ARCHAEOLOGY (3). Introduction to quantitative and computer methods in archaeology. The course stresses exploratory data analysis and graphical pattern recognition techniques. Stenonidis.

233 ADVANCED SEMINAR IN CARIBBEAN STUDIES (3). Prerequisite, ANTH 133 or permission of instructor. Survey of Caribbean cultural development for students with some knowledge or experience in the area. Particular attention is given to current problems and recent theoretical issues. Fall. Staff.

240 POWER (3). Theories of power within anthropology, from Marxism, post-structuralism, feminist studies, studies in race relations, cultural studies, others. Nonini.

244 SEMINAR IN ETHNICITY AND CULTURAL BOUNDARIES (3). Investigation of recent theoretical approaches to ethnic phenomena; consideration of cases ranging from tribal organization to complex industrial nations; analysis of particular ethnographic and ethnohistorical situations by individual students. Daniels.

249 STUDIES IN CULTURAL PRODUCTION (3). Critical examination of theories of social and cultural (re)production (e.g., Bourdieu's practice theory, cultural studies, and resistance theory) applied to enduring issues, e.g., the relations between power and gender, race and class. Holland.

250 SEMINAR IN MEDICAL ANTHROPOLOGY (3). Specially designed for, but not restricted to, students who are specializing in medical anthropology. Medicine as part of culture; medicine and social structure viewed cross-culturally; medicine in the perspective of anthropological theory; research methods. A special purpose is to help students plan their own research projects, theses, and dissertations. Pauketat. Finkler.

251 SEMINAR ON THE ANTHROPOLOGICAL CONTRIBUTION TO THE UNDERSTANDING OF MEDICAL SYSTEMS (3). Anthropological contributions to the understanding of medical systems, sickness, and public health. Attention is given to the ways in which medical anthropology illuminates social processes, beliefs, and ideologies. Finkler.

252 TRANSCULTURAL PSYCHIATRY (3). Prerequisite, ANTH 121, 170, or permission of instructor. Consider cross-cultural variations in the perception, definition of, and reaction to course and treatment of deviant behavior - especially mental disorders.

253 GENDER, SICKNESS, AND SOCIETY (WMST 253) (3). This seminar deals in depth and cross-culturally with the nature of gender and the ways in which social comprehension of gender, gender status, and gender relationships impinge upon differential experience of health and sickness of men and women from a historical and contemporary perspective. Finkler.

254 PHENOMENOLOGICAL ANTHROPOLOGY (3). Prerequisite, permission of the instructor. The course aims to apply the theories and methods of phenomenology to the practice of anthropology. Evans.

255 SEMINAR IN ECOLOGY AND POPULATION (3). Mutual relationships of environment, social structure, mortality, and natality, reviewed in an evolutionary framework. Leslie.

256 THE EVOLUTION OF HUMAN COGNITION (3). Prerequisite, permission of the instructor. A critical examination of contemporary evidence on the evolution of human cognition and consciousness, including phylogenetic, comparative (interspecific), ontogenetic, and cross-cultural perspectives. Holland.

259 IDENTITY AND AGENCY (3). Sociogenetic theories of identity, agency, and human consciousness - the works of Mikhail Bakhtin, Pierre Bourdieu, and others - examined ethnographically and cross-culturally in selected fields of social activity. Holland.

260 SEMINAR IN HUMAN EVOLUTIONARY ECOLOGY (3). Prerequisite, permission of instructor for undergraduates. Examination of evolutionary ecology concepts with existing or potential uses in human adaptation research including adaptation and optimization, effective environmental properties, foraging strategies, niche, competitive exclusion, life history tactics, and biogeography.

265 SEMINAR IN THE ANTHROPOLOGY OF LAW (3). Prerequisite, permission of the instructor. Drawing upon recent work of social anthropologists, this course analyzes the nature of law and conceptions of authority in various Asian, African, and American preliterate societies. The course relates law with the economy, social organization, religious ideology, and political instruments of each society. Underlying theories of social cohesion and process are examined in detail. Conley.

266 SEMINAR IN ETHNOBOTANY (3). Prerequisite, permission of instructor. The focus is on economic plants and primitive technology, ecological relationships between man and plants, and analysis and interpretation of archaeological plant remains. Some laboratory work is expected. Scarry.

270 SEMINAR ON ANTHROPOLOGICAL PERSPECTIVES ON LATIN AMERICA (3). The seminar focuses on the interaction of five major issues in Latin America: class, ethnicity, gender, religion, and health. Finkler.

290 LINGUISTIC GEOGRAPHY (LING 250) (3). (See LING 250 for description.) Staff.

293 LINGUISTIC FIELD WORK I (LING 293) (3). (See LING 293 for description.) Fall. Staff.

294 LINGUISTIC FIELD WORK II (LING 294) (3). (See LING 294 for description.) Spring. Staff.
297 ART OF ETHNOGRAPHY (FOLK 297) (3). A field-based exploration of the pragmatic, ethical, and theoretical dimensions of ethnographic research, addressing issues of experience, aesthetics, and worldview through the lens of cultural encounter. Field research is required. Prerequisite: Anthropology 101.

301 READING AND RESEARCH (1 to 4). Registration with permission of professor. Fall and spring. Staff.

302 READING AND RESEARCH (1 to 4). Registration with permission of professor. Spring. Staff.

310 SEMINAR IN THE ANTHROPOLOGY OF MEANING (1). Ongoing seminar for students and faculty participating in the Anthropology of Meaning concentration.

315 READING AND RESEARCH IN METHODOLOGY (1 to 4). Registration with permission of professor. Fall and spring. Staff.

316 READING AND RESEARCH IN METHODOLOGY (1 to 4). Registration with permission of professor. Spring. Staff.

317 THE CONCEPT OF TEACHING OF GENERAL ANTHROPOLOGY (3). Prerequisite: permission of associate chair. Directed course preparation and review of teaching techniques, films, and other aids. Staff.

318 TRAINING IN THE TEACHING OF ANTHROPOLOGY (3). Prerequisites, ANTH 317 and permission of associate chair. The trainee teaches a small class in general anthropology under supervision. Staff.

321, 322 FIELD RESEARCH (3 each). Registration with permission of the professor. Fall and spring. Staff.

327 SEMINAR IN SELECTED TOPICS (1 to 4). Fall. Staff.

328 SEMINAR IN SELECTED TOPICS (1 to 4). Spring. Staff.

393 MASTERS THESIS (3 or more). Individual research in a special field under the direction of a member of the department. Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3 or more). Individual research in a special field under the direction of a member of the department. Fall and spring. Staff.

**CURRICULUM IN APPLIED AND MATERIALS SCIENCES**

SEAN WASHBURN, Chair
Otto Zhou, Associate Chair for Graduate Studies
Stephen Quinn, Associate Chair for Undergraduate Studies

**Professors**

A. J. Banes (Orthopaedics) Cytomechanics, Cell-Cel1 Communication, Matrix Proteins
Joseph M. DeSimone (Chemistry) Polymeric Materials Synthesis
Robert P. Kusy (Orthodontics and Biomedical Engineering) Orthodontic Materials/Properties of Materials
Carol Lucas (Biomedical Engineering) Mathematical Modeling of Materials
Laurie E. McNeil (Physics and Astronomy) Structure-Property Relations, Optical Spectroscopy
Royce W. Murray (Chemistry) Electron Transfer Active Polymers, Metal Clusters
Michael Rubinstein (Chemistry) Molecular Models of Polymers
Edward T. Sambukski (Chemistry) Liquid Crystals and Liquid Crystal Polymers
Sean Washburn (Physics and Astronomy) Quantum Transport, Plasma Reactor Studies, Virtual Reality

**Associate Professors**

Jianping Lu (Physics and Astronomy) Theoretical Studies of Materials
Natlin Parkhi (Physics and Astronomy) Ion Beam Modifications and Analysis
Lu-Chang Qin (Physics and Astronomy) Synthesis and Structure of Nano-Materials
Richard Supiche (Physics and Astronomy) Interfacial Ordering of Molecules
Franz Tsui (Physics and Astronomy) Synthesis of Artificially Structured Materials

Yue Wu (Physics and Astronomy) Quasicrystals, Nanocrystals, Nanotubes and Molecular Motion in Polymers

**Assistant Professor**

Jeffrey Thompson (Dentistry) Development of Biomaterials

The Materials Science program at the University of North Carolina at Chapel Hill is an interdisciplinary graduate program that brings together faculty from physics and astronomy, chemistry, and various departments in the health sciences (including dentistry, orthopaedics, and biomedical engineering) to engage in research and training in Materials Science. The primary areas of emphasis in the program are electronic, nano, polymer, bio-materials. Students pursuing MS and PhD degrees in materials science begin their studies with a core curriculum covering the fundamentals of materials including their structures, surfaces, fabrication, thermodynamics, and materials science laboratory techniques. They continue with elective courses offered by the curriculum or the participating departments as appropriate to their area of research concentration. Graduate students engage in research under the supervision of one of the participating materials science faculty in the Curriculum in Applied and Materials Sciences.

**Research Interests**

The four areas of research emphasized in the Materials Science program are electronic, nano, polymer and bio-materials. These four areas are not discrete, however, as research projects in electronic polymers, nonlinear optics of polypeptides on surfaces, liquid crystals, and wear in polyethylene artificial joints demonstrate. Individual faculty members may have research interests in more than one of the primary areas, and may collaborate with others to address all four. For detailed information, please contact the Curriculum Office at (919) 962-6293 or e-mail materials_science@unc.edu.

**Degree Requirements**

The PhD degree requirements include completion of a suitable set of courses, cumulative written comprehensive exams, a preliminary doctoral oral exam, an original research project culminating in a dissertation, and a final oral exam. The MS degree requirements include completion of a suitable set of courses, cumulative written comprehensive exams, a research project and a final oral exam. The general regulations of the graduate credit hour, residency, and examination requirement.

**Courses**

All students must pass the following courses, or must have passed their equivalents elsewhere: APPL 141, APPL 143, and MTSC 101, 102, 103, and 104. Each student also takes additional courses offered by the curriculum or participating departments, as appropriate for his or her area of study.

**Comprehensive Exam**

MS students must pass three core exams and one specialty exam. PhD students must pass four core exams and two specialty comprehensive exams. Topics for the specialty exams will be research areas represented in Materials Science program at UNC: core exams cover the fundamental knowledge of materials science. All students are required to complete the comprehensive exam by the second year.
Preliminary Doctoral Oral Exam

Students are required to select a research adviser and a thesis committee during the first year in graduate school. To pass the preliminary doctoral oral exam, students must present and successfully defend their Ph.D. research proposal to the thesis committee by the end of the second year.

Facilities and Equipment

Students and faculty in the curriculum have access to the following central facilities located in various departments: NMR (2), computer modeling and computer graphics, confocal microscopy, electron microscopy, glass shop, machine shop (2), laser lab, mechanical testing, mass spectrometry, and X-ray diffraction. In addition, a variety of equipment is located in individual research laboratories. This includes equipment for thermal analysis, polymer synthesis, FTIR, UV-Vis, Raman, and photoluminescence spectroscopy; ellipsometry; CVD; MBE; thermal evaporation; AFM; RBS and ion channeling; electrical measurements; nonlinear optics; low temperatures and high pressures. Facilities at North Carolina State University and MCNC are also available.

Fellowships and Assistantships

Teaching assistantships (with stipends of $12,225 for nine months) are available to qualified graduate students. The duties of assistants include teaching laboratory sections, assisting in the supervision of advanced laboratories, teaching recitation sections, and grading papers. Summer support is generally available. Research assistantships are also offered.

Courses for Graduates and Advanced Undergraduates

**MTSC 101 STRUCTURE AND PROPERTIES OF SOLIDS** (3). Prerequisite, permission of the instructor. Introduction to the structure and properties of amorphous, crystalline, quasi-crystalline, liquid crystalline, and polycrystalline materials. Fall. Zhou.

**MTSC 102 MATERIALS FABRICATION** (3). Prerequisite, permission of the curriculum. Introduction to modern materials fabrication and characterization techniques. Topics include: single crystal growth, thin film deposition, synthesis of quantum dots and nanotubes/nanowires, dielectric and electronic emissive materials, nanocomposites, bio-ceramics, and energy storage materials. Structure characterization techniques including diffraction, electron and scanning probe microscopy, and optical spectroscopy are introduced. Spring. Zhou.


**MTSC 104 TECHNIQUES IN MATERIALS SCIENCE** (3). Prerequisite, permission of the curriculum. Lecture and laboratory in materials analysis techniques, including microscopy, X-ray diffraction and fluorescence, magnetic resonance, thermal analysis, XPS, channeling and RBS, mechanical properties, optical spectroscopy. Spring. Faculty.


**MTSC 123 INTERMEDIATE POLYMER CHEMISTRY** (APPL 123) (CHEM 123) (3). Prerequisite, APPL 122. Rheology and mechanical properties of polymers; plastics, fiber, and elastomer technology. Spring. Chemistry faculty.

**APPL 130 THERMODYNAMICS AND KINETICS APPLIED TO SOLIDS** (3). Prerequisites, PHYS 27, MATH 83, APPL 50. The elements of thermodynamics and phenomenological kinetics of diffusion appropriate to solids are examined. Topics include equations of state, heat capacity, polyphase equilibria, phase transitions, diffusion, and interfaces. Fall. Applied sciences, chemistry, physics staff.

**MTSC 134 VISUALIZATION IN SCIENCE** (COMP 134) (PHYS 134) (3). Prerequisite, graduate student or senior in computer science or natural science major. Computational visualization applied in the natural sciences. For both computer science and natural science students. Available techniques and their characteristics, based on human perception; using software visualization toolkits.

**MTSC 142 CHEMISTRY AND PHYSICS OF ELECTRONIC MATERIALS PROCESSING** (APPL 142) (CHEM 192) (PHYS 144) (3). Prerequisites, PHYS 160 or PHYS 27, CHEM 182, and permission of the instructor. A survey of materials processing and characterization used in fabricating microelectronics devices. Crystal growth, thin film deposition and etching and photolithography, characterization techniques, electric and dielectric properties of materials. Spring. Chemistry and physics faculty.

**MTSC 143 CHEMISTRY AND PHYSICS OF SURFACES** (APPL 143) (CHEM 193) (3). Prerequisite, APPL 141. The structural and energetic nature of surface states and sites; experimental surface measurements; reactions on surfaces including bonding to surfaces and adsorption; interfaces. Spring. Chemistry and Physics faculty.

**MTSC 169 INTRODUCTORY SOLID STATE PHYSICS** (PHYS 169) (3). Prerequisite, PHYS 160 or equivalent. Crystal symmetry, atomic structure of crystalline and non-crystalline solids, and imperfections in crystals; atomic bonding and types of atomic bonds in solids; electron and mechanical waves in solids; thermal, electrical, optical, and magnetic properties of solids; electronic structure and superconductivity of solids. Fall. Qin.

**MTSC 200 SPECIAL TOPICS IN MATERIALS SCIENCE** (2 or 3). Prerequisite, permission of the curriculum. Current topics in materials science, including electronic and optical materials, polymers, and biomaterials.

**MTSC 242 DEVICE PHYSICS AND ELECTRONIC PROPERTIES OF SOLIDS** (3). Prerequisite, PHYS 169 or APPL 141. MTSC 101, MTSC 103, or permission of the instructor. Survey of crystal structure, bandstructure, transport. Overview of FET's, heterostructures, light emission, dissipation, noise, integrated circuits, solar cells and ceramics. Emphasis on physical sources of device behavior.

**MTSC 245 OPTICAL PROPERTIES OF SOLIDS** (3). Prerequisite, APPL 141 or PHYS 169. PHYS 106, or permission of the instructor. Reflection, waveguides, nonlinear optics, optical switching, photorefraction, optical storage. Optical coupling to electronic states, device applications, optical computing.

**MTSC 249 ION-SOLID INTERACTIONS** (3). Prerequisite, APPL 141 or PHYS 169 or permission of the instructor. Interatomic potentials, range distribution, radiation damage, annealing, secondary defects, analytical techniques, silicon-based devices, implantation in compound semiconductors, and buried layer synthesis. Ion implantation in metals, ceramics, polymers, and biomaterials.

**MTSC 250 NEW TECHNOLOGIES AND DEVICE ARCHITECTURE** (3). Prerequisite, PHYS 169 or APPL 141, MTSC 101, MTSC 103 or permission of the instructor. Survey of novel and emerging device technologies. Resonant tunneling transistors, HEMT, opto-electronic devices and optical communication and computation, low-temperature electronic, hybrid superconductor devices.
MTSC 270, 271 SOLID STATE PHYSICS (PHYS 270, 271) (3 each).
Prerequisite, PHYS 160 or equivalent. Topics considered include those of Physics 169, but at a more advanced level, and in addition a detailed discussion of the interaction of waves (electromagnetic, elastic, and electron waves) with periodic structures; e.g., X-ray diffraction, phonons, bond theory of metals and semiconductors. Fall and spring. Hernandez.

MTSC 393 MASTER'S THESIS (variable). Prerequisite, permission of the curriculum.

MTSC 394 DOCTORAL DISSERTATION (variable). Prerequisite, permission of the curriculum.

DEPARTMENT OF ART

MARY D. SHERIFF, Chair
Dorothy Verklek, Assistant Chair for Art History
Dina o'Hara Slavick, Associate Chair for Studio Art

Professors
Jaroslav Folda (10) Crusader and European Medieval Art
Elizabeth Grabowski (68) Printmaking, Painting, Drawing
Jim Hinchfield (82) Sculpture
Richard Kinmaur (11) Painting, Drawing
Carol Mavor (94) Critical Theory, Modern Art
Mary Sheriff (94) Eighteenth- and Nineteenth-Century Art, Gender Studies
Dina o'Hara Slavick (118) Mixed Media
Mary Surgeon (31) Ancient Art, Archaeology
Dennis Zaborowski (13) Painting, Drawing

Associate Professors
Michael D. Harris (131) African, African American Art
Juan Logan (155) Painting, Mixed Media
Yun-Dong Nam (128) Ceramic Sculpture
Mary Pardo (67) Italian Renaissance
Dorothy Verklek (123) Late Antique, Celtic, Early Medieval

Assistant Professors
Pika Ghosh (144) South Asian Art
Kim Colman (152) Mixed Media
Joyce Rudinsky (150) Electronic Media

Adjunct Professors
Gerald B. Bola (126) American Art, Modern Japanese Art, Museum Studies, Director, Ackland Art Museum
Timothy Riggs (65) Sixteenth-, Nineteenth-, and Twentieth-Century Prints, Curator of Collections, Ackland Art Museum

Adjunct Associate Professors
Barbara Maindy (139) Curator of Exhibitions, Ackland Art Museum
Mary Ellen Sodre, Curator of Ancient Art, NCMA
David H. Steel Jr., Curator of European Art, NCMA
Dennis P. Weller, Associate Curator of Northern European Art, NCMA
Caroline Wood (114) Italian Baroque Art, Ackland Art Museum

Adjunct Assistant Professor
Caroline Allmendinger (161) Educator for University Audiences, Ackland Art Museum

Adjunct Instructor
Evelyn Koehnline (106) Conservation of Art on Paper, Ackland Art Museum

Instructor/Photo Technician
Jeff Whetstone, Photography

Professors Emeriti
Robert Barnard
James Gaden
Frances Huemer
Sara Immerwahr

J. Richard Judson
Arthur Marks
Kenneth Ness
Jerry Noe
Marvin Saltman

For those considering professional careers as art historians (teaching and research), critics, or museum or gallery professionals, the department offers graduate work leading to the degrees of master of arts and doctor of philosophy. Those who aim to become professional artists should take the degree of master of fine arts.

The Hanes Art Center provides exhibition galleries, a departmental library, a visual resources library, offices, study areas, classrooms, and studios. Additional studios and shops are located in the Art Laboratory building on Airport Drive, one mile from campus.

The Joseph C. Sloane Art Library has a collection of nearly 100,000 volumes and is supplemented by the University’s Academic Affairs libraries with holdings of over 5,000,000 volumes. The Sloane Art Library collection provides computer terminals for catalogs and houses the reserve holdings for art department courses. Graduate students have access to the departmental visual resources library with current holdings of 225,000 slides, 15,700 digital images, and 40,000 photographs.

Admission
Deadline for applications for consideration for Graduate School fellowships and assistantships is January 1. Graduate School application may be submitted via the online application for admission (www-sais.unc.edu/admissions/gradapp.html). This user-friendly, online application is faster and easier than completing a paper application and provides for the prompt receipt and distribution of application information. Individuals with special needs, or Internet access problems, may obtain a paper application at http://gradschool.unc.edu/applicants/admissions (see last paragraph) or by phoning (919) 966-2612.

Master of Fine Arts (MFA). Applications are welcome from students holding a bachelor’s degree in art or from students with an undergraduate degree in another field who present a strong portfolio in art. A background of at least one basic-level course and one intermediate-level course is necessary to prepare the applicant adequately for the required graduate-level courses in art history and a cognate field. In addition to the UNC-Chapel Hill application, applicants to the MFA program must submit directly to the Department of Art a portfolio of representative examples of creative work. Twelve slides, adequately identified and labeled, are required and should be enclosed in plastic slide sheets. Applicants should not send original works. A slide description sheet noting dimensions, media, and date of each piece should be included. A statement of purpose (i.e., reasons for pursuing graduate study in studio art), along with an artist statement, should also be submitted. Portfolios of those admitted become property of the department and are retained in the student’s file. The portfolios of applicants who are not offered admission will be returned if accompanied by a self-addressed stamped envelope. The GRE is not required for application to the MFA program.

Master of Arts (MA) and the Doctorate (PhD). In addition to completing an application to The Graduate School (which must include up-to-date GRE scores), the candidate for admission to the programs in art history must submit directly to the Department of Art the departmental supplemental application, available with the online Graduate School application or upon request to the Department of Art, and an example of his/her written work. The writing sample should be no more than fifteen pages. All applicants for graduate study in art history are admitted to the program as candidates for the master of arts degree unless they have already received or
expect to receive the MA degree in art history from another institution. An undergraduate major in art history is not required for MA candidacy; however, enrolling candidates, as a rule, have taken an average of twenty-one semester hours in art history. Courses in archaeology, cultural anthropology, and aesthetics are also considered in the admission process. At the time of application the candidate is expected to have a reading competency in either a romance language or German; a student entering with an MA should have reading competency in both a romance language and German.

There are no spring semester admissions in either studio art or art history.

Degree Requirements for Studio Art

The master of fine arts degree at UNC-Chapel Hill is a two-year, sixty-hour program. The majority of credits (thirty-one) are earned as independent study and critiqued under the direction of a resident professor adviser. Further interaction with the studio faculty is encouraged through a series of critiques/reviews. In the first year, students interact one-on-one with the whole studio faculty through appointments and in a series of scheduled individual meetings. In the second year students select a thesis committee composed of at least three members, two of whom must come from the studio faculty. This implies that students can have representation of faculty on the thesis committee from outside the art department. Through interaction with faculty both within the art department and in the University at large, students are guided technically and intellectually toward producing work that reflects the unique and personal conviction of the artist/student.

Believing that technique must serve the visual ideas, faculty stress the image-making/conceiving process as integral to the execution of the work. As each student understands his or her own point of view with regard to issues being addressed in the work, faculty serve as guides and instructors in technique when necessary and appropriate. Given this approach, students do not necessarily choose a particular media for specialized concentration. Determinations of media focus are arrived at through an examination of aesthetic and conceptual goals. This does not preclude a media focus, just that any choices made must be considered as part of the students' intellectual and aesthetic explorations.

Additional studio credits (eight) are in the form of the Graduate Critique held with the faculty and the artist-in-residence. The department invites a nationally recognized artist to be a member of the faculty each year.

The academic component of the MFA program is designed to complement the main purpose of making art. The program operates under the philosophy that the decision to pursue the making of fine art in an academic context carries an attendant responsibility to develop the verbal and written articulation of the visual. To accomplish this goal, students participate each semester in a graduate seminar (three credit hours per semester), conducted by the faculty and/or the artist-in-residence. Contemporary critical issues including social, cultural, political, and aesthetic ideas surrounding the making of art are explored and debated in this group forum. This also provides an opportunity for young professionals to interact with accomplished, successful artists, working in a variety of contexts.

A continuation of this more traditional academic endeavor is accomplished by a requisite twelve hours of additional course work in art history and/or related fields. Course selections are made depending on the focus of the individual student's research; selected courses will supplement and stretch the potential of the creative work from an academic perspective. Usually students are urged to take one of these courses in the area of twentieth-century art history. The remaining hours (three) are Master's Thesis, taken in the final semester. The thesis hours basically constitute the preparation of the thesis exhibition and writing the thesis document.

The conclusion of the MFA program is the group exhibition of the thesis work produced under the direction of the thesis committee. Students write a thesis document/statement to accompany the thesis work. A final oral defense takes place during the time of the exhibition. Once the oral defense has been passed, students submit a copy of the thesis statement along with slide and photo documentation of the thesis work for permanent retention in the Sloane Art Library.

An additional feature of the UNC-Chapel Hill master of fine arts program is the Hanes Visiting Artist Lecture Series. This program has proved to be a vital conduit for graduate students to see the work of and interact with a large and diverse number of professional artists. The artists are typically invited to campus for a two-day visit in which they give a public lecture and then give private critiques for the graduate students.

Financial Aid for Studio Art Students

All applicants for admission to the MFA program whose applications are complete by January 1 are automatically considered by the department for nomination in the University Fellowship Competition. Applicants and students in residence are eligible for teaching assistantships and graduate assistantships that are awarded on a semestral basis. Students desiring financial aid should consult as early as possible The Office of Scholarships and Student Aid, CB 2910, 300 Pettigrew Hall, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-2300 (on the Web at http://www.unc.edu/studentaid), for information about work-study jobs and loans.

Degree Requirements for Art History

Master of Arts Degree

The master of arts degree generally follows the requirements of The Graduate School as described in the section on graduate degree requirements in the Graduate School Handbook.

The MA degree requires eleven courses over a two-year period (four semesters). During the first three semesters, students take nine courses of which two may be taken in other departments. All students are required to take Methods (ART 276) during their first semester. Of the remaining eight courses, at least four must be 300-level seminars. The other four can be 100- and 200-level courses, although students are encouraged to take as many 300-level courses as possible. At least four of the remaining eight courses must fall within four of the five distribution areas noted:

Group 1: Ancient Greek Art, Celtic Art
Group 2: Medieval Art
Group 3: Renaissance and Baroque Art
Group 4: Eighteenth-, Nineteenth-, Twentieth-Century European and American Art, African American Art
Group 5: African, Asian, and South Asian Art, Post-Colonial Art

In the fourth semester, students must sign up for ART 393 (thesis registration) and ART 280 (thesis writing seminar).

At the end of the third semester, all MA students are required to demonstrate proficiency in either German or a Romance language by obtaining a passing grade on the UNC-Chapel Hill reading competency examination, or by passing German 102x or, e.g., French 102x (graduate reading courses offered by the departments of Germanic languages and Romance languages, respectively).

As the start of the third semester, students must take the MA exam. Students will not be allowed to register for ART 393 or ART 280 until they have passed the exam.

Master's Thesis

By October 1 of the second year, the MA student must submit a thesis. By October 1 of the second year, the MA student must submit a thesis proposal signed by his or her committee. (The committee consists of an advisor plus two other readers. Two of the three must be permanent art
history faculty.) The master's thesis is completed by the end of the fourth semester.

Formal acceptance of an MA thesis by the student's adviser and two additional readers concludes the MA course of study. If the student wishes to continue into the PhD program, he or she should notify the department of that intention in writing at the time of the MA examination in order to allow a full evaluation of his or her graduate work by the Art History Graduate Committee. A student may not continue in the art history graduate program for more than one semester beyond thirty hours of graduate credit unless approval is granted by the graduate committee for entrance into the PhD program.

**Doctor of Philosophy Degree**

The degree of doctor of philosophy generally follows the requirements of The Graduate School as described in the section on graduate degree requirements in the Graduate School Handbook.

Students are required to take ten to three-hour courses, a total of thirty hours, all of which are beyond those completed for the MA At least four of these courses should be taught by the Graduate School or the field department. The remainder must be in the Graduate School, and the final course must be ART 394 (Dissertation Registration). Students sign up for ART 394 during their fourth semester when they are taking their PhD exams. Two of the ten courses may be taken in other departments as electives for supplementary and complementary studies.

PhD students may elect to complete an external minor. This consists of at least three more courses in the external field (the minor department) such as medieval studies, communication studies, women's studies, or English, and will require an additional semester of coursework. Students must secure prior approval of the minor department.

The PhD requires demonstration of proficiency in German and one Romance language. Proficiency is usually demonstrated by obtaining a passing grade on the UNC-Chapel Hill reading competency examination, or passing German 102x or, e.g., French 102x. PhD students should be aware that although they are not formally required to have a command of any additional languages, their advisers may determine that other languages (e.g., Latin, Greek, Arabic, Hindi) are necessary in order to advance their research.

Students take written and oral preliminary exams the semester after they complete their PhD course work (except for ART 394). Upon successful completion of the written exam and the first doctoral oral examination, students begin the actual writing of the dissertation. Once the dissertation is completed, students seek approval of their adviser and the examining committee for the final oral defense of the dissertation. A doctoral dissertation has eight calendar years from the date of first registration in the PhD program to complete the doctoral degree. For the doctoral candidate there is a minimum residence credit requirement of four semesters; at least two semesters must be earned through continuous full-time registration on this campus.

For further information the applicant should write to the director of graduate study in art history.

**Financial Aid for Art History Students**

All applicants for admission who have completed their applications by January 1 are automatically considered by the department for nomination for Graduate School Awards. Applicants and students in residence are also eligible for teaching and research assistantships, which are awarded by the department. There are also annual service and nonservice awards. Students desiring financial aid should consult as early as possible The Office of Scholarships and Student Aid, CB# 2300, 300 Pettigrew Hall, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-2300, for information about work-study jobs and loans.

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**Art History**

**Courses for Graduates and Advanced Undergraduates**

110 TOPICS IN THE HISTORY OF ANCIENT ART (3). Sturgeon.
111 TOPICS IN THE HISTORY OF EARLY MEDIEVAL ART (3). Folda, Verkerk.
112 TOPICS IN MEDIEVAL ART: A.D. 1000-1453 (3). Folda, Verkerk.
113 TOPICS IN RENAISSANCE ART (3). Pardo.
114 TOPICS IN BAROQUE ART (3). Cole.
115 TOPICS IN MODERN ART (3). Marks, Sheriff, Mavor, Harris.
116 TOPICS IN MODERN DESIGN (3).
118 AFRICAN ART TOPICS (AFRI 118) (3). Harris.
119 TOPICS IN AMERICAN ART (3). Marks, Harris.
120 EARLY MODERN SCULPTURE (3). Cole.
124 TOPICS IN FAR EASTERN ART (ASIA 124) (3).
128 ART AND RITUAL IN SOUTH ASIA (ASIA 128) (3). Ghosh.
151 WOMEN IN THE VISUAL ARTS (3). Sheriff.
153 HISTORY OF ILLUMINATED MANUSCRIPTS (3). Folda, Verkerk.
154 NORTHERN EUROPEAN ART: A.D. 1300-1500 (3). Folda.
155 CELTIC ART (3). Verkerk.
180 THEORIES OF MODERN ART (3). Mavor.
181 MODERN ART AND CRITICISM (3). Mavor.
182 MOSAICS: THE ART OF MOSAIC IN GREECE, ROME, AND BYZANTIUM (CLAR 182) (3). Connor.
183 CONNOISSEURSHIP (3). Bolas, Riggs, Koehnline, Wood.
184 MUSEUM STUDIES (3). Bolas, Riggs, Koehnline, Wood.
185 THE LITERATURE OF ART (3). Staff.
186 TOPICS IN THE HISTORY OF ART (3). Staff.
187 STUDIES IN THE HISTORY OF GRAPHIC ART (3). Riggs.
189 STUDIES IN NEAR EASTERN ARCHAEOLOGY (CLAR 189) (3).
190 GREEK ARCHITECTURE (CLAR 190) (3). Sams.
191 ARCHITECTURE OF ETRURIA AND ROME (CLAR 191) (3).
192 THE GARDENS, SHRINES, AND TEMPLES OF JAPAN (ANTH 196) (ASIA 196) (3). Johnson.
193 GREEK PAINTING (CLAR 193) (3). Sturgeon.
194 ARCHAIC GREEK SCULPTURE (CLAR 194) (3). Sturgeon.
195 CLASSICAL GREEK SCULPTURE (CLAR 195) (3). Sturgeon.
196 HELLENISTIC GREEK SCULPTURE (CLAR 196) (3). Sturgeon.
198 AEGEAN CIVILIZATION AND NEAR EASTERN BACKGROUNDS (CLAR 198) (3).
199 READING IN ART HISTORY (3). Staff. The content of these courses varies slightly from year to year in accordance with the needs of the students and the special competence of the instructor.
Courses for Graduates
In the seminars listed, the topics for study change from year to year depending on the professor conducting the course. Architecture, sculpture, painting, or a combination of these may be the subject. Consult the department schedule for details on specific courses in any given semester.

201 MEDIEVAL STUDIES (3). Folda, Verkerk.
251 GENDER AND VISUAL CULTURE (WMST 251) (3). Sheriff, Morrow.
276 ADVANCED READINGS TOPICS IN THE HISTORY OF ART (3).
280 MASTER'S THESIS WRITING SEMINAR (3).
294 GREEK TOPOGRAPHY (CLAR 294) (3).
296 ROMAN SCULPTURE (CLAR 296) (3).
297 ROMAN PAINTING (CLAR 297) (3).
298 ROMAN TOPOGRAPHY (CLAR 298) (3).
299 ETRUSCAN ART (CLAR 299) (3).
301 TOPICS IN THE HISTORY OF ART (3). Staff.
310 SEMINAR IN ARCHITECTURE (3).
350 SEMINAR IN MEDEIVAL ART (3). Folda.
351 SEMINAR IN MEDEIVAL ART (3). Verkerk.
352 SEMINAR IN RENAISSANCE ART (3). Pardo.
353 SEMINAR IN RENAISSANCE (3). Pardo.
355 SEMINAR IN NINETEENTH-CENTURY ART (3). Sheriff.
356 SEMINAR IN AMERICAN ART (3). Marks, Harris.
357 SEMINAR IN MODERN ART (3). Mavor, Sheriff, Harris.
358 SEMINAR IN ANCIENT ART (CLAR 358) (3). Sturgeon.
359 SEMINAR IN AFRICAN ART (3). Harris.
360 SOUTH ASIAN ART (3). Ghosh.
378 SEMINAR IN MUSEUM STUDIES (3).
393 MASTER'S THESIS (3 or more).
394 DOCTORAL DISSERTATION (3 or more).

Studio Art
Courses for Graduates
230 GRADUATE STUDIO ART SEMINAR (3).
231/232 TA PRACTICUM (3).
240 GRADUATE STUDIO (Var.).
250 GRADUATE CRITIQUE (2).
393 MASTER'S THESIS (3 or more).

DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS

DAVID C. LEE, Chair

Professors
*Sharon Campbell (18) NMR Spectroscopy, Structure and Regulation of Proteins Involved in Ras-Mediated Cell Signaling
*Michael Caplow (16) Chemistry of the Microtubule Cytoskeleton
*Charles W. Carter Jr. (19) Structural Molecular Biology, Protein Structure-Function, X-ray Crystallography of Proteins Including Aminoacyl tRNA Synthetases, Deaminases, Phasing Methods and Crystal Growth
*Stephen G. Chaney (25) Chemistry and Action Mechanism of Platinum Anticancer Agents, DNA Repair, Effects of DNA-Damaging Agents on DNA Replication
David Clemmons (15) Receptor Signaling
*Stephen Crews (24) Molecular Genetics of Nervous System Development, Transcriptional Control, Evolution of Regulatory Mechanisms
Manhall Edgell (143) Use of Biophysical and Genetic Techniques Using Combinatorial Libraries and High Throughput Robotics to Assess Determinants of Protein Structure
*Beverly Errede (144) Function and Regulation of MAP-Kinase Activation Pathways in Saccharomyces cerevisiae
Jack Griffith (41) Architecture of DNA-Protein Complexes Involved in: Replication, Repair, and Telomere Maintenance, Electron Microscopy
*Jan Hermans (46) Theoretical Approaches to Structure and Function of Proteins: Computer Modeling, Molecular Dynamics, and Molecular Graphs
*Hemming Ke (50) X-ray Crystallography, Structure and Function of Biologically Important Proteins Such As Phosphodiesterase and Molecular Chaperone Systems
*David C. Lee (56) Growth Factors and Receptors, Molecular Oncogenesis, and Proteolytic Regulation of Cell Surface Proteins
*Barry R. Lentz (62) Biomembrane Structure and Its Relationship to Function, Phospholipid Membranes in Blood Coagulation, Membrane Fusion, Liposomes
*Patricia F. Maness (68) Mechanisms of Cell Signaling and Adhesion, Axon Guidance and Synaptic Plasticity
*William F. Marshall (69) Control of Gene Activity, Cell-Cycle Regulation in Early Embryos, Control of Expression of Histone mRNA
*Gerhard W. Meissner (79) Intracellular Ca2+ Signaling and Regulation of Ion Channels in Striated Muscle
Gary Pielak (99) Protein Structure/Function Using 2-D NMR
*Aziz Sancar (103) DNA Repair and Cancer, Structure and Function of DNA Repair Enzymes, Molecular Neurobiology, Reaction Mechanism of Human Blue-Light Photoreceptor
*Gwendolyn B. Sancar (104) Cellular Responses to Genotoxic Stress, DNA Repair, Transcriptional Regulation of Stress Response Genes
*John Sheehan (111) Understanding the Role of Glycoconjugates in Biology
*Ronald L. Swanstrom (123) Molecular Biology of HIV, Resistance to HIV Protease Inhibitors
Michael D. Topal (126) Protein-DNA Recognition, Genomic Instability
*Thomas W. Traut (128) Enzyme Structure and Regulation, Allosteric Dissociating Enzymes
*Terry Van Dyke (132) Molecular Regulation of Cell Growth Control, Cell Specificity of Tumor Suppression Function, Gene Regulation
Elizabeth M. Wilson (134) Mechanisms of Steroid Hormone Action, Androgen Regulation of Gene Transcription
*Richard V. Wolfenden (139) Enzyme Mechanisms, Water Affinities of Biological Compounds
*Yue Xiong (140) Molecular Mechanisms of Cell Cycle Control, Tumor Suppression and Development

Associate Professors
Ed Collins (23) Use of Biophysical Tools to Study Immunological Problems Focusing on Immune Recognition of Cancer
*Henrik Dohlman (17) Regulators of G Protein Signaling, Mechanisms of Drug Desensitization
*Ann Erickson (33) Cellular Protein Targeting, Lysosomal Enzyme Biosynthesis, Secretion of Lysosomal Proteases by Transformed Cells
*Howard M. Fried (39) Cell and Molecular Biology, Mechanisms of Nuclear-Cytosolic Transport, Mechanisms of RNA-Protein Recognition
*Dale Ramsden (108) Mechanism of V(D)J Recombination, End-Joining Pathway for Repair of DNA Double Strand Breaks
John Sondek (117) Protein Crystallography and Signal Transduction
*Yi Zhang (118) Chromatin Dynamics, Gene Expression, Cellular Proliferation

Assistant Professors
*Christoph Borchers (12) Protein-Protein and Protein-Ligand Interaction, Protein Tertiary Structure, Quaternary Structure of Multi-Protein Complexes, Structure-Function Relationship of Proteins, Functional Proteomics
Lyndon Cooper (21) Osteoblast Responses to Physiological Stress: Characterization of the Heat Shock Response and Mechanochemical Deformation and Stimulation
*Nikolay Dokholyan (47) Computational Structural Biology
*Brian Kuhlman (72) Computational Protein Design, Protein-Protein Interactions, Structural Biology
Andrew Lee (71) Protein, Structure and Dynamics, NMR Spectroscopy
Matthew Redinbo (110) Structural Biology of Proteins and Protein-nucleic Acid Complexes
*Brian Stahl (120) Mechanisms of Chromatin-Mediated Gene Transcription

Research Professors
David G. Kaufman (55) Cellular and Molecular Mechanisms of Cancer
Development, Epithelial Cell-Stromal Cell Interactions, Cell-Cycle Influences on Carcinogenesis
*Arrel D. Toews (125) Neurochemistry, Neurotoxicology: Metabolism and Gene Expression during Denervation and Remyelination, Molecular Biology of Cholesterol Metabolism and Trafficking

Professors Emeriti
Michael K. Berkut
Edward B. Glassman
David J. Holbrook Jr.
William Henry Pearlman
Ralph Penniall
Howard A. Schneider
George K. Summer
Robert H. Wagner
James R. White
John E. Wilson
*core faculty member

The Department of Biochemistry and Biophysics is an administrative division of the School of Medicine and a member of the Graduate School. The graduate program offers instruction and research opportunities leading to the PhD degree. Although the department offers the MS degree, the graduate program is not designed as a terminal master's curriculum. Applicants are offered admission with the expectation that they will complete their doctorate.

Modern research in biochemistry and biophysics is designed to address mechanism and function; it utilizes the paradigms of molecular biology, but is influenced by chemistry, physics, and genetics. The philosophy of the department and its graduate program is to provide students with broad training in modern approaches to the field and unique opportunities for multidisciplinary training.

Curriculum
Students admitted to the graduate program take any two of the following five courses: BIOC 104, 110, 111, 117, 118, 134, or any three of the physical biochemistry modules (BIOC 144-158). In addition, all students take a special seminar course (BIOC 205) and select a minimum of three laboratory rotations (BIOC 207). These four core courses can be completed during the first year when a student has all prerequisites. A scientific writing course, BIOC 212, is required during the second year. This course is designed to prepare students for the comprehensive examination, which is in the format of an NIH grant proposal. Students are also required to take a minimum of twelve semester hours of electives, including at least three three-hour lecture courses. The remainder of the electives can be either seminar or lecture courses. The electives may be courses offered either by the Department of Biochemistry and Biophysics or by other departments. Further information on course requirements may be found in the Guidelines for Students in the Graduate Program in Biochemistry and Biophysics at The University of North Carolina at Chapel Hill.

Students in the combined M.D./PhD program are required to complete two of the following courses (six credit hours): BIOC 110, 111, 117, 118, 134, or any three of the physical biochemistry modules (BIOC 144-158), as well as BIOC 205 (three credit hours), two rotations in BIOC 207 (four credit hours), and BIOC 212 (two credit hours). School of Medicine courses can serve in lieu of electives.

A faculty committee advises entering students about course selection until the student chooses a research sponsor. Students select research sponsors from the department's primary and joint faculty members following the three laboratory rotations. After a research sponsor has been selected, a dissertation committee is formed to review the student's yearly progress. The examinations required for admission to candidacy for the PhD are administered as a comprehensive exam and written research proposal. The comprehensive exam will cover major topics in the areas of biochemistry/biophysics and cell/molecular biology. The written research proposal will be on the student's chosen research project and will be defended in an oral examination. The most important requirement for the PhD degree is the dissertation of original research carried out independently by the candidate. The PhD candidate is required to conduct a final oral defense of a dissertation.

Financial Aid and Admissions
Funds available from the University, the department, and individual research grants provide stipends for students. All applicants are considered for special fellowships and teaching or research assistantships. In 2003 students received a stipend of $21,500 plus in-state tuition and fees. Major medical insurance was also provided. Nonresidents with predoctoral fellowships or assistantships are recommended for special tuition rates. Applications are considered from prospective graduate students who present evidence of superior scholarship in biology, chemistry, or biochemistry. The department recommends that students prepare themselves by taking general and organic chemistry, biochemistry, biology, physics, and calculus. It is anticipated that students who have not had these courses will take them, as appropriate, after their arrival. Departmental information may be obtained through the department's Web site: www.med.unc.edu/wikunits/2depts/biochem. Applicants should apply online at http://gradschool.unc.edu.

Research Interests
The faculty research interests are diverse and include research in the following areas: cell signaling and growth control, DNA repair and replication, membrane biophysics and function, molecular regulation including transcriptional control, nervous system development and function, and protein structure/function, including enzymology. Model systems used by the faculty range from bacteria to mammals; techniques span molecular biology to physical biochemistry. A brochure describing the department and more detailed faculty research interests can be obtained by writing to the director of graduate studies of the department of Biochemistry and Biophysics, or by visiting the department's Web site:
Facilities
The departmental research facilities are centered in the Mary Ellen Jones building, which is within walking distance of the Cancer Research Center and the departments of Biology, Chemistry, and Physics. The building is equipped with instruments for molecular biological, biochemical, structural, and biophysical research. Animal-care facilities are available to support the department's research endeavors. The computer facilities are networked within the department, to the Research Triangle area, and to national and international databases. Color graphics workstations (including an E&S PS350) and high speed minicomputers are available within the department.

Courses for Graduates and Advanced Undergraduates

102 UNDERGRADUATE RESEARCH IN BIOCHEMISTRY (1-3).
Prerequisites, an overall 3.0 GPA and permission of course director. For juniors and seniors who wish to carry out an independent, mutually arranged research project in the laboratory of a biochemistry faculty sponsor. Restricted to on-campus work. Minimum three hours per week for each unit of credit per semester. May be repeated. May not substitute for honors, advanced elective, or other course requirements of another department. A written report is required in each term. Fall and spring. Fried, staff.

103 BIOCHEMISTRY FOR DENTAL STUDENTS (5). Prerequisite, CHEM 62 or equivalent. This course may be taken by qualified students who are not majoring in biochemistry. Fall. Staff.

104 ENZYME PROPERTIES, MECHANISMS, AND REGULATION (3).
Prerequisite, CHEM 130 or equivalent. Focuses on enzyme architecture to illustrate how the shapes of enzymes are designed to optimize the catalytic step and become allosterically modified to regulate the rate of catalysis. Fall. Traut, Wolfenden.

105 MOLECULAR BIOLOGY (3). Prerequisites, undergraduate biochemistry or genetics, and organic chemistry. Techniques in molecular biology, mechanisms of DNA replication, transcription, and translation of genetic material in prokaryotic and eukaryotic systems; genomics, gene organization, regulatory and signaling mechanisms, and molecular biology of cancer. Fall. Crews, Fried, Van Dyke, Xiong.

110 ADVANCED MOLECULAR BIOLOGY I (MCRO 108) (GNET 110) (PHCO 136) (BIOL 178) (3). Prerequisites, at least one undergraduate course in both biochemistry and genetics and permission of the instructor. DNA structure, function, and interactions in prokaryotic and eukaryotic systems, including chromosome replication, recombination, repair, and genome fluidity. Fall. Griffith, Matson, A. Sancar.

111 ADVANCED MOLECULAR BIOLOGY II (MCRO 109) (GNET 111) (PHCO 137) (BIOL 179) (3). Prerequisites, at least one undergraduate course in both biochemistry and genetics and permission of the instructor. RNA structure, function, and processing in biological systems including transcription, gene regulation, translation, protein and RNA transport. Spring. Baldwin, Manduff, Staahl.

117 CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (2 or more). Prerequisites, undergraduate cell biology or biochemistry or permission of instructor. Comprehensive introduction to cell structure and function. Fall. Meisner, staff.

118 CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (2 or more). Prerequisites, undergraduate cell biology or biochemistry or permission of instructor. Comprehensive introduction to cell structure, function, and transformation. Spring. Cox, staff.

125 PLANT PHYSIOLOGY AND BIOCHEMISTRY (BIOL 125) (3).
Prerequisites, BIOL 11 and BIOL 41 or 52. An advanced course covering growth of plants including photosynthesis, nitrogen fixation, and biosynthesis of cellular components; developmental processes; hormonal regulation; and responses to stress. Spring. Staff (Biology).

134 CASE STUDIES IN STRUCTURAL MOLECULAR BIOLOGY (3).
Prerequisite, CHEM 130 or equivalent. Principles of macromolecular structure and function with emphasis on proteins, molecular assemblies, enzyme mechanisms, and ATP enzymology. Spring. Carter.

142 BIOCHEMICAL TOXICOLOGY (TOXC 142) (3).
Prerequisites, CHEM 130 or equivalent, and one additional biochemistry course or permission of course director. Biochemical actions of toxicants, and assessment of cellular damage by biochemical measurements. Course intended primarily for graduate students. Spring. Harper (course director).

144 MACROMOLECULAR THERMODYNAMICS (1).
Prerequisites, CHEM 130 and two semesters of physical chemistry or permission of instructor. Basic molecular models and their use in developing statistical descriptions of macromolecular function. Fall. Lentz.

145 MACROMOLECULAR STRUCTURE AND DYNAMICS (1).
Prerequisites, CHEM 130 and two semesters of physical chemistry or permission of instructor. Macromolecules as viewed with modern computational methods. Fall. Sondak (course director), Temple, Lentz.

146 MACROMOLECULAR EQUILIBRIA (1).
Prerequisites, CHEM 130 and two semesters of physical chemistry or permission of the instructor. Stability of macromolecules and their complexes with other molecules. Fall. Hermans.

147 MACROMOLECULAR SPECTROSCOPY (1).
Prerequisites, CHEM 130 and two semesters of physical chemistry or permission of the instructor. Principles of UV, IR, Raman, fluorescence, and spin resonance spectroscopy: applications to the study of macromolecules and membranes. Spring. Lentz.

150A INTRODUCTION TO LIGHT MICROSCOPY (BIOL 175) (1).
Prerequisites, BIOL 144-147 or permission of course director. Fundamentals of optics and light microscope design for the novice student. Spring. (Even years.) Salmon (course director).

150B ADVANCED TOPICS IN IMAGING (BIOL 175) (Cell Biology) (2).
Prerequisites, BIOL 144-147 or permission of course director. Optical imaging including fluorescence and confocal techniques. Scanning and transmission electron microscopy and image interpretation. Mechanical imaging and scanning probe microscopy. Spring. (Even years.) Costello (course director), Eric, Jacobson, Salmon, Superfine.

151 MACROMOLECULAR INTERACTIONS (CHEM 235) (1).
Prerequisites, BIOL 144-147 or permission of course director. Theory and practice of biophysical methods used in the study of interactions between macromolecules and their ligands including surface plasmon resonance, analytical ultracentrifugation, and calorimetry. Spring. Pielak (course director), Tripathy.

152 MACROMOLECULAR NMR THEORY (CHEM 234) (1).
Prerequisite, BIOL 147 or permission of the course director. This is the lecture component of a combined lecture/laboratory course that provides a practical introduction to the use of macromolecular NMR spectroscopy. The lecture may be taken independently of the lab (BIOL 152L). Spring, Campbell (course director), Pielak, Young.

152L MACROMOLECULAR NMR PRACTICE (CHEM 234) (1).
Prerequisite, BIOL 147 or permission of course director. Lab section for BIOL 152. Spring, Campbell (course director), Pielak, Young.

153 X-RAY CRYSTALLOGRAPHY OF MACROMOLECULES (CHEM 233) (1).
Prerequisite. BIOL 144 or permission of course director. Principles of protein crystallography; characterization of crystals; theory of diffraction; phasing of macromolecular crystals and structure refinement. Spring, Ke.

154 PRINCIPLES OF AND SIMULATION OF MACROMOLECULAR DYNAMICS (1).
Prerequisites, BIOL 144-147 or permission of instructor. A combined lecture/computer lab treatment of the principles of macromolecular dynamics and structure as approached using the tools of molecular dynamics simulations. Spring. (Odd years.) Hermans (course director), Tro痂ha.
155 ELECTRICAL SIGNALS FROM MACROMOLECULAR ASSEMBLAGES (NBIO 222A) (2). Prerequisite, BIOL 144 or permission of course director. An intensive, six-hour-per-week course on the fundamentals to the transmission of electrical signals in neurons. Laboratory sessions to demonstrate principles and methods. Fall. Oxford (course director), Cheney, Rosenberg, Palotra, Stuart.

156 BIOMOLECULAR INFORMATICS (1). Prerequisites, BIOL 144-147 or permission of instructor. A workshop/laboratory course introducing the methods and principles of biological data management. Spring. Vaisman.

157 MACROMOLECULAR CRYSTALLOGRAPHIC METHODS (CHEM 233) (2). Prerequisite, BIO 151 or permission of course director. A combined lecture/laboratory workshop for serious students of protein crystallography. Spring. (Odd years) Collins (course director), Rettenhofer, Carter, Sondek.

158 PROTEOMICS, PROTEIN IDENTIFICATION AND CHARACTERIZATION BY MASS SPECTROMETRY (1). Prerequisite, BIOL 144-147 or one semester of Physical Chemistry or permission of instructor. A lecture module that introduces students to the basics of mass spectrometry as applied to protein science. Spring. Horn (course director).

189 MOLECULAR BIOLOGY TECHNIQUES (BIOL 189) (GNET 189) (MCRO 189) (PHCO 189) (PHY 189) (4). Prerequisites, some knowledge of molecular biology, permission of instructor. These one- to two-week intensive courses are part of the series of Carolina Workshops. Topics emphasized vary, but usually include techniques such as isolation of nucleic acids, blotting, cloning in viruses and plasmids, and DNA sequencing. Fall, spring, and summer courses available. Liakos and staff. Fee required. Eight laboratory hours.

Courses for Graduates

205 RESEARCH TOPICS IN BIOCHEMISTRY (3). Prerequisites, CHEM 130 or equivalent and permission of the coordinator. Seminar and critical study of modern research topics in biochemistry under the supervision of individual biochemistry faculty. Spring. Caplow (coordinator), staff.

206 EXPERIMENTAL APPROACHES TO BIOCHEMICAL RESEARCH (1). A survey of biochemical techniques in a lecture/demonstration format. Fall. Staff.

207 ADVANCED BIOCHEMISTRY LABORATORY (2 or 4). Prerequisite, CHEM 130 or equivalent. Permission of the department required except for departmental majors. Designed to introduce students to the principles of biochemical research. Moderated by the instructor and staff. May be repeated two or more semesters for credit. Hours and credit to be arranged, any semester. Staff.

208 ADVANCED BIOPHYSICS LABORATORY (2 or 4). Permission of the program required. Designed to introduce students in the Molecular and Cellular Biophysics Program to research methods. Moderated by the instructor and staff. May be repeated two or more semesters for credit. Hours and credit to be arranged, any semester. Staff.

211 RESEARCH CONCEPTS IN BIOCHEMISTRY (2). Prerequisite, master's candidate in biochemistry. A series of lectures and exercises on formulating research plans to attack specific scientific problems, and on presenting the research plan in the form of a grant proposal. Fall. G. Sasnak (course director), staff.

212 SCIENTIFIC WRITING (3). Prerequisite, doctoral candidate in biochemistry. A course of lectures and workshops on the principles of clear scientific exposition as applied in the design and preparation of research grants. Fall. G. Sasnak (course director), staff.

221 CELL REGULATION BY UBQUITINATION (PHCO 221B) (2). Prerequisites, two semesters of biochemistry. Lecture and literature-based discussion course on ubiquitin-mediated regulation of hormone receptor signaling, trafficking, and degradation. Spring 2004 and years alternating with PHCO 221B. Dohlmam.

222A CELLULAR AND MOLECULAR NEUROBIOLOGY: INTRODUCTION (2). Prerequisite, permission of the course director. Introduction to cellular and molecular neuroscience, including neuronal cell biology, action potentials, synaptic potentials, molecular biology, and neuroanatomy. Course meets four weeks with six lecture hours per week. Fall. Stuart.

222B CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-RECEPTORS (NBIO 222B) (2). Prerequisite, permission of instructor. Consideration of membrane receptor molecules activated by neurotransmitters in the nervous system with emphasis on ligand binding behavior and molecular and functional properties of different classes of receptors. Course meets for four weeks with six lecture hours per week. Fall. Neurobiology faculty.

222C CELLULAR AND MOLECULAR NEUROBIOLOGY: ELECTRICAL SIGNALING (2). Prerequisite, permission of the course director. The genesis of electrical impulses in the nervous system is considered with an emphasis on membrane potentials, voltage-gated ion channels, and structural features of neurons that influence conduction. Course meets for five weeks with six lecture hours per week. Fall. Neurobiology faculty.

223A CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-INTRACELLULAR SIGNALING (NBIO 223A) (2). Prerequisite, permission of course director. Explores biochemical signal transduction events following activation of neurotransmitter receptors including G-protein coupling, desensitization, signaling specificity, downstream effectors, calcium signaling and cGMP and cAMP kinases. Course meets for five weeks with six lecture hours per week. Spring. Neurobiology faculty.

223B CELLULAR AND MOLECULAR NEUROBIOLOGY: PRESSYNYNAPTIC MECHANISMS AND SYNAPTIC PLASTICITY (2). Prerequisite, permission of course director. Explores the mechanisms regulating the release of neurotransmitters from nerve terminals, including quantal release, vesicle and terminal membrane proteins, neurotransmitter transporters, and plasticity of synaptic transmission. Course meets for five weeks with six lecture hours per week. Spring. Stuart and faculty.

The following seminar courses are designed for students majoring or minoring in biochemistry who wish to further their knowledge in particular areas. Unless otherwise stated, two semesters of biochemistry are prerequisites for seminar courses. Most of these courses are given in alternate years by interested staff members. Unless otherwise stated, these seminars may not be repeated for credit. Seminar courses provide teaching experience, which is required for a graduate degree in biochemistry and biophysics. In addition, the courses provide experience in giving a critical review of the current literature.

241 SEMINAR ON SPECIAL TOPICS IN BIOCHEMICAL RESEARCH (2). Prerequisites, two semesters of biochemistry. Covers current research and productive areas of biochemical research. Specific subjects will be announced. May be repeated for credit. (Either semester as announced.) Staff.

244 SEMINAR IN THE PHASE PROBLEM IN X-RAY CRYSTALLOGRAPHY (2). Prerequisite, permission of instructor. Image formation is treated from a general viewpoint, showing the Fourier transform methods used in X-ray crystallography. Homogenous model replacement, multiple wavelength anomalous scattering, and Fourier direct methods are covered. Two two-hour seminars per week. Spring. (2005 and alternate years.) Carter.

245 SEMINAR ON CELL SIGNALING (2). Prerequisite, two semesters of biochemistry. Signal transduction in embryonic development. Spring. (2005 and alternate years.) Maness.

251 SEMINAR IN DNA-PROTEIN INTERACTIONS (2). Prerequisites, two semesters of biochemistry, review of current literature on structural, thermodynamic, and kinetic aspects of binding to DNA of proteins involved in replication, recombination, and repair. Spring. (2005 and alternate years.) A. Sasnak.

254 SEMINAR IN CELLULAR RESPONSES TO DNA DAMAGE (2). Prerequisites, graduate-level courses (each one) in molecular biology and biochemistry. A seminar course on the enzymology of DNA repair and damage tolerance.
and the regulation of genes involved in these processes. Both classic and recent literature are discussed. Spring. G. Sanchez.

260 SEMINARS IN BIOPHYSICS (2). Prerequisite, permission of the instructor. Students present seminars coordinated with the visiting lecturer series of the Program in Molecular and Cellular Biophysics. Fall and spring. Lents; staff.

273 MOLECULAR MODELING (MEDC 275) (3). Prerequisites, MATH 31, 32; CHEM 181. Introduction to computer-assisted molecular design, techniques, and theory with an emphasis on the practical use of molecular mechanics and quantum mechanics programs. Fall. Tropsha (coordination), staff.

275 GENETICS SYSTEMS (Biol 275) (GENET 275) (MCRO 275) (1). A course to provide public lecture experience to advanced genetics students. Students present personal research seminars based on their individual dissertation projects. Lectures are privately critiqued by fellow students and genetics faculty. Required for all candidates for the degree in Genetics. Fall, spring. Staff.

276 MACROMOLECULAR MODELING (MEDC 276) (3). Prerequisites, CHEM 130 or equivalent and permission of instructor. Applications of computational techniques to the study of macromolecular systems (protein and nucleic acid structure, molecular dynamics, free energy simulations, ligand docking). Practical use of macromolecular modeling programs in the laboratory. Two to three lecture hours and three laboratory hours per week. Spring. Tropsha (coordination), staff.

301, 302 RESEARCH IN BIOCHEMISTRY (3 or more). Prerequisite, permission of the department. Six or more hours a week throughout both semesters. (On demand.) Staff.

310 RESEARCH IN NEUROBIOLOGY (NBIO 310) (PATH 310) (PHCO 310) (PHY 310) (BIOL 310) (PSYC 310) (3-12). Prerequisite, permission of the graduate student advisor, curriculum in Neurobiology. Research in various aspects of neurobiology. Six to twenty-four hours a week. Fall and spring. Faculty of the Neurobiology program.

393 MASTER'S THESIS (Var.). Staff.

394 DOCTORAL DISSERTATION (Var.). Staff.

DEPARTMENT OF BIOLOGY*

STEVEN W. MATSON, Chair

*With recommendation of the department and the approval of the administrative board of The Graduate School, special courses and the direction of graduate studies are offered by the staff of the Institute of Marine Sciences, Morehead City, North Carolina.

Professors
Albert S. Baldwin (81) Immunoglobulin Gene Expression
Victoria L. Bautch (79) Molecular Basis of Development
Kerry S. Bloom (39) Molecular Genetics
W. E. Boltbacher (38) Invertebrate Neuroendocrinology
Jeffrey L. Dangl (87) Genetic and Molecular Analysis of Disease Resistance
J. Alan Feduccia (3) Vertebrate Evolution and Paleontology
Patricia G. Gense (45) Paleobotany and Morphology
Lawrence L. Gilbert (37) Developmental Insect Physiology, Neuroendocrinology, and Biochemistry
Albert K. Harris (5) Morphogenesis and Embryology
Alan M. Jones (71) Plant Molecular and Cellular Biology
William M. Kier (67) Functional Morphology of Invertebrates, Biomechanics
Joel G. Kingsolver (101) Evolutionary Ecology and Physiological Ecology
Kenneth J. Lohmann (83) Neuroethology and Invertebrate Zoology
William E. Martenuff (86) Transcriptional and Posttranscriptional Regulation of RNA Metabolism, Cell Cycle Regulation during Development
Ann G. Mattheyse (52) Molecular Biology and Plant Pathology
Steven W. Mason (63) Molecular Biology and Biochemistry
Robert K. Peer (57) Plant Ecology

Charles H. Peterson (69) Marine Ecology
Thomas D. Pette (77) Yeast Genetics
Mark A. Pfeifer (85) Developmental Genetics
John R. Pringle (84) Cell Biology and Yeast Genetics
Edward D. Salmon (34) Cell Biology
Darell W. Stafford (17) Developmental Biochemistry
Peter S. White (72) Plant Ecology
R. Haven Wiley (20) Animal Behavior

Associate Professors
Joseph J. Kiefer (97) Plant Cell Biology
Gustavo P. Maronti (33) Molecular Genetics of Drosophila
David Pfennig (91) Behavioral Ecology and Evolutionary Biology
Patricia J. Pukkila (35) Molecular Genetics
Jason W. Reed (88) Light Signal Transduction in Plants
Seth R. Reiche (14) Community Ecology, Stream Ecology
Lillie L. Sears (68) Molecular Biology

Assistant Professors
Shawn C. Ahmed (102) Telomeres, DNA Change and Germline Immortality
Christina L. Burch (107) Experimental Evolution of Viruses
Gregory P. Cohen (107) Plant Genome Biology, Reorganization, Centromeres
Robert P. Goldstein (96) Generation of Cell Diversity in Development
Corbin D. Jones (21) Evolutionary Genetics and Genomics
Jason D. Lieb (106) Understanding Specificity and Function in Protein-Genome Interactions
Sarah Liljegren (108) Molecular Genetic Analysis of Flower Development
Karin S. Pfennig (22) Ecology, Behavior, and Evolution
Robert D. Podolsky (94) Ecology and Evolution
Jeff Sekelsky (95) Meiotic Recombination, DNA Repair
Maria R. Servidio (24) Evolutionary Theory
Keith Sockman (23) Neuroendocrine Control of Reproductive Flexibility
Todd J. Vision (103) Evolutionary and Computational Genetics

Associated Faculty
Stephen T. Crews (98) Molecular Genetics
Frank L. Conlon (100) Xenopus, Mesoderm, Heart, Thyroid Genes
Brian K. Kay, Molecular Recognition
Wayne W. Lushaker, Molecular Biology
Roger McVaugh, Plant Systematics
Michael A. Resnick, Molecular Genetics
Cary Wineberger, Reproductive and Developmental Toxicology
R. E. Wyatt (99) Ecological Evolution, Plant Reproduction

Professors Emeriti
Edward G. Barry
C. Richie Bell
Aristotle J. Dommas
Nelson G. Hairson
Max H. Hemmersand
William J. Koch
H. Eugene Lehman
Jimmy R. Massey
Elizabeth A. McMahan
Donald W. Misch
Helmut C. Mueller
Clifford R. Parks
Albert E. Radford
Tom K. Scott
Alan E. Stiven

The Department of Biology offers programs of study leading to degrees of master of arts, master of science, and doctor of philosophy in biology. The curricula are designed primarily for students who plan to continue for the doctoral degree. A master's degree may be taken as part of the program...
leading to the PhD, however, a master's degree is not an essential part of doctoral programs. Special departmental rules and guidelines for advanced degrees are available upon request.

**Graduate Programs and Facilities**

The Department of Biology is housed in three modern buildings and is equipped with modern instrumentation for research and research training in the biological disciplines represented by faculty areas for research. These include:

- **Genetics and Molecular Biology**, including (1) biochemistry and molecular biology (with emphasis on development, protein synthesis, enzyme mechanisms and control, and aspects of plant systems); (2) developmental and molecular genetics.

- **Cell Biology, Development, and Physiology**, including (1) cyto- and cell biology (with emphasis on mitotic mechanisms, histochemistry, and ultrastructure); (2) developmental biology (with emphasis on invertebrate endocrinology, experimental morphogenesis, morphogenetic movements, tissue culture, hormones, and plant development); (3) physiology (with emphasis on functional morphology, biomechanics and neuroethology, and developmental and membrane functions in plant systems).

- **Systematic and Evolutionary Biology**, including neontological and paleontological studies of invertebrates, vertebrates, and vascular plants emphasizing morphology, anatomy, paleontology, and systematics.

- **Ecology and Behavior, and Organismal Biology**, including (1) ecology and population biology (life histories, population, community, and ecosystems phenomena in terrestrial, freshwater, and marine ecosystems); (2) behavior (with emphasis on social and mating systems of vertebrates, communication, ecology and ontogeny of behavior, and predator-prey interactions); (3) marine biology (with emphasis on marine ecology and oceanography); (4) comparative physiology, neurobiology, and biomechanics.

Students in marine biology, after completing required course work in the department, have access to the research facilities of the Institute of Marine Sciences, Morehead City, North Carolina. By cooperative arrangements, deep water research can be carried out through the use of the research vessel of the Duke University Marine Laboratory.

Interdepartmental degree programs in genetics, ecology, neurobiology, and marine science offer unusual opportunities for special training through participation of staff from the Department of Biology and many other departments in arts and sciences and health affairs.

The John N. Couch Biology Library has over seventy thousand volumes and receives over twelve hundred serials related to fields of research in the department. The collection includes treatises, monographs, symposia volumes, reprints, and standard and classical works of research and historical importance. The nearby Health Sciences Library contains additional biological references.

A major research asset is the location of the University, which makes the varied flora and fauna of the Appalachian Mountains, Piedmont Plateau, Coastal Plain, and Atlantic Coast all accessible for research and instruction. The department operates a small field station a few miles from the Chapel Hill campus in the Mason Farm Biological Reserve, which includes several hundred acres of upland and floodplain habitats.

The Coker Arboretum and the North Carolina Botanical Garden are of value to students in the study of special problems. The Herbarium, containing more than six hundred thousand specimens, is especially rich in collections of the vascular plants and fungi of the Carolinas and the southeastern United States.

The Highlands Biological Station, administered for the University system by Western Carolina University, is located in the biologically rich mountains at Highlands, North Carolina. Graduate courses offered cover various parts of the mountain biota. Credit may be obtained through UNC-Chapel Hill or Western Carolina University. A limited amount of research support is available on a competitive basis. (See the annual announcement of the Highlands Biological Station.)

The University is a member of the Organization for Tropical Studies (OTS). Financial support is available for students attending OTS courses in tropical ecology in Costa Rica.

Additional information about the graduate program is available at www.bio.unc.edu.

**Fellowships and Assistantships**

Application for admission and graduate appointments, accompanied by credentials and Graduate Record Examination scores, including the Advanced Biology score, should be submitted for receipt no later than December 31.

All outstanding prospective graduate students who apply for admission are automatically considered for University Fellowships.

More than forty-five teaching assistantships are open to graduate students. Duties of assistants include preparation for and supervision of laboratory and recitation sections of undergraduate courses. Duties usually require thirteen to fifteen hours per week including six contact hours in classes and six to nine hours of preparation or other services associated with instruction.

Research assistantships are available. Salaries and duties are variable as determined by the research needs of faculty supervising the work. Applications for these appointments must be made personally to faculty members directing grant-supported research.

The following awards are specifically for graduate students in the biology department.

- The Anna Holland Beers Scholarships are awarded annually to support summer research of students in botany. They are nonstipend awards.
- The William Chambers Coker Fellowship is awarded annually to a student or students in the final years of work toward a doctor of philosophy in a botanical field. This is a nonstipend award that carries with it an additional supplement for tuition and fees.
- The Mrs. W. C. Coker Fellowship is awarded annually to an outstanding first-year graduate student in plant biology. This is also a nonstipend award that carries with it an additional supplement for tuition and fees.
- The H. V. Wilson Marine Scholarship is awarded annually for summer work at a marine laboratory. It is a nonstipend award.

**Courses for Graduates and Advanced Undergraduates**

The stated prerequisites should be interpreted to read "or equivalent" and may be waived by the course instructor for students who are adequately prepared.

**101 STRUCTURE, FUNCTION, AND DEVELOPMENT OF PLANTS** (4).
Prerequisite: BIOL 52 or 53. A modern approach to growth, development, differentiation, and physiological processes in plants. Three lecture and three laboratory hours a week. Spring. Jones.

**104 VERTEBRATE EMBRYOLOGY** (3).
Prerequisite: BIOL 45 or 52. Principles of development including gametogenesis, fertilization, cleavage, germ layer formation, organogenesis, and techniques of experimental analysis of developmental processes. Three lecture hours a week. Spring. Harris.

**104L VERTEBRATE EMBRYOLOGY LABORATORY** (1).
Prerequisite or corequisite: BIOL 104. Descriptive and experimental aspects of vertebrate development. Four to six laboratory hours a week. Spring. Harris.

**105 BIOLOGY OF THE INVERTEBRATES** (4).
Prerequisites: BIOL 11, 111, and one additional course in biology. An introduction to the major invertebrate phyla, emphasizing the morphology, behavior, classification, and ecology of marine invertebrates. Three lecture and three laboratory hours a week. Spring. Lohmann, Podolsky.
108 MICROBIOLOGY (3). Prerequisite, BIOL 50 or consent of instructor. Bacterial form, growth, physiology, genetics, and diversity. Bacterial interactions including symbiosis and pathogenesis (animal and plant). Use of bacteria in biotechnology. Brief introduction to fungi and viruses. Three lecture hours per week. Fall. Matthesy.

108L MICROBIOLOGY LABORATORY (1 or 2). Prerequisite or corequisite, BIOL 108. Sterile technique, bacterial growth and physiology, bacterial genetics, bacteriophage, and bacterial diversity. One or two laboratory hours per week. Fall. Matthesy.

109 BACTERIAL GENETICS (3). Prerequisites: for undergraduates, BIOL 108; for graduate students, a molecular microbiology course. Genetics of eubacteria with emphasis on molecular genetics including regulation of gene expression, transposons, operons, regulons, plasmids, transformations and conjugation. Spring. Matthesy.

110 INVERTEBRATE PALEONTOLOGY (GEOL 132) (4). Prerequisites, GEOL 16 or BIOL 11, or permission of instructor. Study of major invertebrate phyla in the geologic record. Five-credit-hour class includes an internship (once a week) at the North Carolina Museum of Natural History as part of the APPLES service learning program in addition to the laboratory taught on campus. Fall. Carter.

114 AVIAN BIOLOGY (3). Prerequisites, BIOL 11, 11L, and one additional course in biology. A study of avian evolution, biogeography, ecology, and behavior, with emphasis on North Carolina avifauna. Three lecture hours a week. Spring. Feducia, Wiley.

114L AVIAN BIOLOGY LABORATORY (1). Corequisite, BIOL 114. Techniques for the study of avian evolution, ecology, and behavior, with emphasis on North Carolina birds. Three laboratory or field hours a week, including one or two weekend field trips. Spring. Wiley.

115 STRATEGIES OF HOST-MICROBE INTERACTIONS (3). Prerequisites, BIOL 52 and 108, or equivalents. There is great variety in how microbes colonize and live with their hosts. The course will summarize strategies of pathogenicity, symbiosis, commensalism, and mutualism. Evolutionary, cellular, and molecular aspects will be analyzed. Spring. (Alternate years.) Dangl.

120 COMPARATIVE PHYSIOLOGY (3). Prerequisites, BIOL 11, 11L, PHYS 24 and 25. An examination of the physiology of animals using a comparative approach. Both invertebrate and vertebrate animals are discussed in order to elucidate general principles. Spring. Kier.

121 INTRODUCTION TO NEUROBIOLOGY (NBIO 125) (3). Prerequisite, BIOL 50 and 52. Survey of neurobiological principles, including development, morphology, physiology, and molecular mechanisms in invertebrates and vertebrates. Three lecture hours a week. Spring. Bollebachener.

122 HUMAN GENETICS (GNET 122) (3). Prerequisite, BIOL 50. Pedigree analysis, inheritance of complex traits, DNA damage and repair, human genome organization. DNA fingerprinting, the genes of hereditary diseases, chromosomal aberrations, cancer and oncogenes, immunogenetics, and tissue transplants. Three lecture hours a week. Fall. Macagno.

124 INTRODUCTION TO IMMUNOLOGY (3). Prerequisites, BIOL 50, 52, and permission of instructor. This course provides a general overview of the evolution, organization, and function of the immune system. Instruction will be inquiry-based with extensive use of informational and instructional technology tools. Spring. Bollorachendenk, Weintraub.

125 CLINICAL AND COUNSELING ASPECTS OF HUMAN GENETICS (GNET 125) (3). Prerequisites, BIOL 122 and permission of instructor. Topics in clinical genetics including pedigree analysis, counseling/ethical issues, genetic testing, screening, and issues in human research are taught in a small group format. Active student participation is expected. Three lecture hours per week. Spring. Roche.

126 OCEANOGRAPHY (MASC 101) (ENVR 117) (GEOL 101) (3). Prerequisite, major in a natural science or at least two college-level courses in natural sciences. The origin of ocean basins, chemistry and dynamics of seawater, biological communities and processes, the sedimentary record, and the history of oceanography. Term paper. Intended for students with college science background; other students should see Geology 12. Three lecture hours a week. Fall, Neumann. Spring, staff (Marine Sciences).

129 LABORATORY IN CELL BIOLOGY (4). Prerequisites, grade of B- or better in BIOL 52. Modern methods to study cells, technical skills necessary for research in cell and molecular biology, knowledge of good lab practice, operation of technical instrumentation. Three lecture and three laboratory hours per week. Spring. A. Jones.

130 INTRODUCTION TO BIOLOGICAL CHEMISTRY (CHEM 130) (3). Prerequisites, CHEM 62, 62L, BIOL 11. The study of cellular processes including catalysis, metabolism, bioenergetics, and biochemical genetics. The structure and function of biological macromolecules involved in these processes are emphasized. Fall and spring. Biological Chemistry faculty.

131 ENDOCRINOLOGY (3). Prerequisite, BIOL 52 or 62. Principles of neuroendocrine and endocrine systems of vertebrates and selected invertebrates with consideration of the anatomy and physiology of glands of internal secretion. Hormone chemistry and interendoctrine relationships are also emphasized. Three lecture hours a week. Spring. Bollenbachener.

132 EVOLUTIONARY MECHANISMS (3). Prerequisite, BIOL 50 and 54 or permission of the instructor. Introduction to mechanisms of evolutionary change, including natural selection, population genetics, life history evolution, speciation, and micro- and macro-evolutionary trends. Three lecture hours plus two hours of laboratory/recitation per week. Fall. Pfennig, Kingsolver.

133 EVOLUTION AND DEVELOPMENT (3). Prerequisites, BIOL 50, 52, 54. The course examines the mechanisms by which organisms are built and evolve. In particular, it examines how novel and complex traits and organisms arise from interactions among genes and cells. Three lecture hours per week. Fall. Pfennig, Goldstein.

134 BIOLOGY OF BLOOD DISEASES (PATH 134) (3). Prerequisite, BIOL 52 or permission of instructor. An introduction to the biology and pathophysiology of blood and the molecular mechanisms of some human diseases, including malignant neoplasms, anemias, hemorrhagic, thrombocytopenia and viral infections. Fall. Church.

135 MOLECULAR BASIS OF DISEASE (3). Prerequisites, BIOL 50 and BIOL 52. or permission of instructor. This course covers the molecular mechanisms of human diseases, including genetic diseases, infectious diseases, immunodeficiencies, nutritional disorders, cancer, metabolic diseases, cardiovascular diseases, and neurological disorders. Bollenbachener, Weintraub.

140 BIOLOGICAL OCEANOGRAPHY (MASC 104) (ENVR 120) (4). Prerequisite, BIOL 54 or 105 or permission. Physical, chemical, and biological factors characterizing estuarine and marine environments emphasizing factors controlling animal and plant populations including experimental approaches and methods of analysis, sampling, and identification. Five lecture and five laboratory hours a week. Summer. (Alternate years.) (Offered on demand at the Institute of Marine Sciences, Morehead City, NC.) Staff.

142 PLANT ECOLOGY (4). Prerequisite, BIOL 54. Terrestrial, vascular plant ecology including environmental physiology, population dynamics, and community structure. Laboratory stresses collection and interpretation of field data. Three lecture and two laboratory hours a week. Fall. (Alternate years.) Peet.

143 ECOLOGICAL PLANT GEOGRAPHY (GEOG 13) (3). Prerequisite, BIOL 11 or GEOG 38. Major vegetation types of the world, including their distribution, structure, and dynamics. The principle causes for the distribution of plant species and communities, such as climate, soils, and history are also discussed. Fall. (Alternate years.) Peet.
144 DEVELOPMENTAL BIOLOGY (3). Prerequisites, BIOL 50, 52 and CHEM 61. An experimental approach to an understanding of developmental processes and the molecular mechanisms that control cell growth and cell differentiation. Three lecture hours a week. Spring. Bauch, Peifer.

145 STATISTICAL ANALYSIS IN ECOLOGY AND EVOLUTION (ECOL 145) (3). Prerequisites, BIOL 54, STAT 11 or 31. Statistical analysis and modeling of data in ecology and evolutionary biology. Analyses are related directly to specific biological data and experiments, including student projects that involve applying techniques to data. Three lecture hours per week. Fall or spring. Kingsolver, Weiss.

146 MARINE ECOLOGY (MASC 146) (3). Prerequisite, BIOL 54 or 105. A survey of ecological and oceanographic processes structuring marine communities in a broad range of habitats with an emphasis on experimental approaches to addressing both basic and applied problems in marine systems. Three lecture hours a week. Fall. Spring, Bruno.

147 FIELD ECOLOGY (4). Prerequisites, BIOL 54 and one additional course in biology. Applications of ecological theory to terrestrial and/or freshwater systems. Lectures acquaint students with these systems and emphasize quantitative properties of interacting populations and communities within them. The required laboratory teaches techniques and methodology applicable for analysis of these systems. Individual and group projects emphasize experimental testing of ecological theory in the field. Two lecture and two lab hours a week. Spring. (Alternate years.) Reice.

148 MARINE BIOLOGY (MASC 148) (3). Prerequisites, MASC 12 or BIOL 11. A survey of plants and animals that live in the sea; characteristics of marine habitats, organisms, and the ecosystems will be emphasized. Marine environment, the organisms involved, and the ecological systems that sustain them. Fall. Moran.

149 ECOSYSTEM STRUCTURE AND FUNCTION (3). Prerequisite, BIOL 54 or a course in limnology or geochemistry. Pattern and process in natural ecosystems, with stress on comparative approaches to ecosystem analysis. Topics include primary and secondary productivity, nutrient cycling, and the biogeochemistry of aquatic and terrestrial ecosystems. Three lecture hours a week. (On occasion.) Staff.

149L ECOSYSTEM STRUCTURE AND FUNCTION LABORATORY (1). Corequisite, BIOL 149 and permission of the instructor. Use of data to generate empirical models of ecosystem patterns or processes. Individual research projects. Three laboratory hours a week. Fall or spring. (On occasion.) Staff.

150 ANIMAL SOCIETIES AND COMMUNICATION (3). Prerequisite or corequisite, BIOL 73. Comparative review of animal societies; diversity of social structure, social dynamics, communication, ecology, and evolution of social organization. Three lecture hours a week. Spring. (Alternate years.) Wiley.

151 BEHAVIORAL ECOLOGY (3). Prerequisite, BIOL 54 or 73. Behavior as an adaptation to the environment. Evolution of behavioral strategies for survival and reproduction. Optimality, competition, and "games that animals play." Three lecture hours a week. Spring. (Alternate years.) P. Demetriou.

152 PLANT ANATOMY (5). Prerequisite, BIOL 51. Introduction to the development and comparative anatomy of vascular plants. Practice in methods of anatomical microscopy. Three lecture and four laboratory hours a week. Fall. (On occasion.) Staff.

153 COMPARATIVE MORPHOLOGY OF VASCULAR PLANTS (5). Prerequisite, BIOL 51. Comparative morphology and evolutionary relationships of the Tracheophyta. Both living and fossil forms are considered. Three lecture and four laboratory hours a week. Spring. (Alternate years.) Bertaud.

154 BEHAVIORAL NEUROSCIENCE (3). Prerequisite, BIOL 52 or permission of the instructor. The neurobiological basis of animal behavior at the level of cells, neural circuits, sensory systems, and organisms. Lecture topics range from principles of cellular neurobiology to ethological field studies. Spring. (Alternate years.) Loehmann.

155 COMPARATIVE BIOMECHANICS (3). Prerequisites, BIOL 11, 11L, PHYS 24 and 25. The structure and function of organisms in relation to the principles of fluid mechanics and solid mechanics. Fall. (Alternate years.) Kier.

156 EVOLUTIONARY ECOLOGY (3). Prerequisite, BIOL 132 or permission of instructor. Advanced topics in the evolution of form and function. May include issues in life-history evolution, evolutionary physiology, evolutionary morphology, and the evolution of complexity. Three lecture hours per week. Spring. (Alternate years.) Podolsky.

157 PROBLEMS IN VERTEBRATE EVOLUTION (GEOL 157) (3). Prerequisite, BIOL 63 or permission of instructor. A study of the major transitions in vertebrate evolution and associated problems in evolutionary biology, structural change, paleontology, biogeography and earth history, physiology, and behavior. Three lecture hours a week. (On occasion or.) Fuducia.

158 EVOLUTIONARY GENETICS (3). Prerequisites, BIOL 50 and 54 or permission of instructor. The roles of mutation, migration, genetic drift, and natural selection in the evolution of the genotype and phenotype. Basic principles are applied to special interest topics. Three lecture hours a week. Fall. (Alternate years.) Burch, Vision.

159 MOLECULAR POPULATION BIOLOGY (MASC 147) (4). Prerequisites, BIOL 132 and permission of instructor. Hands-on training, experience, and discussion of the application of molecular genetic tools to questions of ecology, evolution, systematics, and conservation. Lab/recitation/fieldwork is included and contributes three credit hours to the course. Marko.

160 DEVELOPMENTAL GENETICS (GNET 160) (3). Prerequisites, BIOL 50, 52, and permission of the instructor required of undergraduates. Genetic and molecular control of plant and animal development. Extensive reading from primary literature. Fall. Bauch, Reed.

161 PRINCIPLES OF GENETIC ANALYSIS 1 (GNET 112) (4). Prerequisite for undergraduates, BIOL 50; for graduate students, an undergraduate genetics course or permission of instructor. Genetic principles of genetic analysis in prokaryotes and lower eukaryotes. Fall. Peters, Pringle.

162 COMPUTATIONAL GENETICS (4). Prerequisites, BIOL 50, COMP 14, STAT 31. A study of the concepts underlying the bioinformatic tools used in genet- ics. Topics include alignment, gene finding, expression analysis, mapping, phylogenetics, and measuring sequence divergence and polymorphism. Three lecture and two laboratory hours per week. Fall. Vision.

163 LABORATORY EXPERIMENTS IN GENETICS (4). Prerequisite, BIOL 50. Experiments using a range of organisms from bacteria to Drosophila, higher plants, and man to simple organismal and molecular genetics. One lecture hour and four laboratory hours a week. Spring. Grant.

164 MOLECULAR BIOLOGY (3). Prerequisites or corequisites, CHEM 61 and BIOL 50. Emphasis is on prokaryotic molecular biology, plasmids, l-phase, and single-strand phages. Three lecture hours a week. Fall. spring. Searles, Stafford.

165 INTRODUCTION TO SIGNAL TRANSDUCTION (3). Prerequisites, BIOL 11, 50, 52. This course presents an introduction to signal transduction pathways used by higher eukaryotes. Several signaling paradigms will be discussed to illustrate the ways that cells transmit information. Three lecture hours per week. Fall. Kieber.

166 UNSOLVED PROBLEMS IN CELLULAR BIOLOGY (3). Prerequisite, BIOL 52. A survey of areas of current interest in cytology, embryology, and genetics with concentration on problems that remain unsolved but appear to be near solution. Three lecture and discussion hours a week. Fall. Harris.

167 ADVANCED CELL BIOLOGY (3). Prerequisite, BIOL 52. An advanced course in cell biology with emphasis on the biochemistry and molecular biology of cell structure and function. Three lecture hours a week. Fall. Kieber.


169 CANCER BIOLOGY (3). Prerequisites, BIOL 50, 52. Selected examples will be used to illustrate how basic research allows us to understand the mechanic
basis of cancer and how these insights offer hope for new treatments. Three lecture hours per week. Spring. Duronio, Peifer.

170 MATHEMATICAL AND COMPUTATIONAL MODELS IN BIOLOGY (MATH 107) (4). Prerequisites, BIOL 50, 54, MATH 31, MATH 32 (or STAT 11). Introduction to analytical, computational, and statistical techniques, such as discrete models, numerical simulation of ordinary differential equations, and likelihood functions, to explore topics from various fields of biology. Three lecture hours and one recitation hour per week. Fall. Servvidio, Elston.

171 MOLECULAR BIOLOGY TECHNIQUES (4). Prerequisite, permission of instructor; BIOL 164 recommended. Experiments with bacterial plasmids, nucleic acid isolation and properties, recombinant DNA techniques and DNA sequencing. Additional hours in laboratory are necessary to complete assignments. Fall. Stafford.

175 SPECIAL TOPICS (3). Prerequisite, permission of the instructor. Content will vary. Three lecture and discussion hours a week by visiting or resident faculty. Fall, spring. Staff.

177 CURRENT TOPICS IN CELL DIVISION (3). Prerequisite, BIOL 52. An advanced course in cell and molecular biology integrating genetic, biochemical, and structural aspects of the cell cycle. Principles derived from a variety of biological systems. Extensive reading of classic papers as well as recent literature. Spring. Bloom, Salmon.

178 ADVANCED MOLECULAR BIOLOGY I (BIOL 110) (GNET 110) (MCRO 109) (PHCO 130) (3). Prerequisites, at least one undergraduate course in biochemistry and genetics. DNA structure, function, and interactions in prokaryotic and eukaryotic systems, including chromosome structure, replication, recombination, and repair and genome fluidity. Undergraduate students should obtain permission of the instructor before registering. Three lecture hours per week. Fall. Griffith, Ramsden, Saiac.

179 ADVANCED MOLECULAR BIOLOGY II (BIOL 111) (GNET 111) (MCRO 109) (PHCO 137) (3). Prerequisites, at least one undergraduate course in both biochemistry and genetics. RNA structure, function, and processing in biological systems including transcription, gene regulation, translation, and oncogenes. Three lecture hours per week. Spring. Baldwin, Marzulli, Straub.

181 PALEOBOTANY (GEOL 197) (4). Prerequisites, BIOL 11-11L and permission of the instructor. An introduction to the morphology, stratigraphic occurrence, and evolutionary relationships of fossil plants. Both macrofossils and microfossils are considered. Three lecture and three laboratory hours a week. Fall. (Alternate years.) Gensel.

184 CONSERVATION BIOLOGY (3). Prerequisite, BIOL 54. The application of biological science to the conservation of populations, communities, and ecosystems, including rare species management, exotic species invasions, management of natural disturbance, research strategies, and preserve design principles. Three lecture hours a week. (On occasion.) White.

186 COMMUNITY AND SYSTEMS ECOLOGY (3). Prerequisite, BIOL 54. A holistic approach to ecology. State-space modeling of ecological processes. Other topics vary but may include spatial and temporal heterogeneity in communities and ecosystems; disturbance theory; decomposition; community structure and function; and freshwater ecology. Spring. (Alternate years.) Reice.

186L COMMUNITY AND SYSTEMS ECOLOGY LABORATORY (1). Prerequisite or corequisite, BIOL 186. Community and/or ecosystem modeling and computer simulation. Experimental analyses and validation in the field. Individual and group projects. Three laboratory and field hours a week. Spring. (Alternate years.) Reice.

188 LIGHT MICROSCOPY FOR THE BIOLOGICAL SCIENCES (3). Prerequisites, BIOL 52 and permission of instructor. Introduction to various types of light microscopy, digital and video imaging techniques and their application in biological sciences. Spring. Salmon.

190 FRONTIERS IN CELL AND MOLECULAR BIOLOGY (4). Prerequisites, two courses in biology and permission of the instructor. Does not count toward a major in biology. Fall. (Available by correspondence.)

195 FIELD BIOLOGY AT HIGHLANDS BIOLOGICAL STATION (1-4). Prerequisite, BIOL 11 or equivalent or permission of the instructor. Content varies. Summer field biology at the Highlands Biological Station focuses generally on the special faunal and floristic processes and patterns characteristic of the southern Appalachian mountain region. Field and laboratory hours vary depending on the credit. Summer. Staff.

With approval of the instructor and The Graduate School, biology majors who need fewer than fifteen hours to complete the bachelor's degree and who have at least a B average in biology courses may take one or two courses at the 200 level for the purpose of later receiving graduate credit.

Courses for Graduates

225 EXPERIMENTAL NEUROPHYSIOLOGY (NBIO 225) (3). Prerequisite, permission of the instructor. Six or more laboratory hours a week. (On occasion.) Staff (Neurobiology).

247 FIELD PLANT GEOGRAPHY (2). Prerequisites, BIOL 142 or 143 and permission of instructor. Intensive literature and field study of the plant geography and ecology of a selected region. Weekly seminar-style discussions followed by approximately nine days' field experience. May be repeated for credit. Spring. (Alternate years.) Peet.

250 SPECIAL SEMINAR (2). Prerequisite, permission of the instructor. Consideration of special topics in biology. May be repeated for credit. Fall or spring (as occasion demands). Staff.

251 GRADUATE SEMINAR IN BIOLOGY (2). Prerequisite, graduate standing or permission of instructor. A course to provide public lecture experience to advanced biology students. Students present individual research seminars based upon their dissertation projects. Lectures are critiqued by fellow students and biology faculty. Required of all candidates for the degree in biology. Fall and spring. Staff.

252 SEMINAR IN INSECT PHYSIOLOGY, BIOCHEMISTRY, AND ENDOCRINOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Current topics and discussion in insect physiology, biochemistry, and endocrinology. Fall and spring. Bollenbacher, Gilbert.

253 SEMINAR IN EMBRYOLOGY (2). Prerequisite, BIOL 52 or permission of the instructor. May be repeated for credit. Fall or spring. Baurch, Harris.

254 SEMINAR IN CELL BIOLOGY (2). Prerequisite, BIOL 52 or permission of the instructor. May be repeated for credit. Fall or spring. Bloom, Goldstein, Harris, Salmon.

255 SEMINAR IN ECOLOGY (ECOL 255) (2). Prerequisite, BIOL 54 or permission of the instructor. May be repeated for credit. Fall and spring. Bruno, Peet, Reice, White.

256 SEMINAR IN INVERTEBRATE ZOOLOGY (2). Prerequisite, BIOL 105 or permission of the instructor. May be repeated for credit. Fall or spring. Kiet, Lohmann, Podolsky.

257 SEMINAR IN VERTEBRATE EVOLUTIONARY BIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Fidducea.

258 SEMINAR IN EVOLUTIONARY BIOLOGY (2). Prerequisite, BIOL 132 or permission of instructor. Advanced topics in evolutionary biology. Fall and spring. Burch, Kingsolver, D. Pfennig, Podolsky, Serviedo, Willens, Vision.

259 SEMINAR IN COMPARETIVE ANIMAL BEHAVIOR (NBIO 259) (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Lohmann, Wiley.
260 SEMINAR IN COMPARATIVE PHYSIOLOGY (NBIO 260) (2).
Prerequisite, BIOL 120 or permission of the instructor. Fall or spring. Lohmann.

264 SEMINAR IN MOLECULAR BIOLOGY (2). Prerequisite, BIOL 50 or permission of the instructor. May be repeated for credit. Fall or spring. Bauch, Bloom, Stafford.

265 SEMINAR IN MARINE BIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Kier, Podolsky.

266 SEMINAR IN NEUROPHYSIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Kier, Lohmann, staff of Neurobiology Curriculum.

268 SEMINAR IN CELL BIOLOGY AND BIOCHEMISTRY (2). Prerequisite, permission of the instructor or research director. Fall and spring. Gilbert.

269 SEMINAR IN PLANT SYSTEMATICS (2). Prerequisite, permission of instructor or research director. Fall and spring. Gesel, Parks.

270 SEMINAR IN GENETICS (GENET 270) (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall and spring. Bauch, Maroni, Peres, Peifer, Puklilka, Searles, Selkly. (2).

271 SEMINAR IN PLANT MORPHOLOGY AND ANATOMY (2). Prerequisite, permission of research director. Fall and spring. Gesel.

272 SEMINAR IN PLANT MOLECULAR AND CELL BIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Current and significant problems in plant molecular and cell biology are discussed in a seminar format. Fall or spring. Dangl, A. Jones, Kieber, Liljegren.

275 GENETICS SYSTEMS (GENET 275) (MICRO 275) (BIOL 275) (1). A course to provide public lecture experience to advanced genetics students. Students present personal research seminars based on their individual dissertation projects. Lectures are privately critiqued by fellow students and genetics faculty. Required of all candidates for the degree in genetics. Fall and spring. Genetics faculty.

282 PALYNOLOGY (5). Prerequisite, consent of the instructor. A consideration of various aspects of palynology, including the morphology, structure, development, systematics, evolution, preparation techniques, and analysis of fossil pollen grains, spores, and other palynomorphs. Two lecture and six laboratory hours a week. Fall or spring. (Alternate years) Gesel.

290 SEMINAR IN NEUROBIOLOGY (BIOL 290) (NBIO 290) (PATH 290) (PHCO 290) (PHY 290) (3). Prerequisite, permission of the director of the Neurobiology Curriculum. An intensive consideration of selected topics and problems in neurobiology. The course focuses on the development of presentation and evaluation skills of the trainees. Six credit hours required for neurobiology graduates. Spring. Faculty of the Neurobiology Curriculum.

299 INTRODUCTION TO GRADUATE RESEARCH (Var). Graduate research for six weeks in two laboratories. Designed primarily to acquaint first-year students with research techniques and to assess their propensity for research. Arranged by mutual agreement of students and faculty members during fall orientation. May be repeated once for credit. Six to nine hours per week: Fall and spring. Staff.

Courses numbered 300 and above are designed for applicants for advanced degrees. Each course requires permission of the instructor or research director. Each may be repeated for two or more semesters for credit.

300 RESEARCH IN CYTOLOGY AND CELL BIOLOGY (2 or more). Bollenbacher, Conlon, Gilbert, Goldstein, Harris, Liljegren, Salmon.

301 RESEARCH IN ECOLOGY (2 or more). Kingsolver, Peston, Peterson, Reice, Stiven, White, Wiley.

302 RESEARCH IN NEUROBIOLOGY (NBIO 310) (BIOL 310) (PATH 310) (PHCO 310) (PHY 310) (2 or more). Bollenbacher, Gilbert, Wiley, and faculty of the Neurobiology Curriculum.

303 RESEARCH IN ETHOLOGY AND ANIMAL BEHAVIOR (2 or more). Kier, Lohmann, Wiley.

304 RESEARCH IN EMBRYOLOGY (2 or more). Bautch, Gilbert, Harris, Peifer.


306 RESEARCH IN MARINE SCIENCES (MASC 300) (2 or more). Kier, Lohmann, Peterson, Podolsky.

307 RESEARCH IN MARINE SCIENCES ON MOLLUSCA, CRUSTACEA, ECHINODERMATOLOGY, OR OCEANOGRAPHY (at the Institute for Marine Science, Morehead City) (2 or more). Approval by the Department of Biology required. Chestnut, Faby, Peterson, Schwartz.

308 RESEARCH IN MOLECULAR BIOLOGY (2 or more). Bloom, Bautch, Duronio, Gilbert, Searles, Stafford.

309 RESEARCH IN PHYSIOLOGY: CELLULAR, COMPARATIVE, NEUROPHYSIOLOGY (2 or more). Bollenbacher, Gilbert, Kier, Lohmann, Salmon.

310 RESEARCH IN VERTEBRATE OR INVERTEBRATE ZOOLOGY (2 or more). Feduccia, Kier, Lohmann, Podolsky.

314 RESEARCH IN PLANT MOLECULAR BIOLOGY (2 or more). Fall and spring. Copenhaver, Dangl, A. Jones, Kieber, Liljegren, Reed.

316 RESEARCH IN PLANT SYSTEMATICS (2 or more). Fall and spring. Parks, Staff.

317 RESEARCH IN PLANT MORPHOLOGY AND ANATOMY (2 or more). Fall and spring. Gesel.

318 RESEARCH IN PALEOBOTANY (2 or more). Fall and spring. Gesel.

Special Graduate Registration

393 MASTER'S THESIS IN BIOLOGY (3 or more). Fall and spring. Staff.

394 DOCTORAL DISSERTATION IN BIOLOGY (3 or more). Fall and spring. Staff.

DEPARTMENT OF BIOMEDICAL ENGINEERING

H. TROY NAGLE, Founding Chair, (38) Medical Devices, Microsensor

Faculty at the University of North Carolina at Chapel Hill

Professors
* Henry S. Huiao (3) Medical Instrumentation, Interfacing Microprocessors to Physiological Transducers, Telemedicine
* Carol L. Lucas (24) Digital Signal Processing, Mathematical Modeling and Simulation, Pulmonary Circulation in Newborns and Infants
* Terry Magnuson, Genetics
* Emma Pisanio (53) Medical Imaging, Breast Cancer Research
* Barry Whistler (52) Computation by Neural Networks, Somatosensory Nervous System, Cerebral Cortex

Adjunct Professors
* Albert Banes (49) Tissue Engineering
* Wayne E. Casio, Cardiac Electrophysiology
* Edward Chaney (58) Image Acquisition Processing and Analysis for Radio Therapy Treatment Planning
* Henri Fuchs (11) Virtual Reality
* William Hammod, Medical Informatics
* Anthony Hickey (42) Pulmonary Drug Delivery, Aerosol Formulations
* Stephen M. Pizer (23) Medical Image Processing, Three-Dimensional Display Techniques
* Lola M. Reid, Tissue Engineering
Julian Rosenman, 3D Medical Imaging in Reconstruction
Alexander Troppa (47) Computer Assisted Drug Delivery
Benjamin M. W. Tsui (34) Medical Imaging Especially in the Areas of Single-Photon Emission Computed Tomography (SPECT) and Magnetic Resonance Imaging (MRI)
Sean Washburn, Experimental Condensed Matter and Low Temperature Physics
Barbara M. Wildermuth, Adoption and Use of Information Technologies, Information-Seeking Behavior and Information Use, Design and Evaluation of Information Systems

**Associate Professors**
*Timothy A. Johnson (46) Cardiac Electrophysiology, Biomedical Instrumentation, Biosensors and Control Theory
Stephen Kinsley (51) Cardiac Electrophysiology and Biosensors
Weli Lin (56) Function Magnetic Resonance Imaging, Cerebrovascular Disease

**Adjunct Associate Professors**
Steven M. Downs, Decision Analysis and Its Applications in Clinical Guidelines
Development and Computer-Based Medical Decision Support Systems
Marija Ivanovic, MRI Imaging

*Jeff Thompson (55) Dental Materials, Fracture Mechanics, Atomic Force Microscopy
Bradley Vaughn, Epilepsy, Sleep Disorders
Bing Yu (50) Biomechanics, Rehabilitation, Movement Analysis

**Research Associate Professors**
*Oleg Favors (31) Somatosensory Cortical Dynamics
Stephen R. Quack (29) Signal Processing, Systems Analysis, Optimal Ventilation of Neurenes
Mark Tommerdahl (48) Somatosensory Cortical Dynamics and Neurocomputation in Living Neural Networks, Methods for Acquisition and Analysis of Neurophysiology

**Adjunct Research Associate Professors**
Charles C. Finley (44) Cochlear Implants
Harvey A. Zar, Birobotics

**Assistant Professors**
Michael Giddings (32) Bioinformatics
Sarang Joshi (36) Medical Image Processing, Radiation Treatment Planning
Jeffrey MacDonald (30) Tissue Engineering, Bioartificial Liver

**Adjunct Assistant Professor**
Timothy Crowder, Aerosol Drug Delivery

**Research Assistant Professor**
*Richard Goldberg (5) Developing Devices for the Disabled

**Adjunct Research Assistant Professors**
David Fenstermacher (43) Bioinformatics
Paul Weinhold, (59) Orthopaedics, Biomechanics and Biomaterials

**Professors Emeriti**
N. A. Coulter Jr.
Richard N. Johnson
Lloyd R. Yonce

**Faculty at North Carolina State University**

**Core Faculty**
C. Frank Abrains, Biomechanics
Susan Blanchard, Digital Systems and Signal Processing, Biosystems Analysis
Stuart Cooper, Biomechanics and Tissue Engineering
David Lallush, Digital Systems and Signal Processing, Instrumentation, Telemmedicine, Microelectronics, Medical Imaging, Biomedical Informatics
Elizabeth Loboa, Biomechanics and Tissue Engineering
Marian McCorrd, Biomaterials and Tissue Engineering
Peter Mente, Biomechanics, Cellular Response to Loading, Properties of Biological Tissues
H. Troy Nagle, Digital Systems and Signal Processing, Instrumentation, Telemedicine, Microelectronics, Biosystems Analysis

**Adjunct Faculty**
Lianne Carter, Cochlear Implants
Bruce Oberhardt, Biosensors, Biofluids, Biomaterials, Blood Analysis, Instrumentation, Medical Devices, Medical Diagnostics

**Associate Faculty**
Nina Allen, Cellular and Molecular Imaging
Donald L. Bitter, Application of Information Theory to Genomics
Mohamed Bourhan, Plasma and Fusion Engineering, X-ray Imaging
Gregory D. Buckner, Biomechanics, Instrumentation
John Cavanaugh, NMR Spectroscopy, Protein Structures and Protein: Protein/DNA/Metal Recognition and Interactions
Mo-Yuen Chow, Intelligent Systems, Bioengineering
Edward Grant, Robotics and Intelligent Machines
Mansoor A. Haider, Biomechanics
S. Andrew Hale, Biosensors, Instrumentation
Ola L. A. Harrysson, Biomodeling, Gastrointestinal Design and Fabrication
Clement Kleinreuter, Computational Biofluid-Mechanics and Bio-System Design
Hamid Krim, Digital Systems and Signal Processing, Medical Imaging
Gianluca Lazzi, Instrumentation, Electromagnetic Radiation
Sharon R. Lubkin, Biofluids and Biomechanical Tissue Modeling
Gary A. Mirka, Biodynamics, Musculoskeletal Mechanics, Ergonomics
Nancy A. Monteiro-Riviere, Tissue Engineering, Toxicology
John F. Muth, Microelectronics, Biosensors, Photodetectors
Metse S. Oluise, Biofluids, Biomechanics
Hao He Ozturk, Digital Systems and Signal Processing, Medical Imaging
Behnam Pourdeyhimi, Polymer Science, Tissue Engineering
Afnan Rabiei, Biomaterials
Sarah Rajala, Digital Systems and Signal Processing, Medical Imaging
M.K. Ramachandran, Biomechatronics, Biomechanics, Tissue Engineering, Biomaterials

Simon C. Roe, Bionics and Biomechanics
Stefan Seelecke, Thermodynamics
Charles E. Smith, Neurophysiology
Wesley Snyder, Digital Systems and Signal Processing, Medical Imaging
Larry F. Stukehatter, Biomechanics, Whole-body Vibration
Michael K. Stozkopf, Biosenses, Imaging and Physiology
Donald E. Thrall, Radiology, Oncology
Alan E. Tonelli, Biomaterials and Tissue Engineering
Mladen A. Vouk, Application of Information Theory to Genomics, Automation of Biomedical and Bioinformatics Workflows

*basic teaching faculty*

Biomedical engineering is a field stressing the application of engineering techniques and mathematical analysis to biomedical problems. The department offers graduate education in biomedical engineering leading to the master of science and doctor of philosophy degrees. Students enter this program with backgrounds in engineering, physical science, mathematics, or biological science. Curricula are tailored to fit the needs and develop the potential of individual students. In addition, courses in biostatistics, computer science, physiology, mathematics, and engineering provide a well-rounded background of knowledge and skills. This program is jointly offered by faculties at both UNC-Chapel Hill and North Carolina State University and is fortunate in its close association with associated faculty in the School of Medicine (UNC-Chapel Hill) and...
engineering (North Carolina State). The joint Department of Biomedical Engineering also has close working relations with the Research Triangle Institute and industry within the Research Triangle area. These associations enable students to obtain research training in a wide variety of fields and facilitate the selection and performance of dissertation research. The department thus provides students with excellent opportunities to realize the goal of enhancing medical care through the application of modern technology.

Admission Requirements

In general, students must satisfy all entrance requirements for the Graduate School of the University of North Carolina at Chapel Hill and North Carolina State University and must demonstrate interest and capability commensurate with the quality of the biomedical engineering program. The department requires that a one-to-three-page personal statement about research interest and background be submitted.

Students should have a good working knowledge of mathematics at least through differential equations, plus two years of physical or engineering science and basic courses in biological science. Deficiencies in preparation can be made up in the first year of graduate training.

Requirements for Degrees

Candidates for the UNC-Chapel Hill/NC State jointly issued degrees in biomedical engineering must have met the general requirements of the Graduate Schools of the University of North Carolina at Chapel Hill and North Carolina State University. Degree candidates in this program are expected to obtain experience working in a research laboratory during their residence and to demonstrate proficiency in both teaching and research. The PhD dissertation should be judged by the graduate committee to be of publishable quality.

UNC-Chapel Hill Biomedical Engineering Courses

Courses for Graduates and Advanced Undergraduates

Core curriculum courses

110 INTRODUCTION TO BIOMEDICAL ENGINEERING (1). Seminar introducing students to biomedical engineering research, including literature search, faculty presentation of ongoing research, and student discussion of research papers. Fall. Staff.

102 BIOMECHANICS (3). Prerequisites, PHYS 26, MATH 83, and permission of the instructor. Fundamental principles of solid and fluid mechanics applied to biological systems. Human gait analysis, joint replacement, testing techniques for biological structures and viscoelastic models are presented. Papers from the current biomechanics literature are discussed. Fall. Weinhold.


107 ANALOG AND DIGITAL COMMUNICATION SYSTEMS (APPL 102) (4). Prerequisites, PHYS 101 and permission of the instructor. Modulation and demodulation of signals using AM, FM, and PM. Practical applications are studied. Goldberg.

110 SURVEY OF ENGINEERING MATH APPLICATIONS (APPL 110) (3). Computational laboratory that surveys engineering math with emphasis on differential equations, and Laplace and Fourier analysis. Application in biomedical engineering emphasized through problem set computation using Matlab. Fall. Finley.

111 BIOMEDICAL INSTRUMENTATION I (APPL 111) (4). Prerequisite, PHYS 101. Topics include basic electronic circuit design, analysis of medical instrumentation circuits, physiologic transducers (pressure, flow, bioelectric, temperature, and displacement). This course includes a laboratory in which the student builds biomedical devices. Spring. Hsu.

112 BIOMATERIALS (3). Chemical, physical, engineering, and biocompatibility aspects of materials, devices, or systems for implantation or in interfacing with the body, cells, or tissues. Food and Drug Administration and legal aspects. Fall. Thompson.

120 REAL-TIME COMPUTER APPLICATIONS I (APPL 119) (3). Prerequisite, COMP 14. Introduction to digital computers for on-line, real-time processing and control of signals and systems. Programming analog and digital input and output devices using C and assembly language is stressed. Case studies are used as vehicles to present software design strategies for real-time laboratory systems. Fall. Lahush, Quint.

121 DIGITAL SIGNAL PROCESSING I (APPL 103) (3). Prerequisite, COMP 14 or equivalent. This is an introduction to methods of analysis of special relevance to biomedical problems. Sampling theory, analog-to-digital conversion, and digital filtering are explored in depth. Spring. Lucas.

128 ANALYSIS AND SYNTHESIS OF DIGITAL SYSTEMS (APPL 104) (4). Prerequisites, PHYS 101 and 102. Application of Boolean algebra to the analysis and synthesis of switching circuits; synchronous and asynchronous machines; programmed logic arrays, and fault tolerant design. Includes two hours of laboratory per week. Fall. Quint.

132 LINEAR CONTROL THEORY (APPL 105) (4). Prerequisite, MATH 128 or equivalent. Linear control system analysis and design are presented. Frequency and time domain characteristics and stability are studied. These techniques are applied in an included laboratory. Fall. Johnson.

141 MEDICAL IMAGING I (3). Prerequisites, MATH 34, PHYS 28. Basic physics of X-ray, gamma radiation, nuclear magnetic resonance, and ultrasound are applied to medical imaging problems. Digital electronics, radiation interaction and detection, image analysis, and counting statistics are treated. Fall. Lin.

142 MEDICAL IMAGING II (3). Prerequisite, BMME 141. Modern medical diagnostic imaging techniques and instrumentation are studied, including classical and digital radiography, computed tomography, nuclear medicine, magnetic resonance, and ultrasound. Includes discussion of clinical utility. (On demand.) Staff.

151 FROM GENES TO TISSUES: MOLECULAR BIOLOGY AND GENETICS FOR BIOMEDICAL ENGINEERS (4). Prerequisites, undergraduate organic chemistry (or biochemistry) and undergraduate biology (or with permission of instructor). An introduction to molecular, cell, and tissue biology for BME students covering molecular genetics, gene expression, self-assembly mechanisms, metabolism, bioenergetics, cell organelles, regulation of growth and differentiation, and signaling. Fall. Macdonald, Reid.

153 BIOMATHMATICAL MODELING I (3). Prerequisites, engineering-level mathematics, e.g., MATH 83, 128. Various approaches to mathematical modeling of biological systems will be considered. The major focus at the cellular level will be expanded to include examples in organs, organisms, and populations. Fall. Lucas.

154 MICROELECTRODE TECHNIQUES (4). Prerequisites, PHYS 101 and BIOL 11 or equivalent. Methods for measurement of cellular transmembrane voltages with microelectrodes are introduced. Basic and technical aspects of the measurements are described. Students fabricate microelectrodes and measure action potentials in living cells. Spring. Kastley.

160 FUNDAMENTALS OF MATERIALS ENGINEERING (3). The structure, defects, thermodynamics, kinetics, and properties (mechanical, electrical, thermal, and magnetic) of matter (metals, ceramics, polymers, and composites) are considered. Spring. Thompson.

181 SYSTEMS PHYSIOLOGY FOR BIOMEDICAL ENGINEERS (5). Prerequisites, six hours of undergraduate biology or chemistry and permission of instructor. A graduate-level introduction to systems and organ physiology. Topics covered will include membrane structure and physiology, muscle physiology, central nervous system, cardiac electrophysiology, and endocrinology. Fall. Tommerdahl.
Courses for Graduate Students

201 BIOMEDICAL INSTRUMENTATION II (3). Prerequisite, BMME 111 or permission of the instructor. The fundamentals of interfacing microprocessor and microcomputers with physiological transducers. Practical circuit design problems are presented with biomedical applications. This course includes a laboratory and individual student projects. Fall. Hsiao.

212 ADVANCED BIOMATERIALS (3). Prerequisite, BMME 112 or permission of the instructor. Medical or dental implants or explants are highlighted from textbooks, scientific literature, and personal accounts. Spring. Weinhold, Thompson.

220 REAL-TIME COMPUTER APPLICATIONS II (3). Prerequisites, BMME 120, 111. Problems of interfacing computers with biomedical and systems are studied. Students collaborate to develop new biomedical instruments. Projects have included process control, data acquisition, disk systems interfaces, and DMW interfaces between interconnected computers. Spring. Staff.

222 HEMODYNAMICS (3). Prerequisites, BMME 102 and PHY 140 or equivalents. The dynamics of blood flow in blood vessels is studied from the standpoint of modern continuum mechanics. Mathematical models of cardiac action and cardiovascular regulation are included. Fall. (On demand.) Lucas.

223 DIGITAL SIGNAL PROCESSING II (3). Prerequisites, BMME 121, MATH 128, and BMME 132 or equivalent. Advanced techniques for analyzing biomedical systems and signals are presented, including signal characterization, pattern recognition, and parameter estimation. Examples from biomedical literature are studied. Spring. Quint.

230 NUMERICAL METHODS FOR BIOMEDICAL ENGINEERING (3). Prerequisites, MATH 83, BMME 120, or experience in Car Fortran programming. Emphasis on numerical methods for solving inverse problems relevant to biomedical engineering. Matrix inversion, singular value decomposition, and parameter estimation are covered with an emphasis on application of the methods. Fall. (Alternate years.) Staff.

231 SPECIAL TOPICS (Hours to be arranged.) Prerequisite, permission of the instructor. Special library and/or laboratory work on an individual basis on specific problems in biomedical engineering and biomedical mathematics. Direction of student is on a tutorial basis and subject matter is selected on the basis of individual needs and interests. Fall and spring. Staff.

232 DIGITAL CONTROL THEORY (3). Prerequisite, BMME 132 or equivalent. Discrete time systems performance and stability are represented in the time and frequency domains. Series compensation and state variable design techniques are studied. Student projects include discrete time control designs, simulations, and implementation using laboratory devices. Fall. (On demand.) Quint.

233 BIOMATHEMATICAL MODELING (3). Prerequisite, MATH 124, 128, or equivalent. Mathematical modeling and computer simulation of physiological and other biomedical systems, with emphasis on application of ordinary and partial differential equations. Analytical and digital solution techniques are considered. Fall. (Even years.) Lucas.

235 FINE ELEMENT ANALYSIS (3). Prerequisites, BMME 102 or equivalent and permission of the instructor. The underlying principles associated with the finite element method are presented along with applications. Topics to be included are the development of the stiffness matrix, node numbering schemes, potential energy and the Rayleigh-Ritz method, and element selection. Fall. (Odd years.) Weinhold.

251 PHYSIOLOGY AND METHODS IN GENOMICS (5). Prerequisites, BMME 151 or undergraduate organic chemistry or biochemistry and undergraduate biology or with permission of instructor. Lectures in physiology systems and lab techniques covering various functional genomic methods including DNA sequencing, gene arrays, proteomics, confocal microscopy, and imaging modalities.

252 DIGITAL NUCLEAR IMAGING (3). Prerequisites, BMME 141, 142. Advanced topics of physics and instrumentation in nuclear imaging and magnetic resonance techniques. Fall. (Alternate years.)

253 ADVANCED MEDICAL IMAGE PROCESSING (3). Prerequisites, BMME 141, 142. Theory and digital implementation of image processing and reconstruction techniques applied in medical imaging are discussed. Specific topics include filtering, edge detection, and image reconstruction algorithms. Spring. (Alternate years.)

256 HIGH RESOLUTION X-RAY AND NUCLEAR IMAGING (3). Prerequisites, BMME 141 and 142. Covers design and application of high-resolution x-ray, PET, and SPECT imaging devices for animal imaging. Includes a laboratory portion providing hands-on experience in development and use of these systems. Fall.

260 BIOMATERIALS INSTRUMENTATION (3). Prerequisite, BMME 160 or permission of the instructor. Within a laboratory environment the fundamental or engineering properties of various biomaterials are evaluated. Scientific methodology, data analysis, and technical report writing are stressed. Spring.

281 SYSTEMS PHYSIOLOGY FOR BIOMEDICAL ENGINEERS (3). Prerequisite, BMME 181. This is the second semester of the two-semester series intended to provide graduate students with an introduction to systems and organ physiology. Spring. Tommerdahl.

282 INFORMATION PROCESSING IN THE SOMATOSENSORY NERVOUS SYSTEM: BRAIN IMAGING AND DATA ANALYSIS METHODS (3). Prerequisite, BMME 181. Introduction to methodologies used to characterize: (a) the aggregate behavior of living neural networks; and (b) the changes in that behavior that occurs as a function of stimulus properties, pharmacological manipulations, and other factors that dynamically modify the functional status of the network. Spring. (Alternate years.) Tommerdahl.

290 REHABILITATION ENGINEERING DESIGN (4). Prerequisite, BMME 111 or permission of instructor. Students will design an assistive technology device to help individuals with disabilities to become more independent. Project will be used in community when it is completed. Spring. Goldberg.

300 LABORATORY ROTATION IN BIOMEDICAL ENGINEERING (1). Laboratory practice. Observational and hands-on experience in state-of-the-art biomedical laboratories with bioengineering faculty/preceptor. Fall and spring. Staff.

301 LABORATORY ROTATION IN FUNCTIONAL GENOMICS (1). Prerequisites, BMME 151 and permission of instructor. Students are required to work in two laboratories that involve: (1) the creation and analysis of mouse technologies, and (2) developing technologies (biosensors or imaging) for use in functional genomics. Spring. Staff.

311 RESEARCH IN BIOMEDICAL ENGINEERING AND BIOMATHMATICS (Hours to be arranged.) Prerequisite, permission of the instructor. Staff.

393 MASTER'S THESIS (Hours to be arranged.) Staff.

394 DOCTORAL DISSERTATION (Hours to be arranged.) Staff.

North Carolina State University Biomedical Engineering Courses

590 SPECIAL TOPICS (1-4). Prerequisite, senior or graduate standing in engineering or physical or biological sciences. A study of topics in the special fields under the direction of the graduate faculty. Fall, spring, and summer. Abrams.

601 BIOMEDICAL ENGINEERING SEMINAR (1). Prerequisite, graduate standing. Elaboration of subject area, techniques, and methods important in biomedical engineering through presentations of personal and published works; opportunity to present and critically defend ideas, concepts, and inferences. Discussions to identify analytical solutions and analogies between problems in biomedical engineering and other technologies, and to present relationship of biomedical engineering to societal needs. Fall and spring. Abrams.

620 BIOMEDICAL ENGINEERING SPECIAL PROBLEMS (1-4). Prerequisite, graduate standing in biomedical engineering. Selection of a subject by each student on which to do research and write a technical report on the results. Subject may pertain to the student's particular interest in any area of study in biomedical engineering. Fall, spring, and summer. Abrams.
650 Internship in Biomedical Engineering (1-3). Prerequisite, graduate standing in biomedical engineering. Students obtain professional experience through advanced engineering work in industrial and commercial settings under joint supervision of a member of the graduate faculty and an outside professional. Fall, spring, and summer. Abrams.

790 Advanced Special Topics (1-4). Prerequisite, graduate standing in engineering, physical, or biological sciences. A study of topics in advanced or emerging special areas under the direction of the graduate faculty. Experimental doctoral level courses. Fall, spring, and summer. Faculty.

802 Biomedical Engineering Advanced Seminar (1). Elaboration of advanced subject areas, techniques, and methods related to professional interest through presentations of personal and published works; opportunity for students to present and critically defend ideas, concepts, and inferences; opportunity for distinguished scholars to present results of their work. Discussions to uncover analytical solutions and analogies between problems in biomedical engineering and other technologies, and to present relationship of biomedical engineering to society. Fall and spring. Abrams.

Kenan-Flagler Business School

Walter Steven Jones, Dean

Professors
Robert Sanford Adler (3) Legal Studies, Business Ethics, Government Regulations
Carl Robert Anderson (80) Strategic Management, Organizational Design, Organizational Decision Making
Gary M. Armstrong (2) Public Policy in Marketing, Sales Force Management
Barry L. Bayus (131) Marketing Research, Technology Changes, Product Management
Richard A. Bettis, Strategic Management, Global Competition, Technological Innovation, Strategic Change
Edward Joseph Blocher (61) Auditing, Management Accounting
Paul N. Bloom (95) Public Policy, Nonprofit Marketing, Marketing Professional Services
Robert M. Bushman, Information Economics, Corporate Governance, Executive Compensation, Organizational Structure
Jennifer S. Conrad (107) Market Constraints, Stocks and Options
James W. Dean (158) Quality Management, Strategic Decision Making, Organizational Cynicism
Jeffrey R. Edwards (160) Person-Organization Fit, Work-Family Issues
Douglas Allen Elvers (18) Production/Operations Management, Scheduling, Project Management
John Parkhill Evans (20) Operations Research, Mathematical Programming
Paolo Fuglieri, Finance
John R. M. Hand (126) Financial Accounting, Capital Markets, Market Efficiency
Stuart Hart (163) Environmental Management
David James Hartnell (16) Mortgage Bank Securities, Real Estate Investment, Finance
Walter Steven Jones, Business Education
John Dale Kasarda (32) Business Globalization, Privatization, Job Creation
Wayne R. Landman (58) Financial Reporting, Capital Markets
Richard Allan Mann (37) Legal Studies, Regulation of Business, Business Ethics
Edward Maydew, Accounting, Taxation, Corporate Tax Planning, Mergers and Acquisitions - Tax Aspects, Economic Effects of Tax Changes

Alan William Neele (41) Resource Allocation, Integer Programming, Facility Location, Computer Reliability
Hugh M. O'Neill (131) Corporate Strategy, New Ventures, Turnaround Situations
Ellen Rust Peirce (4) Legal Studies, Labor Law, Government Regulations
William Daniel Perreault Jr. (62) Industrial Marketing, Marketing Research Methods, Marketing Strategy
William P. Purvis, Marketing
David J. Ravenscraft (10) Mergers, Takeovers, Sell-Offs
Richard James Rendelman Jr. (89) Investments, Corporate Finance, Capital Markets Efficiency
Barry Stuart Roberts (63) Legal Studies, Business Ethics, Government Regulation
Dennis A. Rondinelli (134) International Management, International Economic Development, Public Policy for Development
Benson Rosen (40) Organizational Behavior, Human Resources Management
Aleida V. Roth (130) Strategic Decision Making, World Class Manufacturing, Service Quality
Albert H. Segars (152) Telecommunications Management, Impact of Technology, Corporate-Level Planning for Information Technology
Anil Shrivastasi (35) Corporate Boards of Directors, Corporate Finance, Corporate Governance, Finance, International Business - Finance, Mergers and Acquisitions, Organizations
Michael A. Stegman, Asset-Building in Low-Income Communities, Community Development Finance, Electronic Benefits Transfer, Housing Policy, Real Estate Finance
Harvey M. Wagnier (64) Management, Modeling
Valerie Zietzhami (169) Service Quality, Services Marketing

Associate Professors
Jeffrey Abarbanell, Financial Statement Analysis, Analyst Forecasting, Valuation, Accounting in Transition-to-Market Economies
Dong-Hyun Ahn (149) Finance
Richard Stanley Blackburn (81) Organizational Behavior, Organizational Research Methods, Philosophy of Organizational Science
Linda Carolyn Bowen (9) Financial Accounting, Taxation, Auditing
Joseph Henry Bylinks (83) Financial Accounting, Auditing
Daniel Cable (154) Human Resources Management, Selection, Recruitment, Compensation
Brian A. Gioehtri (141) Finance Real Estate Markets
Robert A. Connolly (127) Foreign Currency Markets, Empirical Investments, Capital Markets
Nicholas Michael Dickow (15) Consumer Behavior, Marketing Research Methods, Evaluation Research
Bin Gao (151) Finance
Mustafa N. Guleston (106) Portfolio Theory, Asset Pricing Models, Corporate Finance
David A. Hofmann, Management
William E. Jackson III (56) Financial Institutions, Regulation of Financial Markets, Market Efficiency, Strategic Pricing Issues
J. Morgan Jones (19) Quantitative Consumer Models, Bayesian Decision Theory
Cl. Kendall (26) International Marketing
Charlotte H. Mason (108) New Product Evaluation, Diffusion of Innovation, Marketing Research Methodologies
Jayashankar M. Swaminathan, Operations, Technology and Innovation Management
Harold Zhang, Finance
Assistant Professors
Sridhar Balasubramanian, Marketing
Peter J. Brews, Management
Henry H. Cao, Finance
Kyle D. Cattani (156) Production Planning, Supply-Chain Management, Demand Forecasting
Geraldo Fetter (161) Remanufacturing, Reverse Logistics, Product Recovery
Wendell Gilland (162) Production Planning and Control, Capacity Management, Business Process Reengineering
Eitan Goldman, Corporate Finance, Microeconomic Theory
Steve E. Hoefler, Marketing, Consumer Behavior, Decision Making, Sales Forecasting, Information Technology, Electronic Commerce, Internet Marketing
Nicholas Luie, Consumer and Managerial Decision Making, Inferential Processes and Reasoning, Communication and Signaling, Electronic/Interactive Environments
Arvind Malhotra, Electronic Commerce, Knowledge Management, Interorganizational Information Technology, Supply Chain Management, Internet Business Opportunities, Internet Startups, Strategic Use of Information Technology, Virtual Teams and Communities
Kahl Matthias, Finance
Jana Smith Raedy (166) Market Efficiency/Market Anomalies, Financial Analyst Forecasts
Rebecca K. Ranner, Consumer Behavior, Decision Making, Individual Decision Making, Marketing
Adam V. Reed, Finance
Merh Sevillor, Finance
Baohtong Sun, Marketing
Brian Tomlin, Finance
Gal Zauberman, Marketing

Research Professor
Michael M. Berry, Corporate Environmental Management Strategies, Environmental Management Systems, Environmental Risk Assessments, Environmental Technology and Services Industry, Management, National and International Environmental Regulatory Programs, Sustainable Development

Adjunct Professors
Warren E. Baum (143) Executive Education, Marketing, Competitive Strategy
Gerald D. Bell, Leadership, Management, Negotiation, Teamwork
Bruce Boehm, Management
Jennifer Biemer, Management
Edward Cornet, Management
Travis Day, Business Computing Skills
Jaime Gomez, Management
Eric Ghyzel, Finance
Noel Greis, Air Logistics, Aviation, Innovation, International Manufacturing, International Operations, Logistics, Manufacturing
Richard Koury, CETV
Michael Ian Lugter, Economic Development, Employment and Welfare Policy, Infrastructure, Public Finance, Urban and Regional Economics
Curis Perry McLaughlin (39) Production of Services, Professional Productivity, Management of Nonprofit Organizations
Bill Moore, Investment Banking, Venture Capital, Investment Management, Entrepreneurship
Charles R. Myer, Management
Jack Olin, Management
John J. Pringle, Financial Management
C.J. Skender, Accounting, Auditing, Decision Making
S. Peter Smith, Manufacturing, Marketing, Strategy, Operations Management, Product Design, Product Development
Ronald Williams, Management

Adjunct Associate Professors
David A. Neal, Management
Elliot Silvester, Management
Donald McVey Stanford Jr., Commercial Law, Legal Environment of Business, Managerial Law, Mutual Funds, Sports Law and Management
Roby B. Sawyer, Accounting
Hedi Schlut (167) Business Communication

Adjunct Assistant Professors
Eliezer Fisch, Finance
Corinne Knapp, Finance Trade, Antidumping Trade, Exchange Rates
Mark Milstein, Management
Kevin Raedy, Accounting
Dana Strickland, Finance
Judy Jones Tisdale, Consumer Banking Retail Sales, Professional Communication, Sales Coaching and Development
Scott Turner, Management
Liliana Wendorff, North Carolina Global Center
Anne Y. York (152) Strategic Management, Research Methods, Finance

Adjunct Lecturers
William C. Buxton, Compensation, Conflict Resolution, Entrepreneurship, Family-Owned Businesses, Small Business Management, Strategic Positioning, Turnaround and Renewal
Courtney Edwards, Accounting
John T. Ganim, Management
Altryn Gardner, Entrepreneurship
John Glushik, Entrepreneurship
Gregory Hohn, MBA Program
Leonard Homer, Management
Donald Marple, Management
Mitch Mumma, Management
Edward G. Pringle, Consulting, Management, Service Industry
Laura Schope, Management
Cynthia Senzer, Management
William Shulby, Marketing
Andrew Silton, EMBA Program
April Triyanon, Finance
Colin Wahl, Entrepreneurship
Amy Ward, Accounting
Maria Elena Vasquez, Business Communications
Kenneth Wiles, Finance
Todd J. Weber, Management

Professors Emeriti
Jack N. Behrman
R. Lee Brummet
Dewitt Clinton Dearborn
Robert DesJardins
G. David Hughes
Thomas H. Jerdee
Jay Edward Klompaker
Clifton Holland Kreps Jr.
Hans E. Kruse
The Kenan-Flagler Business School offers programs of graduate study leading to the degrees of master of business administration, master of accounting, and doctor of philosophy. The school is committed to providing cutting-edge, real-world business education and research. Known for its collegial, intimate environment and selective, diverse admissions, the school prepares tomorrow's leaders in business and industry.

The school pioneered the team approach to learning more than a quarter century ago and has more recently added cross-functional, entrepreneurial, and global priorities to its curriculum.

Kenan-Flagler is recognized for world-class teaching. The faculty consistently has been nationally ranked for teaching excellence, availability, and responsiveness to students and emphasis on relevant, applied research and case development. Through these efforts, the faculty constantly strive to give students great opportunities for learning.

In fall 1997, Kenan-Flagler moved to its new state-of-the-art facility located on South Campus. Building features include 18 classrooms with multimedia capabilities, a 456-seat auditorium, and a 250-plus seat multi-purpose dining pavilion and activity space.

The world-class McColl Building is a hub of learning, teaching, and research. Each classroom, office, and study room is designed for maximum use and technological efficiency to support these activities. The building includes: an Asynchronous Transfer Mode (ATM) backbone network providing high-speed transmissions within the school and on the Internet; ports in many rooms that allow students to connect laptops from virtually anywhere in the building; a network operating at 100 megahertz per second; a computer lab with state-of-the-art multimedia workstations; and network servers that provide students with online access to a number of CDs for company research and historical financial market data.

Master of Business Administration

The Kenan-Flagler Business School's highly ranked MBA program provides exceptional students the opportunity to develop outstanding functional and analytical skills and the vision of a general manager. The two-year program combines a first year of core courses designed to provide a general management background, technical and analytical expertise, and exposure to decision making in all functional areas of business. The second year provides the opportunity to concentrate in areas of student interest and faculty expertise.

Application forms and a brochure containing detailed information may be obtained by contacting the Kenan-Flagler Business School MBA Admissions Office, CB# 3490, McColl Building, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3490; (919) 962-3236; mba_info@unc.edu, www.kenan-flagler.unc.edu/programs/mba.

Master of Accounting

The Kenan-Flagler Business School's master of accounting (MAC) program's unique approach to accounting and business education involves a challenging curriculum that integrates accounting with other business disciplines and emphasizes the application of accounting concepts to current business issues. The goal of the accounting and business courses is to create well-rounded business advisors who can compete in the international business world. Rather than specializing in specific areas of accounting, MAC students take a broad but balanced series of accounting courses that focus on skill development, problem solving, and decision making in business situations. The business core courses are designed specifically for MAC students to emphasize accounting and business consulting skills. The program develops students' communication and leadership skills, giving them a competitive advantage in today's tight job market and enhancing their ability to succeed in the accounting profession.

The MAC program is designed for candidates holding undergraduate degrees in liberal arts, sciences, business, and other nonaccounting disciplines. Candidates earn the MAC degree in twelve months of concentrated study. The application deadlines are August 1 (for UNC-Chapel Hill business majors only), December 1, and March 1. Because admission is competitive and some decisions are made on a rolling basis, applicants are encouraged to apply early.

Application forms and a brochure containing detailed information may be obtained by contacting the Kenan-Flagler Business School MAC Admissions Office, CB# 3490, McColl Building, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3490; (919) 962-3186; mac_info@unc.edu, www.kenan-flagler.unc.edu/programs/mac.

The Executive MBA Program

The Executive MBA (EMBA) Program provides working professionals the opportunity to acquire the traditional MBA degree without interrupting their careers. Kenan-Flagler offers two attendance options for completing the Executive MBA degree program.

The EMBA Evening Program classes are held on Monday and Thursday evenings for twenty-four months. This program is best suited for professionals who live and work in the Triangle area and have careers that do not require frequent weekday travel.

The EMBA Weekend Program classes are held on alternate weekends (all day Friday and Saturday) for twenty months with two mandatory weekend residencies for intensive course work. This program is best suited for professionals who travel extensively or who live too far from Chapel Hill to make attending evening classes feasible.

Application forms and a brochure containing detailed information about the program may be obtained by contacting the Executive MBA Program, Kenan-Flagler Business School, The University of North Carolina at Chapel Hill, CB# 3490, McColl Building, Chapel Hill, NC 27599-3490; (800) 453-9515; emba@unc.edu, www.kenan-flagler.unc.edu/programs/emba.

Doctor of Philosophy

The PhD program in business administration is designed for individuals who plan careers in research and teaching. A limited number of students are admitted each year, resulting in a high-quality learning environment that emphasizes rigor and personal attention. Although many students enter the program with an MBA, this degree is not a requirement for admission. However, an MBA from an accredited institution usually allows the student to waive some of the business fundamentals requirements. Prior to admission to the doctoral program, students are expected to have a knowledge of elementary calculus and basic computer skills. A foreign language is not required for graduation from the program. Research and teaching assistantships are available on a competitive basis.

The requirements for the PhD in business administration are:
- Business Fundamentals. All PhD students are expected to possess or to acquire a basic knowledge of accounting, finance, marketing, organiza-
tional behavior, and production. This requirement involves a level of competence roughly equivalent to the MBA core courses on these topics. Most students entering with an MBA or similar degree meet this requirement without additional course work. Appropriate courses will be recommended for students who do not meet this requirement prior to beginning the program.

- **Economics.** All PhD students are expected to possess or to acquire a knowledge of microeconomic and macroeconomic theory. The basic requirement is an MBA or graduate-level course on each topic. Once again, most students with an MBA meet this requirement without additional course work. However, individual areas within the Business School (e.g., finance) may require that students take specific courses after entering the program to meet this requirement. Appropriate courses will be recommended for students who do not meet this requirement prior to beginning the program.

- **Research Methods/Quantitative Methodologies.** All PhD students are required to take five courses (fifteen hours) in Research Methods/Quantitative Methodologies. At least one course (three hours) must be a research methods course covering topics such as philosophy of science, research design, sample selection, etc. At least three of the courses (nine hours) must focus on quantitative methodologies such as statistics, operations research, econometrics, etc. The fifth course (three hours) may be a more specialized research methods course (e.g., survey research, lab experimentation) or another quantitative methodologies course.

- **Major Area of Concentration.** All PhD students are required to declare a major area. The major area consists of six courses (eighteen hours). Students may concentrate in one of the following areas:
  - Accounting
  - Operations
  - Finance
  - Organizational Behavior
  - Marketing
  - Strategy

  These courses may be a combination of required courses offered within the major area, required courses offered outside of the major area, or approved elective courses.

- **Supporting Area.** All PhD students are required to declare a supporting area. The supporting area consists of four courses (twelve hours). The supporting area allows the student to develop a strong expertise in an area related to the student’s research and teaching interests. These courses are usually drawn from a single area within the Business School or from a specific outside department, but a student may assemble four courses from more than one area if the courses represent a coherent package.

- **Research Paper.** During the summer and fall following the first year, all PhD students are required to complete a research paper. The paper must be evaluated and approved by the student’s faculty. The primary purpose of this paper is to provide the student with important research experience and to develop research and writing skills. Most of these papers are later presented at professional meetings and many lead to publication. Some papers develop into dissertations.

- **Comprehensive Examination.** All PhD students must pass a written comprehensive examination on the student’s major area of concentration and relevant material from the other requirements. Students usually take this examination after completing course work, typically at the end of the second year. Some areas may require an oral examination after completion of the written examination.

- **Dissertation.** All PhD students are required to complete a dissertation prior to graduation from the program. The dissertation is a thorough theoretical and empirical investigation of a specific problem important to the student’s major area. The dissertation’s value is in its contribution to knowledge, in the scholarly manner in which it is organized and presented, and in the demonstrated development of the student’s conceptual and research skills. Before substantial work on the dissertation is undertaken, a written dissertation proposal must be presented and approved by the student’s dissertation committee. In most cases, the dissertation proposal is completed during the student’s third year in residence and the dissertation is completed during the fourth year.

- **Teaching and Research.** All students are required to serve as a teaching assistant for at least one semester and as a research assistant for at least one semester. Students are also required to work with faculty prior to that semester on the development of their teaching skills.

**Scholarships and Fellowships**

Available to doctoral students in business administration are a number of assistantships, each with a value of $12,900 for the academic year. The school provides summer assistantships for doctoral students who receive awards from the University or the school during the academic year. These assistantships carry stipends of $3,100 for the summer. Once a doctoral student is awarded financial aid, the school generally provides support for eight semesters if the student is making satisfactory academic progress.

To receive an application and brochure containing detailed information, contact the PhD Program Office, Kenan-Flagler Business School, CB# 3490, McColl Building, Chapel Hill, NC 27599-3490; (919) 962-3126; kphd_app@unc.edu, www.kenan-flagler.unc.edu/programs/phd.

**Courses for Doctoral Candidates**

308 **APPLIED RESEARCH METHODS I** (3). Addresses fundamentals of empirical social science research. Topics include framing a research question, comparing research designs, instrumentation, reliability, validity, and exploratory and confirmatory factor analysis. Emphasizes application and analysis. Edwards.

309 **APPLIED RESEARCH METHODS II** (3). Continuation of Applied Research Methods I (BUSI 308). Topics include statistical control, categorical variables, interaction, curvilinear and similarity effects, longitudinal analysis, path analysis, structural equation modeling, and publication. Emphasizes application and analysis. Edwards.

330 **THEORY OF OPERATIONS MANAGEMENT I** (3). Prerequisite, permission of the instructor. Rigorous study of traditional and modern issues, problems, and approaches in operations management. Fall and spring. Staff.

331 **THEORY OF OPERATIONS MANAGEMENT II** (3). Prerequisite, BUSI 330 or equivalent. A continuation of BUSI 330. Fall and spring. Staff.

332 **THEORY OF OPERATIONS MANAGEMENT III** (3). Prerequisite, BUSI 330 or equivalent. A continuation of BUSI 330. Fall and spring. Staff.

337 **ADVANCED TOPICS IN OPERATIONS MANAGEMENT** (3). Prerequisite, permission of the instructor. Intensive study of a specific area in operations management. Spring. Staff.

338 **SEMINAR IN OPERATIONS MANAGEMENT** (3). Prerequisite, permission of the instructor. Intensive study of a specific area in operations management. Spring. Staff.

351 **INDIVIDUAL BEHAVIOR IN ORGANIZATIONS** (3). Analysis of individual behavior, adjustment, and effectiveness. Examination of attitudes, stress, problem solving, decision making, motivation, and personality. Applications to management of human resources. Fall. Hofmann.

352 **INTERPERSONAL AND INTERGROUP BEHAVIOR IN BUSINESS ORGANIZATIONS** (3). Intensive critical examination of interpersonal and intergroup behavior, including decision processes, communication, conflict, and conflict resolution in large organizations. Spring. Staff.
353 MACRO ORGANIZATIONAL BEHAVIOR (3). Prerequisite, graduate standing in business administration. Intensive study of theory and research in organizational structure, coordinating and control mechanisms, design parameters, and environments. Spring, Blackburn.

354 ORGANIZATIONAL DESIGN AND DEVELOPMENT (3). Prerequisite, Principles of Marketing. The development of understanding and skills in changing and evolving organizational design, interpersonal relationships, and people to achieve organizational goals. Spring, Staff.

356 SEMINAR IN ORGANIZATIONAL BEHAVIOR (3). Prerequisite, permission of the instructor. Intensive study of important current theory and research in organizational behavior. Fall, Staff.

357 SEMINAR IN HUMAN RESOURCE MANAGEMENT (3). Prerequisite, permission of the instructor. Intensive study of how businesses manage their human resources. Topics include recruitment, training, compensation, motivation, and performance management. Fall, Winter, Spring, Staff.

360 SEMINAR IN MARKETING I (3). Prerequisite, permission of the instructor. Overview of current issues and trends in marketing. Topics include current trends in marketing, the role of marketing in society, and the future of marketing. Fall, Winter, Spring, Staff.

361A SEMINAR IN MARKETING II (3). Prerequisite, BUSI 360. Intensive study of the empirical and analytical literature on marketing problems, market development, and market structure and behavior. Fall, Winter, Spring, Staff.

361B SEMINAR IN MARKETING II (3). Prerequisite, BUSI 360. Intensive study of the consumer behavior and decision-making literature with an emphasis on identifying research problems, methods, and approaches. Fall, Winter, Spring, Staff.

365 SEMINAR IN CURRENT MARKETING TOPICS (1-3). Prerequisite, permission of the instructor. Advanced research in marketing. A seminar to discuss current research of doctoral candidates, faculty, and invited guests. Fall and spring, Staff.

367 ISSUES IN THE DESIGN AND ANALYSIS OF RESEARCH IN MARKETING (3). Prerequisite, graduate standing in business administration. A review of major issues in marketing, including philosophy of science, measurement, and experimental and quasi-experimental design. Fall, Staff.

368 SEMINAR IN MARKETING RESEARCH METHODOLOGY (3). Prerequisite, permission of the instructor. An introduction to multivariate data analysis methods including factor analysis, cluster analysis, logic, discriminant analysis, and multidimensional scaling. Spring, Staff.

376 SEMINAR IN RESEARCH ACCOUNTING (1). Prerequisite, permission of the instructor. An informal seminar to discuss current research in accounting. Fall and spring, Staff.


380 FINANCIAL ECONOMICS (3). Prerequisite, permission of the instructor. Introduction to the theories of asset pricing. Fall, Spring, Staff.

381 CORPORATE FINANCE (3). Prerequisite, BUSI 380 or equivalent and permission of the instructor. Introduction to corporate finance theory. Spring, Goldman.

382 EMPIRICAL CORPORATE FINANCE (3). Prerequisite, permission of the instructor. An introduction to the empirical corporate finance literature. Spring, Kahl.

385 SEMINAR IN RESEARCH IN FINANCE (0 to 1). Prerequisite, permission of the instructor. Advanced research in business finance and investment. An informal seminar to discuss current research of doctoral candidates, faculty, and others. Fall and spring, Staff.

386 SEMINAR IN PORTFOLIO MANAGEMENT (ECON 386) (3). Prerequisite, permission of the instructor. Theoretical asset pricing, continuous time finance, option pricing, and term structure models. Spring, Staff.

387 QUANTITATIVE METHODS IN FINANCE (3). Prerequisite, permission of the instructor. Review of information generating and optimizing models and their applicability to decision making in finance. Fall, Staff.

388 SEMINAR IN FINANCIAL MARKETS (3). Prerequisite, permission of the instructor. Advanced methods in finance. Spring, Staff.

390 STRATEGIC MANAGEMENT OVERVIEW (3). A seminar to provide a broad and current understanding of strategic management. Exposure to the entire field is emphasized. Beatty, Illinois, O'Neill.

391 STRATEGIC FORMULATION (3). Prerequisite, BUSI 390. This seminar emphasizes both process and content issues to provide students with an in-depth understanding of strategy formulation topics. Beatty, Illinois, O'Neill.

392 STRATEGY IMPLEMENTATION (3). Prerequisites, BUSI 390 and 391. This seminar focuses on strategy implementation with particular emphasis devoted to the process, systems, and structures required for effective implementation. Fall, Staff.

394 DOCTORAL DISSERTATION (3). Prerequisite, permission of the instructor. Individual research in a special field under direction of a member of the department. Fall and spring, Staff.

DEPARTMENT OF CELL AND DEVELOPMENTAL BIOLOGY

VYTAS A. BANKAITIS, Chair

Professors

Vytas A. Bankaitis (4) Signal Transduction, Genetic Models for Neurodegenerative Disease in Mice, Yeast Genetics and Cell Biology
Keith W. T. Burridge (41) Cell Migration, Cell-Matrix and Cell-Cell Adhesion, Rho Family GTPases, Leukocyte Transendothelial Migration
Johnny L. Carson (6) Developmental Biology, Pathogenic Mechanisms Involving Mammalian Airways
M. Joseph Costello (50) Membrane Biophysics, Intracellular Junctions, Active Transport, Membrane Fusion, Electron Microscopy
Noelle A. Granger (42) Developmental Biology, Endocrinology, Neuroendocrinology
O'Dell W. Henson Jr. (19) Ear Structure and Function, Animal Sonar
Kenneth A. Jacobson (39) Membrane Biology and Biophysics, Cell Migration, Video Image Analysis

William E. Koch (8) Developmental Biology


John J. Lemasters (29) Cellular and Molecular Mechanisms of Apoptosis and Necrosis in Liver, Heart, and Tumor cells; Organ Preservation for Transplantation Surgery, Mitochondrial Permeability Transition, Confocal and Multiphoton Microscopy of Living Cells; Mechanism of Kupffer Cell Activation; Mitochondrial Calcium Homeostasis, Mitochondrial Autophagy

Royce L. Montgomery (11) Invertebrate Disc Lesions and Back Pain
Michael G. O'Rand (38) Cell Biology, Immunology, Reproductive Biology
Peter Petrusz (13) Neurobiology, Reproductive Biology

Aldo Rustioni (15) Glutamate Receptors Expression and Regulation, Axonal Regeneration and the Cytoskeleton, Somatosensory Mechanisms

Kathleen K. Svitk (40) Developmental Toxicology, Embryology
Associate Professors
Cornelius J. Beckers (12) Signal Transduction, Cell Motility, Cytoskeleton, Infectious Diseases, Cell Biology
Patrick Brennwald (5) Cell Polarity, Tumor Suppressor, Vesicle Transport, Exocytosis, Rho GTPases
Douglas M. Cyr (6) Cytosolic Fibrinogen, Organelle Biogenesis, Protein Folding, Molecular Chaperones, the Ubiquitin-Proteasome Pathway
Sharon L. Milgram (8) Epithelial Biology, Trafficking and Polarity, Signal Transduction in Polarized Cells, Scaffold and Adaptor Proteins
Andrew J. Morris (7) Roles of Lipids in Cellular Regulation, Signal Transduction in Normal and Cancerous Cells
Deborah A. O'Brien (51) Mammalian Spermatogenesis and Fertilization, Regulation of Sperm Motility, Contraception, Gene Targeting, and Animal Models
Michael D. Schaller (2) The Integrins, Protein Tyrosine Kinases and Signal Transduction
Ellen R. Weiss (9) Regulatory Domains of G-Protein Coupled Receptors, Molecular Biology of Cellular Signaling Pathways

Assistant Professors
James Bier (14) Cell Motility, Acrin Cytoskeleton, Coronins, Live-Cell Microscopy
Jay E. Brennen (10) Neuronal Development, Drosophila and Mouse Genetics, Dendrite and Axon Morphogenesis
Mohammad P. Deshmukh (5) Neuronal Apoptosis, Molecular Mechanism of Programmed Cell Death, Regulation of Caspase Activation
Scott Hammond

Research Professor
Richard Weinberg (20) Quantitative Immunocytochemistry, Organization of Excitatory Synapses, Calcium Signaling in Dendritic Spines

Research Associate Professors
Shoji Osawa (16) Regulation of Signal Transduction Pathways by G Proteins
Richard Richardson (17) Molecular Biology of Sperm-Oocyte Interaction, Studies of Immuconception
Julia Vatsanov, Electron Microscopy of Synaptic Proteins, Nitric Oxide, Spinal Pain Mechanisms

Research Assistant Professors
James Ahn, Role of Phosphatidylserine Transfer Protein Alpha in Mammalian Systems
Shao-Yu Chen, Developmental Toxicology, Embryology
Ji-Gang Cheng
Gerald W. Gordon (14) Instrument Development for Cell Biology Research
Jae Sung Kim
Kiyoshi Miki, Sperm Motility, Death Signaling in Male Germ Cells
Zenon Rajfur
Gabriel Weizreb
Rebecca Wordylake
Zhi Zhong, Hepatobiology and Toxicology, Renal Toxicity of Immunosuppressive Drugs, Organ Preservation for Transplantation Surgery, Ischemia/Reperfusion Injury, Mechanisms of Kupffer Cell Activation

Research Instructors
Malika Boukhelfa
Lihua He

Instructors
Edward Kernick
Linda Levitch

Professor Emeritus
Charles R. Hackenbrock

Program of Study

The Department of Cell and Developmental Biology of the School of Medicine offers a program of study leading to the doctor of philosophy degree. The program provides training for students whose research/teaching career objectives are faculty positions in medical school cell biology/anatomy departments. However, the flexibility of the program also provides for the training of students who seek careers in basic science as well as clinical science departments of medical schools; in other professional schools such as dental schools; in liberal arts academic departments such as biology; or in state, federal, private, and industrial research laboratories. The program for the PhD normally takes four to five years to complete. Persons interested in a combined PhD program must be accepted into the School of Medicine and the departmental graduate program, whereupon the combined studies are scheduled in accordance with individual requirements.

Some of the department's areas of specialization are cell biology, developmental biology, neurobiology, reproductive biology, endocrinology, bioacoustics, membrane biology, molecular biology, and cell signaling. PhD students receive broadly based training in these areas before examination for advancement to candidacy. PhD candidacy is followed by optional further formal study while a dissertation based on original research is prepared under the supervision of a faculty adviser. All students are encouraged to develop a strong background in the various aspects of contemporary cellular and biostructural studies, with individual programs varied to suit the particular interests and previous training of each student. Students are required to complete a course in biostatistics or computer science.

Admission Requirements

A BA or BS degree is required for admission. Applicants are expected to have a strong background in the biological sciences, chemistry, physics, and mathematics. A complete application including transcripts, GRE scores (with a subject test score), and three letters of recommendation should be sent to the Office of the Graduate School, Bynum Hall. A letter outlining career goals and why they would be helped by study in the department is also required. Prospective students are advised to contact the director of graduate studies in Cell and Developmental Biology and faculty members whose fields interest them.

Research Facilities

The department occupies forty thousand square feet of research and office space in addition to teaching space, primarily in Taylor Hall and the Biomolecular Research Building in the School of Medicine. The department and its research laboratories are a biotechnological resource available for qualified scientists in the University, state, and region. The laboratories house instrumentation for transmission, scanning, and cryo electron microscopy, as well as equipment to prepare biological specimens for these techniques. The Electron Microscope Facility contains a multi-purpose JOEL 820 scanning electron microscope and a high resolution FEI-Phillips Tecnai 12 transmission electron microscope. Ancillary facilities include fully equipped darkrooms and equipment for ultramicrotomy, critical point drying, rotary evaporation, sputter coating, and a state-of-the-art, high resolution Reichert freeze fracture system. A world class facility is available for optical imaging of all kinds including digitized video microscopy, confocal microscopy, and fluorescence lifetime imaging microscopy, two-photon confocal microscopy, nanovid microscopy, and fluorescence recovery after photobleaching.
Assistantships and Other Student Aid
Students are supported by a stipend of $21,500 annually plus tuition, fees, and medical insurance.

Courses for Graduates and Advanced Undergraduates

104 INTRODUCTION TO MEDICAL CELL BIOLOGY (1). Introduction to the structure and function of cell membranes, membranous organelles, the nucleus, and the filamentous components of the cytoplasm. Fall. Burridge. For medical students only.


107AB GROSS ANATOMY (6). Prerequisite, permission of the instructor. Primarily for medical students. Graduate enrollment by availability of space and material. One lecture, six laboratory hours, fall: two lectures, six laboratory hours, eight weeks of spring. Granger, Sulik, Staff.

117 CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (MICRO 117) (BIOL 117) (PHCO 117) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Fall. Lee, Meisner, Paris.

118 CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (MICRO 118) (BIOL 118) (PHCO 118) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function and transformation. Spring. Cox, Lee, Meisner, Paris.

123 DEVELOPMENTAL TOXICOLOGY AND TERATOLOGY (TOXC 123) (2). Emphasis is placed on topics of current research interest relative to the genetics of environmentally caused and genetically based birth defects. One two-hour session per week (evening). Spring. (Alternate years.) Sulik.

191 GROSS ANATOMY FOR PHYSICAL THERAPISTS (PHYT 191) (6). Prerequisites, BIOL 63 and 63L and permission of the instructor. Fundamental principles and concepts of human gross anatomy for physical therapists taught by lectures and cadaver dissection. Emphasis on functional anatomy. Three lecture and six laboratory hours a week. Fall. Kernick.

193 FUNCTIONAL NEUROANATOMY (PHYT 193) (3). Prerequisites, BIOL 191, BIOL 192 or equivalent, and permission of the instructor. Study of basic structure of the brain and spinal cord, including both lecture and laboratory. Primarily for physical therapy students. Four hours a week. Spring. Kernick.

Courses for Graduates

200AB ADVANCED GROSS ANATOMY (4/3). Prerequisites, BIOL 107ab and/or permission of the instructor. Detailed dissection of the human body. Specific regions may be selected; topics include topographic, radiographic, and cross-sectional anatomy. Fall and spring. Granger.

207 REGIONAL ANATOMY (3). Prerequisite, permission of the instructor. For students of oral surgery, surgical residents, and graduate students. Second summer session. Kernick.

209 ELECTRON MICROSCOPY: PRINCIPLES AND APPLICATIONS (3). Prerequisite of the instructor. Lectures on scanning, transmission, high voltage, freeze fracture, analytical and immunoelectron microscopy. Laboratory training in preparation of biological specimens, operation of scanning and transmission microscopes, and darkroom procedures. Three lecture and twelve laboratory hours per week. First summer session. Costello.

310 RESEARCH (2 or more). Credit to be arranged in individual cases. Fall, spring, and summer. Staff.

315 RESEARCH LABORATORY APPRENTICESHIP (2). Prerequisite, enrollment in the Cell Biology and Anatomy graduate program. A course for first- and second-year graduate students in Cell Biology and Anatomy, consisting of a research project of limited scope pursued under the supervision of a faculty member. Fall, spring, summer. Staff.

320AB ADVANCED TOPICS IN CELL AND DEVELOPMENTAL BIOLOGY (Vac.). Prerequisite, permission of instructor. Seminar/discussion course dealing with advanced topics in modern cell biology and/or developmental biology. Based mainly on discussion of current literature. Fall, spring. Staff.

321AB CONTEMPORARY APPROACHES TO SOLVING BASIC PROBLEMS IN CELL AND DEVELOPMENTAL BIOLOGY (3). Prerequisite, permission of instructor. Analysis of grant proposals dealing with advanced topics in modern cell biology and/or developmental biology. Spring, fall. Banksitis.

393 MASTER'S THESIS (3).

394 DOCTORAL DISSERTATION (3).

DEPARTMENT OF CELL AND MOLECULAR PHYSIOLOGY

JAMES M. ANDERSON, Chair

Professors


James E. Faber (49) Vascular Physiology, Signal Transduction of Vascular Smooth Muscle and Fibroblast Cells, Atherosclerosis, Adrenergic Receptors.

Paul B. Farel (5) Regulation of Neuron Number, Development of Specific Neural Connections, Regeneration.

Pauline K. Lund (50) Growth Factors, Cytokines, Gastrointestinal Growth, Molecular Biology, Signal Transduction, Aging and Memory Loss.


David L. McIlwain (14) Normal, Injured, and Diseased Spinal Motorneurons.


Lola M. Reid (67) Hepatic Stem Cell and Maturational Lineage Biology, Synergies between Extracellular Matrix and Hormones in the Regulation of Gene Expression.

Robert L. Rosenberg (63) Regulation of Ion Channels.

Aldo Rusini (30) Somatosensory System: Connections, Neurotransmitters, and Interneuronal Integration.

Robert Sealock (32) Cell Biology and Biochemistry of the Neuromuscular Junction, Proteins Involved in Duchenne Muscular Dystrophy.

William Snyder (74) Developmental Regulation by Neuronal Growth Factors.

Ann E. Stuart (41) Aspects of Synaptic Transmission from Photo receptors, Hissamnergic Synapses.

Tony C. Waldrop (77) Genetic Aspects of Hypertension, Developmental Neurobiology, Effects of Hypoxia on Brainstem Neurons.

Barry L. Whitel (23) Neuronal Mechanisms of Somatic Sensation.

Associate Professors


Michael F. Goy (60) Biochemistry and Physiology of Excitable Cells, Second Messenger Mechanisms in Signal Transduction, Epithelial Biology, Natriuretic Peptides

Anthony-Samuel LaMania (73) Induction and Patterning of the Mammalian Forebrain, Inductive Signaling Mechanisms in the Developing and Regenerating Nervous System, Function of Genes Associated with Human Developmental Disorders

Assistant Professors

Ewa Anton (76) Molecular Analysis of Neuronal Migration and Development of Cerebral Cortex

Kathleen Caron (80) Gene Targeted Models of Human Disease, Reproductive Biology, Cardiovascular Biology, G-Protein Coupled Receptor Signaling

Sela Mager (71) Molecular Biology and Biophysics of Neurotransmitter Transporter

Carol A. Orey (72) Mechanisms of Cell Adhesion, Cell Migration and Cytoskeletal Organization, and Neuronal Cell Biology

Benjamin Philipson (82) Mechanisms of Experience-Dependent Synaptic Plasticity in Visual Cortex

Research Professor

C. William Davis (51) Airway Epithelial Cell Physiology

Research Assistant Professor

Scott Randell (79) Airway Epithelial Cell Biology

Adjunct Professor

Anthony C. Hackney (21) Systemic Endocrinology and Physiology, Exercise Endocrinology, Regulation of Steroid Hormone Production

Professors Emeriti

Robert S. Faust

Enid R. Kafer

Alan Light

Joseph H. Perlmutter

Lloyd R. Yonce

Physiology is the study of the biological, chemical, and physical processes that underlie the functions of living cells and organs. Research in physiology uses tools from chemistry, mathematics, molecular biology, and physics to identify regulatory mechanisms that operate at levels of complexity ranging from the subcellular to the organismic.

Curriculum

The Department of Cell and Molecular Physiology offers a program of study leading to the PhD or MD/PhD degree. The MS degree is offered only under special circumstances.

Research opportunities cover molecular, cellular, and systems physiology with an emphasis on mechanisms of disease. Faculty specialties include neurophysiology, endocrinology, gastrointestinal, cardiovascular, and renal physiology.

The PhD program typically requires four to five years of study. The first two years of graduate study include core and elective coursework, laboratory rotations, seminar courses and research. The curriculum is individualized to develop the analytical, research, and communication skills necessary to carry out successful dissertation research. All students are required to take cell biology plus PHY125, PHY120, one of three advanced courses - PHY122/223, PHY129 A,B,C, or PHY120 in addition to cell biology. Research rotations introduce students to faculty laboratories and develop and broaden research experience. Requirements may be waived for students with previous graduate-level coursework. The qualifying examination is scheduled at the end of the second year.

Students join the lab of the research adviser within the first year of the program. Journal clubs, a class in oral and written communication, the seminar program, and a research-in-progress series provide a less formal way for students to develop research and analytical skills. Teaching experience is available in preprofessional courses, graduate school, and medical school courses.

Students submit the dissertation proposal in year three and complete research and writing in years four and five.

Research Facilities

In May 2003, the department moved into the newly completed Medical Biomolecular Research Building and the adjoining Neuroscience Research Center. Faculty laboratories are equipped for research and training in all methods of biological research, including biophysics, molecular biology, biochemistry, immunology, and whole-animal studies. UNC-Chapel Hill has an outstanding center for development and breeding of transgenic and gene-knockout mice for molecular biology/recombinant DNA-related research. Researchers in the department routinely collaborate with members of other School of Medicine departments and centers and with laboratories at Duke University and in Research Triangle Park.

Financial Aid

All students in good academic standing receive a stipend, tuition scholarship, and health insurance. Many students receive fellowships or graduate teaching assistantships. Additional support is available from the National Science Foundation, and the Howard Hughes Medical Institute.

Placement of Graduates

Recent graduates are working as postdoctoral fellows and faculty members at colleges and universities, as bench scientists in the biotechnology and pharmaceutical sectors, and as scientific advisors in both clinical and basic research settings.

Requirements for Admission

Applicants to the program must have a strong undergraduate record including course work in organic chemistry and biochemistry, two semesters of calculus and physics, and appropriate course work in the biological sciences, typically including zoology, genetics, cell biology, and molecular biology. All applicants are required to submit scores on the GRE aptitude test, a written statement, transcripts, and a minimum of three letters of recommendation. Applications are welcome at any time but should be received by January 1 to receive priority consideration for financial support. A personal interview is highly recommended.

Courses for Graduate and Professional Students

114 PHYSIOLOGY (DENT 114) (4). This basic biology course introduces students to the functions of and interactions between the various systems of the body. Particular emphasis is placed on those aspects of specific relevance for students and practitioners of dentistry. The course also provides students with a solid physiological background for subsequent courses within the dentistry curriculum. Spring, Odd, Staff.

122 DEVELOPMENTAL NEUROBIOLOGY (NBIO 122) (3). Prerequisites: NBIO 222 and permission of the instructor. Principles of developmental biology applied to the nervous system. Mechanisms that guide differentiation of neurons and circuits. Development of distinct neural systems including the visual, auditory, and somatosensory systems. Spring, LaMania and faculty.
125 MOLECULAR AND INTEGRATIVE PHYSIOLOGY (1-4). Prerequisite, permission of the instructor. Introduction to current areas of genomic, cellular, and integrative physiological research and methodology. Topics include: cell-to-cell and intracellular signaling, growth, and differentiation; physiological regulation; mechanisms of disease. Fall. Lund, Sealsack. Staff.

189 NUCLEIC ACID TECHNIQUES (BIOL 189, GNET 189, MCRO 189) (4). Prerequisites, some molecular biology and permission of the instructor. An intense hands-on course covering many aspects of recombinant DNA technology such as isolation of nucleic acids, gel analysis, Southern and Northern blotting, cloning in viruses and plasmids, and DNA sequencing. Fee required. Some scholarships available. Eight laboratory hours. Fall, spring, summer. Linaker.

200 HUMAN PHYSIOLOGY (5). Prerequisite, permission of the course director. A special section for physiology graduate students only of the course for medical students. The course provides a general consideration of cell function and systemic physiology. Four lecture and two laboratory hours a week. Spring. Mellwain, staff.

201 NEUROBIOLOGY (Neurobiology 210) (3). Prerequisite, permission of the course director. A special section for physiology graduate students only of the neurobiology course for medical students. Structural and functional organization is analyzed at the level of the cell membrane, the neuron, and integrated neuronal systems. Spring. Fuel, staff.

205 COMMUNICATING SCIENTIFIC RESULTS (1). Practice in oral and written communication evaluated by peers and faculty. Includes delivery of prepared presentations on topics in physiology and preparation of writing assignments typically encountered in scientific life. Fall. Stuart.

206 COMMUNICATING SCIENTIFIC RESULTS (1). Practice in oral and written communication evaluated by peers and faculty. Includes delivery of prepared presentations on topics in physiology and preparation of writing assignments typically encountered in scientific life. Spring. Stuart.

210 PHYSIOLOGY LABORATORY ROTATION (1-6). Prerequisite, permission of the director of graduate studies. Rotations in faculty laboratories introduce methods and techniques in physiology. Individual projects provide an opportunity to explore potential dissertation topics. Fall, spring, summer. Staff.

211 SPECIAL TOPICS IN PHYSIOLOGY (NBIO 211) (1-3). Prerequisite, permission of the instructor. Individually arranged in-depth programs of study of selected topics such as membrane function, transport physiology, renal physiology, etc. Fall. Staff.

212 SPECIAL TOPICS IN PHYSIOLOGY (NBIO 212) (1-5). Prerequisite, permission of the instructor. Individually arranged in-depth programs of study of selected topics such as membrane function, transport physiology, renal physiology, etc. Spring. Staff.

220 SEMINAR IN PHYSIOLOGY (1). Prerequisite, permission of the director of graduate studies. Fall. Faber.

221 SEMINAR IN PHYSIOLOGY (1). Prerequisite, permission of the director of graduate studies. Spring. Faber.

222A CELLULAR AND MOLECULAR NEUROBIOLOGY: INTRODUCTION (2). Prerequisite, permission of course director. Introductory section covers basic neurobiology, including neuronal cell biology, action potentials, synaptic potentials, molecular biology, and neuroanatomy. Course meets four weeks with six lecture hours per week. Fall. Stuart.

222B CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-RECEPTORS (2). Prerequisite, permission of instructor. Consideration of membrane receptor molecules activated by neurotransmitters in the nervous system with emphasis on ligand binding behavior and molecular and functional properties of different classes of receptors. Course meets for five weeks with six lecture hours per week. Fall. Stuart.

222C CELLULAR AND MOLECULAR NEUROBIOLOGY: ELECTRICAL SIGNALING (2). Prerequisite, permission of course director. The genesis of electrical impulses in the nervous system is considered with an emphasis on membrane potentials, voltage-gated ion channels, and structural features of neurons that influence coding. Course meets for five weeks with six lecture hours per week. Fall. Stuart.

223A CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-INTRACELLULAR SIGNALING (2). Prerequisite, permission of the course director. Explores biochemical signal transduction events following activation of neurotransmitter receptors including G-protein coupling, desensitization, signaling specificity, downstream effectors, calcium signaling and trypsin kinases. Course meets for five weeks with six lecture hours per week. Spring. Stuart.

223B CELLULAR AND MOLECULAR NEUROBIOLOGY: PRESYNAPTIC MECHANISMS (2). Prerequisite, permission of course director. Explores the mechanisms regulating the release of neurotransmitters from nerve terminals, including quantal release, vesicle and terminal membrane proteins, neurotransmitter transporters, and plasticity of synaptic transmission. Course meets for five weeks with six lecture hours per week. Spring. Stuart and faculty.

224 PAIN AND SOMATIC SENSATION (Neurobiology 224) (2). Prerequisites, PHYI 200 or equivalent and permission of the instructor. Consideration of peripheral and central neural mechanisms for somatic sensation with particular emphasis on pain. Spring. Perl.

240 ADVANCED CONCEPTS IN PHYSIOLOGY: RENAL/CARDIOVASCULAR SYSTEMS (3). Prerequisites, PHYI 200 and permission of the instructor. Blood pressure control in normal, diseased, and genetically modified animals. Physiology and pathophysiology of the renal and cardiovascular systems. Fall. Atwood, He, staff.

290 SEMINAR IN NEUROBIOLOGY (BIOC 290) (NBIO 290) (PHCO 290) (3). Prerequisite, permission of the director of the Neurobiology Curriculum. An intensive consideration of selected topics and problems. The course focuses on the development of presentation and evaluation skills of the trainees. Spring. Faculty of the Neurobiology Curriculum.

300 TEACHING PHYSIOLOGY (1-3). Prerequisite, permission of the course director. Introduces the principles of teaching physiology. Provides students the opportunity to plan instruction and to teach with increasing degrees of responsibility. The teaching internship is under the direct supervision of a faculty mentor. Fall and spring. Faber and faculty.

301 RESEARCH IN PHYSIOLOGY (3-10). Fall. Staff.

302 RESEARCH IN PHYSIOLOGY (3-10). Spring. Staff.

303 RESEARCH IN PHYSIOLOGY (3-10). Summer. Staff.

310 RESEARCH IN NEUROBIOLOGY (Biochemistry 310) (Neurobiology 310) (Pathology 310) (Pharmacology 310) (Psychology 310) (Biology 302) (3-12). Prerequisites, permission of a staff member. Research in various aspects of neurobiology. Six to twenty-four hours a week. Fall and spring. Faculty of the Neurobiology Curriculum.

393 MASTER'S THESIS (3 or more). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

DEPARTMENT OF CHEMISTRY

JAMES W. JORGENSEN, Chair

Professors

Tomas Barton (1) Physical Chemistry
Max L. Berkowitz (30) Physical Chemistry
John J. Boland (10) Chemistry of Electronic Materials
Maurice S. Brookhart (2) Organic and Organometallic Chemistry
Michael T. Crammim (39) Organic Chemistry
Joseph M. DeSimone (49) Synthetic Polymer Chemistry
Thom Dunning, Physical Chemistry
Malcolm D. E. Forbes (48) Organic and Physical Chemistry
Gary L. Glish (40) Analytical Chemistry
Eugene A. Irene (38) Electronic Materials, Solid State Chemistry
Charles S. Johnson Jr. (18) Physical Chemistry
James W. Jorgenson (36) Analytical Chemistry
Paul J. Kropp (20) Organic Chemistry
Susan T. Lund (50) Biological Chemistry
Roger E. Miller (29) Physical Chemistry
Royce W. Murray (25) Analytical Chemistry
Robert G. Parr (34) Physical Chemistry
Lee G. Pedersen (26) Physical Chemistry
Gary J. Pirhak (46) Biological Chemistry
Michael Rubinstein (43) Polymer Physical Chemistry
Edward T. Samulski (44) Polymer Physical Chemistry
Thomas N. Sorrell (35) Organic Chemistry
Linda L. Spernau (28) Biological Chemistry
Joseph L. Templeton (31) Inorganic Chemistry
Nancy L. Thompson (41) Physical and Biological Chemistry
H. Holden Thorp (51) Inorganic Chemistry
R. Mark Wightman (47) Analytical and Neurochemistry
Richard V. Wolfen (Biological Chemistry)

Associate Professors
Dorothy A. Eric (11) Physical and Biological Chemistry
Michel R. Gagné (22) Inorganic, Organic, and Polymer Chemistry
Cynthia K. Schaefer (45) Inorganic Chemistry
Kevin M. Weeks (53) Biological Chemistry

Assistant Professors
Jeffrey S. Johnson (58) Organic Chemistry
Wentlin Lin (60) Inorganic Chemistry
James P. Morken (42) Organic Chemistry
John M. Papantoniou (52) Physical Chemistry
Matthew Redinbo (55) Biological Chemistry
Mark H. Schoenfisch (57) Analytical and Materials Chemistry
Sergei S. Shekho (59) Polymer and Materials Chemistry
Dominic Tani, Chemistry Education, Lab Curriculum Development
Scott Wallace (54) Analytical Chemistry
Marcy Waters (56) Organic Chemistry

Professors Emeriti
Richard P. Buck
Maurice M. Bunney
Francis N. Collier
James L. Cote
Henry H. Dearman
Ernest L. Eliel
Richard G. Hiskey
Richard C. Jarnagin
Donald C. Jicha
William F. Little

The Department of Chemistry offers graduate programs leading to the degrees of master of arts, master of science (nonthesis), and doctor of philosophy in the fields of analytical, biological, inorganic, physical, and polymer and materials chemistry. Close interaction between the departments of Chemistry, Physics, Biochemistry, and Environmental Sciences and Engineering reinforces the broad nature of the graduate research program.

Doctor of Philosophy
The PhD degree in chemistry is a research degree and students normally begin research during the first year in graduate school. As soon as the entering student has selected a research adviser, an advisory committee is established to develop an appropriate course of study designed to meet individual needs. The PhD degree consists of completion of a suitable program of study, a preliminary doctoral oral examination, a written comprehensive examination that is satisfied by cumulative examinations, an original research project culminating in a dissertation, and a final oral examination.

Master of Arts
The master of arts degree requires a minimum of thirty semester hours of credit. Courses are determined by the student's advisory committee. A written comprehensive examination that may be satisfied by cumulative examinations, a thesis, and a final oral examination are also required. Admission to the PhD program after completion of the MA degree in the department requires approval by the Chemistry Graduate Studies Committee.

Master of Science (nonthesis)
The master of science (nonthesis) degree requires a minimum of thirty semester hours. The candidate must earn at least twenty-four hours of graduate credit in chemistry and allied subjects, which may include graduate seminars numbered 200 or higher but does not include CHEM 331, 341, 351, 361, and 381 (referred to collectively as 3×1). As a substitute for the thesis the candidate must earn a minimum of six hours of CHEM 392 (master's non-thesis option). The student's program of study is determined by the student's advisory committee. A written report submitted to the student's research director describing work done while registered for CHEM 392 and a written examination that may be satisfied by cumulative examinations are also required. Admission to the PhD program after completing the MS degree in the department requires approval by the Chemistry Graduate Studies Committee.

Research Interests

Biological. Kinetics in complex biochemical systems molecular biology and molecular genetics; mechanism of protein biosynthesis; metabolic regulation; gene organization and regulation of gene expression; structural studies of macromolecules; protein structure function using nuclear magnetic resonance spectroscopy, protein folding and site-directed mutagenesis; the thermodynamics of protein-protein interactions; protein stability; characterization of proteins by laser light scattering; characterization of protein/DNA complexes using scanning force microscopy and rapid mixing techniques; RNA structure, assembly of complex RNA-protein architectures, protein-facilitation of RNA catalysis; chemical synthesis of peptides and proteins; microanalysis of peptides and proteins; protein engineering through chemical synthesis; biochemical studies of the serum complement and clotting cascades; molecular immunology; computer graphics and molecular modeling of biomolecules; mathematical methods for comparison of genetic sequences; cell surface biophysics; fluorescence microscopy and spectroscopy.
Inorganic. Physical inorganic chemistry: electronic structure of transition metal complexes; photochemistry and electrochemistry of metal complexes; molecular orbital theory, nuclear magnetic resonance and electron paramagnetic resonance spectroscopies; X-ray crystallography; infrared and Raman spectroscopies. Chemistry of transition metal complexes: synthesis of transition metal compounds, organometallic chemistry including metal-catalyzed organic reactions; reactions of coordinated ligands; kinetics and mechanisms of inorganic reactions; metal cluster chemistry; chiral supramolecular chemistry. Materials chemistry: molecular precursors to materials; solid state lattice design; metal-ion containing thin films; metal-polymer complexes; functional coordination polymers; chiral porous solids. Bioinorganic chemistry: reactivity of oxidized metal complexes with nucleic acids, photoinduced DNA cleavage, synthesis and characterization of model complexes for metalloenzymes.

Organic. Synthesis and biological reactions of natural products; peptide synthesis; protein engineering; structure-function studies on polypeptides and proteins; mechanistic and synthetic studies in organometallic chemistry; catalysis using organometallic complexes; nuclear magnetic resonance; kinetics; organosulfur and organophosphorus chemistry; surface effects in chemical behavior; chemistry of reactive intermediates including carbonates, carbanions, carbene and radical pairs; new synthetic methods including asymmetric synthesis; stereochemistry and conformational analysis; design and synthesis of models for metalloenzymes; epr investigations of electronic couplings in high-spin organic molecules; spectroscopic studies of free radicals; synthesis and characterization of well-defined polymeric materials; synthesis of materials for use in microelectronics; homogenous and heterogeneous polymerizations in supercritical fluids; synthesis of engineering polymers; molecular recognition.


Polymer and Materials Chemistry. Many challenging problems in the modern science and technology are related to preparation, properties, and utilization of novel functional materials. The polymer chemistry and the chemical microelectronics programs represent parts of the multidisciplinary effort in this field. The many-pronged approach includes: synthesis and molecular characterization of well-defined block and graft copolymers; preparation of new engineering thermoplastics and liquid crystalline materials; synthesis, modification and processing of polymers in super-critical carbon dioxide; chemical design of hybrid polymers for catalysis and photoredox activity, polymers for microelectronics applications including 193 nm and 157 nm photoresists and low-k dielectrics, and defined microstructures. Chemical microelectronics is focused on preparation of organic and inorganic electronic materials; microscopic patterning of thin films using novel techniques (plasma, ion beam, laser beam, etc.); kinetics of etching and film formation; characterization of mechanical, electronic, and optical properties; spatially resolved chemical analysis of surfaces, interfaces, and thin films and microstructures. A broad variety of expertise includes visualization and probing of submicrometer surface structures by scanning probe microscopy, characterization of polymer dynamics by NMR techniques and light scattering, measurement of molecular conductivity, and analysis as well as computational and numerical methods in polymers.

Biotechnology. The University has instituted a program in Molecular Biology and Biotechnology. This program is an umbrella covering faculty and their research programs located in various departments including Biochemistry and Biophysics, Microbiology, Pathology, Biology, and Chemistry. Some of the research being carried out in this field includes recombinant DNA technology, molecular genetics, atomic force microscopy, protein biosynthesis, enzymology, protein engineering, monoclonal antibodies, protein molecular dynamics, molecular modeling, and site-directed mutagenesis.

Attention is drawn to the possibility of arranging, through consultations with staff of the departments of Chemistry and Physics, a program combining course work in the two departments with thesis research in either department. Such a program would provide training in an area in which methods of theoretical and experimental physics are applied to chemical problems.

Facilities and Equipment

Research is carried out in the William Rand Kenan Jr. Laboratories, a facility of 130,000 square feet completed in 1971. Additional space of approximately the same size is used in the historic and renovated Venable Laboratories, while undergraduate laboratories are housed in the modern John Motley Morehead Laboratories completed in 1986. Construction will begin in 2003 of Phase 1 of a multiphase project to replace Venable and provide increased laboratory space. The new laboratory space will ultimately exceed the combined size of Kenan and Venable Laboratories. Included in the department are some major facilities managed by PhD-level staff scientists. The NMR laboratory includes 7 high resolution FT-NMR spectrometers ranging from 200 to 600 MHz for liquids: 200 MHz, 300 MHz, two 400 MHz and 500MHz Bruker spectrometers, and 300 MHz and 600 MHz Varian spectrometers. There is also a Bruker 360 MHz wide bore FT-NMR spectrometer suitable for solid polymeric samples with magic angle spinning. The protein synthesis laboratory is a joint facility in conjunction with NIEHS in the Research Triangle Park. In addition, the department houses an ESCA instrument, various U/V-visible spectrometers, EPR, and FT-IR spectrometers, an Aviv circular dichroism spectrometer, mass spectrometers, and magnetic susceptibility equipment as well as an automated X-ray facility that houses two single crystal Rigaku diffractometers.
Computing services are among the most important for modern research. The University facilities include a 46 processor SGI cluster (400 MHz), a 36 processor SUN E10000 system, and a 4 processor SUN E450 system. These are dedicated broadly to scientific computing. Local Ethernet and a campus-wide broadband network link all parts of the campus. There are also links to the North Carolina Supercomputer Center, which houses an IBM cluster of power 3 processors (180 nodes of 4 processors each) and an SGI cluster of 48 processors (600 MHz). A number of the individual laboratories in chemistry own Silicon Graphics workstations. In addition, UNC-Chapel Hill has a major molecular modeling laboratory located in the Department of Medicinal Chemistry and a world-renowned graphics facility housed in the Department of Computer Science.

To support the research programs, the department provides a number of services. Machine, glass, and electronics shops are provided to assist in construction and maintenance of specialized equipment. Technicians are also available to run certain specialized instruments.

The William Rand Kenan Jr. Chemistry Library and reading room, conveniently housed in the Venable Laboratories for twenty-four-hour use by research students, contains complete sets of the most important chemical periodicals, many books of reference, on-line literature searching terminals, an extensive collection of monographs, and books of historical value and interest, amounting to more than 45,000 volumes.

Financial Aid and Admission

The department awards a number of industrial fellowships and predoctoral research and teaching appointments. All outstanding prospective graduate students who apply for admission/support are automatically considered for fellowships.

There are approximately 200 graduate students in the department. All are supported either as teaching assistants (64), research assistants (106), or as Fellows (30) supported by the Graduate Student, industry, or the United States government. The duties of the teaching assistants include the preparation and supervision of laboratory classes in undergraduate courses and grading of laboratory reports.

Applications for assistantships and fellowships should be made by January 1, although applicants for assistantships are considered after that date. All applicants (foreign and American) must take the Graduate Record Examination. All foreign students whose native language is not English must take the TOEFL examination in addition to the Graduate Record Examination. However, foreign students who hold a degree from a university in the United States are exempt. Both the TOEFL and GRE should be taken as early as possible, preferably in October.

Applications forms for admission/support, as well as information about the department, may be obtained from the graduate studies coordinator in Chemistry, email address: kcj@unc.edu.

Courses for Graduates and Advanced Undergraduates

101 SPECIAL PROBLEMS IN CHEMISTRY (1-3). Prerequisite, to be determined by consultation with vice-chair of Undergraduate Studies. Equivalent of one to three hours a week. Fall and spring. Chemistry faculty.

120 INTRODUCTION TO POLYMER CHEMISTRY (APPL 120) (3). Prerequisite, CHEM 61 or 65H; prerequisites or corequisites, CHEM 62 or 66H, 62L or 66L. Introduction to polymer chemistry; synthesis and reactions of polymers; thermodynamics and kinetics of polymerization; physical characterization of polymers; industrial uses of polymers. Fall. Organic and Physical Chemistry faculty.


123 INTERMEDIATE POLYMER CHEMISTRY (3). Prerequisite, CHEM 122. Rheology and mechanical properties of polymers; plastics, fiber, and elastomer technology. Spring. Chemistry faculty.

124L POLYMER CHEMETRY LABORATORY (APPL 124L) (2). Prerequisite or corequisite, CHEM 120 or 121. Thermal analysis; solution viscosity; gel permeation chromatography; end group analysis; synthesis; characterization of an unknown polymer. One four-hour laboratory and a one-hour lecture each week. Spring. Chemistry faculty and staff.

130 INTRODUCTION TO BIOLOGICAL CHEMETRY (BIOL 130) (3). Prerequisites, CHEM 62 or 66H, 62L or 66L; Biology 11. The study of cellular processes including catalysis, metabolism, bioenergetics, and biochemical genetics. The structure and function of biological macromolecules involved in these processes is emphasized. Fall and spring. Biological Chemistry faculty.

131 NUCLEIC ACID CHEMETRY (BIOL 131) (3). Prerequisites, CHEM 130, Biology 50. Study of reactions and chemical properties basic to nucleic acids; chemical synthesis; as well as biosynthesis; nucleic acids in protein biosynthesis. Spring. Biological Chemistry faculty.

132 PROTEIN CHEMETRY (3). Prerequisite, CHEM 130. Structural properties of proteins; active-site chemistry; chemical modification of proteins; metalloproteins; ozone-enzyme interactions; organization of enzyme systems. Fall. Biological Chemistry faculty.

133 ENZYME MECHANISMS AND KINETICS (3). Prerequisite, CHEM 132. A detailed discussion of enzyme catalysis; principles of catalysis; enzyme kinetics; the active site of enzymes; allosteric interactions between substrates; the mechanism of coenzyme-catalyzed reactions. Spring. Biological Chemistry faculty.


136L LABORATORY TECHNIQUES FOR BIOCHEMETRY (3). Prerequisite, CHEM 130. An introduction to important chemical techniques and research procedures of use in the fields of protein and nucleic acid chemistry. Two four-hour laboratories a week, and one-hour lecture each week. Biological Chemistry faculty.

137 MEMBRANE CHEMETRY (BIOL 137) (3). Prerequisites, BIOL 11, CHEM 130; corequisites or prerequisite, CHEM 180 or 181. The structure and properties of synthetic membranes and of naturally occurring biological membranes. Spring. Biological Chemistry faculty.

138 CHEMETRY OF METABOLIC REGULATION (3). Prerequisites, CHEM 130. 180 or 181. Energy metabolism and its regulation; nitrogen metabolism; biosynthesis of amino acids; fatty acid metabolism. Fall. Biological Chemistry faculty.

140 ANALYTICAL METHODS (2). Prerequisites, CHEM 41 or 45H, 62 or 66H, 62L or 66L. Analytical separations, chromatographic methods, spectrophotometry, acid-base equilibria and titrations, fundamentals of spectroscopy. Fall. Analytical Chemistry faculty.

141 INTERMEDIATE ANALYTICAL CHEMETRY (2). Prerequisites, CHEM 41 or 45H, 41L or 45L, 62 or 66H, and 180 or 181. Spectroscopy, electroanalytical chemistry, chromatography, thermal methods of analysis and signal processing. Spring. Analytical Chemistry faculty.
141L INTERMEDIATE ANALYTICAL CHEMISTRY LABORATORY (2).
Conquisite, CHEM 141. Experiments in spectroscopy, electroanalytical chemistry, chromatography, thermal methods of analysis and signal processing. One four-hour laboratory a week and a one-hour lecture each week. Spring. Analytical Chemistry faculty and staff. (Fee required.)

142 ANALYTICAL RESEARCH TECHNIQUES (2). Prerequisite, CHEM 180 or 182. Introduction to chemical instrumentation including digital and analog electronics, computers, interfacing, and chemometrics. Two one-hour lectures a week. Fall. Analytical Chemistry faculty.

142L LABORATORY IN ANALYTICAL RESEARCH TECHNIQUES (3). Prerequisite, CHEM 180 or 182; corequisite, CHEM 142. Experiments in digital and analog instrumentation, computers, interfacing and chemometrics, with applications to chemical instrumentation. One four-hour laboratory a week. Fall. Analytical Chemistry faculty.

144 SEPARATIONS (2). Prerequisites, CHEM 141 and 180 or 181. Theory and applications of equilibrium and nonequilibrium separation techniques. Extraction, countercurrent distribution, gas chromatography, column and plane chromatographic techniques, electrophoresis, ultra-centrifugation, and other separation methods. Fall or spring. Analytical Chemistry faculty.

145 ELECTROANALYTICAL CHEMISTRY (3). Prerequisite, CHEM 180 or 181. Basic principles of electrochemical reactions, electroanalytical voltammetry as applied to analysis and the chemistry of heterogeneous electron transfers, analog electronics, and electrochemical instrumentation. Fall or spring. Analytical Chemistry faculty.

146 ANALYTICAL SPECTROSCOPY I (3). Prerequisite, CHEM 180 or 182. Fundamentals of interactions of electromagnetic radiation with matter, vibrational, electronic, nuclear magnetic, mass spectrometry, scattering-based spectroscopy, instrumentation and signal processing. Fall or spring. Analytical Chemistry faculty.

147 ANALYTICAL SPECTROSCOPY II (2). Prerequisite, CHEM 180 or 182. Principles and applications of X-ray absorption and emission, photoelectron, Raman, gamma-ray, Mössbauer and internal reflection spectroscopy, nuclear quadrupole and electron spin resonance, fluorescence, optical rotatory dispersion and circular dichroism, secondary emission methods. Fall or spring. Analytical Chemistry faculty.

148 MASS SPECTROMETRY (2). Prerequisite, CHEM 180 or 181. Fundamental theory of gaseous ion chemistry, instrumentation, combinations with separation techniques, spectral interpretation for organic compounds, applications to biological and environmental chemistry. Fall or spring. Chemistry faculty.

150 INTERMEDIATE INORGANIC CHEMISTRY (3). Prerequisite, CHEM 51. Electronic states of transition metal ions, symmetry labels, ligand field theory and angular overlap model for coordination complexes, kinetics and mechanisms of transition metal reactions, organometallic chemistry, biomimetic chemistry. Fall. Inorganic Chemistry faculty.

151 THEORETICAL INORGANIC CHEMISTRY (1-3). Prerequisites, CHEM 51, 62 or 66H. Chemical applications of symmetry and group theory, crystal field theory, molecular orbital theory. The first third of the course, corresponding to one credit hour, covers point symmetry, group theoretical foundations, and character tables. Fall. Inorganic Chemistry faculty.

152 ELECTRONIC STRUCTURE OF TRANSITION METAL COMPLEXES (3). Prerequisite, CHEM 151. A detailed discussion of ligand field theory and the techniques that rely on the theoretical development of ligand field theory, including electronic spectroscopy, electron paramagnetic resonance spectroscopy, and magnetism. Spring. Inorganic Chemistry faculty.

153 PHYSICAL METHODS IN INORGANIC CHEMISTRY (3). Prerequisite, CHEM 151. Introduction to the physical techniques used for the characterization and study of inorganic compounds. Topics typically include vibrational spectroscopy, nuclear magnetic resonance, X-ray photoelectron spectroscopy, and inorganic electrochemistry. Spring. Inorganic Chemistry faculty.


166 ADVANCED ORGANIC CHEMISTRY I (3). Prerequisite, CHEM 62 or 66H; prerequisites or corequisites, CHEM 150, 181. A survey of fundamental organic reactions including substitutions, additions, eliminations, and rearrangements; static and dynamic stereochemistry; conformational analysis; molecular orbital concepts and orbital symmetry. Fall. Organic Chemistry faculty.

167 ADVANCED ORGANIC CHEMISTRY II (2). Prerequisite, CHEM 166. Spectroscopic methods of analysis with emphasis on elucidation of the structure of organic molecules: 1H and 13C NMR, InfraRed, ultraviolet, ORD-CD, mass and photoelectron spectroscopy. CHEM 146 and 167 may not both be taken for academic credit. Spring. Organic Chemistry faculty.

168 SYNTHETIC ASPECTS OF ORGANIC CHEMISTRY (3). Prerequisite, CHEM 165. Modern synthetic methods and their application to the synthesis of complicated molecules. Fall. Organic Chemistry faculty.

170L SYNTHETIC CHEMISTRY LABORATORY I (2). Prerequisites, CHEM 41L or 45L, 51, 62L or 66L. A laboratory devoted to synthesis and characterization of inorganic complexes and materials. A four-hour synthesis laboratory, a characterization laboratory outside of the regular laboratory period, and a one-hour recitation each week. Fall. Chemistry faculty and staff.

170L SYNTHETIC CHEMISTRY LABORATORY II (2). Prerequisite, CHEM 170L. An advanced synthesis laboratory focused on topics in inorganic chemistry. A four-hour synthesis laboratory, a characterization laboratory outside of the regular laboratory period, and a one-hour recitation each week. Spring. Chemistry faculty and staff.

175 MECHANISMS OF ORGANIC AND INORGANIC REACTIONS (4). Prerequisite, CHEM 150. Kinetics and thermodynamics; free energy relationships: isotope effects; acidity and basicity; kinetics and mechanisms of substitution reactions; one- and two-electron transfer processes; principles and applications of photochemistry; organometallic reaction mechanisms. Fall. Inorganic and Organic Chemistry faculty.

180 INTRODUCTION TO BIOPHYSICAL CHEMISTRY (3). Prerequisites, CHEM 61 or 65H; Physics 25, Math 32. Does not carry credit toward graduate work in chemistry or credit toward any track of the BS degree in chemistry. Application of thermodynamics to biochemical processes, enzyme kinetics, properties of biopolymers in solution. Fall. Physical Chemistry faculty.

181 PHYSICAL CHEMISTRY I (3). Prerequisites, CHEM 21 or 25H; PHYS 26, 27; and pre- or corequisite, MATH 83, 58, or 61. Thermodynamics, kinetic theory, chemical kinetics. Fall. Physical Chemistry faculty.

181L PHYSICAL CHEMISTRY LABORATORY I (2). Prerequisite or corequisite, CHEM 181. Experiments in physical chemistry. One three-hour laboratory and a single one-hour lecture a week. Fall. Physical Chemistry faculty and staff.

182 PHYSICAL CHEMISTRY II (3). Prerequisite, CHEM 181. Introduction to quantum mechanics, atomic and molecular structure, spectroscopy, statistical mechanics. Spring. Physical Chemistry faculty.

182L PHYSICAL CHEMISTRY LABORATORY II (2). Prerequisites, CHEM 181, 181L; prerequisite or corequisite, CHEM 182. Experiments in physical chemistry. One four-hour laboratory a week. Spring. Physical Chemistry faculty and staff.

184 THERMODYNAMICS AND INTRODUCTION TO STATISTICAL THERMODYNAMICS (1-3). Prerequisite, CHEM 182. Thermodynamics, followed by an introduction to the classical and quantum statistical mechanics and their application to simple systems. The section on thermodynamics can be taken separately for one hour credit. Fall. Physical Chemistry faculty.
185 CHEMICAL DYNAMICS (3). Prerequisites, CHEM 181, 182. Experimental and theoretical aspects of atomic and molecular reaction dynamics. Fall or spring. Physical Chemistry faculty.

186 INTRODUCTION TO QUANTUM CHEMISTRY (3). Prerequisites, CHEM 181, 182. Introduction to the principles of quantum mechanics. Approximation methods; angular momentum; simple atoms and molecules. Fall. Physical Chemistry faculty.

187 INTRODUCTION TO MOLECULAR SPECTROSCOPY (3). Prerequisite, CHEM 186. Interaction of radiation with matter; selection rules; rotational, vibrational, and electronic spectra of molecules; laser-based spectroscopy and nonlinear optical effects. Fall or spring. Physical Chemistry faculty.

188 QUANTUM CHEMISTRY (3). Prerequisite, CHEM 186. Applications of quantum mechanics to chemistry. Molecular structures; time-dependent perturbation theory; interaction of radiation with matter. Spring. Physical Chemistry faculty.

189 STATISTICAL MECHANICS (3). Prerequisite, CHEM 184. Applications of statistical mechanics to chemistry. Ensemble formalism; condensed phases; nonequilibrium processes. Spring. Physical Chemistry faculty.

190 FUNDAMENTALS OF MATERIALS SCIENCE (APPL 141) (3). Prerequisite, CHEM 182; or prerequisite, PHYS 28 and prerequisite or corequisite, PHYS 105. Crystal geometry; diffusion in solids; mechanical properties of solids; electrical conduction in solids; thermal properties of materials; phase equilibria. Fall. Irene.

191 MATHEMATICAL TECHNIQUES FOR CHEMISTS (3). Prerequisites, knowledge of differential and integral calculus. Chemical applications of higher mathematics. Fall. Chemistry faculty.

192 CHEMISTRY AND PHYSICS OF ELECTRONIC MATERIALS PROCESSING (PHYS 144) (APPL 142) (3). Prerequisite, CHEM 182, or PHYS 25 or 27, and permission of the instructor. A survey of materials processing and characterization used in fabricating microelectronics devices. Crystal growth, thin film deposition and etching, and microelectronics characterization techniques. Electric and dielectric properties of materials. Spring. Chemistry and Physics faculty.

193 CHEMISTRY AND PHYSICS OF SURFACES (APPL 143) (3). Prerequisite, CHEM 180. The structural and energetic nature of surface states and sites; experimental surface measurements; reactions on surfaces including bonding to surfaces and adsorption; interfaces. Spring. Irene, Jarnagin.

Courses for Graduates

231, 232 SEMINAR IN BIOLOGICAL CHEMISTRY (2 each). Prerequisite, graduate standing. Literature survey dealing with topics in protein chemistry and nucleic acid chemistry. Fall and spring. Biological Chemistry faculty.

233 SPECIAL TOPICS IN BIOLOGICAL CHEMISTRY (1-3). Modern topics in biological chemistry. Fall and spring. Biological Chemistry faculty.

234 SPECIAL TOPICS IN BIOLOGICAL CHEMISTRY: NMR (1-3). Introduction to practical solution NMR of proteins in solution. Fall, spring. Pietak.

235 SPECIAL TOPICS IN BIOLOGICAL CHEMISTRY: MACROMOLECULAR INTERACTIONS (1-3). Fall, spring. Pietak.

236 MACROMOLECULAR CRYSTALLOGRAPHIC METHODS (2). Data collection, phase determination, and structural refinement. Laboratory component allows students to crystallize protein, collect and process data, determine phases, and refine their structures. Spring. Redinbo.

242, 243 LITERATURE SEMINAR IN ANALYTICAL CHEMISTRY (2 each). 242 given in fall; 243 given in spring. Analytical Chemistry faculty.

244, 245 SPECIAL TOPICS IN ANALYTICAL CHEMISTRY (1-2). Modern topics in analytical chemistry, including advanced electroanalytical chemistry, advanced mass spectrometry, chemical instrumentation, and other subjects of recent significance. Two lecture hours a week. Fall and spring. Analytical Chemistry faculty.

252 SPECIAL TOPICS IN INORGANIC CHEMISTRY (1-3). Prerequisite, permission of the instructor. Research-level survey of topics in inorganic chemistry and related areas. Fall and spring. Inorganic Chemistry faculty.

254 LITERATURE SEMINAR IN INORGANIC CHEMISTRY (2). Prerequisite, graduate status. Fall and spring. Inorganic Chemistry faculty.

258 X-RAY STRUCTURE DETERMINATION (3). Prerequisite, permission of the instructor; a knowledge of elementary and differential calculus is assumed. This course is designed to introduce students to the techniques used in solving crystal structures by X-ray diffraction. Three lecture hours a week. Fall. Inorganic Chemistry faculty.

261, 262 SEMINAR IN ORGANIC CHEMISTRY (2 each). Prerequisite, graduate standing. One afternoon meeting a week and individual consultation with the professor in charge. Fall and spring. Organic Chemistry faculty.

264, 265 SPECIAL TOPICS IN ORGANIC CHEMISTRY (1-3 each). Two lecture hours a week. Fall and spring. Organic Chemistry faculty.

267 ORGANIC CHEMISTRY (2 to 6). Prerequisite, to be determined by consultation with professor in charge. Three to six hours a week. Fall and spring. Organic Chemistry faculty.

281, 282 SEMINAR IN PHYSICAL CHEMISTRY (2 each). Prerequisite, graduate standing. Two hours a week. Fall and spring. Physical Chemistry faculty.

283, 284 SPECIAL TOPICS IN PHYSICAL CHEMISTRY (1-3 each). Prerequisite, permission of the instructor. Modern topics in physical chemistry, chemical physics, or biophysical chemistry. One to three lecture hours a week. Fall and spring. Physical Chemistry faculty.

288, 289 PRINCIPLES OF CHEMICAL PHYSICS (3 each). Prerequisite, CHEM 281 or PHYS 160 or permission of the instructor. The quantum mechanics of molecules and their aggregates. Atomic orbitals, Hartree-Fock methods for atoms and molecules.

Research Courses

331 RESEARCH METHODOLOGY AND SEMINAR IN BIOLOGICAL CHEMISTRY (1 or more). Seminar and directed study on research methods of biological chemistry. This course provides a foundation for master's thesis or doctoral dissertation research. Fall and spring. Biological Chemistry faculty.

341 RESEARCH METHODOLOGY AND SEMINAR IN ANALYTICAL CHEMISTRY (1 or more). Seminar and directed study on research methods of analytical chemistry. The course provides a foundation for master's thesis or doctoral dissertation research. Fall and spring. Analytical Chemistry faculty.

351 RESEARCH METHODOLOGY AND SEMINAR IN INORGANIC CHEMISTRY (1 or more). Seminar and directed study on research methods of inorganic chemistry. The course provides a foundation for master's thesis or doctoral dissertation research. Fall and spring. Inorganic Chemistry faculty.

361 RESEARCH METHODOLOGY AND SEMINAR IN ORGANIC CHEMISTRY (1 or more). Seminar and directed study on research methods of organic chemistry. The course provides a foundation for master's thesis or doctoral dissertation research. Fall and spring. Organic Chemistry faculty.

381 RESEARCH METHODOLOGY AND SEMINAR IN PHYSICAL CHEMISTRY (1 or more). Seminar and directed study on research methods of physical chemistry. The course provides a foundation for master's thesis or doctoral dissertation research. Fall and spring. Physical Chemistry faculty.

392 MASTER'S (NONTHESIS) (Hours vary).

393 MASTER'S THESIS (Hours vary). Prerequisites, CHEM 331, 341, 351, 361, or 381. Fall and spring. Graduate faculty.

394 DOCTORAL DISSERTATION (Hours vary). Prerequisites, CHEM 331, 341, 351, 361, or 381. Fall and spring. Graduate faculty.
DEPARTMENT OF CITY AND REGIONAL PLANNING

EMIL MALIZIA, Chair

Professors
Richard N. L. Andrews (37) Environmental Policy - Joint
Philip R. Berke (52) Environmental Planning, Land Use Policy, Natural Hazards Mitigation
Raymond J. Burby (40) Land Use, Hazard Mitigation, Environmental Planning
David R. Godschalk (11) Land Use Policy, Dispute Resolution, Growth Management - Emeritus
Harvey A. Goldstein (36), Planning Theory, Economic Development, Research Methods
Edward J. Kaiser (5) Urban Development Processes, Land Use Planning, Hazard Mitigation - Emeritus
Enid E. Malizia (12) Economic and Real Estate Development, Development Finance
David H. Moreau (10) Environmental Planning, Water Resources Planning, Systems Analysis
William M. Rohe (22) Social Behavioral Aspects of Urban Development, Neighborhood Planning and Development
Dale Whittington (39) Environmental Planning, Public Investment Theory, International Planning

Associate Professor
Asad Khattak (54) Transportation, Quantitative Analysis

Assistant Professors
Thomas Campaella (61) Urban Design Theory and Practice, History of the American Built Environment, Site Planning
Roberto Quercia (57) Housing Finance, Housing Policy
Meeting Tewari (59) Microeconomics, International Planning
Daniel Rodriguez (60) Transportation, Spatial Structure
Yan Song (62) Geographic Information Systems, Urban Spatial Analysis, Land Use and Site Planning

Research Professors
Richard E. Bilsborrow, Developing Countries
David J. Brower (34) Growth Management, Coastal Planning, Hazard Mitigation

Adjunct Professors
Richard "Pete" Andrews, Environmental Policy Analysis
Edward M. Bergman (14) Economic Development
Jonathan B. Hawes (44) Planning and Government
Michael I. Lugger (38) Urban and Regional Economics and Development, Public Policy Analysis, Infrastructure and Housing - Adjunct
David Owens (49) Land Use Law
Michael A. Stegman (6) Housing and Policy Development, Real Estate Development - Joint Professor

Associated Faculty
Brian A. Giochetti, Real Estate Development
Milton S. Heath Jr., Natural Resource Law
David J. Hartell, Real Estate Finance
J. Myrick Howard, Historic Preservation
Dennis A. Rondinelli, Developing Countries
Judith W. Wegner, Land Use and Local Government Law

Professors Emeriti
F. Stuart Chapin Jr.
Maynard M. Hufschmidt
Edward J. Kaiser
David R. Godschalk
Shirley F. Weiss

City and Regional Planning

The state of North Carolina, the Research Triangle region, and the community of Chapel Hill are ideally suited to serve as the home base of a nationally ranked program in city and regional planning. The UNC-Chapel Hill campus is thirty miles west of Raleigh, the state capital and location of many agencies of state government. Through research projects, internships, and workshop courses, faculty and students interact with agencies such as Commerce, Community Development, Labor, Environmental and Natural Resources and Transportation, the Board of Science and Technology, and the North Carolina Housing Finance Agency.

The fifty-six-hundred-acre Research Triangle Park, which boasts over forty large research facilities employing more than thirty thousand people, is only ten miles from campus. The park, which symbolizes the style of high-tech economic development emerging in many growing regions in the United States, is one engine that drives the area's growth. The Raleigh/Durham metropolitan area, of which Research Triangle Park and Chapel Hill are part, was identified as one of thirty metropolitan areas in the country that accounted for half the new jobs in the nation in the year 2000. North Carolina, the nation's tenth most populous state, is growing by about 1.5 percent a year. The Research Triangle area is growing three times as fast. The future urbanization patterns of other areas are evident in the Research Triangle area.

The Department of City and Regional Planning at the University of North Carolina at Chapel Hill was established in 1946. It was among the first seven planning education programs in the United States. The original base of the department and its program were ideas about regionalism, broad-scale development planning, and the application of social science methods to practical problems of government being explored on the Chapel Hill campus in the 1930s and 1940s. This was the first planning department to be established with its principal university base in the social sciences rather than in landscape design, architecture, or engineering. The department has retained and strengthened that social science legacy through its faculty's multidisciplinary research and teaching programs.

At the start of the program in 1946, planning was defined as "the union of modern social science, design and engineering. It utilizes social science techniques to analyze the adjustments between people and their physical environment, and adjustments among people in their efforts to meet human needs. Through the planning process and means of meeting these needs are developed through social organization and the application of design and engineering techniques..."

From an original concern for applications of social science to regional development needs, the department has broadened its scope to include urban, state, and community planning and to cover physical, social, economic, and natural environmental concerns. The implementation and management aspects of planning — carrying out public policy through programs, projects, budgeting and finance, regulatory controls, and other actions — are also emphasized.

The concept of development as a goal of planning remains central to the department's mission. Whether the objectives are improved physical, social, economic, or environmental conditions or more efficient and equitable policies and programs, planning is a way to effectively marshal resources to achieve public development objectives. The professional planner combines an understanding of urban and regional theory grounded in a spatial context with a grasp of the planning and management methods necessary to guide development toward desired goals. These skills have taken on added importance with the emergence of expanded state and local responsibilities and increased public-private development ventures.
Graduates of the program apply their professional knowledge as local and regional planners, private consultants, public interest group staff members, nonprofit development organization planners, and state and federal government officials. To be an effective professional in these varying contexts requires a continuously updated knowledge base; therefore the practitioner must be supported by active researchers. Thus, the overall mission of the department is twofold: to educate practitioners and researchers capable of leadership in planning, and to expand the frontiers of knowledge about the effects of public and private actions on development processes through faculty research and service.

Degrees Offered
The department offers two degrees: the master of regional planning and the doctor of philosophy in planning. The two-year master’s degree program prepares students for the professional practice of planning. The PhD program prepares students for careers in research and university teaching in planning. The requirements of the two programs are described in detail in subsequent sections of the catalog. The two graduate degree programs are largely independent. Applicants should indicate which program they wish to enter.

Facilities and Equipment
The Department of City and Regional Planning is housed in New East and maintains a design laboratory in Hanes Hall. New East contains microcomputer laboratories, lecture and seminar rooms, offices, and the E. Stuart Chapin Jr. Research Library containing books, periodicals, pamphlets, reports, and maps used in the study of planning. The Chapin Library, with some sixteen thousand books, two thousand bound volumes, and sixty-five hundred planning reports and documents, is one of the outstanding planning research collections in the country. The facilities and services of all university libraries and those of other Triangle universities are available to students enrolled in the Department of City and Regional Planning. (Web: http://www.lib.unc.edu)

Mainframe and additional microcomputer facilities and a geographic information systems laboratory are available to students through the Institute for Research in Social Science and through the UNC-Chapel Hill Computation Center.

Students in the Department
During the past fifty-five years students have entered the department from all parts of the United States, Canada, and many other countries. The educational backgrounds of alumni who now hold positions of responsibility in the profession cover a wide range of undergraduate fields. Among them are architecture, biology, botany, business, economics, engineering, forestry, geography, history, landscape architecture, philosophy, political science, public policy analysis, psychology, public administration, sociology, and urban studies.

Graduates hold positions as directors of planning in the planning departments of small and large cities and as directors of state and regional planning programs. Graduates work as associate and assistant planners in city, county, metropolitan, and regional planning agencies, in housing and urban development agencies, in various branches of the federal service, in community-based organizations and associations, in research organizations, and in private development firms and banks. Finally, graduates are employed as private consultants; planning advisers to communities and developing areas; and as deans, chairs, and faculty members of educational institutions.

The Planning Profession and Employment Opportunities
During the past twenty-five years the field of planning has expanded considerably. The planning function remains a central part of municipal, county, and state government. Planning agencies operate within the framework of metropolitan, regional, and national governmental programs. Planning expertise is now essential in non-profit and community-based development organizations, consulting firms, advocacy groups, and other private organizations.

This period of increasing planning activity has broadened the scope of planning. In addition to design, research, and analysis, present-day planning functions include program management and implementation activities within public agencies and private organizations as well as coordination between government and business. Planners are increasingly called upon to lead analysis teams, to mediate conflicts, to advise decision makers of project impacts, and to package development proposals.

Employment opportunities in planning are varied. In general the work involves collection and processing of data; physical, environmental, and socioeconomic analysis; the preparation and evaluation of alternative proposals; and the formulation and implementation of programs for action.

As a consequence of the growth of planning activities throughout the world, adequately trained and qualified members of the profession are in demand in this country and abroad.

Equally important to the advancement of the field is the increasing need for advancing theory and knowledge in urban and regional development and for motivated teachers of planning. There has been a steady increasing demand for teachers and researchers among universities and research organizations in the United States, Canada, and overseas.

Together with the faculty, hundreds of the department’s seventeen hundred alumni in all parts of the country form an effective job referral and placement network for new and old graduates alike. Large numbers of our graduates in such key metropolitan centers as Boston, New York, Washington, Atlanta, Miami, Chicago, and on the West Coast provide invaluable assistance to students in their initial job searches and throughout their professional careers. Alumni keep in touch with the department and each other through the Alumni Lisserv and the Alumni Newsletter, which the department publishes and distributes annually to all graduates.

Application and Admission
Applications for the fall semester must be received by January 1 to be considered for Graduate School fellowships and first consideration for departmental fellowships, assistantships, and other financial aid. Applicants are notified of admission on a continuous basis between late January and early May. Financial aid decisions are made by early April, and the admissions process is fully completed by mid-May.

Forms and instructions for application are available on the Web (http://www.planning.unc.edu/program/admiss.htm) or mailed by the department upon request. Each applicant is required to pay a nonrefundable $60 fee when submitting an application.

Applicants are advised to apply for admission as early as possible. Open-house weekend, hosted by the department each March, provides applicants an opportunity to learn about the department and discuss their professional interests with faculty and enrolled students. Applicants may also visit the department on specific dates. For more admissions information see the departmental Web site at: www.planning.unc.edu/program/admiss.htm.
Admission Requirements

All prospective students must hold a bachelor’s degree from an accredited college or university. The educational backgrounds of applicants cover a wide variety of academic fields, work experiences, ethnic backgrounds, and geographic locations. Among them are architecture, biology, business, economics, engineering, biology, geography, geology, history, landscape architecture, philosophy, planning, political science, psychology, public administration, sociology, and urban studies.

Applicants are required to take the Graduate Record Examination (GRE). The GRE should be taken as early as possible. It is administered in conveniently located centers throughout the United States and in many other countries. Appointments are scheduled on a first-come, first-served basis. Register early to get your preferred test date, and to receive your test preparation material in time to prepare for the test. Applicants may register by phone, mail, or fax. Information on the GRE is available from the admission offices of most colleges and universities, or by writing to Graduate Record Examinations, CN 6000, Princeton, N.J. 08541-6000, or from their Web site, http://www.ets.org. GRE scores are recognized as contributory, not determinative, evidence of the applicant’s qualifications.

Admission Decisions

The Graduate School makes admissions decisions on the basis of recommendations submitted by the department. In making admissions recommendations, a student committee reviews all applicants in terms of established department policy. The department considers all credentials submitted as part of the application. No single factor is regarded as qualifying or disqualifying. Factors considered in the review of all applications include the grades and academic transcript, GRE scores, references, strength of courses, undergraduate institution, professional work experience, and statement of interest. The statement of interest should demonstrate understanding of and commitment to the planning field. The student’s overall academic record should be strong.

The department has a strong commitment to increasing diversity and providing opportunities for disadvantaged persons to enter the planning profession. We admit students from a variety of academic fields, work experiences, ethnic backgrounds, and geographic locations. Most successful applicants have planning-related work experience.

Transfer Credit

Students desiring to transfer to Chapel Hill from another graduate planning program may do so if they meet the admission requirements. Courses submitted for transfer must be reviewed and approved by this faculty. The maximum credit that may be transferred from another program is nine semester hours for the master’s degree.

Similarly, students wishing to transfer non-planning graduate course work taken elsewhere may do so up to a maximum of nine semester credit hours, provided that the courses were not credited to another degree and that the courses are judged by the department to be appropriate to the elective requirements of the student’s program at Chapel Hill. Graduate courses taken as an undergraduate are not transferable.

A minimum of three semesters in residence is required.

The Professional Master’s Degree Program

The program leading to the degree of master of regional planning prepares the candidate for professional planning practice. The curriculum covers social and institutional problems and settings and planning and management skills.

Satisfactory completion of the degree requires completion of a minimum of fifty-one credit hours, including an area of specialization and a master’s project in that area. The normal course load is twelve to fifteen credit hours per semester. Thirty-nine of the required fifty-one credits must be taken in the planning department.

Course work for the degree is divided into general requirements, area of specialization, and electives. Each student is assisted by a faculty adviser in designing an educational program. The adviser helps select courses appropriate for the student’s educational interests and goals.

General Course Requirements

All master’s degree students are expected to meet certain general course requirements. These consist of courses covering planning theory, urban spatial theory, applied microeconomics, analytical methods, communications skills, and a planning workshop. These basic course topics constitute a core of knowledge and skills prerequisite to completion of the master’s degree program.

The planning theory requirement is met by completing PLAN 204. The analytical methods requirement is met by completing PLAN 130. PLAN 214 fulfills the spatial theory requirement. The economics requirement is met by completing PLAN 210. Students select a planning workshop (PLAN 222 or 223) during their second year. In addition, most students take a planning law course appropriate for their specialization.

Areas of Specialization

Each student develops an area of specialization in Planning in consultation with faculty advisers. The area of specialization identifies the fields of professional practice in which the student expects to develop competence and begin a professional career.

Areas of specialization offered by the department reflect a combination of current practice, employment opportunities, available faculty resources, and longer term societal needs. As these factors change, specialization content is adjusted. Specialization offers different blends of technical knowledge, planning and management skills, philosophies about the role of the planner, and theories for understanding relevant problems and contexts.

The department currently offers ten specializations in five general areas of professional planning practice. The areas are Community Development, Economic Development, Environmental Planning, Land Use Planning, and Transportation Planning.

Community Development: Housing and Community Development is concerned with the supply of affordable housing and the revitalization of urban neighborhoods. The related Real Estate Development specialization stresses project development and redevelopments. It is closely coordinated with the real estate concentration at the Kenan-Flagler Business School.

Economic Development: Urban and Regional Economic Development focuses on planning for functional and sustainable regional economies whereas Community Economic Development deals with issues of income and jobs for inner city areas and neighborhoods.

Environmental Planning: Environmental Policy and Planning stresses policy analysis with emphasis on water resources; Land Use-Environmental Planning addresses environmental management through land use planning.

Land Use Planning: Land Use and Sustainable Development stresses growth management at the urban and regional scales. Emphasizing small-area planning, the History, Design, and Preservation of the Built Environment specialization combines coursework in urban history, land use design, and historic preservation.

Transportation Planning: Transportation specialization provides concepts and tools relevant to transportation policy and planning. The
Land Use-Transportation Planning specialization provides in-depth knowledge of the reciprocal relationship between transportation decisions and land development.

Students with a special interest in areas of the developing world may take a formal minor in Planning for Developing Areas in addition to their area of specialization. The minor is designed to train planners from both industrialized and less developed countries to work on management, research, administrative, and planning issues at the local, regional, and national levels in developing areas. Theories of economic development, social change, environmental degradation, and urbanization are presented, as well as analytical tools and quantitative techniques that prepare students to embark on a variety of careers that meet the needs of donor agencies and governments in developing countries. Students receive training in cost-benefit analysis and project appraisal, project management, and population planning.

It is also possible for master's students in City and Regional Planning to take a formal minor in Public Policy Analysis within the structure of the MRP curriculum.

Generally, specialization courses account for fifteen credit hours. Thus, in a fifty-one credit-hour program, about two-thirds of the credits fulfill basic requirements or specialization requirements while the rest are electives chosen by the student in consultation with faculty advisors.

**General Electives**

Additional courses are required beyond the general required courses and courses in the area of specialization. General electives may be used to complement and support the area of specialization, to specialize in another area of professional planning, to develop skills in a discipline (e.g., economics, design, management) or another professional program represented on campus (e.g., public administration, health administration, environmental engineering, business), or to develop general competence for professional practice through courses selected both within the department and from the regular offerings of the University. Up to twelve credits may be taken outside the department.

**Summary of Course Requirements**

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**Master's Project**

The master's project required of all master's degree students is original work involving substantial independent research and analysis of a topic related to planning practice. The requirement may be met by a paper of standard format. The requirement can also be fulfilled with a product in some other form, such as a plan or audiovisual presentation. Ordinarily, students submit an individually prepared paper. The student submits the paper topic and outline to the director of the student's focus area. The director approves the topic and assigns a faculty member to serve as major adviser for the project. The student may invite another faculty member to serve as a reader. Both must approve the final project. The project is completed during the final semester in residence and is filed by the department as part of the permanent record of the student's work.

**The Doctoral Program**

The doctoral program in planning provides training in research methods, planning theory, and areas of specialization that enable graduates to contribute to the development of substantive theory, knowledge, and scholarship in planning; to formulate and evaluate innovative public policy; and to administer research programs in domestic and international contexts. The program is small but highly selective and individualized. It is ideal for mature students from a variety of backgrounds.

The PhD degree requires a minimum of thirty credits. A master's degree in planning is not required, although most doctoral students have previous graduate work in planning or a related field. Students must fulfill four semesters of residence. The department accepts graduate transfer credits but requires at least one year of continuous residency at least six semester hours per regular semester. The department does not require a foreign language. It strongly encourages both research and teaching experience during residency.

In practice, doctoral candidates who hold master's degrees in planning or a related field generally require three to four semesters of formal course work in residence before beginning the dissertation. Other candidates may require five or more semesters, depending on their preparation. Dissertation research generally takes one more year.

Each student develops an individualized course of study to reflect a specific area of interest and career aspirations. Areas of specialization and appropriate course work are determined jointly by the student and program advisor. Programs are designed to meet the student's needs and build on prior academic training, for which substantial departmental or University faculty resources are available. Courses in the area of specialization must be mutually reinforcing and coherent; must prepare the student for expertise in some body of knowledge, methodology, or problem area; and must provide the student with the methods and knowledge base to do scholarly research. The comprehensive exams, taken at the end of course work, require a knowledge of planning theory and research methods in addition to the student's specific area of specialization.

A student may take a formal minor in another discipline with the consultation and approval of the appropriate department and the student's program committee. The minor emphasizes the achievement of methodological and related skills necessary to extend the student's research capabilities within a chosen area of specialization. Supportive complementary relationships between the two program components must be demonstrated.

It is important that the PhD Admissions Committee be able to identify an applicant's program interests from application materials submitted for review to The Graduate School and the department. In addition to any supplemental material the applicant may wish to submit in support of the application, the statement called for in the department's supplemental application should describe the proposed area of concentration and specific program course work and research interests, and information on relevant prior academic and professional training. The admissions process consists of two related phases. First, the Admissions Committee renders judgment about the academic qualifications of the PhD applicant. Second, if academic qualifications are met, the committee attempts to identify the applicant's program interests and the stage of development of those interests, and then considers the extent to which departmental and University-wide resources may be marshaled in support of those stated interests. Thus, academic qualifications are necessary but are not the only basis for admission into the doctoral program. Applicant interests must be clear and University
resources must be supportive to ensure the development of a strong PhD program.

Persons wishing to be considered for admission to the doctoral program and for fellowships and assistantships that may be available to doctoral candidates are advised to communicate with the department as far in advance as possible of the date they wish to enter. While the University financial awards are made in the spring semester each year, the deadline for applications for certain fellowships available to PhD candidates is in January preceding the August in which the applicant plans to begin the doctoral program. Applicants benefit by a visit to the department to discuss program requirements and interests prior to making formal application for admission.

Dual Degree Programs
Program in Law and Planning
Under a dual-degree program sponsored by the School of Law and the Department of City and Regional Planning, students may pursue the JD and MRP degrees together. Taken concurrently, the two degrees may be obtained in four years rather than the five years ordinarily required. The program seeks to develop professionals capable of dealing with both the legal and planning aspects of urban and regional development and policy. Course work is designed to prepare students for a variety of professional roles in which knowledge of planning methodology and process, coupled with the analytical skills and professional expertise of the lawyer, are essential. Graduates join private law firms, consulting firms, and public legal and planning staffs.

To enter this program, students must apply separately to the School of Law and the Department of City and Regional Planning and must be accepted independently by both. Students entering the program spend their entire first year in either the planning department or the business school. The second year is spent full-time in the other program. In the third year, students take courses in both business and planning. Sufficient electives can be taken in planning and business so that a curriculum can be tailored to each student’s career objectives. Admission to the business school is based on demonstrated potential for responsible leadership, the quality of the student’s academic transcripts, and the applicant’s score on the Graduate Management Admission Test (GMAT) administered by the Educational Testing Service of Princeton, N.J.

To request an admission packet for the Kenan-Flagler Business School please contact:
- Director of MBA Admissions
  - The Kenan-Flagler Business School
  - Campus Box 3400, Carroll Hall
  - The University of North Carolina at Chapel Hill
  - Chapel Hill, NC 27599-3400
  - http://www.kenanflagler.unc.edu

Program in Public Administration and Planning
Planners often gravitate to management positions in local and state government that require knowledge of budgeting, personnel, and government administration and politics. City and county managers grapple with planning and development issues, which constitute a large portion of local government agendas. This dual-degree program prepares professionals who want the flexibility of moving between planning and management positions in government. The Department and the Public Administration Program in the School of Government collaborate to enable students to receive both the MRP and the MPA degrees in three years, plus a summer professional field experience in public administration.

The intent of the combined program is to ensure that students have two complete and complementary, but distinct, areas of training. The MPA requirements ensure adequate training in public management. The MRP requirements ensure adequate training in core planning knowledge and skills, and in an area of planning specialization.

Students must obtain admission to both the MPA and MRP programs independently. With prior approval from faculty advisors in both programs, students may then count certain courses toward both degrees. The combined program requires a total of seventy-five semester credit hours.

Students are advised to gain approval from faculty advisors for their specific program of courses during the first semester of residence to assure that they can meet all requirements of both programs within three years.

To request an admission packet for the Master of Public Administration Program please contact:
- Jessica C. Russell
  - Administrative Assistant and Admissions Coordinator
  - Master of Public Administration Program
  - School of Government, UNC-Chapel Hill
  - CB # 3330 Knapp Building
  - Chapel Hill, NC 27599-3330
  - Phone: (919) 962-0425
  - Fax: (919) 962-8271
  - E-mail: mpastaff@ioinformatics.unc.edu
  - Web: www.mpas.unc.edu

Program in Public Health and Planning
The intellectual, professional, and historical connections between public health and city planning have assumed new urgency in the twenty-first century as the challenges of chronic illness, urban livability, and public safety...
have come to the fore. The built environment is increasingly seen as an important factor influencing physical activity, which in turn has multiple positive impacts on health promotion and disease prevention. The growth and redevelopment of urban areas impact social and economic well-being, public health, and safety. It is important to reconnect the public health and urban planning fields through professional training that will encourage greater connections in professional practice.

The Department of Health Behavior and Health Education (HBHE) in the School of Public Health and this department offer the dual-degree program in public health and planning. HBHE seeks to train future leaders in the planning, management, and evaluation of health education programs. Planning students will learn about the public health impacts of planning and how public health professionals can be allies in achieving shared goals. Students seeking careers in public health will learn how to shape the physical and social urban community in health-enhancing ways. This combination of skills will help forge broader and more powerful alliances that promote public health, safety, and livability in American communities.

To enter this program, students must apply separately to the Department of City and Regional Planning and the School of Public Health and must be accepted independently by both. Students entering the program spend their entire first year either in HBHE or DCRP. The second year is spent full-time in the other program. In the third year, students take both public health and planning courses. Students should be able to complete both programs in three years instead of four years by taking thirty-nine credit hours in HBHE and thirty-six credit hours in DCRP. Students are expected to produce master's projects for each department at the end of the program that demonstrate mastery of the two fields and an understanding of the interconnections between the fields.

To request an admission packet for the School of Public Health please contact:

Linda Cook, Registrar
Department of Health Behavior and Health Education
CB# 7440, Rosenau Hall
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-7440
Phone: (919) 966-5771
Fax: (919) 966-2921
E-mail: lcook@email.unc.edu
Web: www.sph.unc.edu/hbhe

Program in Landscape Architecture and Planning

The dual-degree program in landscape architecture and planning strengthens the design dimension of the planning curriculum, and creates a venue for working closely with the College of Design at North Carolina State University. The Department of Landscape Architecture offers two graduate program tracks leading to the MLA, which emphasize creative problem solving and a long-term commitment to responsible design. The curriculum provides the professional skills needed to deal with the human and natural forces that shape the land. The department is especially concerned with the protection, restoration, enhancement, and regeneration of the natural and cultural environments in urban, rural, and wilderness settings.

To enter this program, students apply to each department separately and must gain admission to both. The amount of time required for the MLA will depend on whether the student is pursuing the First Professional Degree track (eighty-two credits) or Advanced Studies track (forty-two credits). Usually, students will be able to reduce the time needed to attain both the MRP and the MLA by about one year by taking coursework in each department that counts toward the other department's degree program.

To request an admission packet for the Department of Landscape Architecture please contact:

Pam Christie-Tabor
Department of Landscape Architecture
220 Brooke Hall, Box 7701
College of Design
North Carolina State University
Raleigh, NC 27695-7701
Phone: (919) 515-8308
E-mail: pamela.christie@ncsu.edu
Web: http://ncusdesign.org/content

Program in Civil Engineering

A dual degree program is under development with the Department of Civil Engineering at North Carolina State University.

Students in Other Departments

Students taking degrees in other departments may be admitted to courses in city and regional planning provided they have the necessary prerequisite training and permission of the instructor. Courses are also open to undergraduate students. Priority is given to students minoring in urban studies and planning.

Research Programs in Urban and Regional Studies

Through the Center for Urban and Regional Studies, the Howard W. Odom Institute for Research in Social Science, the Water Resources Research Institute, the Carolina Environmental Program, the Carolina Population Center, and the Institute for Economic Development, members of the faculty and graduate students in the Department of City and Regional Planning and in related departments collaborate on research in a wide range of subject areas concerning planning, human behavior, and the environment.

Established in 1953 and later expanded under a grant from the Ford Foundation, the program of the Center for Urban and Regional Studies is concerned with theoretical and empirical research in urban processes and area development. The center has a permanent staff for planning and administration of its program and for the development of an interdisciplinary research-oriented program of services to local and state governments in North Carolina and elsewhere. The department's faculty use the center to pursue research interests and collaborate with faculty members of other University departments on research projects.

In 1964 the Water Resources Research Institute was established to support research on all aspects of water resources including the planning, programming, and analysis of urban and regional systems for development and control of quantity and quality of water and related land use. The institute serves as a focal point for faculty and student research and interdisciplinary seminars relating to water resources.

The Carolina Population Center (CPC), established in 1966, provides coordination of the University-wide interdisciplinary program in population research and training. Its efforts span the social, behavioral, and health sciences and it provides research services to faculty doing research in the United States and abroad. Departmental faculty and students are engaged in international research through the CPC.

The Institute for Economic Development was created in 1971 within the Extension Division of the University to sponsor the Basic Economic Development course. Now under the auspices of the Department of City and Regional Planning, the institute promises to strengthen the department's research and teaching mission and to enlarge its service capacity.

The Highway Safety Research Center (HSRC) is dedicated to improving transportation safety, with a major emphasis on highway safety. The center
conducts basic and applied research that increases knowledge and contributes to reducing death, injury, and related societal costs. HSRC works to translate developed knowledge into practical interventions that can be applied at local, state, national, and international levels. HSRC conducts research in three major areas of the highway safety problem: the driver/occupant, the vehicle, and the roadway. HSRC produces guidebooks, brochures, how-to manuals, news releases, public service announcements, and newsletters to communicate highway safety information to research colleagues, safety advocates, government officials, and motorists.

In addition to these activities organized under an institute or center, faculty members are engaged in research projects administered by the department.

Several other facilities in the nearby Research Triangle Park enrich and support the department's teaching and research programs:

The Research Triangle Institute (RTI) is a not-for-profit corporation that conducts research under contract to departments of federal, state, and local governments, public service agencies, foundations, and industry clients ranging from local firms to national corporations.

The institute was created as a separately operated affiliate of the three major universities that form the Research Triangle. Initial start-up funding for RTI was provided through a grant from the Research Triangle Foundation.

The institute is organized into major groups whose areas of capability span social and economic systems and human resources, statistical sciences, survey research, chemistry and life sciences, energy, engineering, and environmental sciences.

The Environmental Research Center, U.S. Environmental Protection Agency (EPA), the largest field installation of the United States EPA, was dedicated in December 1971. Today it is an international center of scientific expertise in environmental research.

The Triangle Universities Center for Advanced Studies, Incorporated (TUCASI) represents an additional effort in the Research Triangle of North Carolina to capitalize on the presence in a small radius of three major doctoral-research institutions, their facilities, libraries, and auxiliary resources. TUCASI is a joint activity of The University of North Carolina at Chapel Hill, Duke University in Durham, and North Carolina State University at Raleigh. TUCASI is the parent body that sponsors development of advanced study enterprises on its 120-acre campus within the Research Triangle Park. The center, chartered in 1975, is governed by a board of trustees, representing the constituent universities, the Research Triangle Foundation, and elected members.

The National Humanities Center was the first resident activity on the TUCASI campus. The center opened in 1978 as an institute for advanced study in history, literature, philosophy, and other fields of the humanities. Each year approximately forty-five leading scholars from the United States and other nations come to the center to pursue individual research and engage in interdisciplinary seminars, lectures, and conferences. Their work results in books, articles, and other contributions to learning. Grants from major foundations, corporations, the National Endowment for the Humanities, the Triangle Universities, and individuals support the center's program funding and administrative costs.

The UNC Institute for Transportation Research and Education (ITRE) is a division of The University of North Carolina General Administration. Its responsibilities include facilitation of transportation-related programs throughout the sixteen UNC campuses. Affiliated faculty and staff of ITRE are located on various campuses of the University and at ITRE's Research Triangle Park facilities. Included among ITRE's activities are workshops, short courses, research projects, and training programs for transportation professionals throughout North Carolina.

Courses for Graduates and Advanced Undergraduates

0066 FIRST YEAR SEMINARS (3). First Year Seminars offer an introduction to the intellectual life of the University. While drawing on diverse disciplines and subject areas, the seminars share a focus on how scholars pose problems, discover "truths," resolve controversies, and evaluate knowledge. Fall or spring. Faculty.

110, 111 SELECTED TOPICS IN URBAN STUDIES (1-3). The functioning of the urban area as a complex system. Analysis of planning and policies aimed at development and change. Fall or spring. Faculty.

126 URBAN TRANSPORTATION PLANNING (3). Prerequisite, permission of instructor required for undergraduates. Fundamental characteristics of the urban transportation system as a component of urban structure. Methodologies for the analysis of transportation problems, planning urban transportation, and the evaluation of plans. Spring. Khatrak.

127 PUBLIC TRANSPORTATION (3). Prerequisite, permission of instructor required for undergraduates. Alternative public urban transportation systems including mass transit, innovative transit services, and para-transit, examined from economic, land use, social, technical, and policy perspectives. Spring. Rodríguez.

128 TRANSPORTATION POLICY AND PLANNING (3). Prerequisite, PLAN 125 or permission of instructor. Examination of active transportation planning and policy questions: land use relationships, modal comparisons, environmental quality, transportation demand management, paratransit planning, the transportation needs of special populations, and international comparisons. Fall. Rodríguez.

129 TRANSPORTATION PLANNING MODELS (3). Prerequisite, permission of instructor required for undergraduates. The transportation planning process: data collection, trip generation, modal choice, trip distribution, and assignment. Social, economic, and environmental impacts of transportation. Innovative modeling techniques. Spring. Faculty.

130 PLANNING METHODS (3). Prerequisite, permission of instructor required for undergraduates. Accessing information from conventional and electronic sources, spatial data acquisition, analysis and mapping. Inferential statistics through multiple regression. Microcomputer laboratory. Fall. Khatrak.

230 ADVANCED PLANNING METHODS (3). Prerequisite, permission of instructor required for undergraduates. More in-depth treatment of topics covered in PLAN 130. Particular emphasis on techniques of multiple regression analysis, forecasting, categorical data analysis, and spatial data analysis. Fall. Spring. Faculty.

141 ECOLOGY AND LAND USE PLANNING (3). Integration of the structure, function, and change of ecosystems with a land use planning framework. How land use planning accommodates human use and occupancy within ecological limits to sustain long-term natural system integrity. Fall. Berke.

142 GENDER ISSUES IN PLANNING AND DEVELOPMENT (WMST 142) (3). Prerequisite, permission of instructor required for undergraduates. Examination of the experience of women in the urban environment and economic development process in the developing world. Fall. Faculty.

185 AMERICAN ENVIRONMENTAL POLICY (ENVR 185) (PLCY 185) (3). Intensive introduction to environmental management and policy, including environmental and health risks, policy institutions, processes, instruments, policy analysis, and major elements of American environmental policy. Lectures and case studies. Fall. Andrews.

Courses for Graduates

200, 201 SPECIAL TOPICS IN PLANNING AND URBANISM (3). Reading, lectures, and discussions to provide opportunities to develop new concepts and courses in various city and regional planning topics. Fall or spring. Faculty.

204 THEORY OF PLANNING I (3). The logic of planning as a professional activity. Critical overview of current process theories leading students to develop a personal philosophy applicable to their work as planners. Fall. Goldstein, Berke, faculty.

206 INTRODUCTION TO LAW FOR PLANNERS (3). Governmental institutions, real property, constitutional law, land use law, and environmental law. Fall. Brower.

210 MICROECONOMICS FOR PLANNING AND PUBLIC POLICY ANALYSIS (3). Introduction to principles of demand and supply, elasticity, marginal utility opportunity cost, pricing, production decisions, and profit maximization, cost-benefit analysis, financial appraisal, role of government, and market instruments for environmental protection. Fall. Tewari, Whittington, faculty.

214 URBAN SPATIAL STRUCTURE (3). Theories and empirical evidence of the contemporary spatial development of metropolitan areas. Industrial, residential, and commercial location; neighborhood change; the role of technological change and public policies; normative perspectives. Fall. Rodriguez, Song.

219 WATER POLICY IN LESSER DEVELOPED COUNTRIES (ENVR 219) (3). Multidisciplinary programming and planning techniques applied to environmental and resource management. Review of selected models on water quantity and quality, air quality, land use, and public facilities location. Fall. Whittington.

222, 223 PLANNING WORKSHOP (3). Problem-solving, client-based courses designed to give students experience in applying planning theory and methods to actual problem situations in economic development, housing and community development, real estate, environmental planning, and land use and transportation. Fall or spring. Faculty.

226 STATE AND LOCAL PUBLIC FINANCE I (PLCY 226) (3). Prerequisite, PLAN 210 or intermediate microeconomics. Analysis of tools used to finance infrastructure and services essential for economic development, especially for state/local government. Emphasizes revenue side (taxes, fees, charges) including use of bonds. Includes institutional design and case studies. Spring. Luger.

232 PUBLIC INVESTMENT THEORY (ENVR 282) (PLCY 232) (3). Prerequisite, PLAN 210 or equivalent. Basic theory, process, and techniques of public investment planning and decision making, involving synthesis of economic, political, and technologic aspects. Theory underlying benefit-cost analysis, adaptation to a descriptive and normative model for planning public projects and programs. Spring. Whittington.

233 ENVIRONMENTAL LAW (ENVR 283) (3). An examination of the law of resource use and development, its administration, and underlying policies. Particular attention is given to water resource laws, regulatory law, and natural resource administration. Fall. Heath.

234 WATER RESOURCES PLANNING AND POLICY ANALYSIS (ENVR 284) (3). Water resources planning and management. Federal and state water resources policies. Analytical skills to identify environmental problems associated with urban water resources development. Fall. Moreau.

236 ENVIRONMENTAL QUALITY MANAGEMENT (ENVR 286) (3). Planning and analysis of regional environmental system with a focus on management of mass flows that affect the quality of the regional environment. Spring. Moreau.


240 LAND USE AND ENVIRONMENTAL POLICY (3). History, institutional setting, rationale of state and local land use, and environmental policies. Program and policy frameworks, political and market processes, resource utilization concepts, and contemporary development and resource management. Fall. Berke.


242 PROJECT AND SITE PLANNING (3). Techniques of site analysis, project programming, and arrangement of structures on the land. Workshop covering design and review of urban development projects within limitations of regulatory standards and market criteria. Fall. Campanella, Song.

244 DEVELOPMENT AND ENVIRONMENTAL MANAGEMENT (3). Coordination of public powers and private actions to implement development plans and conserve environmental resources. Regulatory, public investment, incentive, and policy instruments used in land use and environmental guidance systems. Fall. Burby.

245 DEVELOPMENT IMPACT ASSESSMENT (3). Methods for data management and predictive analysis of the environmental, transportation, and other infrastructure; fiscal and social impacts of land development projects. Impact mitigation measures are also examined. Spring. Burby.

246 GIS FOR PLANNERS (3). Stresses the spatial analysis and modeling of organizing data within a geographic information system. Spring. Faculty.

247 ADVANCED GEOGRAPHIC INFORMATION SYSTEM (3). Prerequisite, PLAN 246 or equivalent. Review of spatial analytical techniques through a combination of laboratory work, lectures, and hands-on experience with GIS software. Fall. Song, faculty.

251 REAL ESTATE INVESTMENT AND AFFORDABLE HOUSING (3). Fundamentals and techniques of real estate investment analysis, including cash flow and computer modeling; applications of the public interest in private investment decisions; tax and other public policies influencing real estate investments; and affordable housing. Spring, Quercia.

252 HOUSING AND PUBLIC POLICY (3). A theory-based course in housing and market dynamics; the justification for government intervention and the operations of the mortgage market and construction industry. Students develop skills for housing market and policy analysis. Fall. Quercia.

253 BETWEEN STATE AND MARKET: HOUSING POLICY IN THE 21ST CENTURY (PLCY 259) (3). Prerequisite, PLAN 251 or permission of instructor. The course objective is to design the next generation of low income housing policies that "get the incentives right," and to address the inherent tensions between the "state" and the market. Spring. Stegman.

254 DEVELOPMENT DISPUTE RESOLUTION (3). Contemporary methods of resolving development disputes through negotiation, bargaining, and mediation. Techniques and skills applicable to solving controversies over planning and implementation of public and private development projects. Fall. Quercia.

255 THE DEVELOPMENT PROCESS (3). The dynamics of real property development from the developer's perspective covering market research, government relations, site planning, financing, investment analysis, construction and project management, and marketing. Spring. Malizia.


258 SEMINAR IN COMMUNITY CAPITALISM (PLCY 258) (3). Limited to graduate students. Community capitalism reflects the convergence of business and community development interests. The seminar explores theory and applications in inner city business and capital markets, development finance, and urban policies. Requires a major research project. Fall. Stegman.

261 ECONOMIC DEVELOPMENT POLICY (3). Introduction to basic theories, concepts, and strategies employed to pursue local and regional economic development. Clarifies similarities and distinctions with related planning perspectives.
including community development, investigates the economic logic behind various development initiatives, and reviews basic principles for critically examining alternative policies and programs. Spring, Goldstein, faculty.

263 DEVELOPMENT PLANNING TECHNIQUES (3). Intermediate and advanced techniques for analyzing the development of local and regional economies. Social accounts, indicator construction, regional input-output models, economic and fiscal impact analysis, labor market analysis, and regional economic forecasting techniques. Spring, Goldstein.

264 URBAN AND REGIONAL DEVELOPMENT SEMINAR (3). Fundamental concepts and theories applied to local economic development including growth, trade, product-cycle, flexible specialization, and entrepreneurship theories. Urban and regional development issues addressed in the North American, South American, European, or South Asian contexts. Fall, Tewari, Malizia.


267 DEVELOPMENT FINANCE (3). Community development financial institutions and loan funds for local asset building and wealth creation. Investment analysis to structure and finance local projects. Real estate and business development cases. Fall, Howarth, Malizia.

268 TECHNIQUES IN NEIGHBORHOOD REVITALIZATION (3). The steps involved in developing neighborhood revitalization plans. Students work with local neighborhood associations in identifying both community assets and problems and the various stakeholders, conducting research on selected issues, developing and selecting strategies for addressing these issues, and formulating an implementation strategy. Fall, Rohr.

270 INTERNATIONAL DEVELOPMENT AND SOCIAL CHANGE (3). Prerequisite, must be a graduate student. Course explores: a) impact of the global economy on national and community development; b) effect of environmental degradation processes on development; and c) explores strategies to guide social, economic and environmental change. Fall, Faculty.

288 ADVANCED ECONOMIC ANALYSIS FOR PUBLIC POLICY I (PLCY 288) (3). Economic theory applied to policy issues. Policy issues analyzed require microeconomic theory, including theory of utility and demand, organization and operation of product and factor markets, production theory, regulation, and welfare economics. Fall, Faculty.

289 ADVANCED ECONOMIC ANALYSIS FOR PUBLIC POLICY II (PLCY 289) (3). Prerequisite, PLAN 288. Additional public policy issues addressed to study further applications of economic theory issues require principles of taxation, fiscal and monetary theory, and regulation and growth theory. Spring, Faculty.

301 DESIGN OF POLICY-ORIENTED RESEARCH (PLCY 301) (3). Logic of designing research for the analysis of planning problems and the formulation of public policies. Elements of research design, case study, survey research, quasi-experimental designs, and the social experiment are covered. Spring, Goldstein.

302 ADVANCED SEMINAR IN RESEARCH DESIGN (PLCY 302) (3). Prerequisite, PLAN 301. Advanced treatment of topics introduced in PLAN 301. Spring, Faculty.

310, 311 PLANNING SEMINAR (Var.). Original research, fieldwork, readings, or discussion of selected planning issues under guidance of a member of the faculty. Fall or spring, Faculty.

315 INDEPENDENT STUDY (Var.). This course permits full-time graduate students enrolled in the Department of City and Regional Planning who wish to pursue independent research or an independent project to do so under the direction of a member of the department faculty. Fall or spring, Faculty.

353 PHD SEMINAR IN ENVIRONMENTAL MANAGEMENT AND POLICY (ENVR 353) (PLCY 353) (1). Prerequisites, doctoral standing and permission of the instructor. PhD seminar on theory, methods, and current research and literature in environmental management and policy. One to two seminar hours per week. Fall, spring, summer, Andrews.

355 APPLIED RESEARCH SEMINAR IN ECONOMIC DEVELOPMENT/SCIENCE AND TECHNOLOGY POLICY (3). Explores current issues in economic development and science and technology policy through a series of scholarly presentations and student research projects. Spring, Luger.

392 MASTER'S PROJECT (3). The master's project is original work, involving a substantial degree of independent research and/or analysis. May be a research paper, critical essay, development and evaluation of a program, project, or plan. Faculty.

394 DOCTORAL DISSERTATION (Var.). Faculty.

DEPARTMENT OF CLASSICS

JAMES J. O'HARA, Chair

Professors
Carolyn L. Connor (39) Byzantine Studies
George W. Houson (4) Latin Literature, Roman History, Epigraphy
Sara Mack (24) Virgil, Augustan Poetry, Homer
James J. O'Hara (2) Latin Poetry, Latin and Greek Literature
William H. Race (42) Pindar, Greek Poetry, the Classical Tradition
G. Kenneth Sams (13) Greek Archaeology, Anatolian and Near Eastern Archaeology
Cecil W. Woodham (35) Greek and Latin Prose, Rhetoric, Greek and Latin Language

Associate Professors
Donald Haggis (40) Greek Archaeology, Aegean Prehistory, Bronze Age and Early Iron Age Crete
Sharon L. James (5) Latin Poetry, Women in Antiquity
Peter M. Smith (26) Greek Philosophical Literature, Greek Tragedy, Homer

Assistant Professors
Maura Lafferty (3) Medieval and Classical Latin, Palaeography
Werner Ries, Roman History, Latin Epigraphy, Latin Prose Authors
Nicola Terrenato (6) Roman Archaeology and Art
Phimee Vosniou, Greek and Latin Literature, Ancient and Modern Colonialism, Mythology

Adjunct Professors
Jodi Magnes, Classical and Near Eastern Archaeology
W. James McCoy (17) Greek History
C.D.C. Reeve (39) Ancient Philosophy, Moral Psychology, and History of Philosophy
Mary C. Sturgis (31) Greek Art
Richard J. A. Talbert (18) Roman History

Professors Emeriti
Edwin L. Brown
Henry R. Immerwahr
Gerhard Koeppel
Jery Lindeski
Kenneth J. Reckford
Philip A. Stader
William C. West III

Graduate work in the Department of Classics is primarily designed to meet the needs of students who intend by intensive study and research to specialize in the classics. The MA prepares especially for teaching at the secondary level; the PhD for research and teaching at the university level.
The department cooperates with the other language departments in the University in making available the great literatures of the world. To this end, the department offers courses in Greek and Latin literature which do not require an ability to read either language in the original. Such courses are designed to emphasize aspects of the Greek and Latin genius, the forms of literature created in the ancient world and perpetuated, and the permanent contributions of Greece and Rome to Western civilization. These courses may be elected as part of a major for the Curriculum in Comparative Literature or as a minor or part of a major in other departments.

The department also offers courses in classical and medieval Latin for students of medieval studies in other departments.

The University is a contributing member of the American Academy in Rome, the American School of Classical Studies at Athens, the Archaeological Institute of America, the American Research Institute in Turkey, and the Institute of Nautical Archaeology. There are thus numerous opportunities for study and archaeological activity abroad.

Requirements for Advanced Degrees

The degree of master of arts is offered with a concentration in Greek, Latin, or classical archaeology. The degree of doctor of philosophy is offered with a concentration in Greek and Latin, classics with historical emphasis, classical archaeology, or classical Latin and medieval studies. A minor in related departments may be permitted on application. Students may broaden their program by taking supporting work in related languages or literatures or in art, history, linguistics, or philosophy.

Teaching assistance or lecture instruction equivalent to at least three contact hours a week for one semester, or until teaching competence is acquired, is required of all doctoral candidates. In practice, almost all students acquire several years of supervised teaching experience.

Requirements for advanced degrees are stated in general in the section "Graduate Degree Requirements," but exact prescription of the courses can be determined only upon knowledge of the needs of the individual candidate. A brochure describing the various programs in greater detail is available from the department, and is also online as part of The Graduate School’s Web page.

Graduate students in other departments may, with the approval of their department adviser, pursue a minor in medieval studies through the Department of Classics; for details see the last section of the classics entry.

Greek

Courses for Graduates and Advanced Undergraduates

107 GREEK COMPOSITION (3). Prerequisite, GREEK 21 or 22. Smith.

108 READINGS IN EARLY GREEK POETRY (3). Prerequisite, GREEK 21 or 22. (Alternate years.) Staff.

109 READINGS IN GREEK LITERATURE OF THE FIFTH CENTURY (3). Prerequisite, GREEK 21 or 22. (Alternate years) Staff.

110 READINGS IN GREEK LITERATURE OF THE FOURTH CENTURY (3). Prerequisite, GREEK 21 or 22. (Alternate years) Wooten.

140, 141 PROBLEMS IN THE HISTORY OF CLASSICAL IDEAS (3). Prerequisite, permission of the department.

158 GREEK NEW TESTAMENT (RELI 119) (3). Prerequisite, GREEK 21. Offered on application by five students. Staff.

Courses for Graduates

NOTE: One or two Greek courses numbered in the 200's are offered each semester.

201 GREEK EPIGRAPHY (3). Staff.

211 GREEK LYRIC POETRY (3). Race.

212 GREEK TRAGEDY (3). Smith, Race.

213 GREEK COMEDY (3). Staff.

214 GREEK PHILOSOPHICAL LITERATURE (3). Smith.

215 GREEK RHETORIC AND ORATORY (3). Wooten.

216 GREEK HISTORICAL LITERATURE (3). Staff.

217 HELLENISTIC POETRY (3). Staff.

218 LATER GREEK PROSE (3). Staff.

251 HOMER (3). Smith, Race.

252 SOPHOCLES (3). Race.

253 THUCYDIDES (3). Staff.

256 DEMOSTHENES (3). Wooten.

301 GREEK SEMINARS (3). Topics vary from year to year. Staff.

341 SPECIAL READING (3). Fall and spring. Staff.

393 MASTER'S THESIS (3 or more). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

Latin

Courses for Graduates and Advanced Undergraduates

101X/102X ELEMENTARY LATIN FOR GRADUATE STUDENTS. These courses are designed as a preparation for the reading knowledge examination for higher degrees. Passing the examination at the end of 102 (102X) certifies that the requirement has been satisfied. Students whose major departments permit them to take these courses for credit should register for 101, 102. Those not expecting credit should register for 101X, 102X. One semester each. Staff.

110 INTRODUCTORY LATIN COMPOSITION (3). Prerequisite, LATIN 22 or equivalent. Review of Latin grammar and idiom, exercises in composition, introduction to stylistics. (Alternate years.) Wooten.

111 READING IN LATIN LITERATURE OF THE REPUBLIC (3). Prerequisite, LATIN 21 or 22. (Alternate years) Staff.

112 READING IN LATIN LITERATURE OF THE AUGUSTAN AGE (3). Prerequisite, LATIN 21 or 22. (Alternate years) Mack, James.

113 READING IN LATIN LITERATURE OF THE EMPIRE (3). Prerequisite, LATIN 21 or 22. (Alternate years) Wooten.

114 READING IN LATIN LITERATURE OF LATER ANTIQUITY (3). Prerequisite, LATIN 21 or 22. Lafferty.

130 AN INTRODUCTION TO MEDIEVAL LATIN (3). Prerequisite, LATIN 14 or 102X. Lafferty.

140, 141 PROBLEMS IN THE HISTORY OF CLASSICAL IDEAS (3). Prerequisite, permission of the department.
Courses for Graduates

NOTE: One or two Latin courses numbered in the 200s are offered each semester.

202 LATIN EPIGRAPHY (3). Houston, Rieß.
203 LATIN PALEOGRAPHY (3). Lafferty.
207 LATIN COMPOSITION AND PROSE STYLES (3). Wooten.
211 FRAGMENTS OF EARLY LATIN POETRY (3). Mack.
222 ROMAN HISTORICAL LITERATURE (3). Study of Sallust, Caesar, Tacitus, or the minor historians of the empire. Staff.
224 ROMAN DRAMATIC LITERATURE (3). Study of the comedies of Plautus and Terence or the tragedies of Seneca. Staff.
225 ROMAN LYRIC AND ELEGIAC POETRY (3). Study of the forms of lyric and elegiac poetry with special attention to Catullus, Horace, Tibullus, or Propertius. Mack, James.
226 ROMAN SATIRE (3). Study of the development of satiric forms with special attention to Horace or Juvenal. Staff.
227 OVID AND LITERARY THEORY (3). Introduction to literary theory through a study of Ovid and scholarly approaches to his poetry. James.
230 TOPICS IN MEDIEVAL LATIN LITERATURE (3). Reading in selected medieval Latin prose and verse authors. Lafferty.
261 CICERO: POLITICAL CAREER (3). Rieß.
262 CICERO: LITERARY CAREER (3).
263 LUCRETIUS (3). O’Hara.
264 VIRGIL (3). O’Hara.
265 LIVY (3). Staff.
266 OVID (3). O’Hara, James.
270 PETRONIUS (3). Wooten.
274 TACITUS (3). Houston.
301 LATIN SEMINARS (3 each). Topics vary from year to year. Staff.
314 SPECIAL READING (3). Fall and spring. Staff.
393 MASTER’S THESIS (3 or more). Fall and spring. Staff.
394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

Classical Archaeology

Courses for Graduates and Advanced Undergraduates

140, 141 PROBLEMS IN HISTORY OF CLASSICAL IDEAS (3). Prerequisite, permission of the department.

148 ART IN THE AGE OF JUSTINIAN AND THEODORA (ART 148) (3). An interdisciplinary course based on monuments, history, and contemporary writings of the Byzantine empire during the rule of Justinian and Theodora. The approach is comparative, analytical, and contextual, and includes a feminist perspective. Fall. Connor.

149A CONSTANTINOPLE: THE CITY AND ITS ART (ART 149A) (3). Interdisciplinary study of the city of Constantinople during the Byzantine empire, with emphasis on the artistic, social, and cultural context. Includes study of monuments and their decoration, objects, contemporary documents, and sources, all within a chronological, historical framework. Fall or spring. Connor.

149B IN CONSTANTINOPLE (ART 149B) (3). Taught primarily in Istanbul, once Constantinople, the course provides first-hand experience with monuments and an overview of the history, topography, and culture of the city. Summer. Connor.

182 MOSAICS: THE ART OF MOSAIC IN GREECE, ROME, AND BYZANTINIUM (ART 182) (3). Prerequisite, any course in classics, art history, or religious studies. Traces the development of mosaic technique from Greek antiquity through the Byzantine Middle Ages as revealed by archaeological investigations and closely analyzes how dynamic medium conveyed meaning. Spring. Connor.


189 THE ARCHAEOLOGY OF ANATOLIA IN THE BRONZE AND IRON AGES (3). A survey of Anatolian archaeology from the third millennium through the sixth century B.C. (Alternate years.) Sams.

190 GREEK ARCHITECTURE (3). (Alternate years.) Sams.

191 ARCHITECTURE OF ETRURIA AND ROME (3). (Alternate years.) Terranova.

192 ROME AND THE WESTERN PROVINCES (3). Survey of the material remains of the western provinces of the Roman Empire, with attention to their historical context and significance. Fall. Terranova.


194 ARCHAIC GREEK SCULPTURE (ART 194) (3). (Alternate years.) Sturgeon.

195 CLASSICAL GREEK SCULPTURE (ART 195) (3). (Alternate years.) Sturgeon.

196 HELLENISTIC GREEK SCULPTURE (ART 196) (3). (Alternate years.) Sturgeon.

198 AEGEAN CIVILIZATION AND NEAR EASTERN BACKGROUNDS (ART 198) (3). (Alternate years.) Haggis.

199 THE ARCHAEOLOGY OF DARK AGE GREECE (3). Prerequisite, CLAR 41, 49, 94, or 198 or by permission. Issues and problems in the analysis of the Greek Dark Age and its material culture from the collapse of the Bronze Age palaces to the earliest Greek city states. Fall. Haggis.

Courses for Graduates

201 GREEK EPIGRAPHY (3). See courses in Greek.
202 LATIN EPIGRAPHY (3). See courses in Latin.

290 FIELD PRACTICUM IN ARCHAEOLOGY (3). Seminar in archaeological excavation techniques to be conducted in the field. Previous excavation experience is expected. Summer or fall. Haggis, Sams, Terranova.

294 GREEK TOPOGRAPHY (ART 294) (3). Study of chief archaeological sites of Greece and of existing buildings and monuments. Attention to the problems of excavation and the role of the sites in Greek history. (Alternate years.) Sams.

296 ROMAN SCULPTURE (ART 296) (3). (Alternate years.) Staff.

297 ROMAN PAINTING (ART 297) (3). (Alternate years.) Staff.

298 ROMAN TOPOGRAPHY (ART 298) (3). (Alternate years.) Terranova.

299 ETRUSCAN ART (ART 299) (3). (Alternate years.) Staff.

310 SEMINAR IN ARCHAEOLOGY (ART 310) (3). Topics vary from year to year. Staff.

341 SPECIAL READING IN ARCHAEOLOGY (3). Fall and spring. Staff.

358 SEMINAR IN ANCIENT ART (ART 358) (3). Fall and spring. Sturgeon.

393 MASTER’S THESIS (3 or more). Both semesters. Staff.

394 DOCTORAL DISSERTATION (3 or more). Both semesters. Staff.
Classics in English

Courses Not要求 a Reading Knowledge of Greek and Latin

The following courses in classical literature and civilization are especially designed to supply the necessary foundation for those who, without a reading knowledge of the ancient languages, wish to broaden their culture or plan to specialize in modern literature, history, art, etc. When approved these courses may count as part of the major requirements in other departments. The courses may also be taken to satisfy the requirements of a minor in literature. See also comparative literature.

Courses for Graduates and Advanced Undergraduates

109 GREEK AND ROMAN HISTORICAL LITERATURE (3). The study in English translation of selections from Herodotus, Thucydides, Livy, Tacitus, and others, with consideration of the literary qualities of the selections and the readability of the authors as historians. (Alternate years.) Staff.

115 ROMAN LAW (3). The course presents an introduction to Roman law, public and private. On the basis of Roman texts in translation (or the original if desired), the class will discuss (a) the principles of Roman constitutional law and (b) the legal logic and social importance of Roman civil law. (Alternate years.) Staff.

118 INTRODUCTION TO BYZANTINE CIVILIZATION (3). Intellectual and social history of the Byzantine Empire from Justinian to 1453, noting the interaction of classical and Christian culture and Byzantium's influence on neighboring peoples and on the Renaissance. (Alternate years.) Connor.

235 CLASSICAL CRITICISM (CMPL 235) (3). (Alternate years.) Wooten.

Medieval Studies

Minor in Medieval Studies

Graduate majors in other departments who wish to declare a medieval studies minor may do so with the approval of their departmental adviser. Any student may, of course, take medieval studies courses without seeking a formal minor.

The graduate minor in medieval studies will consist of:

a. Two courses in Latin: i.e., LATN 203 (Paleography) or its equivalent in another language (including Hebrew, Greek, and Arabic or another language pertinent to the student's course of study) and an advanced course in Latin or the chosen language. Students may be able to substitute one language course for another requiring extensive paleographic training. This substitution will require approval of the graduate adviser in medieval studies and the student's departmental adviser.

b. Three courses from at least two of the departments, curricula, or programs listed below. A student may not count courses taken in the major department toward this minor (with the exception of the Introduction to Medieval Studies, currently proposed as HIST 201).

Art: 111, 112, 154, 350, 351

Classics: LATN 102, 115, 130, 203, 230, 304, CLAS 118, CLAR 148, 149A, 310

Comparative Literature: 170, 241


History: 106, 107, 109, 110, 133, 134, 201, 223, 224, 239, 243, 311, 312

Music: 240, 251

Philosophy: 152

Religious Studies: 137, 169, 269, 308

Romance Languages: ARAB 201/202, FREN 126, 221, 222, 233, 248, 331, ITAL 111, 221, 231, 232, 245, ROML 220, 225, 324, SPAN 213, 221, 222, 224

Slavic: 100

Appropriate courses and seminars may be substituted for the above courses with the permission of the instructor and the medieval studies adviser.

Courses in Medieval Studies

Art

111 Topics in Early Medieval Art. Verkerk, Fokker.

112 Topics in High Medieval Art. Fokker, Verkerk.

154 Northern Art of the Fourteenth and Fifteenth Centuries. Fokker.

350 Seminar in Medieval Art. Fokker.

351 Seminar in Medieval Art. Verkerk.

Classics

LATN 102 Section M1. Elementary Medieval Latin for Graduate Students. Staff.

LATN 115 Latin Literature of the Later Empire/Augustine.

LATN 130 Medieval Latin to the End of the Carolingian Age.

LATN 203 Latin Paleography.

LATN 230 Latin Literature from the Tenth to the Thirteenth Centuries.

LATN 304 Medieval Seminar.

CLAS 118 Introduction to Byzantine Civilization. Connor.

CLAR 148 Art in the Age of Justinian and Theodora. Connor.

CLAR 149A Constantinople: City and Art. Connor.

CLAR 310 Seminar in Byzantine Art. Connor.

Comparative Literature

170 The Middle Ages. Kennedy.

241 History of Literary Criticism, Plato to 1750. Masters.

English

105A/105B Celtic (Old Irish or Old and Middle Welsh). O'Neill.

106A/106B Readings in Old Irish or Old Welsh. O'Neill.

151 English Literature of the Middle Ages. Leinbaugh.

153 Medieval Romance. Kennedy.


238 History of the English Language. Eble, O'Neill.

250 Beowulf. Leinbaugh, O'Neill, Wutzig.

251 Studies in Middle English Literature. Kennedy, Wutzig.


350 Seminar in Old English Language and Literature. Wutzig, O'Neill, Leinbaugh.

351 Seminar in Middle English Literature. Kennedy, Wutzig.
Germanic Languages

160 History of the German Language. Roberge.
210 Topics in Medieval Literature.
233 Old Norse I.
234 Old Norse II.
255 Gothic. Roberge.
260 Old Norse I (Old Icelandic).
261 Old Norse II (Old Icelandic).
270 Old High German. Roberge.
271 Middle High German. Francke.
275 Old Saxon. Roberge.

History

106 The Medieval Church. Pfaff.
107 Europe in the Early Middle Ages.
109 Medieval Thought and Learning.
110 The Medieval University. McVaugh.
133 English Economy and Society, 1200-1700. Bennett.
201 Introduction to Medieval Studies. Staff.
223 Readings in Medieval Women's History. Bennett.
224 France, the German Empire, and the Papacy in the High Middle Ages.
243 Late Medieval England. Bennett.
311 Medieval History.

Music (Monophonic Song)


Philosophy

152 Topics in Medieval Philosophy. Galligan, Long.

Religion

137 The Art of Devotion in Medieval and Early Modern Europe.
308 Methods and Topics in the Study of Western Religious Traditions. Staff.

Romance Languages

ARAB 201/2 Romance Arabic Studies.
FREN 221 Old French. Montgomery.
FREN 222 Old French Literature. Montgomery, Amer.
FREN 233 The French Medieval Drama. Montgomery, Amer.
FREN 248 French Literature of the Fourteenth and Fifteenth Centuries. Montgomery.
FREN 331 Seminar in Old French Literature. Montgomery.
ITAL 111 Survey of Italian Literature I. Rao.
ITAL 221 Old Italian. Montgomery.
ITAL 231/2 Dante. Cervigni, Illiano.
ITAL 245 The Italian Trecento. Cervigni.
ROML 220 Vulgar Latin. Montgomery.
ROML 225 Provençal. Montgomery.
ROML 324 Romance Paleography. Montgomery.
SPAN 213 Medieval Poetry. Dominguez, Bandera.
SPAN 221/2 Old Spanish. Binosti.
SPAN 224 Medieval Prose. Bandera, Dominguez.

Slavic

100 Old Church Slavonic. Feinberg, Greenberg, Janda.

DEPARTMENT OF COMMUNICATION STUDIES

V. WILLIAM BALTHROP, Chair

Professors

Robert C. Allen (21) Film and Media History, Media Criticism, Cultural History, and the History of Popular Culture
V. William Balthrop (1) Rhetorical Theory and Criticism, Cultural Studies, Argumentation
Carole Blair (40) Rhetorical Theory and Criticism, Cultural Studies, Argumentation
J. Robert Cox (3) Rhetorical Theory and Criticism, Environmental Advocacy
Lawrence Grossberg (19) Cultural Studies, Popular Culture, Popular Music, Philosophy of Communication and Culture
Gerald C. Horne (23) Film and Theater History
Garth A. Kindem (10) Documentary Production, Film History, Media Aesthetics
Beverly Whitted Long (7) Performance of Literature, Performance Theory, Performance Criticism, Recent American Poetry
Dennis Murby (36) Organizational Communication
Della Pollock (9) Performance of Literature, Performance Theory and Criticism, Cultural Studies
Lawrence B. Rosenfield (11) Interpersonal Communication, Family Communication, Empirical Research Methodology
Julia T. Wood (12) Interpersonal Communication, Gender and Communication, Feminist Theory

Associate Professors

Cori Dauber (2) Rhetoric and Public Address
Paul Ferguson (5) Performance of Literature, Directing, Adaptation and Script Writing
Joanne Hershfield (20) Film Theory and Criticism, Third World Film, Film and Video Production
Ken Hillis (28) Communication Technology
D. Soyini Madison (19) Theory and Ethnography of Performance, African American and Third World Women's Texts
Steven K. May (13) Organizational Communication, Cultural Studies
Michael S. Waltman (14) Interpersonal Communication, Social Cognition

Assistant Professors

Richard C. Cane (33) Media and Cultural Studies
Derek Goldman (32) Performance Studies
Kara Keeling (51) Media and Cultural Studies
Patricia S. Parker, Organizational Communication and Culture; Critical Studies in Gender; Race, Organizational Leadership
Joyce Rudinsky (53) Media Studies, Electronic and Interactive Media
Francesca Talenti (52) Media Studies

**Professors Emeriti**
Elizabeh Czech-Beckerman
Howard Doll
Robert J. Gwyn
Martha Neil Hardy
William M. Handy
James W. Pence Jr.
Wesley H. Wallace

The Department of Communication Studies offers graduate work leading to the degrees of master of arts and doctor of philosophy. A variety of courses are offered, including interpersonal and organizational communication, media studies, performance studies, rhetoric and critical theory, and communication and cultural studies.

The program is designed to develop scholars, teachers, and practitioners capable of producing, disseminating, and applying knowledge in the academic community and in the broader public sphere. Graduates have continued their study in higher degree programs, accepted teaching positions at various levels, and accepted positions in training and development, administration, the arts, and media production in both public and private organizations.

**Master of Arts Degree**

Students are free to develop their own program of study with faculty guidance and approval. Focus and depth are expected. Students must meet the following requirements:

1. Thirty semester hours of graduate-level course work, including either three or six hours of thesis credit. Fifteen of these thirty hours should be in courses numbered 200 and over.
2. Passing COMM 360, a course to prepare students to teach.
3. Passing COMM 200, an introductory course in intellectual history in communications and related fields; COMM 201, Research Colloquium.
4. Passing at least one course designed to develop capability in critical, historical, and/or social scientific methods of communication research.
5. Passing an oral comprehensive examination, usually in the third semester of study.
6. Completing a research or production-centered thesis, including an oral defense, for three or six hours credit, depending upon the breadth of the enterprise.
7. Completing all requirements and deadlines of the Graduate School for the MA degree.

**Doctor of Philosophy Degree**

**Degree Requirements**

The doctoral program in communication studies emphasizes the development of programs of study appropriate to each student’s particular interests and to normative expectations for sophisticated, focused dissertation research (cf. Normative Practices for Doctoral Studies, Graduate School, UNC-Chapel Hill, November 18, 1992). Each student is required to take courses appropriate for his or her program of study from four groups. The first group, core courses, assures that each student is exposed to the variety of communication theories prominent in the discipline, and current communication research practices. The second group, courses in the primary concentration, includes a research methods course in the area of primary concentration, a core seminar, advanced seminars that require students to produce original research in the area of concentration, and a research practicum that serves as the springboard for dissertation work. The third group, courses in a secondary concentration, includes a minimum of three courses in an area of the department not selected at the area of specialization. Areas appropriate to the specialization and secondary concentration include interpersonal and organizational communication, media studies, communication and cultural studies, performance studies, and rhetoric and critical theory. Finally, the fourth area, cognate courses, includes at least two courses outside of Communication Studies related to the work done in the specialization and/or the secondary concentration.

Completion of the PhD program - including coursework, a qualifying examination, and a dissertation - normally requires four years of study beyond the MA degree.

**Admissions Requirements**

Application for admission to the Department of Communication Studies must be made on the application form provided by The Graduate School. Applicants are admitted for the fall semester only.

All applications must be completed by January 1, and should include the following:

1. The General Record Examination, with a recommended minimum score above the fiftieth percentile on both the verbal and quantitative sections;
2. Two official transcripts from all post-secondary educational institutions;
3. Three letters of recommendation, at least two of which should include specific details about the applicant’s educational background; and
4. A personal statement explaining why the applicant wishes to pursue graduate work in this department, his/her goals, and any additional information not requested elsewhere.

In addition to the requirements for admission to the graduate program, applicants for the doctor of philosophy degree program must have a master’s degree in communication studies or a related discipline from an accredited college or university in the United States or its equivalent from a foreign institution and must submit a sample of scholarly writing that shows promise of the ability to conduct research and/or write effectively for a scholarly or professional audience.

International applicants must also include a financial certificate and TOEFL scores.

For more information, please contact the Director of Graduate Studies, Department of Communication Studies, CB# 3285, Bingham Hall, Chapel Hill, NC 27599-3285, or visit the department’s Web site at www.unc.edu/depts/comm.

**Financial Aid**

Financial assistance is available in several forms. Please see the financial aid chapter in this catalog for more information on various sources of available funds and deadlines.

All applicants to the department are eligible for teaching and/or research assistantships; applicants should indicate their desire for such an award on the application form. Generally, first-year students assist with two introductory undergraduate courses. Applicants for the doctor of philosophy degree may have responsibility for their own class depending upon previous experience. All assistantship assignments are awarded on a competitive basis. In some cases, out-of-state applicants who are awarded an assistantship are recommended by the department for a remission of the out-of-state portion of their tuition.

To be considered for The Graduate School’s Competitive Merit Assistantship, applications must be completed by January 1.
Courses for Graduates and Advanced Undergraduates

NOTE: Courses are offered on demand except as otherwise noted.

110 INTRODUCTION TO QUANTITATIVE RESEARCH (3). Basics of data collection, measurement, instrument development, and data analytic approaches to communication research are presented to the student. Emphasis on practical application of research.

111 INTRODUCTION TO CRITICAL PERSPECTIVES (3). This course explores theories of criticism and symbolic action through readings, lecture, and practical criticism of literature, media, discourse, and other symbolic acts. BA-level Philosophical Perspective.

112 PERSUASION (3). Prerequisite, COMM 22 or nonmajor by permission of instructor. Examines contemporary theory and practice of influencing others’ attitudes, beliefs, and actions. Focuses particularly on analyzing and developing persuasive messages.

113 POLITICAL COMMUNICATION (3). A course covering the relationship between communication and political processes and institutions. Topics include media coverage and portrayal of political institutions, elections, actors, and media influence on political beliefs. BA-level Social Science Perspective.

114 SOCIAL DIALECTS (3). An examination of the nature and role of language, language usage, and dialect in the United States.

118 ANIMATION (3). This course is an introduction to the art and mechanics of two-dimensional digital animation.

120 INTERPERSONAL COMMUNICATION (3). Prerequisite, COMM 22 or nonmajor by permission of instructor. Course focuses on how communication is used to build and sustain interpersonal relationships. Forms and functions of communication are examined as a means of testing and defining relationships.

121 COMMUNICATION AND SOCIAL COGNITION (3). An investigation of psychological aspects of communication, particularly the perceptual and interpretive processes underlying the sending and receiving of messages. BA-level Social Science Perspective.

122 TRANSCULTURAL COMMUNICATION (3). Prerequisite, one of the following: COMM 22, 72, 73, or 74. Examines interpersonal and public communication among people from different cultures. Includes case studies of individuals, subcultures, and nations. Cultural Diversity Perspective.

123 COMMUNICATION IN ORGANIZATIONS (3). Prerequisites, COMM 22 and 25 or nonmajors by permission of instructor. Provides a critical exploration of organizational communication theory, research, and application, examining factors involved in the functioning and analysis of complex organizations.

124 FAMILY COMMUNICATION (3). Prerequisite, COMM 22 or nonmajors by permission of instructor. Analysis and exploration of personal experiences, family systems theory, and communication theory to describe, evaluate, and improve family communication patterns.

125 COMMUNICATION AND LEADERSHIP (3). Prerequisite, COMM 22 or nonmajors by permission of instructor. Critical examination of alternative theories of leadership and trends in the study of leadership; focuses on the communicative dimensions of leaderships.

126 NONVERBAL COMMUNICATION (3). Prerequisite, COMM 22 or nonmajors by permission of instructor. Examines the roles and functions of nonverbal behavior in the communication process. Topic areas may include physical appearance; body, face, and eye movements; paralinguistics; haptics; nonverbal deception; the effects of environment; and personal space.

127 INTRODUCTION TO PHONETICS (SPH 130) (3). Detailed study of the international phonetic alphabet with emphasis on the sound system of American English. Application of phonetics to problems of pronunciation and articulation. Includes broad and narrow phonetic transcription.

129 TOPICS IN INTERPERSONAL AND ORGANIZATIONAL COMMUNICATION (3). Designed for advanced students, course provides in-depth examination of particular theories of human communication. Course focus varies. May be repeated.

130 ADVANCED AUDIO PRODUCTION (3). Prerequisites, COMM 34, 41, or permission of instructor. Advanced analysis and application of the principles and methods of audio production.

131 TELEVISION DIRECTING (3). Prerequisite, COMM 32 or permission of instructor. The aesthetics of television directing: script analysis, direction of performance, set and lighting design, creative visual and audio communications. Students direct several television projects.

132 ADVANCED SCRIPTWRITING FOR TELEVISION, FILM, AND STAGE (3). Prerequisite, COMM 33 or permission of instructor. A major writing project will be completed by each student, either dramatic or nonfiction, for radio, television, film, or stage.

133 MEDIA ACTING AND PERFORMANCE (3). Study and practice in acting and performance for radio, television, and motion pictures.

134 NARRATIVE PRODUCTION (3). Prerequisites, COMM 34, 41, or previous production experience. The course focuses on narrative, representational, and aesthetic strategies of narrative production.

135 DOCUMENTARY PRODUCTION (3). Prerequisites, COMM 34 and corequisite, one of COMM 142, 146, 147. A workshop in the production of video/film nonfiction or documentary projects. The course will focus on narrative, representational, and aesthetic strategies of documentary production.

136 INTERACTIVE MEDIA (ART 135) (3). Prerequisites, COMM 34, 41, or permission of instructor. Explores interactive media through creative projects that include sound, video, and graphic elements. Technical information will serve the broader goal of understanding the aesthetics and critical issues of interactive media. BA-level Aesthetic Perspective.

137 SEXUALITY AND VISUAL CULTURE (3). Examines questions about sexuality and how it has changed over time, through various media of visual communication.

139 SPECIAL TOPICS IN MEDIA PRODUCTION (3). Prerequisite, COMM 41. A special topics course on a selected aspect of media production or writing. May be repeated.

140 MASS MEDIA CRITICISM AND THEORY (3). Prerequisite, COMM 41 or nonmajors by permission of instructor. Examination and application of contemporary critical approaches to mass-mediated works; survey of current issues in aesthetic theory as related to mass media.

141 AUDIO THEORY, CRITICISM, AND AESTHETICS (3). Prerequisite, COMM 41 or nonmajors by permission of instructor. An examination of theories of aurality, psychoacoustics, and the development of the audio aesthetics. Course includes, but is not limited to, audio in film, video, and multimedia.

142 THE DOCUMENTARY IDEA (3). Prerequisite, COMM 41 or nonmajors by permission of instructor. Historical and theoretical examination of expressions of the documentary idea in different eras and various modes, including film, television, and radio.

143 HISTORY OF NATIONAL MEDIA IN THE WEST (3). Study of the development of the art and craft of the film through examining individual films and topics stressing the interaction of aesthetic considerations with sociocultural and institutional settings.

144 COMMUNICATION AND INFORMATION TECHNOLOGIES (3). Prerequisite, COMM 41 or nonmajors by permission of instructor. A survey of developing telecommunication systems and technologies and their impact on the traditional electronic media and society.
145 INFORMATIONAL BROADCASTING (3). Study of the structure, preparation, and production of informational radio and television programs including the investigative documentary and radio and television "talk" programs. Instruction in data collection, analysis, and preparation of informational programs.

146 HISTORY OF FILM I - 1895 to 1945 (3). Prerequisite, COMM 41. Study of the development of the art of film through World War II by examining individual films and filmmakers and the emergence of national cinemas through interaction among aesthetic, social, economic, and technological factors.

147 HISTORY OF FILM II - 1945 to Present (3). Prerequisite, COMM 41. Study the development of the art of film from the end of World War II to the present day by examining films, filmmakers, and the emergence of national cinemas through interaction among aesthetic, social, economic, and technological factors.

148 CINEMA OF THE THIRD WORLD (3). Designed for the nonmajor, this course examines contemporary filmmaking in Africa, Latin America, and the Middle East as an aesthetic response to the conventions of "dominant" Hollywood style. BA-level Non-Western/Comparative Perspective.

149 THIRD WORLD MEDIA (3). The cultural and educational uses of radio and television are studied in the developing countries of Africa, Latin America, and India. Emphasis on the new electronic media and their effectiveness in serving developing countries. BA-level Non-Western/Comparative Perspective.

150 POPULAR CULTURE (3). Prerequisite, COMM 41 or for nonmajors, permission of instructor. Examination of communication processes and cultural significance of popular film, television, and other electronic media.

151 CONTEMPORARY INTERNATIONAL FILM/TELEVISION (3). Study of contemporary film/television within a specific international context, such as Scandinavia or Great Britain, with particular attention to comparisons and contrasts with the United States and Hollywood. BA-level Aesthetic Perspective.

152 MINORITIES AND THE MEDIA (3). Prerequisite, COMM 41 or nonmajors by permission of instructor. The course traces the development of minorities in film, radio and television, and the press, looking at trends and treatment of minorities by the media and how and if they have changed.

153 COMMUNITY AND MEDIA (3). A study of the electronic media as a feedback mechanism for community organization and social change. A variety of broadcast and nonbroadcast uses of the media are studied.

154 MEDIA LAW AND REGULATION (3). A study of laws affecting media; role of the courts and federal regulatory agencies in media regulation.

155 INTERNATIONAL COMMUNICATION AND COMPARATIVE JOURNALISM (JOMC 146) (POLI 146) (3). Development of international communication, the flow of news and international propaganda; the role of communication in international relations; communication in the developing nations; comparison of press systems. BA-level Social Science Perspective.

156 WOMEN AND FILM (WMST 143) (3). This course explores the representation of women in contemporary American film. We also consider women as producers of film.

157 IMPLICATIONS OF ELECTRONICALLY MEDIATED COMMUNICATION (3). An examination of electronic technologies and the social practices and communicatory processes they encourage and shape.

158 LATIN AMERICAN CINEMA AND CULTURE (3). This course examines the films, audiences, and social contexts of Latin American cinema from the 1930s to the present. BA-level Non-Western/Comparative Perspective.

159 SPECIAL TOPICS IN MEDIA STUDIES (3). Prerequisite, COMM 41 or nonmajor by permission of instructor. A special topics course on a selected aspect of mass media studies, including but not limited to media texts, contexts, and/or reception. May be repeated.

160 PERFORMANCE OF LITERATURE BY WOMEN OF COLOR (WMST 146) (3). Prerequisite, COMM 60 or permission of instructor. Explores through performance contemporary poetry, fiction, nonfiction, and feminist thought by women of color in the United States. Cultural Diversity Perspective. BA-level Aesthetic Perspective.

161 ORAL HISTORY AND PERFORMANCE (HIST 173) (WMST 173) (3). This course combines reading and fieldwork in oral history with study of performance as a means of interpreting and conveying oral history texts. Emphasis on women's history.

162 GROUP PERFORMANCE (4). Prerequisites, COMM 60, 61, one 100-level performance course, and permission of the instructor. Theory and practice in adaptation, direction, and group performance of texts.

163 PERFORMANCE OF CHILDREN'S LITERATURE (3). Prerequisites, COMM 60 and permission of instructor. The course explores advanced performance theory while focusing exclusively on contemporary poetry, prose fiction, and drama intended for young audiences. Both solo and group performances for young viewers are included. BA-level Aesthetic Perspective.

164 POETRY IN PERFORMANCE (3). Prerequisite, COMM 60 or permission of instructor. Critical, aesthetic, and rhetorical approaches to performed poetry. BA-level Aesthetic Perspective.

165 RITUAL, THEATRE, AND PERFORMANCE IN EVERYDAY LIFE (FOLK 163) (3). Prerequisite, COMM 60, ENGL 26, or permission of instructor. This course will explore the dynamics of performance as it is produced within the texture of individual experiences, the interaction of community memberships, and the dramas of cultural aesthetics. BA-level Aesthetic Perspective.

166 NARRATIVE FICTION IN PERFORMANCE (3). Prerequisite, COMM 60 or permission of instructor. Study of selected short stories and novels in performance with an emphasis on narrative point of view. BA-level Aesthetic Perspective.

167 POLITICS OF PERFORMANCE (3). Prerequisite, COMM 60, 62, or permission of instructor. Course will address the relationship between performance and power, focusing on topics concerned with the potential for performance to contribute to social change.

168 NARRATIVE IN FICTION AND FILM: ADAPTATION AND PERFORMANCE (3). Study of narrative in selected short stories and novels and their adaptation for film. BA-level Aesthetic Perspective.

169 SPECIAL TOPICS IN PERFORMANCE STUDIES (3). Prerequisites, COMM 60 and one 100-level performance course or permission of instructor. Advanced study of selected topics drawn from performance history, theory, and practice. May be repeated.

170 CLASSICAL RHETORIC (CLAS 112) (3). Lecture on the nature, development, and influence of Greek and Roman rhetoric, with class discussion of important rhetorical treatises. BA-level Western Historical Perspective.

171 RHETORICAL THEORY AND PRACTICE (3). Prerequisite, COMM 70 or nonmajors by permission of instructor. Investigates contemporary theories of persuasive symbolic behavior; focus is on rational, psychological, and dramatic explanations of human behavior.

172 PUBLIC POLICY ARGUMENT (3). Prerequisite, COMM 70 or nonmajors by permission of instructor. A course in the techniques of public policy analysis and argumentation. It covers the techniques of writing persuasive arguments, particularly in the context of public policy debates.

173 THE AMERICAN EXPERIENCE IN RHETORIC (3). Prerequisite, COMM 70 or nonmajors by permission of instructor. An examination of the role of rhetoric in shaping American policy and political discourse.

174 WAR AND CULTURE (PWAD 162) (3). Examines American cultural myths about war and specifically about the causes of war, enemies, weapons, and warriors and the way these myths constrain foreign and defense policy, military strategy, and procurement.
175 ENVIRONMENTAL COMMUNICATION AND THE PUBLIC SPHERE (ENST 175) (3). Examines communication practices that accompany citizen participation in environmental decisions, including public education campaigns of nonprofit organizations, "risk communication," media representations, and mediation in environmental disputes.

176 SPEECHWRITING (3). Prerequisite, COMM 13 or 71. Introduces the student to the principles of writing speeches with special attention to adaptation to audience and occasion and to oral style.

179 SPECIAL TOPICS IN RHETORIC AND CULTURAL STUDIES (3). Prerequisite, COMM 70 or nonmajor by permission of instructor. A special topic course on a selected aspect of Rhetoric and Cultural Studies. May be repeated.

180 INTRODUCTORY AUDIOLGY (PHHS 123) (3). Theory and practice of the measurement of hearing, causative factors in hearing loss, evaluation of audio metric results, in demonstration of clinical procedures.

182 SPEECH SCIENCE (PHHS 140) (3). Introduction to the science of speech, including production, acoustics, and perception.

183 ANATOMY AND PHYSIOLOGY OF THE SPEECH AND HEARING MECHANISM (PHHS 170) (3). Anatomy and physiology of the speech-producing and aural mechanism.

184 INTRODUCTION TO COMMUNICATION DISORDERS (EDUC 128) (3). Explores the etiology, epidemiology, assessment, and educational implications of speech and language disorders.

191 ADVANCED INDEPENDENT STUDY/DIRECTED READING (1-3). Prerequisite, completion of at least one 100-level COMM course and departmental permission. For the communication studies major who wishes to pursue an advanced independent research project or reading program under the supervision of a selected instructor. Intensive individual research on a problem designed by instructor and student in conference. Fall and spring.

200 INTRODUCTION TO RESEARCH AND THEORY IN COMMUNICATION STUDIES (3). Prerequisite, admission to graduate program or permission of the chair. Considers theory and philosophy in the study of communication. Surveys major paradigms of contemporary social/cultural theory (and their roots in modern philosophy) in relation to examples of communication research and practice. First of two semesters.

201 RESEARCH COLLOQUIUM (3). Prerequisite, admission to graduate program or permission of the chair. Considers theory and philosophy in the study of communication. Surveys major paradigms of contemporary social/cultural theory (and their roots in modern philosophy) in relation to examples of communication research and practice. Second of two semesters.

210 RESEARCH IN INTERPERSONAL COMMUNICATION (3). Prerequisite, COMM 110. Special emphasis on survey research, content analysis, and experimental design. The design and analysis of communication data gathered in lab and field settings are reviewed. The course emphasizes multivariate data analytic techniques and their interpretation.

211 RHETORICAL CRITICISM (3). Prerequisite, COMM 70, 171, or permission of instructor. Investigates the function of rhetorical criticism, the critical method, and a variety of approaches to the performance of rhetorical criticism.

212 THE BODY AND PERFORMANCE (3). This course will explore through performance the various ways the human body is "marked" or signified in culture. Fall and spring.

213 PERFORMANCE CRITICISM (3). Prerequisites, COMM 162, and 164 or 166. Deals with the key methods of describing and evaluating literature and literature in performance.

220 ORGANIZATIONAL COMMUNICATION ASSESSMENT (3). Prerequisite, COMM 123 or permission of instructor. Examines various methods of communication research in organizations. Emphasis is on recurring problems and issues faced in research.

221 RESEARCH IN ORGANIZATIONAL COMMUNICATION (3). Explores theoretical, methodological, and practical issues encountered in ethnographic, case study, and field research on communication phenomena in organizations.

222 INTERPRETIVE STUDIES IN ORGANIZATIONAL COMMUNICATION (3). Prerequisite, COMM 123 or permission of instructor. Focuses on the theory and practice of interpretive organizational communication research, including organizational phenomena such as culture, metaphor, symbolism, ritual, and narrative. Fall.

223 CRITICAL STUDIES IN ORGANIZATIONAL COMMUNICATION (3). Prerequisite, COMM 123 or permission of instructor. Focuses on the theory and practice of critical organizational communication research, including organizational phenomena such as power, discourse, and culture. Spring.

225 FEMINISM, SCIENCE, AND COMMUNICATION (3). Critical examination of key feminist arguments about science and communication scholarship as conventionally defined, exploration of alternative goals, assumptions, and practices for research consistent with feminist theories and methodologies.

226 COMMUNICATION IN CLOSE RELATIONSHIPS (3). Prerequisite, COMM 120. Examination of contemporary theory and research on communication in close relationships. Topics include communication in relational formation, change, and termination.

229 SEMINAR IN HUMAN RELATIONSHIPS (3). In-depth examination of contemporary research on communication and human relationships. Focus varies and may include intimacy, groups, families, and other communication relationships.

238 PRODUCTION STUDIES (3). Study the integration of audio/video/film theory and practice through lectures, readings, discussions, oral presentations, and the completion of audio, video, and film projects.

239 MEDIA PRODUCTION (3). Permission of the department. Study of problems involved in writing and producing various forms of media programming. Emphasis on script and production elements necessary to translate scripts into media products.

241 PERFORMANCE ETHNOGRAPHY (FOLK 241) (3). This seminar focuses on methods of ethnography and fieldwork ethics. Performance as theory and practice informs methodological inquiries as well as the analysis of specific ethnographic texts and case studies.

250 CULTURAL STUDIES (3). Prerequisite, graduate standing. Introduction for graduate students to the current literature and critical perspectives in the areas of Media and Cultural Studies.

251 RESEARCH METHODS IN MEDIA AND CULTURAL STUDIES (3). Prerequisite, graduate standing. Introduction to the issues, methods, and materials of research in media and cultural studies. Fall.

252 STUDIES IN FILM AND TELEVISION (3). Selected studies of film and/or television history, theory, and/or criticism. Exact topic is announced before classes begin.

253 THEORIES OF THE AUDIENCE/PUBLIC (3). This course offers a sustained analysis of the ways in which the media, audience, and/or public have been variously conceptualized historically, in critical theory.

254 POLITICAL, INSTITUTIONAL, AND ECONOMIC CONTEXTS OF MEDIA AND CULTURE (3). Prerequisite, COMM 200. A detailed analysis of the relationship between government, policy making, corporate and business interests, and various theoretical approaches to their impact on media and culture. Fall.

255 HISTORY OF CULTURAL STUDIES (3). This course introduces cultural studies through its British "origins," especially but not only the work of the Centre for Contemporary Cultural Studies and the Open University.

258 STUDIES IN FILM AND TELEVISION (3). Graduate introduction to the study of film, television, and video. This course traces the theoretical and methodological development of media studies.
260 DIRECTING GROUP PERFORMANCE (3). Prerequisites, at least two performance courses at or over the 100-level. An in-depth examination of the theories and techniques of group performance.

261 NARRATIVE THEORY (3). This seminar recognizes and applies narrative theory in understanding texts, lives, and cultural practice broadly.

262 LITERATURE AND PERFORMANCE IN THE BLACK DIASPORA (3). Examination of Black diaspora studies, that is, colonial, post-colonial, and critical race theory, as illuminated by Black artists and literary expressions, particularly in Africa, the Caribbean, the Americas, and Europe.

269 TOPICS IN PERFORMANCE STUDIES (3). Prerequisite, second-year graduate students and/or consent of the instructor. Special problems in performance studies.

271 RHETORIC AND SOCIAL THEORY (3). This course will draw upon contemporary discussions in both rhetorical theory and critical social theory to explore a set of questions in the western philosophical/political ideals of the public sphere and the political subject as a discursive agent within such public spaces and venues.

273 HISTORY OF RHETORIC (3). A critical survey of the history of rhetoric. Focus on classical and Enlightenment theories of rhetoric, with emphasis on problems of invention, persuasion, interpretation. Fall.

292 PHILOSOPHY OF COMMUNICATION AND CULTURE (3). Prerequisite, COMM 200. Considers the history of and developments in the philosophy of communication and culture as well as the role these concepts have played in western philosophy. Spring.

298 TOPICS IN RESEARCH METHODS (3). Advanced study of selected topics in research methods. Topics vary.

322 SEMINAR IN FAMILY COMMUNICATION (3). This course is an advanced seminar in which students may study family communication and produce original research.

323 SEMINAR IN FEMINIST STUDIES IN COMMUNICATION (3). Prerequisite, COMM 229. This course explores and critically evaluates the work of major feminist scholars in the field of communication. Spring.

329 SEMINAR IN INTERPERSONAL AND ORGANIZATIONAL COMMUNICATION (3). A variable topic seminar that permits faculty and graduate students the opportunity to explore significant historical and emerging issues in the field of communication. Spring.

342 SEMINAR IN PERFORMANCE AND CULTURAL STUDIES (FOLK 342) (3). This course focuses on performance-related issues in the emergent field of cultural studies.

343 SEMINAR IN PROBLEMS IN CONTEMPORARY PERFORMANCE THEORY (FOLK 343) (3). An advanced graduate seminar, this course will address recent developments and problems in performance theory. It will consider cross- and multidisciplinary approaches to performance as sites for consideration and debate. Fall and spring.

344 SEMINAR IN PERFORMANCE AND HISTORY (3). This course explores diverse relations among performance and history, including the performance of life histories, the use of spectacle in history, everyday performances of historical protocols, and performance itself as an historical construct. Fall and spring.

345 THE POLITICAL ECONOMY OF PERFORMANCE (3). This course examines social relations, particularly power relations, by focusing on resistance as performance and the performance of resistance arising from the dynamics and conflicts within specific locations of a political economy.

350 SEMINAR IN MEDIA STUDIES (3). Selected problems in media aesthetics. Exact topic to be covered is announced before classes begin.

351 SEMINAR IN CULTURE AND IDENTITY (3). This course looks at issues of the representation and production of identity, subjectivity, and agency-in various forms-in the practices of media.

352 SEMINAR IN THE HISTORY OF MEDIA (3). Application of historical research techniques to problems in the mass media. Exact topic is announced before classes begin. May be repeated.

353 SEMINAR IN POPULAR CULTURE (3). This course will look at special topics in the study of popular culture. Designed for advanced graduate students, it will consider critical responses to existing scholarship with original research.

354 WRITING PROJECTS (3). Individual media writing projects accomplished with appropriate research, conference, and criticism. Departmental permission required.

355 SEMINAR IN CULTURAL STUDIES (3). Prerequisite, COMM 255 or equivalent. This class explores the impact of some developments in postmodernism - as an interpretive, historical, and philosophical discourse on the possible development of cultural studies.

356 SEMINAR IN COMMUNICATION TECHNOLOGY (3). Prerequisite, COMM 200. Examines new communication technologies, their spatial and social diffusion, and how these relate to theories of culture, politics, and technology and the real-world contexts in which these technologies are received. May be repeated. Spring.

357 SEMINAR IN CULTURAL STUDIES AND POPULAR CULTURE (3). Prerequisite, COMM 200. This course will focus on specific topics, issues, or queries of popular culture as these have been or can be studied within cultural studies. Fall.

358 SEMINAR IN FEMINIST STUDIES OF FILM AND TELEVISION (WMST 358) (3). Prerequisite, graduate standing. This graduate seminar explores theoretical and practical points of contact between feminism, film, and television using psychoanalysis, narrative analysis, ideological analysis, and cultural studies. Spring.

359 SEMINAR IN MEDIA AND CULTURAL STUDIES (3). This course, designed for advanced graduate students, will explore specialized topics in interpretive, critical and cultural research in media studies.

360 TEACHING IN COMMUNICATION STUDIES (1). Prerequisite, must be Communication Studies graduate student. An introduction to teaching at the university level for new teaching assistants and graduate students hoping to have teaching-related responsibilities in communication studies. Fall.

371 SEMINAR IN CONTEMPORARY RHETORICAL THEORY (3). Advanced rhetorical theory. Special attention is paid to contemporary accounts of rhetorical invention, hermeneutics, political judgment, and symbolic action. Spring.


379 TOPICS IN Rhetorical and Cultural Studies (3). Prerequisite, COMM 211. Special problems in rhetorical and cultural studies.

390 RESEARCH PRACTICUM (1-3, repeatable to a maximum of 6). Prerequisite, permission of departmental coordinator of internships. Individualized practical experience supervised by a faculty adviser and by the departmental coordinator of internships. May be repeated once with approval of departmental faculty.

391 DIRECTED RESEARCH (3). Prerequisite, permission of the graduate faculty member involved. Individual research on a problem defined by the graduate student and graduate faculty member in conference. May be repeated once with the permission of departmental graduate faculty.

392 RESEARCH PRACTICUM IN MEDIA AND CULTURAL STUDIES (3). Prerequisites, COMM 250, 251, and permission of instructor. Individualized directed research by advanced students supervised by a member of the graduate faculty. May be repeated once with permission of graduate faculty. Fall, spring, and summer.

393 MASTER'S THESIS (3 or 6). Fall and spring. Members of the graduate faculty.
394 DOCTORAL DISSERTATION (Var.).

399 RESEARCH PRACTICUM IN COMMUNICATION STUDIES (1-3).
Individualized practical research. Fall and spring.

CURRICULUM OF COMPARATIVE LITERATURE
EDWARD DONALD KENNEDY, Chair

Professors
Dino Cervigni (44) Medieval and Renaissance Italian Literature
Marsha S. Collins (42) Modern Peninsular Literature, Golden Age Spanish Literature
Lilian R. Furst (1) Nineteenth-Century Literature, Problems and Methods
William R. Harmon (17) Twentieth-Century American and British Poetry, Comparative Literature
Edward Donald Kennedy (4) Medieval, Medieval Studies, Comparative Literature, Medieval Drama
Clayton Koelb (4) Modern Literature, Literary Theory, Philosophy and Aesthetics, Comparative Literature
Alice A. Kurniar (5) Romanticism, Cinema Studies, Gender and Sexuality Studies
John F. McGowan (92) Critical Theory, Cultural Studies, Novel, Women's Studies
James L. Peacock (11) Anthropology, Symbolic Systems

Associate Professors
Eric S. Downing (4) Eighteenth- and Nineteenth-Century Literature, Literary Theory, Classics
Diane R. Leonard (2) Modern Narrative, Modern Criticism and Theory
José Manuel Polo de Bernabé (34) Nineteenth- and Twentieth-Century Spanish Drama and Poetry, Modern Critical Theory and Film
Alicia Rivero (38) Contemporary Spanish American Literature, Modern Critical Theory, Gender Issues, Literature and Science, Intellectual History

Assistant Professor
Inger S. B. Broedy (3) Prose Fiction in Late Eighteenth- and Early Nineteenth-Century Europe and Meiji Japan

Adjunct Professors
E. Jane Burns (1) Medieval French Literature, Feminist Theory
David J. Halperin (14) Judaism in Antiquity, Jewish Mysticism, Comparative Study of Judaism, Christianity, and Islam
Madeline G. Levine (4) Russian and Polish Literature, Translation Theory
Jessica Wolfe (106) Renaissance

Lecturers
John A. (Tony) Day, Southeast Asian Literature and History
Karen Jacobson, Nineteenth- and Twentieth-Century Literature

Professors Emeriti
Paul Debevec
S. K. Heninger Jr.
George A. Kennedy
G. Mallory Masters
Richard A. Smyth
Philip A. Stader

The graduate program in comparative literature stresses, from an international perspective, the exploration of styles, themes, genres, movements, literary theory, and literary criticism. Students take many of their courses in the cooperating literature departments and may choose among the rich offerings in the literatures of England, France, Germany, Ancient Greece and Rome, Italy, Portugal, Spain, Latin America, Russia, Asia, and the United States. Students in the PhD program take courses in three national literatures.

Requirements for the MA include CMPL 201; two courses in the history of criticism covering together the period from the Greeks to the twentieth century; at least one course in literary theory and at least six courses in literature, ordinarily two in each of two national literatures and two from offerings in the curriculum; and successful completion of an oral examination and a thesis. One theory or criticism course may be postponed until the student enters the PhD program and another comparative literature course substituted for it.

Requirements for the PhD program include the requirements for the MA or their equivalent taken at UNC-Chapel Hill or elsewhere; seven courses (counting those taken for the MA) in one national literature chosen to provide study of its historical development; three courses (counting those taken for the MA) in a second and third national literature (ordinarily distributed 3/2); and six courses (counting those taken for the MA) from offerings in the curriculum. At least two of the courses should be seminars. Doctoral students are expected to develop one major and one minor track of special interest in some aspect of comparative studies through course work and independent reading. The PhD written examination is devoted to these special interests. Among tracks currently available are medieval studies, Renaissance studies, feminist studies, folklore, history of criticism, literary theory, narrative studies, rhetoric, romanticism, realism, and naturalism; but students may request the approval of other tracks. The PhD oral examination is devoted to a discussion of the prospectus for a dissertation.

Courses for Graduates and Advanced Undergraduates
A. Period Courses
140 READING COURSE (Var.). Staff.

150 MAJOR WORKS OF TWENTIETH-CENTURY LITERARY THEORY (3). Comparative study of representative works on literary and cultural theory or applied criticism to be announced in advance. Koelb, McGowan, Leonard.

170 THE MIDDLE AGES (3). Study of selected works of Western medieval literature, with particular attention to the development of various varieties of sensibility in various genres and at different periods. Kennedy.

172 LITERATURE OF THE CONTINENTAL RENAISSANCE IN TRANSLATION (3). Discussion of the major works of Petrarch, Boccaccio, Machiavelli, Castiglione, Ariosto, Tasso, Bembo, Leonardo, Montaigne, Cervantes, and Erasmus. Wolfe.

173 CULT OF SENSIBILITY 1740-1810 (3). The development of the moral aesthetic of sensibility or Empfindsamkeit in literature of western Europe in the late eighteenth and early nineteenth centuries. Broedy.

174 THE EIGHTEENTH-CENTURY NOVEL (3). English, French, and German eighteenth-century narrative fiction, with emphasis on the epistolary novel. Focuses on the relation of the novel to the Enlightenment and its counterpart, the cult of sentimentality; and on shifting paradigms for the family, education, gender, and erotic desire. Downing.

175 ROMANTICISM (3). An exploration of the period concept of romanticism using manifestos and critical writings of the time. Modern studies on the subject, and selected literary works. Forst.

176 REALISM (3). An exploration of the period concept of realism through selected novels and critical writings. Naturalism as an outgrowth of realism is also considered. Forst.

177 NATURALISM (3). The naturalist movement in European and American literature of the late nineteenth and early twentieth centuries, focusing on its philosophical, psychological, and literary manifestations in selected plays and novels. Forst.

178 MODERNISM (3). An exploration of the period concept of modernism in European literature, with attention to central works in poetry, narrative, and drama, and including parallel developments in the visual arts. Leonard.
181 AESTHETICISM (3). Aesthetics as a discrete nineteenth-century movement and as a major facet of modernism in literature and literary theory. Authors include Kierkegaard, Baudelaire, Nietzsche, Huysmans, Wilde, Mann, Rilke, Nabokov, Dinesen, Barthes, SonTag. Downing.

B. Genre Courses

180 CONCEPTS AND PERSPECTIVES OF THE TRAGIC (3). The history and theory of tragedy as a distinctive literary genre and as a more general literary and cultural problem. Authors include Aeschylus, Sophocles, Euripides; Shakespeare, Racine, Goethe; Nietzsche, Wagner, Mann; Samuel I and II, Faulkner. Also engages various theorists, ancient and modern. Downing.

184 THE DRAMA FROM IBSEN TO BECKETT (3). The main currents of European drama from the end of the nineteenth century to the present. (Offered irregularly.)


C. Special Topic Courses

182 NARRATIVE SILENCE: CROSS-CULTURAL THEME AND TECHNIQUE (3). The uses of literary silence for purposes such as protest, civility, joy, oppression, nihilism, awe, or crisis of representation. Authors include Sterne, Goethe, Austen, Kawaiwara, Sōseki, Ok, Tōson, Camus, Mann. Brody.

183 CROSS-CURRENTS IN EAST-WEST LITERATURE (3). The study of the influence of Western texts upon Japanese authors and the influence of concepts of "the East" upon Western writers. Goldsmith, Voltaire, Sōseki, Sterne, Arishima, Iben, Yoshimoto, Ishiguro. Brody.

186 LITERARY LANDSCAPES IN EUROPE AND JAPAN (3). Changing understandings of nature across time and cultures, especially with regard to its human manipulation and as portrayed in novels of Japan and Europe. Rousseau, Goethe, Austen, Abe, Mishima. Brody.

190 LITERATURE AND THE ARTS OF LOVE (3). Love and sexuality in literary works from various historical periods and genres. Authors include Sappho, Plato, Catullus, Propertius, Ovid, Dante, Petrarch, Shakespeare, LaClos, Goethe, Nabokov, and Roland Barthes. Downing.

191 AUTOBIOGRAPHY AS A LITERARY FORM (3). The rise and evolution of interest in the self in literary forms from St. Augustine's to Rousseau's Confessions through Voltaire, Dante, Petrarch, Cellini, and Montaigne. Cervigni.


195 SPECIAL TOPICS IN COMPARATIVE LITERATURE (Var.). Staff.

Courses for Graduates

201 PROBLEMS AND METHODS IN COMPARATIVE LITERATURE (3). The course deals with the history of comparative literature, bibliographical materials, orientations of the subject in Europe and America, and problems of methodology, periodization, literary movements, and concepts of literary theory. Fall. Furst.

202 TOPICS IN CONTEMPORARY LITERARY AND CULTURAL THEORY (3). Selected critical topics in poststructuralist thought, chosen by the instructor and announced in advance. Polo de Bernabé.

221 READING IRONIES (3). Study of processes of recognizing and constructing ironies in texts, with consideration of both theoretical issues and practical readings. Furst.

240 READING COURSE (Var.). Staff.

241 HISTORY OF LITERARY CRITICISM I: CLASSICISM (3). Study of Platonism, Aristotelianism, Ciceroanism, and Horatianism as critical traditions from antiquity to the eighteenth century. Downing, Koebel.

242 HISTORY OF LITERARY CRITICISM II: 1750-1950 (3). Study of major theoretical and critical writings in Europe from the middle of the eighteenth to the early twentieth centuries. McGowan, Koebel.

243 TWENTIETH-CENTURY LITERARY THEORY (3). An overview of major theoretical developments of the twentieth century, including such movements as Saussurean linguistics, Russian Formalism, Prague Circle Semiotics, post-structuralism, phenomenology, psychoanalysis, feminism and Marxism. Leonard.

295 SPECIAL TOPICS IN COMPARATIVE LITERATURE (3). Fall or spring. Staff.

309 INTERDISCIPLINARY SEMINAR IN RENAISSANCE STUDIES (3). Topic announced annually in advance. Collins.

310 SEMINAR (3). Topic announced annually in advance. Staff.

393 MASTER'S THESIS (Var.). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (Var.). Fall and spring. Staff.

395 RESEARCH. Staff.

Cross-Listed Courses

104 (ROMI 104) (PWAD 190) VIOLENCE AND RELIGION IN LITERATURE FROM EPIC TO NOVEL (3).

135 (ANTH 135) CONSCIOUSNESS AND SYMBOLS (3). Peacock.

142 (PHIL 142) PHILOSOPHY IN LITERATURE (3).

153 (ENGL 153) MEDIEVAL ROMANCE (3). Kennedy.

160 (SLAV 160) LITERARY TRANSLATION (3). Levine.

179 (ENGL 179) LITERATURE OF THE AMERICAS (3). DeGuzman.

235 (CLAS 235) CLASSICAL CRITICISM (3).

Doctor of Philosophy Degree with a Minor in Renaissance Studies

Students working on their doctorate in one of the regular departmental programs may, with the approval of their departmental director of graduate studies, submit for the degree an interdisciplinary minor in Renaissance Studies. The program is based in the Curriculum of Comparative Literature and administered by the Arts and Sciences Committee for Renaissance Studies. The minor requires a minimum of five courses. Of those five, one must be CMPL 309, Seminar in Renaissance Studies. The remaining four courses must represent equally two fields other than the major field (e.g., a student with a major in Italian could offer from the approved list two courses in French, two in Latin, and CMPL 309). CMPL 309 (Seminar in Renaissance Studies) serves as a nucleus for the minor, affording students the opportunity to bring together seemingly divergent strands in an interdisciplinary context. Normally the faculty member giving the course invites other members of the Renaissance faculty to participate in the discussions and to present related materials from their own field of inquiry. Student participants choose a related topic or area for research and all report regularly on their own projects under investigation. The course is cross-listed as appropriate, under departmental offerings.

The minor in Renaissance studies for the PhD is examined orally at the departmental oral examination (not the defense), unless written examination is required by departmental policy; normally faculty with whom the candidate has taken courses serve as examiners.

A working knowledge of Latin is strongly recommended for students in the program.
Master of Arts Degree with a Minor in Renaissance Studies

Students working on their MA in one of the regular departmental programs may also, with the approval of their departmental director of graduate studies, submit for the degree an interdisciplinary minor in Renaissance studies. The program, like that for the PhD, is in the Curriculum of Comparative Literature and is administered by the Arts and Sciences Committee for Renaissance Studies. The minor requires a minimum of three courses. The three courses must be from the offerings of two fields other than the major field. The minor in Renaissance Studies at the MA level should encourage students to broaden their program early and should prepare them for continued interdisciplinary work at the doctoral level. It is not designed for terminal MAs.

Faculty in Renaissance Studies and Related Areas

Art History: Mary Parodo, Jaroslav Folda
English: Christopher Armitage, Reid Barbour, Alan Desens, Mary Floyd-Wilson, Ritchie Kendall, Darryl Gleas, Megan Macchinske, Jessica Wolfe
History: Melissa M. Bullard, Barbara Harris, Michael McVeagh, Jay Smith
Music: John Nadas, Thomas Warburton
Religious Studies: Peter Kaufman
Romance Languages: Lucia Biniotti, Dino Cervigni, Marsha Collins, Frank Dominguez, Erinno I. Rao, Frederick Vogler

DEPARTMENT OF COMPUTER SCIENCE

JAN E. PRINS, Chair

Professors
Frederick P. Brooks Jr. (59) 3D Interactive Computer Graphics, Human-Computer Interaction, Virtual Worlds, Computer Architecture, the Design Process
Prasun Dewan (63) User Interfaces, Distributed Collaboration, Software Engineering Environments, Object-Oriented Databases, Mobile Computing
Henry Fuchs (11) High-Performance Graphics Hardware, 3D Medical Imaging, Head-Mounted Displays, Virtual Environments
Guido Gerig (75) Image Analysis, Shape-Based Object Recognition, 3D Object Representation and Quantitative Analysis, Medical Image Processing
John H. Halton (26) Applications of Combinatorial and Probabilistic Methods and of Scientific and Mathematical Analysis to Computational, Scientific, and Engineering Problems
Stephen M. Pizer (6) Image Analysis and Display, Human and Computer Vision, Graphics, Numerical Computing, Medical Imaging
David A. Plaisted (28) Mechanical Theorem Proving, Term Rewriting Systems, Logic Programming, Algorithms
Jan F. Prins (53) Parallel Algorithm, Languages, and Architectures, High-Level Programming Languages, Compilers, Formal Techniques in Program Development, Algorithms for Structural Biology and Bioinformatics
Stephen P. Weiss (10) Information Storage and Retrieval, Natural Language Processing, Communications and Distributed Systems, Computer-Supported Cooperative Work

Associate Professors
Kye S. Hedlund (22) Computer-Aided Design, Computer Architecture, Algorithm Design and Analysis, Parallel Processing
Anselmo A. Lasta (52) Interactive 3D Computer Graphics, Hardware Architectures for Computer Graphics
Ming C. Lin (72) Physically Based and Geometric Modeling, Applied Computational Geometry, Robotics, Distributed Interactive Simulation, Virtual Environments, Algorithm Analysis
David Stotts (59) Computer-Supported Cooperative Work, Hypermedia, Software Engineering and Formal Methods, Programming Languages and Concurrency, Interoperable Distributed Systems

Assistant Professors
Jasleen Kaur (88) Design of Networks and Operating Systems, Specifically Resource Management for Providing Service Guarantees, Internet Measurements, Overlay and Peer-to-Peer Networks, Router Architectures
Karan Mayer-Paradis (80) Multimedia Systems, Networking, Multicast Applications
Maria Papadopoulou (86) Applications for Mobile, Wireless Networks, Ad Hoc and Sensor Networks, Pervasive Computing
Marc Pollefeys (89) Computer Vision, Image-Based Modeling and Rendering, Image and Video Analysis, Multi-View Geometry
Moni Singh (84) High-Performance and Low-Power Digital Systems, Asynchronous Circuits and Systems, System-on-a-Chip Design, VLSI CAD
Wei Wang (90) Data Mining, Database Systems, Bioinformatics

Research Professor
F. Donelson Smith (42) Computer Networks, Operating Systems, Distributed Systems, Multimedia, Computer-Supported Cooperative Work

Research Associate Professors
Russell M. Taylor II (69) 3D Interactive Computer Graphics, Virtual Worlds, Distributed Computing, Scientific Visualization, Human-Computer Interaction

Research Assistant Professor
Mary C. Whitton (81) Virtual and Augmented Reality Systems for Data Visualization, Computer Graphics System Architectures

Lecturers
Timothy L. Quigg (83) Intellectual Property Rights, Industrial Relations, Contract Management, Research Administration
Leandra Vittor (35) Information Processing Hardware: Theory, Practice, Systems, and Applications
Jeannie M. Walsh (56) Computer Education, Social, Legal, and Ethical Issues Concerning Information Technology

Adjunct Professors
Hussein Abd-Elrahman (55) Computer-Supported Cooperative Work, Multimedia Systems, Communications, Distance Learning, Distributed Systems, Operating Systems, Networking
Elizabeth Bulilit, Computer-Aided Surgery, Computer-Aided Diagnosis
J. Stephen Marron, Smoothing Methods for Curve Estimation
Sean Washburn, Condensed Matter Physics, Materials Science
Adjunct Associate Professors
Siddhartha Chatterjee (68) High-Level Programming Languages, Compilation for Highly Parallel Machines, Object-Oriented Programming, Parallel Algorithms and Architectures
M. Gail Jones, Science Education, Gender and Science, High-Stakes Assessment Nanotechnology Education, Haploids and Learning
Andrew B. Nobel, Statistical Analysis of Microarrays, Analysis of Internet Traffic, Non-Parametric Inference, Pattern Recognition: Clustering and Classification
Richard Superfine, Condensed Matter Physics, Biophysics, Microscopy

Adjunct Assistant Professors
Stephen R. Aylward (73) Computer-Aided Diagnosis, Computer-Aided Surgical Planning, Statistical Pattern Recognition, Image Processing, Neural Networks
Bert Dempsey (76) Computer-Supported Cooperative Work, Computer Networks, Multimedia Communications, Digital Library Systems
Sarang C. Joshi, Image Analysis, Medical Image Processing, Computer Vision, Computational Anatomy

Adjunct Research Professors
Nicholas England (67) Systems Architectures for Graphics and Imaging, Scientific Visualization, Volume Rendering, Interactive Surface Modeling
John Poulton (32) Graphics Architectures, VLSI-Based System Design, Design Tools, Rapid System Prototyping

Adjunct Research Associate Professor
John G. Eyles (38) Graphic Architectures, Rapid System Prototyping, Virtual Environments, VLSI-Based System Design

Adjunct Research Assistant Professor
Mark Foskey, Computer-Aided Surgical Planning, Computer-Aided Diagnosis, Geometric Computation

Professors Emeriti
Peter Calingaert
Gyula A. Magó
Donald F. Stanat

The Department of Computer Science at UNC-Chapel Hill was one of the first in the United States to be established as an independent department, in 1964. Its primary missions are research and graduate and undergraduate teaching. Research particularly emphasizes:

- algorithms and complexity theory;
- computer architectures;
- computer graphics and image analysis;
- computer-supported cooperative work;
- distributed systems;
- geometric modeling and computation;
- hardware systems and design;
- human-machine interaction;
- hypermedia;
- the Monte Carlo method;
- multimedia systems;
- networking;
- parallel computing;
- programming language design and implementation;

- real-time systems;
- software engineering and environments; and
- theorem proving and term rewriting.

The MS and PhD curricula are oriented toward the design and application of real computer systems and toward that portion of theory that guides and supports practice. The PhD program prepares teachers and researchers for positions with universities, government research laboratories, and industry. Academic employment ranges from four-year colleges, where teaching is the primary focus, to positions at major research universities. The MS program prepares highly competent and broadly skilled practitioners. A majority of the master's graduates work in industry, in companies ranging from small start-up operations to government labs and large research and development corporations.

Most of the department's approximately 160 graduate students are full time. Students contribute to nearly every aspect of the department's operation. In addition to taking a wide variety of courses, they have the opportunity to participate in groundbreaking research, to teach, to attend research group meetings, and to serve on committees that affect all aspects of life in the department.

The Computer Science Students Association sponsors both professional and social events and represents the students in departmental matters. Its president is a voting member at faculty meetings.

Facilities
Sitterson Hall, opened in 1987, provides seventy-four thousand square feet of sophisticated, state-of-the-art research facilities and office space for all members of the department. The building is organized in "clusters" to create research communities featuring shared laboratories and open conference areas to facilitate interaction among students and faculty. The building contains the 60-seat C. Hugh Holman video teleclassroom, a 125-seat auditorium; the Lib Moore Jones Faculty Conference Room; a reading room; and various research laboratories, conference areas, and study areas.

Graduate students have access to all of the department's research and teaching facilities, including specialized research laboratories for graphics and image processing, computer building and design, and collaborative, distributed, and parallel systems. The laboratories, offices, conference areas, and classrooms are bound together by the department's fully integrated, distributed computing environment.

General Computing Environment
The department's computing environment includes almost seven hundred computers, ranging in performance from twelve million instructions per second (MIPS) to more than twenty-five billion instructions per second (BIPS). These systems are integrated by means of high-speed networks and by software that is consistent at the user level over the many architectural platforms. In addition, the department's research laboratories contain specialized equipment and facilities.

General computing systems include approximately 600 Intel-based personal computers, 4 SGI computers, 26 Sun workstations, and 42 Apple MacOS systems. Main memory on each computer ranges from 16 megabytes to 16 gigabytes. Total disk space exceeds 22 terabytes. Every student is assigned to a two- or four-person office. Each student is assigned a computer. The parallel computing facilities include an SGI Power Onyx machine, a Reality Monster, a 32-processor SGI Onyx2(tm) Infinite Reality2(tm) workstation, and several Sun multiprocessor systems.

The primary software environment consists of the Windows 2000 operating system, Linux, Solaris, and several other flavors of UNIX; the AFS file system, and the X Window System. Languages most commonly used include C, C++, Java, C, and Turing. Document preparation is usually
accomplished via PC and Macintosh systems. The department's extensive software holdings are continually evolving.

The department's computer systems are connected to one another by a high-speed data network. The network was upgraded in 2002 to provide switched 100-megabit connections to every desktop plus fiber, video, and multiple voice and data connections in each office. Special purpose systems and switches use gigabit connections. The Campus Internet II connection is in Sitterson Hall and provides even higher speeds for applications that require it.

The department's network is connected to the North Carolina Research and Education Network (NC-REN), a statewide network that links research and educational institutions. The department's two-way video classroom and teleconference room allow connection to any institution served by the network. Courses are shared among the institutions via two-way, interactive video teleconferencing. NC-REN substantially widens the course, concentration, and advising opportunities available to students at participating universities. The network in Sitterson Hall also incorporates a satellite earth station.

Libraries

Students have access to the entire University library system, which includes a major academic affairs library and numerous satellite libraries containing almost 5 million books and periodicals, as well as to libraries at NC State and Duke universities with a unified on-line searching capability. The Brauer Library, located in Phillips Hall, next door to Sitterson Hall, is a satellite library with extensive holdings in computer science, mathematics, operations research, physics, and statistics.

Degree Requirements

Graduate Curriculum

A flexible course of study for the MS and PhD degrees focuses on areas of choice and accommodates differences in students' backgrounds. The two degree programs share a basic distribution requirement of four courses chosen from theoretical, systems, and applied subject areas. The PhD program includes work in specialized areas, preparation for teaching, and active involvement in advanced research.

Master of Science

An MS candidate must earn 30 semester hours of credit in courses numbered 100 or higher, of which up to 6 hours may be transferred from another institution or graduate program, and of which 18 hours must be completed in the Computer Science Department. Satisfactory completion of the distribution requirement provides 12 hours of credit. The remaining credits are earned in areas of specific interest, and may include course work, as needed, to address the following requirements:

- The technical writing requirement may be satisfied in one of three ways: (1) by taking the technical writing course, COMP 291, (2) by writing a thesis, or (3) by writing a technical document in either academic or nonacademic work that has been reviewed and accepted (this may include a previously written thesis or dissertation).
- The program product requirement may be satisfied by taking the software engineering course, COMP 145, or by presenting satisfactory documentation of previous experience with the development of a significant software system.
- The background preparation requirement reflects the body of material that is prerequisite to the department's graduate courses. Courses needed, if any, to satisfy this requirement are decided in consultation with the candidate's adviser, course instructors, and the graduate faculty committee.

A thesis is optional; if one is written, it counts for six hours. A comprehensive exam is required and has two possible forms: (1) satisfactory completion of an integrative paper (this also satisfies the technical writing requirement when written as part of COMP 291), or (2) an oral exam covering material from the courses in the candidate's program of study. While either exam is sufficient for the MS program, the integrative paper is required for the PhD program. A student with an assistantship generally completes the MS degree in four semesters or fewer.

Doctor of Philosophy

Admission to the PhD program is by oral qualifying examination and recommendation of the faculty. There is no credit hour requirement for the PhD program, but a PhD candidate must complete courses to satisfy the distribution requirement and any needed background preparation, and must write an integrative paper. A PhD candidate proposes an individual program of study, typically 15 to 18 hours. The program of study includes a primary and secondary concentration in computer science, training in mathematics, and a supporting program of external courses or a foreign language. Previous course work can be used to satisfy much of the program of study. A candidate must also satisfy the program product requirement, teach a course, participate in the technical communication seminar, pass an oral examination in the proposed dissertation area, and submit and defend a dissertation that presents an original contribution to knowledge. The normal time needed to complete the degree by a full-time student with an assistantship is five years.

Distribution Requirement

The distribution requirement requires satisfactory completion of four courses from the list below, with at least one course from each area. Grades earned in these four courses must satisfy additional requirements according to the degree program (MS or PhD).

Formal

COMP 202: Algorithm Analysis
COMP 244: Programming Languages
COMP 247: Distributed and Concurrent Algorithms
COMP 250: Scientific Computation

Systems

COMP 204: Software Design and Implementation
COMP 240: Compilers
COMP 242: Operating Systems
COMP 243: Distributed Systems

Applied

COMP 203: Parallel and Distributed Computing
COMP 206: Computer Architecture and Implementation
COMP 235: Images, Graphics, and Vision
COMP 261: Elements of Hardware Systems

Integrative Paper

An integrative paper is a survey of three or more technical papers that span multiple sub-fields of computer science and have a common thread. The integrative paper is written in one semester and is organized as an issue-based survey of approximately 5,000 words, emphasizing the integration of concepts found in the subject papers. Faculty members can suggest suitable collections of papers, but students may propose a collection of subject papers as well. Two faculty members must agree to read the integrative paper for style and content. The student follows a schedule of milestones for drafts and revisions. Both faculty members must accept the final revision for the integrative paper requirement to be satisfied. Concurrent registration in the technical writing class, COMP 291, is recommended but not
required. The satisfactory completion of an integrative paper satisfies the technical writing requirement.

Admissions and Financial Aid

Admission to the department is highly competitive. Although the department welcomes promising students from all disciplines, entering students must have a substantial background in both mathematics and computer science. This background normally includes at least six semester courses in mathematics and six in computer science. The department considers knowledge of the following subjects to be essential preparation for the graduate program:

- differential and integral calculus;
- discrete mathematics: sets, relations, functions, algebra;
- linear algebra or matrix theory;
- mathematical probability, preferably calculus-based;
- structured programming techniques;
- data structures and abstract data types; and
- computer organization.

Most entering students have studied all but two or three of the following subjects, which are required preparation for the graduate program:

- design and analysis of algorithms;
- formal languages and automata theory;
- databases;
- operating systems;
- compilers;
- digital logic techniques;
- numerical computing methods;
- programming languages; and
- software engineering.

Students who are admitted but who have not completed all the requirements must complete them after admission. Preference is given to applicants who are solidly prepared, especially in mathematics.

Previous Degrees. A baccalaureate degree is required, with a grade point average of at least B (3.0/4.0); most entering students have a GPA of more than 3.5.

GRE. High scores on all three parts of the General Aptitude Test of the Graduate Record Examination are also recommended: a minimum of 80th percentile on the verbal and 90th percentile on the quantitative and analytical sections is recommended (a score of 5 is recommended for the Writing Assessment). In recent years, most entering students have averaged in the 90th percentile or higher on each of the three sections. Allowances are made in interpreting the verbal test scores of applicants whose native language is not English. Although GRE Advanced Test scores are not required, applicants are encouraged to take the advanced test in computer science, mathematics, engineering, or physics, as appropriate. Standardized test scores must be reported directly by ETS and no more than five years old. If you did not specify the UNC-Chapel Hill Graduate School institution code #5816 as a score recipient at the time of taking the test, or if your scores were sent more than one year ago, you must contact the Educational Testing Service to request that your scores be sent to the department.

TOEFL. Applicants whose native language is not English must submit TOEFL scores. Applicants from Australia, Bahamas, Canada (except Quebec) England, Ghana, Ireland, India, Jamaica, New Zealand, Nigeria, Scotland, St. Vincent and the Grenadines, Trinidad, Tobago, and Wales are exempt from the TOEFL requirement and should not submit test scores. Also exempt from the TOEFL requirement are those who have received a degree from a university in the United States. The required minimum total score on the paper-based exam is 575 with a minimum of 57 in each section; comparable scores are required on the computer-based exam. The department gives preference to applicants who score above 640. Test scores must be reported directly by ETS and no more than two years old. If you did not specify the UNC-Chapel Hill Graduate School institution code #5816 as a score recipient at the time of taking the test, or if your scores were sent more than one year ago, you must contact the Educational Testing Service to request that your scores be sent to the department.

Personal Statement. Each applicant must submit a short personal statement directly to the department. The statement should include:

- objectives in pursuing graduate study;
- identification of fields within computer science in which the applicant has a particular interest;
- information that is relevant to the applicant's qualifications for graduate study but that has not been included already in the application (e.g., major academic projects, papers presented or published, and nonacademic computer experience);
- an informative title or a brief description of any course listed on the applicant's transcript without a title (or with a vague title such as "Mathematics II");
- a list of courses taken or planned that do not yet appear on a transcript; and
- an e-mail address, if available.

It should be between a half page and two pages long.

Recommendations. Three letters of recommendation are required. Letters written by an applicant's present or former professors are usually more informative than those written by employers or colleagues.

Sponsorship. Because of the large number of applicants, the department's faculty members are unable to provide individual assessments of an applicant's chances for admission. Applicants cannot improve their chances of admission by finding a faculty sponsor within the department, because all admissions decisions are made by a faculty committee that reviews all applications, ranks the applicants by overall merit, and makes decisions on admission and financial support based on the application material submitted. In particular, students are not admitted by research project directors; contacting individual faculty members whose research is of interest has no effect on one's chances of being admitted.

How to Apply. Admission is based solely on merit. The University of North Carolina is an affirmative action, equal opportunity institution. Prospective applicants who clearly surpass the minimum requirements are encouraged to apply. You can submit an electronic application or write for application materials to: The Graduate School, CB# 4010, 200 Bynum Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-4010. Telephone: (919) 966-2611. Web: gradschool.unc.edu/student_prospective.html. The Graduate School's Web site includes information on applying and online application forms. Domestic applicants (U.S. citizens and permanent residents) should check gradschool.unc.edu/application_dorm.html. International applicants should refer to gradschool.unc.edu/application_intl.html.

Candidates Day. Each spring, the department invites those applicants who have been admitted to the graduate program for the fall semester and who are currently living in the United States for a two-day visit to Chapel Hill. The prospective students learn about the research opportunities open to them and meet with individual faculty members and current graduate students.

Financial Support. During the academic year, most computer science students are supported by assistantships and fellowships. The stipend for research and teaching assistantships for the nine-month academic year 2004-2005 will be $14,300 (20 hours a week). Also, at no cost to them, students are covered by a comprehensive major medical insurance program, underwritten by Blue Cross/Blue Shield of North Carolina. Full-time summer employment on a research project is normally available to students.
who would like to receive support. The rate for summer 2005 will be $765 per week (forty hours) for ten to twelve weeks. This will produce a
combined annual financial package for our graduate assistants of approximately
$23,680. Students with assistantships qualify for a Graduate Student
Tuition Grant and pay no tuition. They are, however, responsible for paying
student fees of approximately $553 per semester. Graduate Student
Tuition grants typically cover MS students for four semesters of study and
PhD students for ten semesters of study. Annual living costs for single gradu-
ate students in the Chapel Hill area are estimated to be $12,000 or higher.
On-campus housing is available for both single and married students.

The department provides a $500 educational fund each semester to any
student who receives a competitive fellowship not granted by UNC-Chapel
Hill. The fund may be used for education-related expenses including books,
journals, travel, computer supplies and accessories, and professional mem-
berships. The department also awards a $1,500 supplement each semester
to non-service fellowship holders who join a research team.

To apply for an assistantship, the applicants should check the appropriate
item on the admissions application form. Applicants for assistantships are
automatically considered for all available fellowships. Students can expect
continued support, contingent on satisfactory work performance and aca-
demic progress.

Students are not assigned to specific research projects or teaching assistant
positions immediately upon being admitted to the department.
Assignments are made just prior to the start of each semester, after faculty
members and students have had an opportunity to meet and to discuss
their interests. Students are encouraged to gain professional experience
through summer internships with companies in the Research Triangle area
or in other parts of the country.

Deadlines. The fall semester runs from mid-August to mid-December; the
spring semester from early January to early May. Graduate courses in
computer science are not offered routinely during the summer. Applications
for fall admission, complete with a personal statement, all transcripts, and
recommendations should be received by the Graduate School no later than
January 1. To ensure meeting that deadline, applicants are encouraged to
take the Graduate Record Examination (GRE) no later than December.
Early submission of applications is encouraged. International applicants
should complete their applications earlier to allow time for processing
financial and visa documents.

For more information, write to the Director of Graduate Admissions,
Department of Computer Science, CB# 3175, Sitterson Hall, Chapel Hill,
NC 27599-3175, or send electronic mail to admitt@cs.unc.edu. Interested

Courses

114 FOUNDATION OF PROGRAMMING (4). Prerequisite, COMP 14, 15, or
16. Advanced programming. Program specifications, preconditions, postconditions,
loop invariants. Linear data structures, searching, and sorting. Algorithm paradigms
and analysis. Fall and spring. Dewan, Weiss.

117 INTRODUCTION TO WWW PROGRAMMING (3). Prerequisite, COMP
114 or equivalent experience. Client-side programming in Java for the WWW.
Introduction to TCP/IP, HTTP, and WWW architecture. Emphasis on applet pro-
gramming and component programming using threads, simple client-server applica-
tions, and XML. Fall. J. Smith, Mayer-Patel, Dewan.

118 ADVANCED WWW PROGRAMMING (3). Prerequisite, COMP 117.
Server-side programming in Java for the WWW. Emphasis on servlet programming
and distributed component programming using APIs for object serialization, remote
method invocation, database connectivity, and XML generation. Spring. J. Smith,
Mayer-Patel, Dewan.

120 COMPUTER ORGANIZATION (3). Prerequisite, COMP 114. Digital logic,
circuit components. Data representation, computer architecture and implementa-
tion, assembly language programming. Fall and spring. Bishop, Fuchs.

121 DATA STRUCTURES (4). Prerequisite, COMP 114. The analysis of data
structures and their associated algorithms. Abstract data types, lists, stacks, queues,
trees, and graphs. Sorting, searching, hashing. Fall and spring. Hedlund, staff.

122 ALGORITHMS AND ANALYSIS (3). Prerequisites, MATH 81 and COMP
121. Formal specification and verification of programs. Techniques of algorithm
analysis. Problem-solving paradigms. Survey of selected algorithms. Fall and spring.
Anderson, Hedlund, Lin, Manocha, Paikidis.

123 INTERNET SERVICES AND PROTOCOLS (3). Prerequisites, COMP 120,
121. Application-level protocols HTTP, SMTP, FTP, transport protocols TCP and
UDP, and the network-level protocol IP. Internet architecture, naming, addressing,
routing, and DNS. Sockets programming. Physical-layer technologies, Ethernet,

130 FILES AND DATABASES (3). Prerequisites, COMP 120, 121, MATH 81.
Placement of data on secondary storage. File organization. Database history, prac-
tice, major models, system structure, and design. Fall, Scotts, Weiss.

134 VISUALIZATION IN THE SCIENCES (3). Computational visualization
applied in the natural sciences. For both computer science and natural science stu-
dents. Available techniques and their characteristics, based on human perception,
using software visualization toolkits. Project course. Fall. Taylor.

136 INTRODUCTION TO COMPUTER GRAPHICS (3). Prerequisites, COMP
121, MATH 147. Hardware, software, and algorithms for computer graph-
ics. Scan conversion, 2-D and 3-D transformations, object hierarchies. Hidden sur-
face removal, clipping, shading, and antialiasing. Not for graduate Computer
Science credit. Fall. Staff.

140 COMPILERS (3). Prerequisites, COMP 120, 121. Design and construction of
compilers. Theory and pragmatics of lexical, syntactic, and semantic analysis.
Includes a large compiler implementation project. Fall. (Alternate years.) Prins.

142 OPERATING SYSTEMS (3). Prerequisites, COMP 120, 121. Types of oper-
ating systems. Concurrent programming, Management of storage, processes,
devices. Scheduling, protection. Case study. Students implement significant com-
ponents of a small operating system. Fall. (Alternate years.) Jeffrey.

144 PROGRAMMING LANGUAGE CONCEPTS (3). Prerequisite, COMP 121.
Concepts of high-level programming and their realization in specific languages.
Data types, scope, control structures, procedural abstraction, classes, concurrency.
Run-time implementation. Spring. Staff.

145 SOFTWARE ENGINEERING LABORATORY (3). Prerequisites, COMP
120, 121. Organization and scheduling of software engineering projects, structured
programming, and design. Each team designs, codes, and debugs program com-
ponents and synthesizes them into a tested, documented program product. Spring,
Scotts.

160 DIGITAL LOGIC AND COMPUTER DESIGN (4). Prerequisite, COMP
120. This course is an introduction to digital logic as well as the structure and elec-
tronic design of modern processors. Students will implement a working computer
during the laboratory sessions. Spring. Lastra, Singh, McMillan, Bishop.

170 APPLICATIONS OF NATURAL LANGUAGE PROCESSING (INLS 170)
(3). Prerequisite, COMP 14, 15, or 16. or graduate standing in Information and
Library Science. See course listings for School of Information and Library Science.

171 NATURAL LANGUAGE PROCESSING (INLS 115) (3). Prerequisite,
COMP 14, 15, or 16. See course listings for School of Information and Library
Science.

172 INFORMATION RETRIEVAL (INLS 172) (3). Prerequisite, INLS 50,
COMP 14, or COMP 15. See course listings for School of Information and Library
Science.

190 TOPICS IN COMPUTER SCIENCE (1-3). Prerequisite, permission of the instructor. This course has variable content and may be taken multiple times for credit. Fall and spring. Staff.


220, 221 MATHEMATICAL THEORY FOR COMPUTER SCIENCE (Variable, 0-2.5 each). Open to computer science graduate students only. Modules of mathematics for use in computer science. Includes principles of analysis, probability, linear algebra, modern algebra, logic. Fall and spring. Staff.

222, 223 PROGRAMMING LANGUAGES AND TECHNIQUES (Variable, 0-2.5 each). Open to computer science graduate students only. Modules presenting programming tools. Includes programming and command languages, data representation, data structures, file organization, searches, sorts. Fall and spring. Staff.

224, 225 MATHEMATICAL MODELS IN COMPUTER SCIENCE (Variable, 0-2.5 each). Open to computer science graduate students only. Modules developing mathematical models of computer, algorithms, and information in computers. Applications of these models. Includes theories of switching, automata, computability, formal languages, coding, information, numerical analysis. Fall and spring. Staff.

226, 227 COMPUTER SYSTEMS (Variable, 0-2.5 each). Open to computer science graduate students only. Modules on hardware and software making up computer systems. Includes device technology, computer architecture and implementation, data communications, systems evaluation, language processors, control programs, business data processing, software engineering. Fall and spring. Staff.


230 DATABASE MANAGEMENT SYSTEMS (3). Prerequisites, COMP 122, 130. Database management systems, implementation, and theory. Query languages, query optimization, security, advanced physical storage methods and their analysis. (On demand.) Staff.

231 INTRODUCTORY COMPUTER GRAPHICS (1). Prerequisites, COMP 121, MATH 83. Selected material from Introduction to Computer Graphics, providing remedial introduction for COMP 236. Hardware, software, and algorithms for computer graphics. Fall, Bishop, Brooks, Fuchs, Lin, Manocha, Pizer.


233 DISCRETE EVENT SIMULATION (ORS A 233) (3). See course listings for Department of Operations Research.


236 COMPUTER GRAPhICS (3). Prerequisites, COMP 231, 235. Study of graphics hardware, software, and applications. Data structures, graphics, languages, curve surface and solid representations, mapping, ray tracing and radiosity. Spring, Bishop, Brooks, Fuchs, Lin, Manocha.

238 ADVANCED IMAGE SYNTHESIS (3). Prerequisite, COMP 236. Advanced topics in rendering, including global illumination, surface models, shading, graphics hardware, image-based rendering, and antialiasing techniques. Topics from the current literature. (Alternate years.) Lasota.

239 EXPLORING VIRTUAL WORLDS (3). Prerequisite, COMP 238. Project course, lecture, and seminar on real-time interactive 3D graphics systems in which the user is "immersed" in and interacts with a simulated 3D environment. Hardware, modeling, applications, multi-user systems. (Alternate years.) Fuchs, Brooks.


241 INTERNET ARCHITECTURE AND PERFORMANCE (3). Prerequisite, COMP 123 or permission of instructor. Internet structure and architecture; traffic characterization and analysis; errors and error recovery; congestion and congestion control; services and their implementations; unicast and multicast routing. Spring. (Alternate years.) Jeffay, F. D. Smith, Mayer-Palet.

242 OPERATING SYSTEMS (3). Prerequisite, COMP 142. Theory, structuring, and design of operating systems. Sequential and cooperating processes. Single processor, multiprocessor, and distributed operating systems. Spring, Dewan, Jeffay, F. D. Smith, Mayer-Palet.

243 DISTRIBUTED SYSTEMS (3). Prerequisite, COMP 123 or permission of instructor. Design and implementation of distributed computing systems and services. Inter-process communication protocols: naming and name resolution; security and authentication; scalability; high availability; replication; transactions; group communications; distributed storage systems. Fall, Dewan, Jeffay, F. D. Smith.


245 FUNCTIONAL PROGRAMMING (3). Prerequisite, COMP 144. Programming with functional or applicative languages. Lambda calculus; combinatorics; higher-order functions; infinite objects. Least fixed points, semantics, evaluation orders. Sequential and parallel execution models. (On demand.) Prins, Prins, Plaisted.

246 LOGIC PROGRAMMING (3). Prerequisite, COMP 144. Propositional calculus, Horn clauses, first-order logic, resolution. Prolog: operational semantics, relationship to resolution, denotational semantics, and non-logical features. Programming and applications. Selected advanced topics. (On demand.) Plaisted.


255 recent advances in image analysis (3). Prerequisite, COMP 254. Lecture and seminar on recent advances in image segmentation, registration, pattern recognition, display, restoration, and enhancement. Spring. (Even-numbered years.) Pizer, Gereg.


257 VISUAL SOLID SHAPE (MATH 278) (3). Prerequisites, MATH 33, 116, 3D differential geometry, local and global shape properties; visual aspects of surface shape. Taught largely through models and figures. Applicable to graphics, computer vision, human vision, and biology. Fall. (Alternate years.) Pizer.

258 GEOMETRIC AND SOLID MODELING (3). Prerequisites, COMP 136 or 236, and MATH 191 or COMP 205. Curve and surface representations. Solid models. Constructive solid geometry and boundary representations. Robust and error-free geometric computations. Modeling with algebraic constraints. Applications to graphics, vision, and robotics. (Alternate years.) Mannocha.

259 physically based modeling and simulation (3). Prerequisites, COMP 285, 235; or permission of the instructor. Geometric algorithms, computational methods, simulation techniques for modeling based on mechanics and its applications. (Alternate years.) Lin.

261 ELEMENTS OF HARDWARE SYSTEMS (3). Prerequisite, COMP 120. Issues and practice of information processing hardware systems for computer scientists with little or no previous hardware background. System thinking, evaluating technology alternatives, basics of electronics, signals, sensors, noise and measurements. Spring. Bishop, Vici.

265 ADVANCED COMPUTER ARCHITECTURE (3). Prerequisite, COMP 206. Concepts and evolution of computer architecture. Machine language syntax and semantics; data representation; naming and addressing: arithmetic; control structures; concurrency; input/output systems and devices. Milestone architectures. (Alternate years.) Brooks.

267 ADVANCED COMPUTER IMPLEMENTATION (3). Prerequisites, COMP 206, knowledge of digital logic techniques. The application of digital logic to the design of computer hardware. Storage and switching technologies. Mechanisms for addressing, arithmetic, logic, input/output, and storage. Microprogrammed and hard-wired control. (On demand.) Staff.

268 VLSI SYSTEMS DESIGN (3). Prerequisites, COMP 206, knowledge of digital logic techniques. Introduction to the design, implementation, and realization of very large-scale integrated circuits. Each student designs a complete digital circuit that will be fabricated and returned for testing and use. Spring. Hedlund.

269 ADVANCED DESIGN OF VLSI SYSTEMS (3). Prerequisite, COMP 268. Advanced topics in the design of digital MOS systems. Students design, implement, and test a large custom integrated circuit. Projects emphasize the use of advanced computer aided design tools. (Alternate years.) Staff.


277 VISUAL PERCEPTION (PSYC 289) (3). Prerequisites, COMP 235 (vision segment), PSYC 209A, or equivalent. Surveys form, motion, depth, scale, color, brightness, texture, and shape perception. Includes computational modeling of vision, experimental methods in visual psychophysics and neurobiology, recent research, and open questions. Fall. (Alternate years.) Pizer.

281 COMPUTATIONAL GEOMETRY (3). Prerequisite, undergraduate analysis of algorithms course (e.g., COMP 122), or permission of instructor. Design and analysis of algorithms and data structures for geometric problems. Applications in graphics, CAD/CAM, robotics, GIS, and molecular biology. Fall. (Odd years.) Snoeyink, Lin.


286 TOPICS IN DISCRETE OPTIMIZATION (ORSA 216) (3). See course listings for Department of Operations Research.

288 INFORMATION THEORY (STAT 252) (3). See course listings for Department of Statistics.

289 ERROR-CORRECTING CODES (STAT 253) (3). See course listings for Department of Statistics.

290 TOPICS IN COMPUTER SCIENCE (1-3). Prerequisite, permission of the instructor. This course has variable content and may be taken multiple times for credit. Fall and spring. Staff.


321 TECHNICAL COMMUNICATION IN COMPUTER SCIENCE (1). Prerequisite, graduate major in computer science or permission of instructor. Seminar on teaching, short oral presentations, and writing in computer science. Spring. Weiss, Brooks.
322 SEMINAR IN PROFESSIONAL PRACTICE (1). Prerequisite, satisfaction of MS Computer Science program product requirement. The role and responsibilities of the computer scientist in a corporate environment, as an entrepreneur, and as a consultant. Professional ethics. (Alternate years.) Staff.

323 SEMINAR IN RESEARCH (1). Prerequisite, graduate major in computer science. The purposes, strategies, and techniques for conducting research in computer science and related disciplines. (On demand.) Staff.

324 COMPUTERS AND SOCIETY (1). Prerequisite, graduate major in computer science. Seminar on social and economic effects of computers on such matters as privacy, employment, power shifts, rigidity, dehumanization, dependence, quality of life. (On demand.) Staff.

390 RESEARCH SEMINAR IN COMPUTER SCIENCE (0.5-3). Prerequisite, permission of the instructor. Seminars in various topics offered by members of the faculty. Fall and spring. Staff.

391 READING AND RESEARCH (1-3). Prerequisite, permission of the instructor. Directed reading and research in selected advanced topics. Fall and spring. Staff.

393 MASTER'S THESIS (Var.). Prerequisite, permission of staff. Fall and spring. Staff.

394 DOCTORAL DISSERTATION (Var.). Prerequisite, permission of staff. Fall and spring. Staff.

395 PRACTICUM (0.5). Prerequisite, permission of instructor. Work experience in an area of computer science relevant to the student's research interests and pre-approved by the instructor. The grade, pass or fail only, will depend on a written report by the student and on a written evaluation by the employer. Staff.

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**SCHOOL OF DENTISTRY**

**JOHN W. STAMM, Dean**

**Professors**

Roland R. Arnold, Immunology, Host-Microbial Biology
Ikramuddin Akhil, Tissue Regeneration, Wound Healing
Stephen C. Beane, Biomaterials, Clinical Research
James D. Beck, Oral Epidemiology
Greg Essick, Dental Research Center
Harald Heymann, Operative Dentistry, Biomaterials
Robert P. Kusy, Orthodontics, Biomaterials/Biomechanics
William Maihner, Neurobiology, Pain Perception and Modulation, Pain Management
Kenneth N. May Jr., Operative Dentistry
Frank T. Melver, Pediatric Dentistry
Valerie Murrah, Oral Carcinogenesis, Salivary Gland Malignancies
Steven Offenbacher, Inflammatory Mediators, Host Response, Periodontal, Systemic Diseases
William Robert Proft, Orthodontics
Theodore Robson, Operative Dentistry
Michael Roberts, Pediatric Dentistry, Dental Lasers
Daniel A. Shugars, Health Services Research
David M. Simpson, Periodontology
John W. Stamn, Oral Epidemiology
Ronald P. Strauss, Medical Sociology and Health Promotion/Disease Prevention
Edward J. Swift, Dental Materials
Martin Troppe, Endodontics
J. F. Camilla Tulloch, Orthodontics
Timothy Turvey, Consequences of Craniofacial and Maxillofacial Surgery
Donald A. Tyndall, Oral and Maxillofacial Radiology
William F. Vann Jr., Pediatric Dentistry
Donald W. Warren, Craniofacial Development and Dysfunction
Raymond P. White Jr., Oral Surgery Therapies
Aldridge Wilder, Clinical and Laboratory Dental Materials Research
Ray Williams, Periodontology

J. Tim Wright, Mineralization and Development, Genetic Disorders
Mitsuo Yamauchi, Collagen Biochemistry, Physiology and Metabolism of Bone
John Zuniga, Nerve Injury and Regeneration

**Associate Professors**

L’Tanya Bailey, Orthodontics
Daniel Caplan, Oral Epidemiology
Lyndon Cooper, Bone Cell Physiology, Implantology
Alice Curran, Oral Pathology
Diane H. Dilley, Pediatric Dentistry
David A. Felton, Prosthodontics, Dental Implants, and Clinical Trials
Patrick Flood, Cellular Immunology, Immune Response and Regulation
Mary George, Dental Ecology
Albert D. Guckes, Prosthodontics
Lorne D. Koroluk, Pediatric Dentistry and Orthodontics
Mark Kuchler, Oral Medicine
John Ludlow, Oral and Maxillofacial Radiology
Sergei Makarov, Inflammation and Pain
Sally Mauriello, Radiology, Geriatric Dentistry
Douglas R. McCarthy, Prosthodontics
Glenn E. Mindley, Prosthodontics
John D. Moriarty, Dental Implants, Clinical Periodontology
Lauren Patton, Oral Medicine
Eric Rivera, Endodontics
Diane Shugars, HIV and AIDS Pathogenesis, Virus-Host Cell Interactions
Asgir Sigurdsson, Endodontics, Dental Trauma, Pain Mechanisms
John Studevant, Operative Dentistry
Jeffrey Thompson, Dental Materials
Carroll-Ann Trotman, Orthodontics
E. Leland Webb, Prosthodontics
Rebecca S. Wilder, Dental Hygiene
David Zajac, Craniofacial Disorders
Thomas Ziemiecki, Prosthodontics

**Assistant Professors**

Anne P. Dodds, Pediatric Dentistry
Sylvia Frazier-Bowers, Orthodontics
James M. George, Computer Technologies
Jessica Lee, Pediatric Dentistry
Linda Levin, Endodontics
Andre Mol, Oral and Maxillofacial Radiology
David Paquette, Periodontology
Patricia Pereira, Operative Dentistry
Andre Ritzer, Operative Dentistry
Janet Southerland, Diabetics and Periodontal Disease
Jennifer Webster-Crye

**Clinical Professor**

Richard A. Beane, Orthodontics

**Clinical Associate Professors**

Carolyn Bentley, Oral Diagnosis
Charles F. Brandley, Advanced General Dentistry
Laura Howerton, Dental Ecology
Charlotte Peterson, Dental Hygiene Education
Vickie P. Overman, Dental Hygiene
Mary Pettiette, Endodontics
Enrique Piaton, Oral and Maxillofacial Radiology
Amin Rahmin, Periodontology

**Clinical Assistant Professors**

George H. Blakey, Oral and Maxillofacial Surgery, Anesthesia
Nadine Brogda, Periodontology
Deborah Fleming, Dental Ecology
Anthony Molina, Prosthodontics
Allen Samuelson, Dental Ecology
Karen Twana, Urgent Care
Core and Multiuse Courses Offered to Graduate Students in Dentistry

201 (DENG) INTRODUCTION TO RESEARCH DESIGN (1). Introduction to scientific methodology, clinical epidemiology, oral biology and technology transfer, clinical trials, evaluation of scientific literature, experiments of nature, animal models for oral research, ethics in research, laboratory simulations and research models, and proposal writing. Fall. Wright.

202 (DENG) BIOSTATISTICS (2). Introduction of biostatistical concepts, sampling, descriptive statistics, hypothesis testing, comparisons of means and proportions, t- & c t tables, correlation and simple regression, sample size and power, analysis of variance, factorial anova, multiple regression, and nonparametric tests. Spring, Phillips.

203 (DENG) APPLIED DENTAL RESEARCH METHODS (2). Prerequisites: DENG 201 and DENG 202, or equivalent. Evaluate research methods used in basic, clinical, laboratory, behavioral, and epidemiological research in oral health and encountered in the dental literature. Master's thesis protocols completed by class participants are the basis of most seminar discussions. Fall. Beck.

206 (ORAD) ADVANCED ORAL RADIOLOGY (2). Radiographic selection criteria, efficacy of dental radiographs, panoramic radiology, extrarotals, radiographic projection, radiographic exposure in dental practice, principles of radiographic interpretation, radiography of eyes and tumors, radiology of the TMJ, radiology of systemic disease, quality improvement, radiology for dental implants, digital imaging in dentistry, and advanced imaging of the craniomaxilfacial region. Spring, Tyndall.

207 (OMSU) REGIONAL ANATOMY (3). Review of the anatomy of the head and neck region, including osteology, cardiovascular system, head and neck embryology, special sensory modalities, nervous system, functional nervous system, and extraoral correlation with the oral cavity. Summer. Kernick.

210 (DENG) SCIENTIFIC COMPUTING (2). Use of microcomputers and introduction to word processing, biomedical literature searching, bibliographic management, presentation graphics, and exploring the Internet. Lecture and lab. Fall. George.

213 (ORTH) PRINCIPLES OF ORTHODONTIC TREATMENT FOR ADULTS (2). Topics include orthodontic evaluation, records, diagnosis and treatment planning, fixed vs. removable appliance for tooth movement, orthodontic extraction, molar uprighting, periodontal implications of orthodontic treatment, biology of tooth movement, incisor alignment, and integrated treatment. Fall, Beane.

220 (OMSU) CLINICAL PHARMACOLOGY AND THERAPEUTICS (1). Covers compliance, substance abuse, antibiotic considerations, cardiology issues in dental practice, clinical pharmacology of relevant reactions and interactions of medications encountered in dental practice, dental prescribing and general considerations in pediatrics, pain management, and oral manifestations associated with selected medications. Summer. Eckel.

233 (OBIO) DIRECTED STUDIES IN ORAL BIOLOGY (1, 1, 1, 1). Introduces key concepts in oral biology, examines research methods used in oral biology research, and provides exposure to critical thinking. Summer. Arnold.

234abcd (OBIO) HOST ORAL PATHOGEN INTERACTIONS (2). Topics include extra cellular matrices, immunology, inflammation, neurobiology, and pain management. Fall and spring. Yamuchki, Arnold, Maixner, Flood.

251 (OMSU) ADVANCED PAIN AND ANXIETY CONTROL (2). Introduction to operating room and recovery room protocol, patient cardiovascular and pulmonary evaluation, adjunct and inhalant agents, nitrous oxide, pharmacology of IV anesthetic agents, EKG interpretation, arterial blood gases, anesthesia equipment monitoring, anesthetic complications and emergencies, fluid and electrolyte administration, airway management, venipuncture, pediatric anesthesia, and pre-op evaluation, orders, and rounds. Spring. Roberts.

Tuition and Fees

Semester tuition and fees for residents total $2,600. The summer rate is $350. Instruments, books, and laboratory fees are to be determined. Nonresident tuition and fees total $8,500 per semester and $1,100 for the summer term. Tuition and fees are due at the time of registration.

Student loans are available on the same basis as for undergraduates. For additional information, write Office of Admissions, The University of North Carolina at Chapel Hill, School of Dentistry.
262 (ORPA) ORAL AND MAXILLOFACIAL PATHOLOGY SEMINAR (2).
Fall topics include developmental disturbances of soft and hard tissues, syndromes, inflammation, immunology, pulp and periapical disease, periodontal disease, tumor-like proliferations, microbial disease, endocrine and metabolic diseases. Spring topics include odontogenic cysts, salivary gland disease, oral epithelial and mesenchymal neoplasms, bone and joint diseases, nerve and muscle diseases, dermatological diseases, and blood diseases. Full and spring. Current.

263 (ORPA) ORAL AND MAXILLOFACIAL PATHOLOGY SEMINAR (2).
Continuation of ORPA 262. Spring. Current.

301ab (DENG) INTERDISCIPLINARY CARE CONFERENCE I (1.1). For first-year dental graduate students. Review and discussion of the diagnoses, treatment plans, prognosis, and interdisciplinary care of selected patients. Fall and spring. Bramley, Levin.

302ab (DENG) INTERDISCIPLINARY CARE CONFERENCE II (1.1). For second-year dental graduate students. Review and discussion of the diagnoses, treatment plans, prognosis, and interdisciplinary care of selected patients. Fall and spring. Bramley, Levin.

320 (PERI) INTRODUCTION TO DENTAL IMPLANTS (1). The biological basis for dental implants, patient evaluation, diagnosis and treatment planning, prosthetic considerations, endosseous and transmandibular implants, and prosthetic considerations in complete denture and partial dentures. Fall. Meriary.

321 (PERI) CLINICAL IMPLANTOLOGY (1). Diagnosis and treatment planning implant supported rehabilitation, using interdisciplinary interaction. Surgical placement of implants or restorative procedures using current systems. Spring. Meriary.

Oral Biology
Program objectives are to train individuals for careers in research and teaching in areas related to oral biology. PhD graduates will have the qualifications and research expertise to become productive faculty members at leading universities and senior scientists in various academic institutions or industrial settings.

Oral biology encompasses the study of the structure and function of normal and abnormal tissues of the oral cavity and related areas, as well as the study of disease and healing mechanisms specific to various oral conditions. The discipline of oral biology applies and extends the concepts of immunology, embryology, physiology, cellular and molecular biology, neurobiology, pharmacology, microbiology, and biochemistry to understanding the growth and development and pathologies associated with the oral cavity. Attention in dental research and practice is now focusing on the dynamics of oral disease and prevention and treatment at the earliest stages of development, including research on risk factors for disease as well as the cellular and molecular events in disease pathogenesis. Molecular approaches for oral disease analysis and the complexity of disease elements require advanced training in the discipline of oral biology. Modern biomedical research is also identifying systemic relationship between oral conditions, health status, and diseases such as atherosclerosis, HIV, and cancer; the oral cavity also offers an ideal model to study biological structures and cellular mechanisms important throughout the body and important in immune response.

The UNC-Chapel Hill oral biology PhD program has three primary areas of emphasis: orofacial neurobiology, microbial pathogenesis, and the biology of extracellular matrices. These areas represent central concepts for study at advanced levels in the discipline of oral biology. Expertise and authority in these particular concepts are well represented within the strongest research and training qualifications of program faculty. Curricular requirements are based on training areas, with common core requirements for all students. Students begin with emphasis on basic sciences courses (cell biology and anatomy, microbiology, biochemistry) followed by examining specific biological applications. Research interests and qualifications such as DDS or MD will also determine course requirements. Participation in research in progress is a key element of the program, and students start laboratory rotations first semester to allow maximum time for research involvement. Program participants will be involved early in their academic careers with certain of key research areas targeted by the National Institutes of Health for national scientific focus. In addition, UNC-Chapel Hill's proximity and access to the Research Triangle's unique blend of universities, private industry, and national scientific organizations offer a wealth of resources for scientific study, collaboration, and research development.

The Faculty and Their Research

Orofacial Neurobiology: Greg Easick, somatosensory and motor research; Mark Hollins, somatosensory and motor research; William Maxner, neurobiology; pain perception; Sergei Makarov, signal transduction in inflammation and arthritis; Glenn Matsuoka, neuroimmunology; Aldo Rustioni, neuropsychology; John Zuniga, nerve injury and regeneration.

Pathogenesis: Roland R. Arnold, immunology, host-microbial biology, secretory immunity; Steven L. Bachem, oral biology, molecular pathogenesis of herpes simplex virus; Miriam Bruskin, microbial genetics; Patrick M. Flood, cellular immunology, immune response and regulation; Robert E. Johnston, viral pathogenesis; Thomas Kawula, bacterial pathogenesis; Linda Levin, genetic expression in human odontoblasts, molecular characterization of the pulp immune response; Glenn Matsuoka, neuroimmunology; Steven Offenbacher, inflammatory mediators, host response, periodontal and systemic diseases; Nancy Raeb-Trub, pathogenesis of Epstein-Barr virus; Diane C. Shugars, human immunodeficiency viruses and AIDS pathogenesis, virus-host cell interactions; Christina Teng, human lactoferrin structure and function; Jenny Ting, molecular immunology, immunoneurology, gene regulation; Roland Tisch, immunology and diabetes; Jennifer Webster-Cyriq, oral manifestations of systemic disease, host-virus interactions.

Biology of Extracellular Matrices: Imanuddin Aukhil, tissue regeneration, wound healing; Steven Bachem, host cell-virus interactions involving neurotropic herpes simplex virus; effects of HSV on cell cycle and signal transduction; Albert Banys, cytomembranes, gap junction biochemistry; Lyndon Cooper, bone cell physiology, implantology; Wagner Duarte, physiology and metabolism of bone; Leslie Paris, integrin cytoplasmic domain binding proteins; Patricia Pereira, biomaterials; Loka Reid, stem cell differentiation and extracellular matrix interactions; Kenneth Tomer, application of mass spectrometry to protein characterization, determination of posttranslational modifications of proteins; John Timothy Wright, mineralization and development, genetic disorders, extracellular matrices; Mitsu Yamauchi, collagen biochemistry, physiology and metabolism of bone; Heath Yeowell, protein processing, post-translational, gene expression regulation, connective tissue diseases.

Research Facilities
The oral biology graduate program is located in the Dental Research Center, the central core for much of the basic science research in the five-building School of Dentistry, with access to SEM/TEM microscopy, tissue culture facilities, anaerobic microbiology support, ALAC-accredited animal facilities, a P-3 level isolation facility, atomic absorption spectrophotometry, computers and software for image analyses/enhancement and finite element analyses, and a Clinical Research Unit including an eight-patient operator. Biostatistical assistance is readily available as well as medical illustration, photography, radiology, and grants management.
Financial Aid
Graduate research assistantships are awarded competitively for students accepted for the oral biology PhD program. These competitive assistantships provide support through program resources during the first two years with health insurance, and may include a special tuition rate for out-of-state students. Support for dissertation research (beginning third year) is made available by faculty mentors.

Applying
Individuals with significant background in basic sciences and/or dentistry and medicine who are interested in developing research skills and focus and studying current issues in oral biology are encouraged to apply. Students who wish to study for the PhD degree receive preference. Research experience is an asset and a statement of research interests is desirable. Applications are accepted for the fall session, and are preferred by January 31. Application requirements include GRE and TOEFL (for foreign applicants), documentation of previous scientific or medical studies, and transcripts for all undergraduate and graduate education. Candidates will be selected on a competitive basis by faculty of the oral biology program serving on a selection committee. Candidates’ research interests, research qualifications, and appropriate opportunities will be significant factors in selection.

Correspondence and Information
Cindy Blake, Graduate Program Coordinator
Oral Biology PhD Program, School of Dentistry
101 Dental Research Center, CB# 7455
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-7455
Telephone (919) 966-1538
Fax (919) 966-3683
Refer also to www.dent.unc.edu

Graduate Courses in Oral Biology
203 (OBIO) MATERIALS FOR BIOLOGICAL APPLICATIONS (1).
Prerequisite, approval of the instructor. This course summarizes current knowledge of materials commonly used in biological applications. Emphasis is on their chemical, mechanical, and structural characteristics and the relationship between these factors and appropriate clinical applications. Taylor, faculty on staff.

204 (OBIO) CONGENITAL MALFORMATIONS OF THE OROFACIAL REGION (1).
Prerequisite, approval of the instructor. Students interested in the etiology, growth mechanism, and treatment of congenital defects and associated anomalies are acquainted with significant aspects of the deformities. Faculty on staff.

206ab (OBIO) INTRODUCTORY ASPECTS OF PROTEIN CHEMISTRY (1).
Prerequisite, permission of the instructor. Consideration of selected aspects of protein chemistry with special attention given to problems associated with proteins found in hard tissues and saliva. One lecture hour a week. Fall and spring. Faculty on staff.

207 (OBIO) SEMINAR IN SPEECH PHYSIOLOGY (2).
Prerequisite, permission of the instructor. Evaluation of recent research in areas of anatomy, physiology, growth and development, genetics, and acoustics as they relate to the science of speech. One lecture hour a week. Fall and spring. Warren.

208abcd (OBIO) DISCUSSION IN ORAL BIOLOGY (2).
Prerequisite, approval of the instructor. A series of seminars on topics relevant to research and scientific knowledge in the field of oral biology. Visiting scientists from other research centers in the country and abroad participate in the discussion series. One lecture hour a week. Fall and spring. Faculty on staff and visiting lecturers.

209abcd (OBIO) RESEARCH TECHNIQUES IN ORAL BIOLOGY (6).
Prerequisite, approval of the instructor. The course familiarizes participants with a selection of specialized research techniques employed in interdisciplinary basic science approaches to problems in oral biology. Four lecture laboratory hours a week. Spring and summer. Faculty on staff.

210abce (OBIO) RESEARCH (1-5 per semester).
Prerequisite, approval of staff. Students pursue the literature and select a research project in oral biology that is planned and conducted under direction of research staff. The project is intended to lead to a thesis to meet the requirements of a master of science degree. Fifteen hours of research a week. Summer, fall, and spring. Faculty on staff.

222 (OBIO) SEMINAR IN STRUCTURAL AND HARD-TISSUE PROTEINS (1).
Prerequisite, approval of the instructor. Students discuss significant developments pertaining to the chemistry of molecular biology of the structural proteins. The biochemistry of these proteins is correlated with their various functions. Critiques of current literature are emphasized. One lecture hour a week. Spring. Faculty on staff.

233 (OBIO) ADVANCED ORAL BIOLOGY (3, 2).
Prerequisites, none.
Significant developments and trends in basic medical sciences that have applications in specialized dentistry are discussed. Recent publications taken from medical and dental scientific literature are discussed. Three hours a week. Summer. Arnold, faculty on staff.

234abcd (OBIO) DIRECTED STUDIES IN ORAL BIOLOGY (2).
Topics include extracellular matrices, immunology, inflammation, neurobiology, and pain management. Fall and spring. Arnold.

249ab (OBIO) BIOLOGICAL CONCEPTS (3).
Overview of structures and biological determinants of conditions and diseases of the oral cavity; both growth and development and pathophysiology will be introduced in the context of three areas of oral biology: biology of extracellular matrices, host-pathogens interactions, and orofacial neurobiology. Prerequisite for OBIO 250-252. Fall. Faculty on staff.

250 (OBIO) EXTRACELLULAR MATRICES (3).
Introduction to structures and biological functions of major extracellular matrix components, their interactions with cells, chemistry and biology of mineralized tissues, and biological and molecular aspects of connective tissue disorders. Lectures, discussions. Fall. Yamauchi, faculty on staff.

251 (OBIO) OROFACIAL NEUROBIOLOGY (3).
An overview of normal human orofacial sensation and function, evaluation of orofacial sensory and motor capacities, orofacial pain mechanisms, and neural control of orofacial behaviors. Lectures, literature review, discussions, seminars. Spring. Essick, faculty on staff.

252 (OBIO) HOST-PATHOGEN INTERACTIONS (3).
Overview of basic etiology of pathogens and associated medical conditions, immune factors, immune response, and oral microbiology/immunology, with emphasis on infectious disease processes and innate defense factors. Lectures, discussions. Spring. Flood, faculty on staff.

280ab (OBIO) THE MOLECULAR AND CELLULAR PATHOGENESIS OF INFLAMMATORY DISEASES (6).
Prerequisites, biochemistry and immunology; permission of instructor. Course presents recent information on the pathogenesis of inflammatory conditions from the molecular, cellular, and systems perspectives. The two-semester course covers molecular signals, cellular processes, pathogenesis of specific inflammatory conditions, and the immunopathology of inflammation. Lectures, seminar. Fall (a) and spring (b). Oral biology faculty. (Course director: Offenbacher.)

393ab (OBIO) MASTER’S THESIS (0-6).
Prerequisite, permission of staff. Faculty on staff.

394ab (OBIO) DOCTORAL DISSERTATION (0-6).
Prerequisite, permission of staff. Faculty on staff.
Oral and Maxillofacial Pathology
The advanced dental education program in oral and maxillofacial pathology prepares qualified oral and maxillofacial specialists for positions of responsibility in institutions of higher dental education, research, or in private practice. Students develop competence in surgical oral pathology, clinical management of patients with disorders of the head and neck, gain experience in pathology laboratory management, and develop teaching and research skills for enhancement of an academic career. Upon completion of the necessary requirements, each student is eligible for fellowship in the American Academy of Oral and Maxillofacial Pathology and certification by the American Board of Oral and Maxillofacial Pathology.

212abc (ORPA) SURGICAL ORAL PATHOLOGY SEMINAR I (1). This weekly seminar uses unknown cases as a basis for discussion of a variety of biopsy specimens taken from the head and neck. Clinical management of cases also is discussed. Students will develop skills for interacting with their medical and dental colleagues. Summer, fall, and spring (first year). Murrath.

232abc (ORPA) CURRENT PERSPECTIVES ON ORAL AND MAXILLOFACIAL PATHOLOGY I (1). This seminar series will focus on current research in oral and maxillofacial pathology and related fields. Current scientific literature will be critically reviewed. In addition, students will review historical literature to gain a perspective on the development of OMP as a specialty. Summer, fall, and spring (first year). Padilla.

202abc (ORPA) ADVANCED ORAL PATHOLOGY I (1). This lecture and clinicopathologic correlation series includes study of the etiology, pathogenesis, clinical, and histopathologic aspects of diseases of the head and neck. Summer, fall, and spring (first year). Curran.

301 (ORPA) RESEARCH. Under the guidance of the faculty, the student will select a research topic, review the literature, develop a protocol and present a preliminary proposal for an approved research project. Spring (first year). Curran.

214abc (ORPA) SURGICAL ORAL PATHOLOGY SEMINAR III (1). Continuation of ORPA 212 Summer, fall, and spring (third year). Padilla.

234abc (ORPA) CURRENT PERSPECTIVES ON ORAL AND MAXILLOFACIAL PATHOLOGY III (1). Continuation of ORPA 232 Summer, fall, and spring (third year). Curran.

204abc (ORPA) ADVANCED ORAL PATHOLOGY III (1). Continuation of ORPA 202 Summer, fall, and spring (third year). Murrath.

213 (PATH) MECHANISMS OF DISEASE (1).

393 ORPA MASTER’S THESIS (3).

Oral and Maxillofacial Surgery
The graduate curriculum in oral and maxillofacial surgery consists of a study of the basic biological sciences and clinical experience integrated with a progressively graduated four-year sequence of approved hospital experience. This flexible program is designed to: (1) prepare dentists for a career in teaching, research, and/or practice in the specialty of oral and maxillofacial surgery; (2) meet the requirements for approval by the Commission on Dental Education of the American Dental Association; and (3) prepare candidates for certification by the American Board of Oral and Maxillofacial Surgery.

While the study of the comprehensive biological sciences is integrated and stressed throughout the four years, the more formally structured courses are emphasized during the first two years of residency. More time is spent in seminars and independent study during the junior and senior residency years (third and fourth years). The latter allows flexibility for investigative study and additional rotations through various hospital services, and for additional elective assignments to provide more in-depth experience and knowledge related to oral and maxillofacial surgery.

All students are required to complete the full four-year program including the prescribed formal courses, seminars, independent study, and original research project. One program option is to earn the degree of master of science in dentistry (oral and maxillofacial surgery) by submission of a thesis. Other optional courses of study for selected individuals in this program may include qualifying for an MD degree or a PhD in a biological science. This involves an extended period of time that is individualized for each qualified student pursuing these additional studies.

Admission to The Graduate School for the study of oral and maxillofacial surgery is accomplished only after the the appropriate committees review the application, transcripts, and other credentials.

Graduate Courses in Oral and Maxillofacial Surgery
207 (OMSU) REGIONAL ANATOMY (2 or more). Lecture, laboratory. Montgomery.

212abc (OMSU) ORAL AND MAXILLOFACIAL SURGERY-ADVANCED ORAL AND MAXILLOFACIAL SURGERY (12). Faculty on staff (dental school and UNC Hospitals).

214abc (OMSU) ORAL AND MAXILLOFACIAL SURGERY-GENERAL ANESTHESIA (6). (UNC Hospitals.) Faculty on staff.

215abc (OMSU) ORAL AND MAXILLOFACIAL SURGERY-PHYSICAL DIAGNOSIS (12). (UNC Hospitals.) Faculty on staff.

230 (OMSU) ORAL AND MAXILLOFACIAL SURGERY-BASIC SURGICAL SKILLS (4). (UNC Hospitals.) This course includes an experimental animal surgery laboratory portion as well as lectures and demonstrations of surgical principles and techniques. Faculty on staff.

262 (ORPA) ORAL PATHOLOGY AND HISTOPATHOLOGY I (1). Fall. Murrath.

263 (ORPA) ORAL PATHOLOGY AND HISTOPATHOLOGY II (2). Spring. Murrath.

301 (OMSU) RESEARCH (6). To be arranged.

320 (DENT) INTRODUCTION TO DENTAL IMPLANTS (1). Lectures and seminars on use of dental implants. Fall. Moriarty.

393 (OMSU) THESIS (3 or more).

Operative Dentistry
The Department of Operative Dentistry offers a three-year program leading to an MS degree granted by the UNC-Chapel Hill Graduate School. The program involves component areas of research, teaching, and patient care. The curriculum includes (1) core general courses including topics in basic and clinical sciences; (2) courses in educational sciences; (3) a research component including courses on research design and statistical methods; and (4) a clinical component in contemporary operative dentistry. A formal thesis based on a selected research topic will be required, including its defense before an examining committee. The UNC-Chapel Hill Graduate School also requires a comprehensive written examination.

The admission policy for graduate training in operative dentistry follows the regular requirements for admission to The Graduate School. Admission to The Graduate School is granted only after the department reviews and approves the application, transcript of prior academic work, letters of reference, and other credentials. All applications, transcripts, and letters of reference should be mailed to the Dental Admission Office, UNC-Chapel Hill.
School of Dentistry, Chapel Hill, NC 27599. All application materials should be submitted by December 1 for the following summer class. Students begin the program July 1. The number of students is limited to two each year.

**Graduate Courses in Operative Dentistry**

**201a (OPER) OPERATIVE DENTISTRY SEMINAR I (1).** An intensive review of the basic principles of operative dentistry, cariology, and treatment planning which provides a foundation for all other courses in operative dentistry. The core text for this review is the Art and Science of Operative Dentistry.

**201b (OPER) OPERATIVE DENTISTRY SEMINAR II (1).** (Aesthetic and Adhesive Dentistry). In this seminar, graduate students will learn the scientific principles and clinical techniques involved in dental aesthetics and adhesive restorations. Each student is required to develop a case presentation for this seminar.

**201c (OPER) OPERATIVE DENTISTRY SEMINAR III (1).** (Topics in Operative Dentistry). A review of selected topics in operative dentistry, including biomaterials, clinical research, and aesthetic dentistry.

**203a (OPER) OPERATIVE DENTISTRY RESEARCH A (1).** (Review of Operative Literature). In this mentor-based course, student will develop and write a detailed description of materials and methods used in his or her research project.

**203b (OPER) OPERATIVE DENTISTRY RESEARCH II (2).** (Thesis Materials and Methods). Student will perform research project and obtain data for the master's thesis.

**204a (OPER) OPERATIVE CLINICAL SEMINAR A (1).** This seminar will involve a series of presentations where the student will present clinical cases resolved in the graduate clinic.

**204b (OPER) OPERATIVE CLINICAL SEMINAR B (1).** Continuation of Operative Clinical Seminar A course involving a series of presentations where the student will present clinical cases resolved in the graduate clinic.

**209a (OPER) OPERATIVE DENTISTRY CLINIC I (1).** Basic operative dentistry treatment planning and procedures.

**209b (OPER) OPERATIVE DENTISTRY CLINIC II (4).** Patient treatment. Primary focus is on patients requiring more advanced considerations for operative dentistry treatment planning and/or procedures. There will be a strong focus on aesthetic dentistry, prevention and "medical management" of cases, and the use of advanced technologies to provide operative dentistry treatment.

**209c (OPER) OPERATIVE DENTISTRY CLINIC III (4).** Continuation of Operative Dentistry Clinic II.

**209d (OPER) OPERATIVE DENTISTRY CLINIC IV (3).** Continuation of Operative Dentistry Clinic III.

**209e (OPER) OPERATIVE DENTISTRY CLINIC V (4).** Continuation of Operative Dentistry Clinic IV.

**209f (OPER) OPERATIVE DENTISTRY CLINIC VI (4).** Continuation of Operative Dentistry Clinic V.

**209g (OPER) OPERATIVE DENTISTRY CLINIC VII (3).** Continuation of Operative Dentistry Clinic VI.

**209 (OPER) OPERATIVE DENTISTRY THESIS (3).** The student will begin writing a master's thesis.

**Oral and Maxillofacial Radiology**

The advanced education program in oral and maxillofacial radiology begins July 1 and extends for three years, leading to a master of science degree. The purpose of the program is to prepare qualified oral and maxillofacial radiology specialists to function in institutions of higher dental education, research, and clinical practice. The program prepares individuals to participate in maxillofacial radiological practice, provides background information on imaging physics, radiation physics, radiation biology, and protection, and offers master training preparation. Each student participates in an extensive research project for the thesis and several smaller department based projects.

Each graduate student and his or her faculty adviser develops an original clinical or applied research project that is an integral part of the graduate program. A written thesis is required. The program meets the eligibility requirements of the American Dental Association for certification as an oral and maxillofacial radiologist.

Applications should be submitted by January 15. Interviews are usually scheduled before final acceptance.

**Graduate Courses in Oral Radiology**

162 (RADI) RADIOPHOTIC IMAGING (4). Fall. Burns.

185 (RADI) RADIOLICAL HEALTH PHYSICS (3). Spring. Plott.

202 (ORAD) ADVANCED ORAL RADIOLOGIC TECHNOLOGY (4). Seminars, laboratory, and clinical sessions to provide experience in advanced oral radiologic procedures. Spring. Plott.

203 (ORAD) ADVANCED ORAL RADIOGRAPHIC DIAGNOSIS I (3). Literature review and seminars to present advanced radiologic diagnosis. Fall. Tyndall.

204 (ORAD) ADVANCED RADIOLOGIC DIAGNOSIS II (3). Literature review, seminars, and clinical experience in advanced radiologic diagnosis. Summer. Ludlow.

205 (ORAD) PRINCIPLES FOR ADVANCED DIAGNOSTIC AND THERAPEUTIC RADIOLOGY (4). Literature survey and seminars in the application of radiologic procedures such as computed tomography, digital imaging, and magnetic resonance for the diagnosis of oral and maxillofacial conditions. Fundamentals of radiation therapy are also included. Tyndall.

206 (ORAD) ADVANCED ORAL RADIOLOGY (2). Lecture, seminars, and clinical demonstrations in advanced radiology topics. This is a seminar primarily for master's degree students in advanced dental education graduate and specialty programs. Spring. Tyndall.

207abcdef (ORAD) GRADUATE CLINICAL ORAL RADIOLOGY (3, 3, 3, 3, 3). Fall, spring, and summer (first year); summer, fall, and spring (second year). Tyndall.

302abcdef (ORAD) CLINICAL RADIOLOGY CONFERENCE (1). Case studies in the interpretation of unusual conditions of the oral and maxillofacial region. Fall, spring, and summer (first year); summer, fall, and spring (second year). Tyndall.

360 (ORAD) ORAL RADIOLOGY RESEARCH (1-4). Arranged. Faculty on staff.

393 (ORAD) MASTER'S THESIS (3).

**Core Courses Required**

207 (ANAT) REGIONAL ANATOMY (3). Summer. Montgomery.

262 (ORPA) HISTOLOGY AND HISTOPATHOLOGY (2). Fall. Burkes.

263 (ORPA) HISTOLOGY AND HISTOPATHOLOGY (2). Spring. Burkes.

(DENG) SCI COMPUTING/LAB (2). Fall. George.

(DENG) RESEARCH METHODS (1). Fall. Wright.


203 (DENG) APPLIED RESEARCH METHODS (2). Fall. Beck.
Orthodontics

Admission for graduate study in orthodontics is made only after the department faculty and the Graduate School approve a completed application. Application for entry into the program in August should be made by October 1 of the previous year. Interviews are scheduled in November. Admission decisions normally are made late in November.

The three-year curriculum in orthodontics is designed to prepare dentists for clinical practice in the specialty of orthodontics and meets the educational requirements for specialty board certification. All students participate in research in the department and are expected to earn the master of science degree by completion of a thesis project.

During the program's first year, students participate in seminars selected from the principal didactic courses, discuss clinical topics in seminars, and begin patient care. As the program progresses, didactic seminars gradually are replaced by research participation while clinical seminars continue and the volume of patient care increases. All students must perform satisfactorily on oral and written comprehensive examinations to complete the program successfully.

Graduate Courses in Orthodontics

201 (ORTH) ORTHODONTIC TECHNIQUE (4). Introduction to orthodontic technique and procedures for beginning orthodontic graduate students. Fall (first year). Hensley, faculty on staff.

203ab (ORTH) ORTHODONTIC DIAGNOSIS (2, 2). Principles of orthodontic diagnosis and analysis of diagnostic records for orthodontic specialists. Fall and spring. Tullio, faculty on staff.

206 (ORTH) INTRODUCTION TO CLINICAL ORTHODONTICS (2). Principles of clinical patient care for specialty practice in orthodontics. Fall. Bailey, faculty on staff.

205abcd (ORTH) ADVANCED CLINICAL ORTHODONTICS (5, 3, 7, 7, 3). Fall, spring, and summer. Bailey, faculty on staff.

206 (ORTH) BIOMECHANICS (2). Mechanical principles in orthodontic force production and control; biological response to orthodontic force. Fall, Kusy, Hensley.

206 (ORAD) ADVANCED ORAL RADIOLOGY (2). Acquaints graduate students with the radiographic techniques and equipment currently available to the profession. Includes a review of appropriate radiographic anatomy. Spring, Tyndall.

207 (ORTH) ORTHODONTIC BIOMATERIALS (1-3). Introduction to orthodontic biomaterials and integration with the basic principles of engineering, science, and orthodontics. Spring, Kusy.

208 (ORTH) GROWTH AND DEVELOPMENT (4). Principles of growth and development, emphasizing dento-facial development from an evolutionary and molecular biology perspective as well as the traditional anatomical perspective. Spring, Koroluk, faculty on staff.

210 (ORTH) CRANIOFACIAL ANOMALIES (2). The clinical management of craniofacial anomalies, including cleft lip and palate, and the associated interdisciplinary approach to treatment planning. Fall, Trotman.

213 (ORTH) PRINCIPLES OF ORTHODONTIC TREATMENT FOR ADULTS (2). Orthodontic treatment procedures for adults; AEGD, periodontic, and prosthodontic graduate students. Fall. Beane.

215 (ORTH) ORAL-PHARYNGEAL FUNCTION (1). Maturation of oral and pharyngeal function, including speech and its relation to dento-facial development. Fall. Trotman.

220 (ORTH) ADVANCED BIOMECHANICS (2). Concepts in orthodontic mechanics emphasizing segmented arch approaches and laboratory tests of appliance components and designs. Summer. Hensley, Kusy.

222 (ORTH) ENVIRONMENT OF SPECIALTY PRACTICE (3). Trends in health care delivery; organization and management of orthodontic specialty practice. Fall. Beane, faculty on staff.

301abcd (ORTH) RESEARCH (2, 1, 2, 3, 3). Arranged. Profits, Phillips.

302ab (ORTH) CURRENT TOPICS IN ORTHODONTICS (2, 2). Seminars on pertinent orthodontic literature for advanced orthodontic students. Fall and spring. Profits.

393 (ORTH) THESIS (3 or more).

Pediatric Dentistry

The advanced education program in pediatric dentistry requires participation in both the centralized application and matching services. Application requires submission of the required transcripts and documentation to the Postdoctoral Application Support Service (PASS), 1625 Massachusetts Avenue, NW, Suite 101, Washington, DC 20036. All candidates must register with the Postdoctoral Dental Matching Program, 595 Bay Street, Suite 300, Toronto, Ontario, Canada M5G 2C2. A personal interview is required and interviews are made by invitation of the department after reviewing applicants' records. All candidates must complete an application to the Graduate School once they have been selected for an interview.

The department offers a graduate program in pediatric dentistry leading to an MS, MPH, or PhD degree. The minimum program length is thirty-six months, beginning July 1. The program's goal is to prepare the student for a career in academic research, dental education clinical practice, or public health. Developing leadership skills and training advocates for children's health is emphasized. For interested students, this program can be combined with other educational programs in the social sciences, basic sciences, or allied health professions leading to an additional master's degree, postdoctoral fellowship, an individual Dentist-Scientist award, or a doctoral degree.

During the first year each student completes courses in research design and statistics. A protocol for the research project is completed in conjunction with the course work during the first year. This project provides a background in the scientific method and scientific writing. During the second year data are collected and during the third year the thesis is written and defended. Under the direction of leaders in many fields of research, research opportunities are available in a wide range of topics and can be undertaken in the School of Dentistry, the Dental Research Center, Research Triangle Park, or neighboring institutions. Numerous projects have received national acclaim and have resulted in publications in dental literature. Hospital training is gained through the University of North Carolina Hospitals. Graduate students are active members of the department's teaching team during all years. Development of leadership skills in the health profession is supported by externship at the local, state, and national levels.

Stipends are available depending upon available resources.

Graduate Courses in Pediatric Dentistry

200abcd MATERNAL AND CHILD HEALTH SEMINAR SERIES (1, 1, 1, 1). (One hour/week for each fall and spring semester.) This is a seminar series that focuses on a broad range of topics related to pediatric dentistry and pediatric medicine including general medical issues, practice management, social issues, child advocacy, and presentation of unusual clinical cases. Roberts.

201abcd (ORTH) PEDIATRIC DIAGNOSIS AND TREATMENT PLANNING SEMINARY (1, 1, 1, 1). (One hour/week each fall and spring semester for two years.) This course is a seminar wherein diagnosis and treatment planning options are considered through a problem-oriented approach. For cases in progress and completed, outcomes are reviewed and critiqued. Vann.
203 PRINCIPLES OF PEDIATRIC DENTISTRY (Six hours/month for fall and spring semesters for twenty-four months.) This seminar covers the fundamentals of pediatric dentistry from behavior management to pulpa therapy. The course relies on readings of classic and contemporary literature with seminars that include discussions and critiques of readings. Varin and pediatric dentistry faculty.

204 ADVANCED CLINICAL PEDIATRIC DENTISTRY (Six to twelve hours/week for thirty-six months.) This course provides clinical experience in all phases of pediatric dentistry, including dental treatment under conscious sedation and general anesthesia. Faculty on staff.

205 CONTEMPORARY PRACTICE MANAGEMENT (One hour monthly during the spring semester for three years.) This course provides an understanding of design, implementation, and management of a modern pediatric dental practice. Most seminar leaders are private practitioners who are adjunct faculty in the department. Varin.

206 TREATMENT OF PEDIATRIC DENTAL EMERGENCIES (One hour/week each week for thirty-six months.) This seminar series serves as a faculty/resident forum for reviewing the previous week’s emergency cases and in which diagnosis and treatment options are reviewed and critiqued. Endodonic faculty/residents also participate in this course. Varin.

209 PREVENTIVE ORTHODONTICS (Seven hours/week each semester for thirty-six months.) This course provides an opportunity for students to learn and demonstrate a thorough orthodontic diagnosis and establish realistic treatment objectives considering all aspects of the patient’s treatment needs. This course also provides clinical experience in treating limited orthodontic problems seen commonly by pediatric dentists. Koroluk.

301 RESEARCH (Minimum of one half-day/week for thirty-six months.) Students pursue an institutionally approved research project under the guidance of the faculty following review of the pertinent literature and planning on the basis of sound experimental design. Faculty on staff.

393 MASTER’S THESIS. Faculty on staff.

Periodontology

The graduate program in periodontology is designed to prepare dentists to enter the clinical practice of periodontics or to assume positions in academia and research. Stipends are provided during the three years of study.

The program consists of a thirty-six-month course of study leading to a certificate in Periodontics and a master of science degree. Alternative degree programs include a master of public health or a PhD in oral biology. The first two years are devoted primarily to the study of biological concepts and literature that relate to periodontology, as well as to the acquisition of clinical skills in diagnosing and treating diseases affecting tooth supporting tissues. A portion of the first two years is devoted to research. The third year involves a combination of patient care, teaching, research, and the successful completion of a thesis. Elective courses relating to areas of research interests are available.

The admission policy for graduate training in periodontology follows the regular requirements for admission to The Graduate School. Admission to The Graduate School is granted only after the department reviews and approves the application, transcript of prior academic work, letters of reference, and other credentials. All applications, transcripts, and letters of reference should be mailed to PASS, 1625 Massachusetts Avenue, NW, Suite 101, Washington, DC 20036. All application materials should be submitted by August 15 for the following summer class beginning July 1. A personal interview is required for admission.

Students begin the program July 1. The number of students is limited to three each year.

Graduate Courses in Periodontology

250abc (PERI) ADVANCED CLINICAL PERIODONTOLOGY AND CLINICAL PRACTICE (9). Within this first year specialty clinic, graduate students begin diagnosing and comprehensively treating patients with periodontal diseases. Cases may involve interdisciplinary care, medical management, dental implants, and sedation procedures. Fall, spring, and summer. Department faculty.

251abc (PERI) ADVANCED CLINICAL PERIODONTOLOGY AND CLINICAL PRACTICE (9). Within this second and third year specialty clinic, graduate students gain proficiency in managing patients with periodontal diseases using both surgical and nonsurgical approaches. Again, cases may involve interdisciplinary care, medical management, dental implants, and sedation procedures. Fall, spring, and summer. Department faculty.

266abc (PERI) PERIODONTAL THERAPY (1, 1, 1). This graduate seminar reviews techniques and procedures for treating periodontal diseases. Topics include gingival grafting, surgical flap management, osseous surgery, periodontal regeneration, antimicrobials, host modulation and periodontal medicine. Summer and fall. Rahman.

266ab (PERI) CASE ANALYSIS (10). Course participants present comprehensive cases with periodontal conditions. Discussion focuses on periodontal diagnosis, treatment planning, treatment execution and results. Fall and spring. Paquette.

270ab (PERI) SEMINAR IN PERIODONTOLOGY (6). In this first year literature review course, graduate students present and evaluate the literature and periodontal disease etiology, pathogenesis, risk factors and treatments including mechanical, surgical and pharmacological approaches. Fall and spring. Paquette.

271ab (PERI) SEMINAR IN PERIODONTOLOGY (6). In this second and third year literature review course, graduate students discuss evidence on advanced topics in periodontology or related disciplines. Fall and spring. Williams.

301abcdef (PERI) RESEARCH (5 each). Fall, spring, and summer. Department faculty.

320 (PERI) INTRODUCTION TO IMPLANTS (1). This graduate seminar traces the biology of osseointegration, surgical techniques in dental implant placement and prosthetic restoration. The seminar includes didactic lectures, case presentations and journal club components. Fall. Moriarty.

321 (PERI) CLINICAL IMPLANTOLOGY (1). This graduate seminar continues themes introduced in PERI 320 and discusses advanced implant topics including bone augmentation, peri-implantitis and implant efficacy assessment. The seminar includes didactic lectures, case presentations and journal club components. Spring. Moriarty.

393 (PERI) THESIS (3 or more).

Prosthodontics

The admission policy for graduate training in prosthodontics follows the regular requirements for admission to The Graduate School. Admission to The Graduate School is granted only after the application, transcript of prior academic work, letters of reference, and other credentials are reviewed and approved by the appropriate committee. All applications, transcripts, and letters of reference should be mailed to PASS, 1625 Massachusetts Avenue, NW, Suite 101, Washington, DC 20036. All application materials should be submitted by September 15 for the following summer class beginning July 1. A personal interview is required for admission.

The graduate program in prosthodontics is currently a thirty-six month course of study in fixed and removable prosthodontics, dental implant prosthodontics, and maxillofacial prosthetics leading to a master of science degree. The primary goals of the program are to prepare a student for clinical practice and/or a teaching and research career. The curriculum offers a broad educational experience in clinical, research, didactic, and teaching
activities. The program satisfies the formal training requirements of the American Board of Prosthodontics for certification examination in prosthodontics.

Seminars are available at various levels throughout the entire course.

Graduate Courses in Prosthodontics

230a (PROS) INTRODUCTION TO PROSTHODONTIC LITERATURE
(2, 2, 2). A seminar designed to review early and classic prosthodontic literature common to fixed and removable prosthodontics. Summer (first year); fall and spring (third year). Director, faculty on staff.

231abcd (PROS) PROSTHODONTIC PRINCIPLES, DIAGNOSIS, AND TREATMENT PLANNING-FIXED AND REMOVABLE (2, 2, 2, 2, 2, 2). Principles of diagnosis and treatment relative to the prosthodontic patient are covered in depth in this seminar series. Fall and spring (first year); summer, fall, and spring (second year); summer (third year). Director, faculty on staff.

232abcdefg (PROS) ADVANCED CLINICAL FIXED AND REMOVABLE PROSTHODONTICS (1, 3, 3, 5, 3, 3, 3). This clinical offering is designed to permit the graduate student to experience all phases of advanced patient management in fixed and removable prosthodontics. Summer, fall, and spring (first year); summer, fall, and spring (second year); fall, and spring (third year). Director, faculty on staff.

233ab (PROS) MAXILLOFACIAL PROSTHODONTIC PRINCIPLES,
DIAGNOSIS, AND TREATMENT (1, 1, 1, 1, 1). Principles of diagnosis and treatment relative to maxillofacial prosthetic patients are covered in depth in this seminar series. Summer, fall, and spring (second year); summer (third year). Missy, faculty on staff.

234abcdefg (PROS) CLINICAL MAXILLOFACIAL PROSTHODONTICS (2, 2, 2, 2, 2, 2). This clinical offering is designed to permit the graduate student to manage the comprehensive prosthodontic care of congenital and/or acquired maxillofacial defects in both the dental setting and in the hospital environment. Spring (first year); summer, fall, and spring (second year); summer, fall, and spring (third year). Missy, faculty on staff.

235abc (PROS) RESEARCH (2, 3, 3, 5, 5, 5). The graduate pursues the literature and selects a research project planned and conducted under the direction of the appropriate graduate faculty. Spring (first year); summer, fall, and spring (second year); summer, fall, and spring (third year). Graduate faculty.

236ab (OPER) GRADUATE DENTAL MATERIALS (3). This is a foundation course for dental materials science and dental materials applications. Fall and spring. Bayne.

393 (PROS) MASTER THESIS (3 or more). Completion of thesis for master of science degree. Spring (third year). Graduate faculty.

In addition to the courses listed, core courses are required in anatomy, microbiology, pharmacology, oral pathology, research methodology, scientific writing, and dental education. Flexibility in the curriculum also allows opportunity for appropriate electives.

Graduate Elective Courses

A number of graduate courses from allied clinical and biomedical disciplines are available as electives for prosthodontic graduate students. Though not required, elective courses are encouraged. Interest in electives (from within or outside the School of Dentistry) should be discussed with the program director so that the core curriculum can be adjusted to accommodate the student's needs.

Endodontics

The Department of Endodontics offers a three-year program leading to a certificate in endodontics and a master of science degree. The program is designed to prepare candidates for careers in academics, research, or the clinical practice of endodontics and for certification by the American Board of Endodontics.

The endodontics graduate program involves an integrated study of biological sciences as they pertain to endodontics; development of the clinical skills required in the basic area of the endodontic specialty; review of classic and current biology in endodontics; teaching experience; research design and methodology; and development and completion of a research project.

Enrollment is limited to two candidates each year. The course of study begins July 1.

Graduate Courses in Endodontics

210abcdef (ENDO) ADVANCED CLINICAL ENDODONTICS (29). 870 hours of clinical practice. Faculty on staff.

211abcdef (ENDO) ENDODONTICS SEMINAR AND CASE ANALYSIS (15). 180 hours conference. Faculty on staff.

212abcdef (ENDO) ENDODONTICS LITERATURE REVIEW SEMINAR (20). 270 hours. Faculty on staff.

215abcdef (ENDO) ENDODONTICS CURRENT LITERATURE REVIEW (5). Seminar. Faculty on staff.

220abcdef (ENDO) RESEARCH (15). 675 hours of laboratory. Faculty on staff. Required each semester.

393 THESIS (3 or more). Third year.

Core courses required:

201, 202, 203 (DENG)
206 (ORAD)
207 (ANAT)
210 (DECO)
220 (OMSU)
233 (OBO)
235 (OBO)
250-251 (OMSU)

Dental Hygiene Education

The primary objective of the dental hygiene education master of science program is to prepare well-qualified educators for dental hygiene programs. At the successful completion of this program, the student should be able to (1) give evidence of having acquired advanced knowledge and skills in one of the following minors: dental management/administration, dental radiology, science basic to dental hygiene education, oral pathology, and clinical education; (2) develop the knowledge, skills, and attitudes necessary in the conduct of dental hygiene programs; (3) teach courses in more than one dental hygiene field; (4) define their own problems from the present body of knowledge in dental and dental hygiene education, solve the problems, and present their work in a scholarly fashion.

Credit hour requirements vary and are based on the individual background of the student and on the minor selected by the student. Thirteen credit hours are required in the core (including thesis or research) and nine to twelve hours in the minor. The length of the program is approximately two years. Minimum admissions requirements for the program include current licensure and a bachelor's degree from an accredited institu-
tion and graduation from a dental hygiene program accredited by the Commission on Dental Accreditation, American Dental Association. Work experience in dental hygiene education or dental hygiene practice is strongly recommended.

Applicants must have a grade point average of B or better in the professional undergraduate curriculum. Three letters of recommendation are required as well as completion of an admissions questionnaire by the applicant. The course of study begins July 1. An application to the University can be obtained by writing to the Admissions Office, School of Dentistry, CB# 7450, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7450. For further information contact Coordinator, Dental Hygiene Education Program, School of Dentistry, CB# 7450, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7450, (919) 966-2800.

Core Courses Required of Graduate Students in Dental Hygiene Education

115 (DHED) CURRENT CONCEPTS IN CLINICAL SKILLS (2). This course will review and update students in current treatment and diagnostic modalities in dental hygiene education. Summer. Wilder.

120 (DHED) EDUCATIONAL CONCEPTS (2). Summer. Wilder.

136 (DHED) CLINICAL/LABORATORY TEACHING PRACTICUM (2). Fall. Peterson.

160a (DHED) SEMINAR IN EDUCATION AND RESEARCH (1). Fall. Wilder.

160b (DHED) SEMINAR IN EDUCATION AND RESEARCH (1). Fall. Wilder.

230 (DHED) ORGANIZATION AND ADMINISTRATION (3). Spring. George.


393 (DHED) THESIS (3). Fall and spring. Wilder.

201 (DENG) RESEARCH DESIGN (1). Fall. Wright.


203 (DENG) APPLIED Research Methodology (2). Fall. Beck.

210 (DENG) SCIENTIFIC COMPUTING (2). Fall. George.

ELECTIVE (3).

Additional courses are required for each minor as follows:

Biological Sciences

102 (DENT) GROSS ANATOMY (4). Levitch.

104 (DENT) MICROSCOPIC ANATOMY (4). Hadler.

114 (DENT) PHYSIOLOGY (4). Moss.

Clinical Education

153 (DHED) ADVANCED INTRAORAL FUNCTIONS (3). Wilder.

154 (DHED) ADVANCED INTRAORAL FUNCTIONS (PERIODONTICS) (3). Wilder.

236 (DHED) ADVANCED/ClinICAL TEACHING (3). George.

Dental Radiology

190 (ORAD) COMPREHENSIVE RADIATION BIOLOGY (1-2 variable).

162 (RADI) RADIOGRAPHIC IMAGING I (4). Burns.

233 (DHED) SEMINAR AND PRACTICUM IN DENTAL RADIOLOGY EDUCATION (4). Overman.

Management/Administration

474e (DHED) PERSONNEL MANAGEMENT SEMINAR (2). Wilder.

234 (DHED) DENTAL MANAGEMENT SEMINAR (4). Wilder.

ELECTIVE (3).

Oral Pathology

104 (DENT) MICROSCOPIC ANATOMY (4). Hadler.

127 (DENT) PATHOLOGY I (3). Bentley.

202 (DENT) PATHOLOGY II (2). Murrah.

DEPARTMENT OF DRAMATIC ART

RAYMOND E. DOOLEY, Chair

Professors

Artic M. Cible, Designer
Raymond Dooley, Chair, Acting
David Hammond, Acting, Directing
Robert A. Owen (2) Costume Design and History
Bonnie N. Rupple, Head of MFA Acting, Voice and Speech
Craig W. Turner, Movement for the Actor
Adam N. Versenyi, Head of Graduate Studies, Dramaturgy

Associate Professor

Michael J. Rolleri, Head of Technical Production

Adjunct Professors

Judith L. Adamson, Head of Costume Production
Joan Darling

Adjunct Assistant Professor

Jason Prichard, Technical Production

Lecturer

Traci Meek, Costume Production

The Department of Dramatic Art offers professional training programs in acting, costume production, and technical production leading to the master of fine arts degree. The production facilities in the Center for Dramatic Art include the Paul Green Theatre and the Elizabeth Price Kerr Theatre along with studios, rehearsal hall, costume complex, and scene shops.

Each student is responsible for becoming familiar with the general regulations of The Graduate School and particularly with the dates indicated on the calendar for the academic year; this information is contained elsewhere in the Graduates School Record. Please note that, due to the nature of the professional training programs, the calendar for graduate students in the Department of Dramatic Art will not always coincide with that of the University. Graduate students in the department are frequently required to work on productions during University scheduled holidays.

A limited number of graduate appointments are available in the department. Appointments are presently awarded in the areas of acting, technical
production, costume production, and in support of introductory courses (DRAM 15, 16, and 35). All appointments involve instructional or laboratory supervisory responsibility.

Master of Fine Arts

Purpose. Through disciplined classroom training and a progressive involvement in performance or production opportunities, students in the MFA programs are challenged to develop the skills and attitudes that enable them to compete in the professional theatre. Emphasizing accomplishment in a wide range of performance and production styles, the programs complement the variety of theatrical experiences available in the PlayMakers Repertory Company (PRC), a professional full-season Equity Company and a member of The League of Resident Theatres. Within his or her area of specialization, upon graduation students will be ready to perform a variety of roles or assume a range of responsibilities onstage or backstage in stage, film, or television.

Prerequisites. All applicants must meet admission requirements established by the Graduate School of The University of North Carolina at Chapel Hill. Each area of specialization within the department requires additional application materials. In the costume and technical areas, applicants are required to submit portfolios. Candidates should check with the department for further information as to what is entailed for each area. All acting candidates must audition. In addition to on-campus auditions, the department holds auditions two out of every three years in February in New York and Chicago. Applications must be received by January 31 to be considered.

Curriculum. Each candidate pursues a course of study in a conservatory environment. Classroom training offers a variety of approaches, each designed to develop and refine the candidate's artistic and professional potential. Classroom work is augmented by participation in the professional season of PlayMakers Repertory Company. In addition to the PRC, students find performance opportunities in studio projects and productions.

Evaluation. At least once each semester, the faculty formally evaluates the candidate's progress and makes recommendations concerning his or her continuation in the program. Evaluations are made of each individual on the basis of classroom and performance or production work. Letter grades (H, R, L, F) are assigned for work in all courses.

Admission. Generally, only first-year applicants are considered for admission. Candidates should check with the department for admission information pertaining to their specific area of specialization, i.e., acting, technical production, or costume production.

Residency and Requirements. All candidates are required to be in residence for three years, six consecutive semesters. The departmental system of evaluation requires that the student be invited to continue in the second and then in the final year of the program. While all programs require their students to complete sixty credit hours, those hours are apportioned differently from program to program. In addition to sixty credit hours, each area of specialization carries its own graduation requirements. Candidates are encouraged to ascertain individual requirements for graduation as soon as possible.

Detailed information can be obtained by addressing inquiries to: Director of Graduate Studies, Department of Dramatic Art, CB# 3230, Center for Dramatic Art, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3230. Additional information is available on the Web at www.unc.edu/depts/graduate/home_graduate.htm.

Courses for Graduates and Advanced Undergraduates

100 TECHNICAL DIRECTION (3-6). Prerequisites, permission of instructor. DRAM 64, Technical Methods, Technical Production section, or equivalent technical practice in theatre production. Study of the technical and engineering problems in production and standard theatrical drafting and construction conventions. Must be taken fall and spring. Prichard, Rotherfield, staff.

101 STAGE MANAGEMENT (3). A study of basic principles and practices of modern stage management. Fall and spring. Staff.

150 SHAKESPEARE IN THE THEATRE (3). A study of the literary, stage history, and production problems of representative plays. Dooley, Hammond. BA-level Perspective.

155 PLAYWRITING (3). Permission of the department required. A practical course in writing for the stage with studio productions of selected works. May be repeated once for credit. Spring. Svanoe. BA-level Perspective.

157 PLAYWRITING (3). Prerequisite, at least one semester of DRAM 155. A practical course in the writing of the stage play. (Alternate years) Svanoe.

165 SOUND DESIGN (3). The study of general principles of sound design for the theatre. Theory and application of sound design techniques for the stage, including script analysis, staging concepts, special effects, sound plots, and technology. Spring.

166 SCENE DESIGN (3). Prerequisite, permission of the instructor. General principles of visual design as applied to scenery for the theatre. Instruction in standard techniques of planning and rendering scene design. Fall. Coble. BA-level Perspective.

167 COSTUME DESIGN I (3). Prerequisite, permission of the instructor. Studies and techniques in costume design and rendering costume design. Fall and spring. Owen. BA-level Perspective.

168 LIGHTING DESIGN (3). Prerequisite, DRAM 100 or equivalent training in drafting. General principles of lighting design as applied to the performing arts. Theory and instruction in standard techniques of lighting for the stage. Spring.

169 COSTUME DESIGN II (3). Prerequisite, DRAM 167 or permission of the instructor. Practicum in costume design for the theatre focusing on the requirements of professional theatre production and alternative costume design solutions. Spring. (Alternate years) Owen.

170 SURVEY OF COSTUME HISTORY (3). A survey of historic costume forms from ancient Egypt to the present time. Fall. Owen. BA-level Western Historical Perspective.

171 NON-WESTERN COSTUME HISTORY (3). The traditional costume forms on the African Continent, in Asia (China, Japan, India), and on the Arabian Peninsula explored through discussion of the historical and cultural forces and visual records. Spring. Owen.

172 SPECIAL TOPICS IN COSTUMING (Var. 1-3). Prerequisite, permission of instructor. Advanced study of historical pattern, costume crafts, or costume shop management through directed study. Fall and spring. May be repeated for credit. Adamson.

173 COSTUME CONSTRUCTION I (Var. 1-3). Prerequisite, permission of the instructor required. Beginning instruction in pattern making through flat pattern for theatrical costume. Fall. Adamson.

174 COSTUME CONSTRUCTION II (Var. 1-3). Prerequisite, DRAM 173 or permission of the instructor. Beginning instruction on the dress form for theatrical costume. Spring. Adamson.

175 PERIOD STYLES FOR THE THEATRE (3). A study of visual, cultural, and social styles through history as the forms developed, and as they relate to stylistic production for the theatre. Fall and spring. Coble. BA-level Historical Perspective.
176 ADVANCED SCENE DESIGN (3). Prerequisite, DRAM 166 or permission of instructor. Advanced study of the principles and practice of designing scenery for the theatre. Fall. (Alternate years.) Coble. BA-level Aesthetic Perspective.

185 PERIOD STYLES FOR PRODUCTION (3). A study of the historical development of Western minor arts and the ramifications of reproducing them for the theatre. Spring. (Alternate years.) Coble. Western Historical Perspective.

190 THEATRE MANAGEMENT (3). Prerequisite, permission of the instructor. A historical survey of theatre management in America with emphasis on commercial and non-for-profit theatres. Emphasis on theatre personnel, artistic concerns, financing, publicity, and marketing. Students actively engage in management areas of PlayMakers Repertory Company. Fall and spring. Heins.

191 ISSUES IN ARTS MANAGEMENT (3). Arts management issues caught through analysis of case studies. Course includes management theories, organizational structures, and current issues. (Alternate years.) Staff.

192 SPECIAL STUDIES (5-3). Open only to majors in the Department of Dramatic Art. Permission of the instructor required. Credit for performance and/or production experience in Department of Dramatic Art productions, including PlayMakers Repertory Company. A minimum of fifteen hours per week is required during the rehearsal period; a faculty evaluation is also required at the close of the production. Permission of the undergraduate adviser required. May be repeated for credit. Fall and spring. Staff.

193 SPECIAL STUDIES: TECHNICAL PRODUCTION (5-12). Prerequisite, permission of instructor and DRAM 64, Technical Methods, Technical Production section. Advanced scenic construction techniques leading to specific project or production responsibility in the area of scenic construction in Department of Dramatic Art productions and PlayMakers Repertory Company. A minimum of fifteen hours per week is required during the rehearsal period. Faculty evaluation at the close of the production. May be repeated for credit. Fall, spring. Rolleri.

194 PROFESSIONAL THEATRE LABORATORY (3-12). Open only to advanced students. Prerequisite, permission of department chair. Individual programs or internships in acting, directing, design, management, and playwriting under the guidance of professional practitioners in conjunction with the PlayMakers Repertory Company or other approved professional theatre organizations. Locally supervised. (Offered as required.) Staff.

196 SPECIAL STUDIES: COSTUME PRODUCTION (5-3). Prerequisite, permission of instructor and DRAM 64, Technical Methods, Costume section. Advanced construction techniques in theatrical costuming. May be repeated for credit. Fall, spring. J. Adamson.

198 SEMINARS IN COSTUME PRACTICES (1-3). Prerequisite, DRAM 64, Technical Methods, Costume section, and permission of instructor. Series of topics in costume for use in design and production for the stage. May be repeated for credit; for 12 hours for graduate students, 6 for undergraduates. Taught in a four semester rotation. Fall and spring. Meek.

Courses for Graduates

200 SEMINAR IN PROFESSIONAL PRACTICE: TECHNICAL PRODUCTION (1-12). Prerequisite, admission to the MFA program in Technical Production. An examination of professional theatre practice through contact with students, staff, faculty, and visiting artists in technical theatre. Generally taken fall and spring. May be repeated for credit. Pritchard, Rolleri.

220 ACTING I (3). Prerequisite, admission to the MFA Acting program. Intensive professional training for the actor. Must be taken fall and spring. Hammond.

221 ACTING II (3). Prerequisite, admission to the second year of the MFA Acting program. Advanced professional training for the actor. Must be taken fall and spring. Dooley, Hammond, Darling.

222 VOICE I (3). Prerequisite, admission to the MFA Acting program. Development of the individual actor's voice and speech. Must be taken fall and spring. Raphael.

223 VOICE II (3). Prerequisite, admission to the second year of the MFA Acting program. Expansion of the individual's vocal versatility in performance. Must be taken fall and spring. Raphael.

224 MOVEMENT I (3). Prerequisite, admission to the MFA Acting program. Development of the actor's body as an expressive instrument. Must be taken fall and spring. Turner.

225 MOVEMENT II (3). Prerequisite, admission to the second year of the MFA Acting program. Advanced projects in movement. Special sessions in tumbling and stage combat. Must be taken fall and spring. Turner.

226 REHEARSAL AND PERFORMANCE I (1-6). Prerequisite, admission to the MFA Acting program. Rehearsal and performance of special ensemble projects. Must be taken fall and spring. May be repeated for credit. Hammond, Dooley, Raphael, Turner.

227 REHEARSAL AND PERFORMANCE II (1-6). Prerequisite, admission to the second year of the MFA Acting program. Practical application of techniques in rehearsal and performance in studio and main stage production. Must be taken fall and spring. May be repeated for credit. Hammond, Dooley, Raphael, Turner.

228 ACTING PRACTICUM I (6-12). Prerequisite, admission into the third year of the MFA Acting program. Intense practicum as a member of the PlayMakers Repertory acting company. Preparation and presentation of assigned projects and work in departmental productions. Work in voice and movement as scheduled. Fall. Hammond, Dooley, Raphael, Turner.

229 ACTING PRACTICUM II (6-12). Prerequisite, admission into the third year of the MFA Acting program. Intense practicum as a member of the PlayMakers Repertory acting company. Preparation and presentation of assigned projects and work in departmental productions. Work in voice and movement as scheduled. Spring. Hammond, Dooley, Raphael, Turner.

231 SEMINAR IN DRAMATIC LITERATURE (1-3). Prerequisite, admission to the MFA program in any area. An examination of the literature of the theatre in terms of dramatic construction, theory, and interpretation. May be repeated for credit.

240 COSTUME LABORATORY I (3). Prerequisite, admission to the MFA Costume program. Practical work in the costume shop. Must be taken fall and spring. Adamson.

241 COSTUME LABORATORY II (3). Prerequisite, admission to the second year of the MFA Costume program. Advanced practical work in the costume shop. Must be taken fall and spring. Adamson.

242 COSTUME CONSTRUCTION III (1-3). Prerequisite, DRAM 173. Continued study of pattern making with flat pattern in advanced shapes for the stage. Fall. Adamson.


245 ADVANCED COSTUME DESIGN I (Var.). Prerequisite, admission to the first year of the MFA program or permission of instructor. Study of design for the production student. Spring. Staff.

247 COSTUME LABORATORY III (1-3). Prerequisite, admission to the third year of the MFA Costume program. Advanced practical work in the costume shop. Must be taken fall and spring. Adamson.
248 COSTUME CONSTRUCTION VI (1-3) Prerequisite DRAM 173. continuation of the study of flat pattern using computer software with AutoCad. Spring. Adamson.

249 COSTUME PROGRAM INTERNSHIP (3-6) Intensive practicum in Costume Arts, with tutorial and class assignments on an individual basis as required. Fall or spring. May be repeated for credit. Adamson.

250 ADVANCED TECHNICAL DIRECTION (3-6) Prerequisite. admission to the second year of the MFA Technical Production program. An advanced study of the management, technical, and engineering problems involved in theatrical production. Must be taken fall and spring. Rolleri.

251 MFA TECHNICAL THEATRE PRACTICUM I (3-6) Prerequisite. admission into the MFA tech program. practical work in scene shop. Must be taken fall and spring. Rolleri.

252 MFA/TECH PRACTICUM II (3-6) Prerequisites, DRAM 251 and admission to the second year of the MFA tech program. Advanced practical work in scene shop. Must be taken fall and spring. Rolleri.

259 TECH INTERNSHIP (6-12) Intensive practicum in production projects for departmental and PlayMakers Repertory Company productions, with independent studies as assigned on an individual basis. May be repeated for credit. Staff.

260 TECHNICAL PLANNING AND PRODUCTION (3-6) Prerequisite. admission into the third year of the MFA Technical Production program. Intensive practicum in production projects for departmental and PlayMakers Repertory Company productions. Must be taken fall and spring. Rolleri.

262 ADVANCED LIGHTING DESIGN (3) This course acquaints the student with professional practice in lighting design through lecture by faculty and visiting professionals and through evaluation of lighting designs executed by students and critiqued by professionals. Permission of the instructor required. Spring.

393 THESIS (1-6) J. Adamson, Raphael, Rolleri.

Peter J. Robinson (17) Climatology, Climate Change and Impacts
Robert G. Wessel (25) Biogeochemistry of Freshwater Ecosystems, Physiology and Ecology of Wetland Ecosystems
Peter S. White (15) Plant Population and Community Ecology, Conservation Biology
R. Haven Wiley (21) Behavioral Ecology of Vertebrates, Avian Social Behavior

Associate Professors
John W. Florin (33) Population Geography, Medical Geography
Charles E. Konrad (24) Climatology, Climate Change, Meteorology
Aaron Moody (12) Remote Sensing, Landscape Ecology, Biogeography, GIS
David W. Pfennig (44) Ecology and Evolution, Kin Selection and Mechanisms of Kin Recognition
Andreas T. Sekke (53) Microbial Ecology, Evolution and Systematics
Stephen C. Whalen (7) Nutrient Cycling Dynamics in Aquatic and Terrestrial Ecosystems, Greenhouse Gas Production and Dynamics
Thomas M. Whitmore (42) Cultural Ecology, Latin America, Population

Assistant Professors
John F. Bruno (10) Ecology and Conservation of Marine Communities
Martin W. Doyle (49) Fluvial Geomorphology, Stream Ecology, Environmental Policy, River Restoration
Flora La Holt (46) Ecological Anthropology
Karen S. Pfennig (50) Behavioral Ecology and Evolution, Speciation, Host-Parasite Interactions

Adjunct Professors

Adjunct Assistant Professor
Jack Weiss (49) Biostatistics and Quantitative Ecology

Adjunct Instructor
Alan Wrede (51) Plant Systematics, Biogeography, Floristics, Conservation Biology

Research Assistant Professor
Amy L. Moran (32) Invertebrate Marine Ecology

Professors Emeriti
Nelson G. Hairston Sr.
Elizabeth A. McMahan
Helmut C. Mueller
Alan E. Stiven
Richard A. Yarnell

Using the resources of many departments, the Curriculum in Ecology (www.unc.edu/depts/eco/curriculum) provides both broad and specialized training in ecology. Whereas degree programs with a strong ecology component may be arranged in biology, environmental sciences and engineering, geography, anthropology, and others, the Curriculum in Ecology, by combining many approaches and methods, provides balanced ecological training including preparation for the study and management of natural and human impacted systems. Degrees available in the Curriculum in Ecology are the master of science, the master of arts, and the doctor of philosophy.

For the ecology degrees, course work is required in both the natural sciences (e.g., behavior and physiology, population biology, community and ecosystem ecology, plus atmospheric, terrestrial, and aquatic sciences) and
the sociosciences (e.g., cities and migration, human population dynamics, social organization, human ecology, environmental policy).

Preparation for careers in ecology also requires firm grounding in mathematics, computer science, the physical and chemical sciences, statistics, geographic information systems, remote sensing, and systems analysis and experimental methods. Undergraduate preparation may include a major in a biological science, social science, or in environmental science.

Facilities available for special study include laboratories for remote sensing, GIS, computer cartography laboratories, the North Carolina Botanical Garden and Mason Farm Biological Reserve, the Institute of Marine Sciences at Morehead City, Highlands Biological Station in the Appalachian Mountains, University Lake, Jordan Lake, Duke Forest, New Hope Creek, greenhouses, and ecological equipment administered by the supporting departments. Strong ecological faculty and research programs are available in sister institutions at North Carolina State University and Duke University, and members of these faculties may serve on students' committees. The University of North Carolina at Chapel Hill is a member of the Organization for Tropical Studies, which provides opportunities for field study in Costa Rica and other tropical areas.

**Requirements for Admission**

For admission to the Curriculum in Ecology, an undergraduate degree is required in a natural science such as physics, chemistry, biology, bacteriology, botany, zoology, geology; a social science such as anthropology, sociology, or economics; a mathematical area such as statistics, mathematics, or systems analysis; an engineering area; or environmental science. Students are advised to develop a broad undergraduate science major with as many as possible of the following: calculus; computer science; general physics; analytical, organic, and physical chemistry; general botany and zoology; geology: anthropology; sociology; invertebrate zoology or paleontology; general ecology; physiology; and statistics. Application for admission and graduate appointments accompanied by credentials and Graduate Record Examination scores should be submitted by January 1. Detailed information is available on the Curriculum in Ecology Web site at www.unc.edu/depts/ecology.

**Degree Requirements**

Every student must gain an understanding of the breadth and depth of the field of ecology as it is treated among various traditional disciplines. This is accomplished in two ways: first, through the ECOL 190 and 199 sequence; and second, through the composition of the student's advisory committee.

**Doctor of Philosophy**

The overall course requirements are to be determined by the student’s advisory committee. All incoming students must take ECOL 190 and one ECOL 199 course during the first two years of residence. Doctoral students must register also for ECOL 394 for three hours’ credit.

Requirements for the dissertation, written and oral examinations, admission to candidacy, residency, and final examinations are as provided in the regulations for the Graduate School. Doctoral candidates are to consider teaching experience as an important component of their training. It is recommended that experience equivalent to at least one semester be obtained.

**Master’s Degrees**

Two master's degrees are offered by the curriculum: the master of science degree requiring independent research and a thesis, and the master of arts degree requiring a written library report. All master's degrees are terminal degrees at UNC-Chapel Hill and master's students must request readmis-

sion for PhD work following completion of all requirements for the master's degree.

**Master of Sciences**: The master of science course requirements are determined by the student's advisory committee. They must include a minimum of thirty hours of graduate credit, of which no less than twenty-four hours must be earned in courses and at least three hours in research and completion of the thesis. One semester of registration is required in ECOL 190 and ECOL 199, and MS students must register for three hours in ECOL 393.

Requirements for the thesis, admission to candidacy, residence, and final examinations are provided in the regulations of the Graduate School.

**Master of Arts**: Requirements for the master of arts are the same as those for the master of science, except a master of arts paper is prepared (ECOL 392) in place of a master's thesis (ECOL 393).

**Ecology Core Areas**

(Detailed descriptions are found under the department that offers each course.)

**Natural Sciences**

ANTH 203, 266

Biology - All courses listed below under "Biology"


ENST 101, 102, 103, 106, 110

EPID 160

GEOG 110, 112, 114, 116, 119, 137, 140, 141, 142, 143, 144, 145*, 177, 178, 191, 192, 205, 210, 211, 290, 301, 302, 303, 311, 312

Marine Sciences - All courses listed below under "Marine Sciences"

**Social Sciences**

ANTH 117, 139, 199, 204, 255

BIOS 164, 170

City and Regional Planning - All courses listed below under "City and Regional Planning"

Communication Studies - All courses listed below under "Communication Studies"

ECON 165, 265

ENVR 185, 275, 279, 290, 291, 292

ENST 120, 175, 183, 184, 185, 198

EPID 277, 278

GEOG 120, 132, 134, 135, 145*, 150, 195, 215, 313

Political Science - All courses listed below under "Political Science"

Public Policy - All courses listed below under "Public Policy"

Sociology - All courses listed below under "Sociology"

*Can count as social science or natural science

**Courses in the Ecology Curriculum**

**145 STATISTICAL ANALYSIS IN ECOLOGY AND EVOLUTION (BIOL 145)**

Prerequisites, BIOL 54 and STAT 11 or 31. A modern introduction to the statistical analysis of data in ecology and evolutionary biology. Emphasis is on computer-intensive methods and model-based approaches. Familiarity with the standard parametric approaches to statistical analysis is assumed. Weiss.

**190 ECOLOGICAL ANALYSES AND APPLICATIONS (ENST 190)**

Fall. This course provides an overview of natural and social science approaches to addressing biodiversity conservation and resource management. Concepts and methods from population biology, evolutionary ecology, community ecology, and conservation biology will be complemented with approaches from common property theory, indigenous resource management, and human evolutionary ecology. Holt.
199 CURRENT ISSUES IN ECOLOGY (ENST 199) (3). Prerequisites, previous course work in ecology and permission of the instructor required. Topics vary but focus on interdisciplinary problems facing humans and/or the environment. Repealable. Holt.

202 FIELD EXPERIENCE IN ECOLOGY (2). Prerequisite, graduate standing in ecology. Organized field work in remote environments with a faculty instructor as approved by student's supervisory committee. Repealable. Staff.

250 SPECIAL TOPICS IN ECOLOGY (2-4). Prerequisite, permission of the instructor. Repealable. Staff.

255 SEMINAR IN ECOLOGY (BIOL 255)(2). Prerequisite, BIOL 54 or permission of the instructor. Repealable. Pect, Reice, White, Bruno.

300 RESEARCH IN ECOLOGY (2 or more). Staff.

392 MASTERS NON-THESIS (3-5). Staff.

393 MASTERS THESIS (3-6). Staff.

394 DOCTORAL DISSERTATION (3 or more). Staff.

Ecological courses in other departments that are considered appropriate for the major in the ecology curriculum:

Anthropology
117 EVOLUTIONARY PERSPECTIVES ON HUMAN ADAPTATION AND BEHAVIOR (3). Holt.

139 ENVIRONMENTAL ANTHROPOLOGY (3). Holt.

199 SPECIAL TOPICS (1-4). Fall and spring. Staff.

203 EVOLUTION AND ECOLOGY (3). Fall. Staff.

204 EVOLUTION AND ECOLOGY (3). Spring. Staff.

255 SEMINAR IN CULTURAL ECOLOGY AND POPULATION (3). Leslie.

266 SEMINAR IN ETHNOBOTANY (3). Scarry.

Biology

114L AVIAN BIOLOGY LAB (1). Spring. (Alternate years or on demand.) Wiley.

126 OCEANOGRAPHY (MASC 101) (ENVR 117) (3). MASC staff.


133 EVOLUTION AND DEVELOPMENT (3). Fall. D. Pfennig, Goldstein.

140 BIOLOGICAL OCEANOGRAPHY (ENVR 120) (MASC 104) (4). Summer. IMS staff.

142 PLANT ECOLOGY (4). Fall. (Alternate years.) Pect.

143 ECOLOGICAL PLANT GEOGRAPHY (GEOG 143) (3). Fall. (Alternate years.) Pect.

145 STATISTICAL ANALYSIS IN ECOLOGY AND EVOLUTION (ECOL 145) (3). Fall or spring. Weisa.


147 FIELD ECOLOGY (4). Spring. (Alternate years.) Reice.

150 ANIMAL SOCIETIES AND COMMUNICATION (3). Spring. (Alternate years.) Wiley.

151 BEHAVORIAL ECOLOGY (3). Fall. (Alternate years.) K. Pfennig.

156 EVOLUTIONARY ECOLOGY (3). Spring. (Alternate years.) Podolsky.

184 CONSERVATION BIOLOGY (3). (On occasion.) White.

186 COMMUNITY AND SYSTEMS ECOLOGY (3). Spring. (Alternate years.) Reice.

186L LAB IN COMMUNITY AND SYSTEMS ECOLOGY (BIOL 186) (1).

195 FIELD BIOLOGY AT HIGHLANDS BIOLOGICAL STATION (1-4). Summer. Staff.

247 FIELD PLANT GEOGRAPHY (2). Spring. (Alternate years.) Pect.

255 SEMINAR IN ECOLOGY (BIOL 255) (2). Pect, Reice, White, Bruno.

259 SEMINAR IN COMPARATIVE ANIMAL BEHAVIOR (2). Fall or spring. Lohmann, Wiley.

265 SEMINAR IN MARINE BIOLOGY (2). Fall or spring. Kier, Podolsky.

Biostatistics
164 SAMPLE SURVEY METHODOLOGY (3). Spring. Kalsbeek.

170 DEMOGRAPHIC TECHNIQUES I (3). Fall. Suchindran, Bisborro.

City and Regional Planning
141 ECOLOGY AND LAND USE PLANNING (3). Fall. Berke.

185 AMERICAN ENVIRONMENTAL POLICY (ENST 185) (ENVR 185) (PLCY 185) (3). Fall. Andrews.

210C INTRODUCTION TO LAND, ENVIRONMENT, AND RESOURCE ECONOMICS (1-3). Whittington.

219 WATER POLICY IN LESSER DEVELOPED COUNTRIES (3). Whittington.

232 PUBLIC INVESTMENT THEORY (ENVR 239) (PLCY 232) (3). Whittington.

233 ENVIRONMENTAL LAW (ENVR 239) (3). Fall. Heath.

234 WATER RESOURCES PLANNING AND POLICY ANALYSIS (ENVR 293) (3). Fall. Moreau.

236 ENVIRONMENTAL QUALITY PLANNING (ENVR 292) (3). Spring. Moreau.

240 LAND USE AND ENVIRONMENTAL POLICY (3). Fall. Berke.

244 DEVELOPMENT AND ENVIRONMENTAL MANAGEMENT (3). Fall. Staff.

245 DEVELOPMENT IMPACT ASSESSMENT (3). Spring. Berke, Burby.

Communication Studies

Economics
165 ECONOMICS OF POPULATION (3). Fall or spring. Turchi.

265 ECONOMICS AND POPULATION (3). Spring. Turchi.

Environmental Sciences and Engineering
110 ENVIRONMENTAL CHEMICAL PROCESSES (ENST 110) (3). Fall. Staff.

112 ECOLOGICAL MICROBIOLOGY (3). Spring. Pfuetzner.

113 LIMNOLOGY (3). Fall. Wenzel, Whalen.

114 ECOLOGY OF WETLANDS (MASC 137) (4). Fall. Staff.
115 BIOGEOCHEMICAL PROCESSES (MASC 119) (3). Fall. (Alternate years.) Arnosti.

117 OCEANOGRAPHY (BIOL 126) (MASC 101) (3). Spring. Staff.

119 CHEMICAL EQUILIBRIA IN NATURAL WATERS (3). Fall. Singer.

130 HEALTH EFFECTS OF ENVIRONMENTAL AGENTS (3). Fall. Ball.


185 AMERICAN ENVIRONMENTAL POLICY (ENST 185) (PLCY 185) (PLAN 185) (3). Fall. Andrews.

216 ECOLOGY OF AQUATIC PLANTS AND WETLAND ECOSYSTEMS (3). Spring. (Even years.) Wetzel.

275 MODEL-BASED EXPOSURE MAPPING AND RISK ASSESSMENT (3). Spring. Chisakos.

279 MODELING FOR ENVIRONMENTAL RISK ANALYSIS (POLI 208) (PLCY 208) (3). Fall. Staff.

290 ENVIRONMENTAL LAW (PLAN 233) (3). Fall. Heath.

291 WATER RESOURCES PLANNING AND POLICY ANALYSIS (PLAN 234) (3). Fall. Moreau.

292 ENVIRONMENTAL QUALITY PLANNING (PLAN 236) (3). Spring. Moreau.

Environmental Science and Studies

101 EARTH PROCESSES IN ENVIRONMENTAL SYSTEMS (MASC 111) (4). Fall. Benninger, Band.

102 OCEANIC PROCESSES IN ENVIRONMENTAL SYSTEMS (MASC 112) (4). Spring. Shao.

103 ECOLOGICAL PROCESSES IN ENVIRONMENTAL SYSTEMS (4). Spring. Staff.

106 ENVIRONMENTAL SYSTEMS MODELING (ENVR 160) (MASC 116) (3). Spring. Staff, Rial, Werner.

110 ENVIRONMENTAL CHEMICAL PROCESSES (ENVR 110) (3). Fall. Staff.


183 POLICY ANALYSIS OF GLOBAL CLIMATE CHANGE (PLCY 183) (3). Webster.

184 ENVIRONMENT AND DEVELOPMENT (PLCY 184) (INTS 184) (3). Rahimian.

185 AMERICAN ENVIRONMENTAL POLICY (ENVR 185) (PLAN 185) (3). Fall. Andrews


Epidemiology

160 PRINCIPLES OF EPIDEMIOLOGY (3). Fall and spring. Schoenbach, Alexander.

277 ENVIRONMENTAL EPIDEMIOLOGY (3). Staff. Loomis.

278 COMMUNITY-DRIVEN EPIDEMIOLOGY AND ENVIRONMENTAL JUSTICE (2). (On request.) Wing.

Geography

110 FUNDAMENTAL CONCEPTS OF PHYSICAL GEOGRAPHY (3). Staff.

112 SYNOPTIC METEOROLOGY (3). Konrad, Robinson.

114 PHYSICAL CLIMATOLOGY (3). Konrad, Robinson.

116 APPLIED CLIMATOLOGY (3). Robinson, Konrad.

119 FIELD METHODS IN PHYSICAL GEOGRAPHY (3). Doyle, staff.

120 FUNDAMENTAL CONCEPTS OF HUMAN GEOGRAPHY (3). Florin.

132 AGRICULTURE, FOOD, AND SOCIETY (3). Florin, Whitmore.


135 ENVIRONMENTAL POLITICS (3). Kirsch.

137 NATURAL RESOURCES (3). Whitmore.

140 EARTH SURFACE PROCESSES (3). Band.

141 INTRODUCTION TO WATERSHED SYSTEMS (3). Band.

142 FLUVIAL GEOMORPHOLOGY (3). Doyle.

143 ECOLOGICAL PLANT GEOGRAPHY (BIOL 143) (3). (Alternate years.) Peet.

144 LANDSCAPE BIOGEOGRAPHY (3). Moody.

145 MEDICAL GEOGRAPHY (3). Fall. Meade.

150 POPULATION GEOGRAPHY (3). Florin, Meade, Whitmore.

177 INTRODUCTION TO REMOTE SENSING AND DIGITAL IMAGE PROCESSING (3). Fall. Moody, Song, Walsh.

178 ADVANCED REMOTE SENSING (3). Moody, Song, Walsh.

191 INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (3). Fall. Moody, Song, Walsh.

192 APPLIED ISSUES IN GEOGRAPHIC INFORMATION SYSTEMS (3). Spring. Moody, Song, Walsh.

195 ECOLOGICAL MODELING (3). Fall. Song.

205 ADVANCED QUANTITATIVE METHODS IN GEOGRAPHY (3). Konrad, Moody.

210 ADVANCED PHYSICAL GEOGRAPHY - BIOGEOSCIENCE (3). Staff.

211 ADVANCED PHYSICAL GEOGRAPHY - HYDROCLIMATOLOGY AND BIOCLIMATOLOGY (3). Staff.

215 LAND USE/LAND COVER DYNAMICS AND HUMAN-ENVIRONMENT INTERACTION (3). Walsh.

290 SPATIAL ANALYSIS AND COMPUTER MODELING (3). Staff.

301 RESEARCH SEMINAR IN EARTH SYSTEM SCIENCE AND BIOPHYSICAL GEOGRAPHY (3). Staff.

302 RESEARCH SEMINAR IN GEOGRAPHIC INFORMATION SCIENCES (3). Staff.

303 RESEARCH SEMINAR IN NATURE-SOCIETY STUDIES AND HUMAN-ENVIRONMENT INTERACTIONS (3). Staff.

311 SEMINAR/READINGS IN EARTH SYSTEM SCIENCE AND BIOPHYSICAL GEOGRAPHY (3). Staff.

312 SEMINAR/READINGS IN GEOGRAPHIC INFORMATION SCIENCES (3). Staff.
313 SEMINAR/READINGS IN NATURE-SOCIETY STUDIES AND HUMAN ENVIRONMENT INTERACTIONS (3). Staff.

Marine Sciences
101 OCEANOGRAPHY (BIOL 126) (ENVR 117) (3). Fall and spring. Staff.
104 BIOLOGICAL OCEANOGRAPHY (BIOL 149) (ENVR 120) (4). Spring. Lindquist.
105 CHEMICAL OCEANOGRAPHY (ENVR 118) (4). Fall. Martens, Arntz, A. Alperin.
106 PHYSICAL OCEANOGRAPHY (4). Fall. Bane, Seim.
111 EARTH PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 101) (4). Fall. Beininger, Band.
112 OCEANIC PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 102) (4). Spring. (Alternate years.) Staff.
119 BIOGEOCHEMICAL PROCESSES (ENST 105) (ENVR 115) (3). Fall. (Alternate years.) Arntz, Martens.
125 COASTAL SEDIMENTARY ENVIRONMENTS (3). Spring. (Alternate years.) Staff.
137 ECOLOGY OF WETLANDS (ENVR 114) (4). Fall. Staff.
146 MARINE ECOLOGY (BIOL 146) (3). Fall. (Alternate years.) Peterson.
199 SPECIAL TOPICS IN MARINE SCIENCES (2-4). Fall, spring, and summer. Staff.
248 SEMINAR IN MARINE BIOLOGY (3). Fall. Bruno, Marko, Moran.

Political Science
207 MEASUREMENT AND DATA COLLECTION (SOCI 207) (3). Enrwide.

Public Policy
183 POLICY ANALYSIS OF GLOBAL CLIMATE CHANGE (ENST 183) (3). Fall or spring. Webster.
184 ENVIRONMENT AND DEVELOPMENT (ENST 184) (INTS 184) (3). Fall. Rabindran.
185 AMERICAN ENVIRONMENTAL POLICY (ENST 185) (ENVR 185) (3). Fall. Andrews.

Sociology
153 SOCIAL CHANGE IN LATIN AMERICA (3). Smith.
171 URBAN PUBLIC POLICY (3). Staff.
207 MEASUREMENT AND DATA COLLECTION (3). Enrwide.
212 DEMOGRAPHY: THEORY, SUBSTANCE, TECHNIQUES, PART I (3). Rindfuss, Uhlenberg. Enrwide, Harris.
213 DEMOGRAPHY: THEORY, SUBSTANCE, TECHNIQUES, PART II (3). Rindfuss, Uhlenberg. Enrwide, Mouw.
218 HUMAN ECOLOGY (3). J. Blau, Nielsen.

287 MIGRATION AND POPULATION DISTRIBUTION (3). (On demand.) Uhlenberg.

DEPARTMENT OF ECONOMICS

JOHN S. AKIN, Chair

Professors
John S. Akin (1) Health Economics, Public Finance, Human Resources
Gary A. Biglaiser (63) Microeconomic Theory, Industrial Organization
Stanley W. Black (53) International Monetary Theory
David M. Blau (61) Labor Economics
William A. Darity Jr. (54) Economic Development, Monetary Theory
Richard T. Froyen (7) Macroeconomics, Monetary Policy
Eric Ghyseels (86) Econometrics
David K. Guelkey (39) Econometrics
Claudio Mezzetti (71) Microeconomic Theory
Thomas A. Mroz (68) Labor Economics
James L. Murphy (21) Econometrics
Eric Renault (92) Econometrics, Financial Econometrics
Paul W. Rhode (69) Economic History
Steven S. Rosefield (26) Comparative Economic Systems
Michael K. Salem (38) Macroeconomics, Monetary Economics
John F. Seawright (36) Industrial Organization
Helen V. Tauchen (49) Applied Microeconomics

Adjunct Professors
Richard E. Bilbrough
Peter A. Catanis
Jennifer S. Conrad
Barry M. Popkin
Frank A. Sloan

Associate Professors
Donna B. Gillespie (81) Health Economics, Econometrics
William R. Parke (65) Econometrics
Kolman S. Strumpf (74) Public Finance
Boone A. Tachii (31) Demography
H. Wilbert van der Klauw (85) Labor Economics

Adjunct Associate Professors
James J. Anton
Scott R. Baker
Robert A. Connolly
Edward G. Norton
Sally C. Starnes
Rachel A. Willis
Harold H. Zhang

Assistant Professors
Evan Anderson (84) Macroeconomics
Thomas Geraghty (88) Economic History
Alexander Kovalensk (82) Microeconomic Theory, General Equilibrium
Sergio Ramirez (89) Game Theory, Microeconomics
Xiaodong Wu (87) International Economics

Adjunct Assistant Professor
William H. Dow

Professors Emeriti
Dennis R. Applebyard
Arthur Benavie
James W. Friedman
A. Ronald Gallant
The graduate program in the Department of Economics prepares students for teaching and research careers in the fields of econometrics, economic history, financial econometrics, health economics, international trade and development, labor economics, microeconomic theory/industrial organization, and monetary and open economy macroeconomics. During the first year of the program students concentrate on the core areas of econometrics, macroeconomics, and microeconomics. Later, each student chooses two fields of specialization within those mentioned. The department’s objective is to provide students both with broad training in theory and econometrics and with specialization in the major and minor fields.

A number of students supplement their study in economics at UNC-Chapel Hill with work in finance, statistics, mathematics, biostatistics, urban and regional studies, computer science, and operations research along with courses at Duke University and North Carolina State University. Strong offerings in these and other related areas enhance the overall graduate training offered to students.

**Master of Arts and Master of Science**

The focus of the graduate program in economics is on the doctorate offerings. Most of the students in the master’s program have already been admitted to a PhD or professional program at UNC-Chapel Hill.

The master’s degrees require ECON 200, 202, and 210, one course in econometrics (ECON 272 or 273), two courses in a major field, three electives, and a research course, which is ECON 393 for the MA degree and ECON 392 for the MS degree. Courses are to be selected in consultation with, and with the approval of, the director of graduate studies and the faculty in the major field. A master of arts student writes a thesis under the direction of a three-member faculty committee including the thesis advisor; a master of science student writes a research paper under the direction of the faculty advisor. Also, all candidates must pass a written exam in the major field with the thesis or paper advisor responsible for the examination. The Graduate School Handbook describes the general requirements for the master’s examinations and for the theses or papers.

**Doctor of Philosophy**

**Course Requirements.** A doctoral candidate must complete fifteen PhD-level courses plus two semesters of the doctoral dissertation course ECON 394. Unless otherwise specified by the faculty in the major field, at least twelve of the fifteen courses must be from the Economics Department. All courses must be approved by the director of graduate studies.

**Courses in the Fundamentals of Economics.** The following seven courses or their equivalents are required: ECON 200, 201, 202, 203, 210, 271, and one additional econometrics course.

**Courses in the Major and Minor Fields within Economics.** Each student selects a major and a minor field from among the following fields within economics:

- Econometrics
- Economic History
- Financial Econometrics
- Health Economics
- International Trade and Development

- Labor Economics
- Microeconomic Theory/Industrial Organization
- Monetary and Open Economy Macroeconomics

At least three courses in the major field and two courses in the minor field are required. One of the courses in the major field is usually a seminar course.

**Courses in Supporting Fields.** The remaining courses are supporting courses chosen by the student in consultation with the director of graduate studies and other faculty. The supporting courses may be within the major or minor field or in areas that complement the major and minor fields.

**Foreign Languages/Research Skill.** Additionally, a student must demonstrate competence in one foreign language or fulfill a research skill requirement. Courses satisfying the research skills requirement are usually in econometrics, quantitative methods, mathematics, statistics, or computer science.

**Doctorate Exams and Dissertation.** Students must pass qualifying exams in macroeconomics, microeconomics, and the major field. The faculty in each field determine whether the major field qualifier is a four-hour written exam or a paper. The qualifiers are given in August and January of each academic year; major field papers are due during the week of written exams. The three-hour macroeconomics and microeconomics qualifying exams are first taken in August of the second year and the major field qualifier in August of the third year. The exams are also given in early January. Students have two chances to pass each of the exams and may petition the Appeals Committee for permission to take an exam for the third time.

The Graduate School Handbook describes the requirements for the doctoral oral exam, doctoral dissertation, and final oral defense of the dissertation. The doctoral oral exam includes an evaluation of the thesis prospectus.

The general regulations of The Graduate School apply to students receiving graduate degrees in economics from the University of North Carolina at Chapel Hill.

**Fellowships and Assistantships.** The department offers several fellowships and a number of research and teaching assistantships. All applicants to the PhD program are considered for financial support, and most students enrolled in the PhD program receive a stipend, tuition assistance, and health insurance from departmental or other University sources. Detailed information regarding the fellowships, assistantships, and instructorships may be obtained from the director of graduate studies in economics or from www.unc.edu/depts/econ.

**Courses for Graduates**

Graduate standing in economics or permission of the director of graduate studies in economics is required for all courses numbered 200 or higher.

- **201 ADVANCED MICROECONOMIC THEORY I (3).** Prerequisites or corequisites, ECON 101 and 210 or equivalent. Consumer and producer theory, expected utility, perfect competition and monopoly, introduction to general equilibrium and welfare economics. Fall. Tauchen.

- **202 ADVANCED MICROECONOMIC THEORY II (3).** Prerequisite, ECON 200 or equivalent. General equilibrium and welfare economics, game theory and oligopoly, information economics. Spring. Bikhchandani, Mezzetti, Kovalenkov.

- **203 ADVANCED MACROECONOMIC THEORY I (3).** Prerequisite, ECON 132 or equivalent. Keynesian and classical equilibrium models: the neo-Keynesian synthesis; monetarist and other alternative analytic frameworks. Fall. Freyman, Salemni.

- **204 ADVANCED MACROECONOMIC THEORY II (3).** Prerequisite, ECON 202 or equivalent. Growth models, general equilibrium approach to monetary theory; input-output; disequilibrium theory; extensions of Keynesian and classical models. Spring. Anderson, Salemni.
207 GENERAL ECONOMIC THEORY (3). Prerequisite, graduate standing in a department other than economics. Theory of demand, production, market structures and economic welfare, national income accounts and theory of national income determination, unemployment, inflation. (Not regularly offered.)

210 BASIC QUANTITATIVE TECHNIQUES (3). Topics from linear algebra, calculus, linear and nonlinear programming, and the theory of difference and differential equations with applications to economics. Fall: Mezetti, Kovalenkov.

221 GAME THEORY I (3). Prerequisite, ECON 200, 201, or permission of the instructor. Non-cooperative games in strategic and extensive form, with perfect and imperfect information. Other topics from: information economics, mechanism design, auctions, repeated games, bargaining, bounded rationality, learning, evolutionary games, cooperative games. Fall and spring: Biglaisem, Kovalenkov, Mezetti.

225 GAME THEORY II (3). Prerequisite, ECON 221 or permission of instructor. This course is a continuation of ECON 221. Topics covered will be chosen from those listed, but not covered in ECON 221. Fall and spring: Biglaisem, Kovalenkov, Mezetti, Parreiras.

235 GENERAL ECONOMIC HISTORY (3). Preindustrial societies, early stages in industrial growth, and growth of the world economy in the nineteenth century. Fall or spring: Geraghty, Rhode.

236 MODERN ECONOMIC HISTORY (3). Prerequisite, ECON 235 or permission of the instructor. Economic change in modern Western societies. Comparative study of growth in Europe and North America. Fall or spring: Geraghty, Rhode.

240 ADVANCED PUBLIC FINANCE: EXPENDITURE (3). Analysis of market failure and reasons for public spending, cost-benefit analysis and program budgeting, public decision making, redistribution and fiscal equity, intergovernmental transfers. Spring: Strumpf. (Not offered 2003/2004.)

241 ADVANCED PUBLIC FINANCE: REVENUES (3). Prerequisite, ECON 240 or permission of the instructor. Criteria for judging tax structures, incidence and impact of taxation, user charges and debts, finance, intergovernmental coordination, and macroeconomic effects. Fall: Strumpf. (Not offered 2003/2004.)

245 ADVANCED BUSINESS ORGANIZATION AND SOCIAL CONTROL (3). Prerequisite, permission of the instructor. Extensive readings in the literature are required. Emphasis is placed on the role of economic analysis in dealing with problems in this field. (Not regularly offered.)

248 ECONOMIC REGULATION OF INDUSTRY (3). Economic regulation in theory and practice. Principles of optimal regulation are developed, and regulatory performance in various industries is appraised. Fall or spring: Biglaisem.

250 HEALTH ECONOMICS (3). Prerequisites, ECON 200 and 272 or permission of the instructor. Measurement and modeling of the demand for medical care, the demand for and supply of health insurance, and the incorporation of health medical care, and health insurance in determining both short and long-run labor supply. Fall or spring: Akin, Gilleskie.

255 HEALTH ECONOMICS FOR DEVELOPING COUNTRIES (3). Prerequisites, ECON 200 and 272 or permission. Major topics are: how health and development are related, the demand for health services, cost-benefit and cost-effectiveness analysis, and methods for financing health care in developing, resource-constrained nations. Fall or spring: Akin.

261 THEORY OF INTERNATIONAL TRADE (3). Prerequisite, graduate standing in economics or permission of the instructor. The theory of international values: comparative advantage and the gains from trade; commercial policy. Fall or spring: Conway, Field, Wu.

262 INTERNATIONAL MONETARY ECONOMICS (3). Prerequisite, graduate standing in economics or permission of the instructor. Analysis of the international monetary system; exchange rates; the process of adjustment in the balance of payments. Fall or spring: Black, Conway.

263 ECONOMIC DEVELOPMENT THEORY AND POLICY (3). Prerequisite, permission of the instructor. Intensive study of the development processes and problems of the less developed countries, with emphasis on theories of growth and development, internal and external policies, and planning strategies. Fall or spring: Conway, Darby, Field.

264 SELECTED TOPICS IN ECONOMIC DEVELOPMENT AND DEVELOPMENT PLANNING (3). Prerequisite, ECON 263 or equivalent. Examination of specific problems in economic development of less developed countries, with emphasis on the role of international aid. Not offered 2003/2004.

265 ECONOMICS AND POPULATION (3). Prerequisite, graduate standing in economics or permission of the instructor. Analysis of economic-demographic interactions including: population and economic development; population, environmental decay, and zero population growth; models of fertility, migration, and structural change; population policy. Spring: Turehi.

267 COMPARATIVE ECONOMIC SYSTEMS (3). This course focuses on alternative theories of capitalism, planning, and socialist economies. Yugoslavia, worker-controlled market socialism, Chinese planned economy, and the role of government in economic development. Fall: Parreiras.


272 ECONOMETRICS (3). Prerequisite, ECON 271 or equivalent. One semester coverage of basic econometrics. Topics include: regression under ideal conditions; special models, including simultaneous equations models; and applications and econometric computer programs. Spring: Guilkey, Mroz.

273 ADVANCED ECONOMETRICS (3). Prerequisites, ECON 271, ECON 272, and MATH 147. ECON 273 constitutes a one-semester treatment of the fundamental theory of econometrics. Topics covered include asymptotic distribution theory, linear and nonlinear models, specification testing techniques, and simultaneous equations models. Fall: Campo, Guilkey, Parke, Renault.

274 TIME SERIES ECONOMETRICS (3). Prerequisite, ECON 273. Covers stationary univariate and multivariate time series models, spectral analysis methods, nonstationary models with time trends, unit roots, and cointegration, and special topics such as conditional volatility, the Kalman filter and changes of regime. Spring: Chhysels, Parke, Renault.


281 MONETARY THEORY (3). Examination of theory and evidence on money demand, money supply, and portfolio analysis. Barter versus monetary economics, portfolio school, monetarism, monetary theories of interest rate determination. Fall: Black, Froyen, Salem.

282 MONETARY POLICY (3). Prerequisite, ECON 202 or permission of the instructor. Optimal policy under uncertainty, financial intermediation and monetary control, channels of monetary influence, monetary policy and inflation, rules versus authority. (Not regularly offered.)

291 LABOR ECONOMICS I (3). Prerequisite, ECON 200 or permission of the instructor. An analysis of the short- and long-run aspects of supply and demand of labor, including empirical analysis of the labor force behavior of males, females, blacks, and whites. Topics include the microeconomic effects of marriage, fertility, and mobility on labor supply, as well as the macroeconomic effects of unemployment on inflation. Fall or spring: Blau, Mroz, van der Klaauw.
294 LABOR ECONOMICS II (3). Life cycle analysis of supply and demand for labor as a determinant of individual wages. Topics include an analysis of discrimination, union power, and governmental manpower policies on the distribution of earnings across the population. Fall or spring. Blau, Mroz, van der Klaauw.

300 SEMINAR IN MICROECONOMIC THEORY I (3). This course introduces students to the literature and research methods used in microeconomic theory. May be repeated for credit. Fall or spring. Biglaiser, Kovalenkov, Mezetti, Parreiras.

301 SEMINAR IN MACROECONOMIC THEORY II (3). Students examine current issues and literature with the purpose of initiating research projects in macroeconomics, monetary theory, and international finance. May be repeated for credit. Fall or spring. Anderson, Black, Froyen, Salem.

311 SEMINAR IN TEACHING METHODS IN ECONOMICS (3). Prerequisite: doctoral candidacy in economics or permission of the instructor. Covers skills in lecturing, encouraging student participation and active learning, writing exams, planning and evaluating courses. Students design and teach a module that includes class discussion and hands-on learning. Fall or spring.

335 SEMINAR IN ECONOMIC HISTORY (3). The course introduces students to current problems and techniques of study and research in economic history. May be repeated for credit. Fall or spring. Geraghty, Rhode.

341 RESEARCH IN PUBLIC FINANCE (3). This course introduces students to the literature and research methods used in applied microeconomics including public finance. May be repeated for credit. Fall or spring. Stewart, Strumpf, Tauchen, Trench.

355 RESEARCH IN HEALTH ECONOMICS (3). The course allows graduate students to become familiar with current issues and research topics in health economics. May be repeated for credit. Fall or spring. Akin, Gilleskie.

361 SEMINAR IN INTERNATIONAL ECONOMICS (3). Prerequisites, ECON 261 and 262 or equivalent. A directed reading and research course. Fall or spring. Black, Conway, Wu.

363 SEMINAR IN ECONOMIC DEVELOPMENT (3). This course is an introduction to the literature and research methods of economic development and transition economies. May be repeated for credit. Fall or spring. Conway, Chait, Field, Wu, Rosefelde.

365 SEMINAR IN POPULATION (3). Prerequisite: graduate standing in economics. For advanced population students, this course addresses the newest and most advanced economic demography literature. (Not regularly offered.)

371 RESEARCH IN ECONOMETRICS (93). The course introduces students to theoretical and applied research topics in econometrics. May be repeated for credit. Fall or spring. Gyselis, Gijbels, Mroz, Murphy, Parke, van der Klaauw.

375 SEMINAR IN APPLIED MICROECONOMICS (3). Prerequisite: permission of the instructor. This course offers advanced graduate students the opportunity to begin to develop independent research in applied microeconomic fields. Fall or spring. Staff.

381 SEMINAR IN MONETARY ECONOMICS (3). Prerequisite: permission of the instructor. Advanced study of theoretical and applied topics in monetary economics. Fall or spring. Froyen, Salem.

386 INTRODUCTION TO EMPIRICAL FINANCE (BUSI 387) (3). Corequisite or prerequisite, ECON 272. This course provides an introduction to the econometric techniques commonly applied to empirical issues in finance. Fall or spring. Gyselis.

388 ADVANCED TOPICS IN EMPIRICAL FINANCE (BUSI 388) (3). Corequisites or prerequisites, ECON/BUSI 386 and ECON 274. This course will cover a selected list of current empirical research topics in finance and related econometric methods. Fall or spring. Gyselis.

391 SEMINAR IN LABOR (3). The course introduces students to research topics in labor economics. May be repeated for credit. Fall or spring. Blau, Mroz, van der Klaauw.

392 MASTER'S PAPER (3). Fall and spring. Staff.

393 MASTER'S THESIS (3). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3). Fall and spring. Staff.

396 SEMINAR IN SOVIET ECONOMICS (3). Prerequisite, permission of the instructor. Studies of selected problems of the Soviet economy and related aspects of Soviet economic thought. Seminar members are expected to present reports on assigned research topics. (Not regularly offered.)

399 SEMINAR. Prerequisite, permission of the instructor. Individual research in a special field under direction of a member of the department. Fall and spring. Staff.
Carol E. Malloy (157) Influence of Culture on Mathematical Problem-Solving, Gender and Equity Issues
William W. Malloy (130) Educational Leadership, Special Education
Rita O'Sullivan (180) Educational Assessment and Evaluation
Dwight L. Rogers (067) Early Childhood/Elementary Education, Moral Dimensions of Teaching, Teachers as Reflective Practitioners
Xue Lan Rong (146) Social Studies Education, Social Foundations of Education, Large Data-Set Research

Assistant Professors
Patrick T. Akos, School Counseling
Daniel Boudah (181) Special Education - Middle School and Secondary Grades
Cheryl Mason Bolick (029) Education Technology and Social Studies Education
Kathleen Brown (182) Educational Leadership
Thomas W. Farmer, Special Education
Kathleen Gallagher, Child Development and Family Studies
Jill Hamm (183) Adolescent Development
Mary Stone Hanley, Aesthetic Education
Steve Knoetck (2001) School Psychology
David P. Levine (171) History of Education, and Social Studies Education - Middle School and Secondary Grades
Cynthia Smith, Early Childhood, Families, and Literacy Studies
James Trier, English Education - Secondary Grades
William Veld (172) Science Education - Secondary Grades
Kerry Villalva, English as a Second Language K-12

Research Professors
Donna Bryant, Special Education
H. Dickson Corbett, Social Foundations
Pamela J. Winton (092) Families, Early Intervention, Preservice and Inservice Training
Mark Widerski, Special Education

Research Associate Professors
Virginia Buyse (159) Community-Based Programs for Young Children with Disabilities and Their Families
Richard M. Clifford (111) Public Policy, Early Education and Care, Public Finance
Gloria Harbin, Special Education
Gail S. Huntington, Special Education
Robert A. McWilliam (140) Early Intervention for Children with Disabilities

Research Assistant Professors
Dawn Carlson, School Psychology and Early Childhood
Edward M. Neal (174) Educational Assessment, Adult and Higher Education
Pascal Trohanis, Early Childhood, Family, and Literacy Studies
Rhonda A. Wilkinson (117) Strategies for Teaching to Learning Style Differences

Clinical Assistant Professors
Lynnette Aitch, School Psychology
Conway Banks, Educational Leadership
Ann M. Duffy, Early Childhood, Family, and Literacy Studies
Deborah Eaker-Rich, Educational Foundations
Timothy L. Han, English as a Second Language
Martha Hudson, Masters for Experienced Teachers
Wendy K. Lam, School Psychology
Sharon P. Masket (052) Special Education
Kelly Maxwell, School Psychology
Janey McMillen, Child Development and Family Studies
Janet Mittman, Research Triangle Schools Partnerships
Edward M. Neal, Curriculum and Instruction
Merida Negrete, Music Education - K-12
Sharon Palsha, Child Development and Family Studies
Mary Penta (171) Educational Psychology
Annette Perot, School Counseling
Craig Polihra, School Psychology
Denise Saunders, School Psychology
Carl W. Swartz (129) Teaching Decision Making, Learning Disabilities
James Veith, Educational Leadership
Lynn Williford (173) Educational Psychology

Clinical Instructors
Betsy Barrow (091) Elementary Education
Joyce Betzini (012) Teacher Education and ESL
Terri Buckner (019) Instructional Design
Thomas H. Cox, Technology
Rhonda L. Harrisson, Teaching Fellows
Carolyn E. Jones, Teacher Education
Jo Ann Petrusa, School Psychology
Barbara H. Rhoades (116) Art Education
Kathy Sikes, SCALE
Sandra Swenberg (029) Reading, Literacy and Elementary Education
Susan Wynn (039) Educational Leadership

Retired Fixed-Term Professors
John C. Brantley (009) Psychoeducational Assessment, Professional Decision Making
Walter B. Prywansky (049) School Psychology, Consultation, Learning Disabilities

Professors Emeriti
J. Hunter Balteau
Richard A. Brice
Linda Brooks
William L. Burke
Richard H. Coop
James W. Cunningham
James L. Gallaher
R. Sterling Hennes Jr.
Samuel M. Holton
Paul B. Hounshell
Richard C. Hunter
Annie Lee Jones
Mary Turner Lane
David L. Lillie
Bobbie B. Lukker
James L. Morrison
William S. Palmer
Richard C. Phillips
William C. Self
The School of Education has attempted to present correct information as of the printing date of this Record. However, this information does not establish a contractual relationship and the school reserves the right to alter any statement when review is complete. Therefore, applicants should contact the School of Education to obtain updated information on programs prior to final application procedures.

The School of Education, in keeping with the general goals of the University of North Carolina at Chapel Hill, embraces a threefold mission of teaching, research, and service. With these purposes in mind, the school's graduate programs are designed to meet the needs of professional educators who seek to further their knowledge, understanding, and skills relating to educational processes. These professionals vary in their career orientations. Some are employed in or wish to become employed in educational institutions and others in agencies and organizations performing noninstructional educational functions.

The research mission involves continuing inquiry into the development of knowledge of the teaching-learning process, human development, the organization of schools and educational agencies, the historical and philosophical bases for educational institutions, and the processes of program development and implementation.

The service mission provides public and private institutions and agencies with the benefits of research and consultation, thereby enhancing these institutions and agencies' ability to satisfy their educational objectives.

The teaching mission involves the faculty and graduate students in applying the knowledge base in field settings and translating it in course work.

The School of Education is headed by Dean Thomas James. He is assisted by the senior associate dean and the assistant dean for faculty personnel procedures.

Degree Programs

Note: Additional information may be found on the School of Education's Web site at www.unc.edu/eddepted.

The department offers two doctoral degrees: (1) the doctor of philosophy (PhD) in education (with three research areas: culture, curriculum, and change; early childhood family, and literacy studies; and educational psychology, measurement, and evaluation), and school psychology; and (2) the doctor of education in curriculum and instruction, and educational leadership. The Graduate School administers the PhD, while the School of Education administers the EdD.

The master's programs include the following degrees: (1) the master of arts in teaching (MAT) in secondary education for English, Latin, mathematics, science, and social studies, and K-12 education for French, German, Japanese, Spanish, music, and English as a second language; (2) the master of arts (MA) in education with three research strands (culture, curriculum and change; early childhood, family, and literacy studies; and educational psychology, measurement, and evaluation) and in school psychology; (3) the master of education (MEd) in school counseling, school psychology, and the master's for experienced teachers; and (4) the master of school administration (MSA) in educational leadership. The Graduate School administers all but the master of school administration program and the master's for experienced teachers, which the School of Education administers.

Two off-campus, part-time programs are offered: the master of education (MEd) for experienced teachers and the master of school administration. The potential specialty areas for this program are: early intervention (birth through kindergarten); elementary education: language arts and social studies; and mathematics and science; middle grades education: language arts, mathematics, science, and social studies; secondary education: English, mathematics, science, and social studies; K-12 and 9-12: foreign language education; and K-12: learning disabilities, and literacy education (reading and writing).

The part-time, off-campus MSA program is designed for working professionals and stretches the normal two-year program offered on campus over an extended period of three academic years and three summers. While the program emphasizes preparation for the school principalship, individuals with other educational career aspirations such as district-level leadership positions will find it appropriate.

Education Degree Requirements

The School of Education offers through The Graduate School the following degrees: MA, MEd, MAT, and PhD. The School of Education administers the following degrees: MEd for experienced teachers, MSA, and EdD.

MA Degree Requirements

1. A bachelor's degree from a four-year college or university.
2. Completion of the minimum required number of semester hours of advanced course work. (Check with individual programs to ascertain the minimum requirements.)
3. Completion of at least two full semesters of residence.
4. Completion of all required and elective courses within five years of admission.
5. A grade of Pass on a written comprehensive examination.
7. Application for admission to candidacy; and the degree application to be filed together no later than the date specified in the academic calendar.

MEd Degree Requirements

1. A bachelor's degree from a four-year college or university.
2. Completion of the minimum required number of semester hours of advanced course work. (Check with individual programs to ascertain the minimum requirements.)
3. Completion of at least two full semesters of residence.
4. Completion of all required and elective courses within five years of admission.
5. A grade of Pass on a written comprehensive examination or equivalent.
6. Application for admission to candidacy, and the degree application to be filed together no later than the date specified in the academic calendar.

MAT Degree Requirements

1. A bachelor's degree from a four-year college or university.
2. The equivalent of an undergraduate major in the chosen subject area.
3. Completion of a minimum of forty-plus semester hours of advanced course work.
4. Completion of at least two full semesters of residence.
5. Completion of all required and elective courses within five years of admission.
6. Satisfactory completion of a comprehensive teaching portfolio that synthesizes course work and experiences as related to state and national standards.
7. Candidacy statement.

EdD (Doctor of Education) Degree Requirements
1. A bachelor's degree from a four-year college or university and a master's degree in the field of education.
2. Completing six hours of graduate work for two consecutive semesters in resident at this university.
3. Students have nine years to complete all work including the successful defense of the dissertation. Students have six years to complete all course work and oral and written exams.
4. Completion of a research core (twelve semester hours) which is comprised of: EDUC 184, EDUC 275, EDUC 334, and Research Methods Elective.
5. Completion of a research seminar and a supervised field experience in the student's area of specialization.
6. A grade of Pass on a written comprehensive examination
7. A grade of Pass on an oral examination
8. Successful completion of a final oral examination, which is the defense of the dissertation.
10. Application for admission to candidacy, and the degree application to be filed together no later than the date specified in the academic calendar.

PhD Degree Requirements
In addition to the Graduate School requirements for the PhD, the School of Education also requires:
• Full-time enrollment until all formal course work is completed; and
• Completion of an individual program of study comprised of required and elective courses.

Programs of Study

Master of Arts (MA) in Education
The MA in education is designed for individuals from a variety of backgrounds who are interested in research in the field of education. The program should be of particular interest for individuals considering doctoral work in education but who have not yet completed a master's. The MA in education is not designed for students interested in receiving licensure.

Students select an area of specialized study from: culture, curriculum, and change; early childhood, family, and literacy studies; or educational psychology, measurement, and evaluation. Each student develops an individualized program of study of at least thirty hours with the guidance of an advisor. Working with a three-member committee, the student completes a comprehensive examination and a thesis.

Master of Education (MEd) for Experienced Teachers
The MEd for experienced teachers is a part-time, field-based program for teachers currently employed in local schools, public and private. The program is designed to assist licensed teachers with at least two years of experience in reflecting upon their experiences and with developing further skill and art as professional educators. It is a thirty-one-hour program that begins in the summer, extends through the next two years, and concludes in the third summer. Courses are offered at local sites, not on the University campus, for the convenience of practicing teachers. Courses during the school year are offered generally from 4:00 p.m. to 7:00 p.m.

The School of Education offers and administers the MEd for experienced teachers program. For program information or an application please visit the school's Web site at www.unc.edu/depts/ed or call (919) 966-1346.

Master of Education (MEd) in School Counseling
The master's program in school counseling is a full-time, sixty-hour program that prepares students for successful practice in the elementary, middle, and senior high schools. The program is accredited by the Council for Accreditation of Counseling and Related Educational Programs and is modeled on the four "C"s as a conceptual base for its curriculum: counseling, consultation, coordination, and classroom guidance.

The program is firmly committed to experience-based learning, and field experiences are a cornerstone of the curriculum. Typically, students spend two and one-half days per week for the entire school year (August-June) working in an elementary, middle, or high school. Although training usually takes place at a primary field site, students supplement and broaden their practical experience by completing work at a secondary site (typically at a different school and grade level). During the field experiences, supervision is provided weekly on an individual basis from both an on-site and a University supervisor. This program begins in the first summer session.

Applicants to the program need to be aware of the fact that, because of the field experience requirements, students follow the calendar of the school district rather than the University's calendar. Upon completing the School Counseling program, students are eligible for North Carolina Advanced Graduate licensure as school counselors.

Requirements
Students in the MEd school counseling program typically complete the course work in fourteen months, beginning and ending with summer study.
1. Fifty-one (51) hours of counseling courses.
2. One, three (3) hour course in life span human development (EDUC 281)
3. Six (6) hours of graduate level electives, approved by the advisor.

Semester One - Summer
First Summer Session
EDUC 205* Introduction to School Counseling 3 hours
EDUC 206 Theories of Counseling 3 hours
Second Summer Session
EDUC 208 Practicum in Counseling 3 hours
EDUC 210 Group Counseling Procedures 3 hours

Semester Two - Fall
EDUC 207 Career Development and Counseling 3 hours
EDUC 209 Tests and Measurements 3 hours
EDUC 211* Practicum in School Counseling 9 hours
EDUC 281* Theories and Research in Human Development 3 hours

Semester Three - Spring
EDUC 212* Internship in Counseling and Consultation 9 hours
EDUC 214* Cross-Cultural Counseling 3 hours
EDUC 215* School Consultation Methods 3 hours
EDUC 216 Seminar in Applied Investigations 3 hours

Semester Four - Summer
First Summer Session
EDUC 212* Internship in Counseling and Consultation 3 hours
EDUC 213* Organizing Guidance Services 3 hours

Second Summer Session
Elective 3 hours
Elective 3 hours
*These courses are necessary for Rehabilitation Counseling students seeking certification as a school counselor. These students must also complete their internship experience in a public school setting.

**Students must spend a minimum of 700 clock hours in their field experiences during the August to June school year. The schedule for completing these hours should be arranged with both the field supervisor and the EDUC 211 and 212 instructors.

The list below provides some examples of appropriate elective courses. It is not exhaustive. All elective courses must be graduate-level (i.e., courses numbered 100 level or above at this university) and must be approved by the student's advisor.

From Education:
EDUC 153 Introduction to Curriculum
EDUC 171 Social Foundations of Education
EDUC 182 Psychology of Learning in the School
EDUC 127 Introduction to Exceptional Children
EDUC 311 Problems in School Counseling

From Psychology:
PSYC 127 Cognitive Development
PSYC 128 Development of Language
PSYC 129 Development of Social Behavior and Personality
PSYC 140 Advanced Personality
PSYC 144 Psychological Disorders of Childhood and Adolescence
PSYC 172 Family and Development
PSYC 183 Contemporary Sex Roles

From Social Work:
SOWO 233 Family Stress: Coping and Social Support
SOWO 234 Psychopathology
SOWO 243 Social Work Practice with Couples
SOWO 244 Approaches to Brief Treatment
SOWO 252 Substance Abuse and Dependency
SOWO 272 Services for Persons in Grief

From Communication Studies:
COMM 112 Persuasion
COMM 120 Interpersonal Communication

From Romance Languages:
SPAN 101X Elementary Spanish for Graduate Students

Master of Education (MEd) and Master of Arts (MA) in School Psychology
The master's program in school psychology is a three-year plus summers, full-time program consisting of two years of course work and a one-year internship. The program covers content and skills in the professional areas of assessment, intervention, research and evaluation, consultation, and professional development. Students may elect to receive an MA or MEd. The MA requires a thesis. The program prepares individuals to work in schools and related educational agencies. Graduates are eligible for psychological and educational licensing in North Carolina. The school psychology program is accredited by the National Council for Accreditation of Teacher Education and the National Association of School Psychologists.

Requirements and Prerequisites
Applicants should enter the program with course work in psychology, abnormal psychology, statistics, learning theories, history systems, and developmental psychology. Missing prerequisites are added to the program of study.

Assessment
EDUC 221-A Psychoeducational Assessment I 3 hours
EDUC 221-B Psychoeducational Assessment II 3 hours
EDUC 221-C Psychoeducational Assessment III 3 hours

Intervention
EDUC 222-A Behavioral Intervention I 3 hours
EDUC 222-B Behavioral Intervention II 3 hours
EDUC 222-C Behavioral Intervention III 3 hours

Consultation
EDUC 215-A School Consultation Methods I 3 hours

Research and Evaluation
EDUC 184 Statistical Analysis of Ed. Data I 3 hours
EDUC 284 Statistical Analysis of Ed. Data II 3 hours
EDUC 216 Applied Investigations 3 hours
EDUC 392 Project, Semester I (For MEd students) 4 hours
EDUC 392 Project, Semester II (For MEd students) 4 hours
EDUC 393 Thesis, Semester I (**For MA students) 4 hours
EDUC 393 Thesis, Semester II (**For MA students) 4 hours
**Only 6 hours of thesis credit can be used as part of the 60 hours for graduation.

Professional Development
EDUC 223 Professional Seminar 3 hours
EDUC 224 Externship, Semester I 3 hours
EDUC 224 Externship, Semester II 3 hours
EDUC 224 Externship, Semester III 3 hours
EDUC 224 Externship, Semester IV 3 hours
EDUC 226 Internship, Semester I 3 hours
EDUC 226 Internship, Semester II 3 hours

Psychological Foundations
EDUC 263 Neuropsychology (Biological Bases of Behavior) 3 hours
EDUC 214 Cross-Cultural Counseling (Social Aspects of Behavior) 3 hours
EDUC 221 Psychoeducational Assessment 3 hours
EDUC 222 Behavioral Intervention in Counseling and School Psychology 3 hours

Master of Arts in Teaching (MAT)
The master of arts in teaching (MAT) program is designed for individuals wishing to teach in secondary school (grades 9-12) or in kindergarten-grade twelve special subjects. Secondary school subjects include English, Latin, mathematics, science, and social studies. Special subjects include English as a second language, French, German, Japanese, music, and Spanish. This school-based, student-centered program relies on partnerships between public schools and the University and uses the realities of the classroom as the motivation for students to connect theory and practice. It provides opportunities for students to accomplish three general objectives:
1. expand their understanding of methodology in their content specialization;
2. gain an understanding of curriculum and instruction primarily at the secondary level (but in K-12 in foreign languages, ESL, and music); and
3. provide knowledge of the social and psychological foundations of education.

   This program is designed to prepare candidates for initial and advanced teaching licensure in North Carolina.

   Several interrelated strands of knowledge run throughout the program:
   • The Teaching and Methods Strand focuses upon the structure of disciplines, tools of inquiry, and methodologies concerned with instructional strategies, planning, and assessment in varied learning experiences and communities.
   • The Learner and Learning Strand helps teachers design and implement learning experiences for students based on subject matter knowledge, the nature of the learning process, and the nature of learners.
   • The Context Strand focuses on teacher-student-community relationships in schools and classrooms. Students will prepare case studies of each type of relationship, analyze them from cultural, historical, and pedagogical perspectives, and develop strategies to address these issues in practice.

   The MAT is a twelve-month, full-time program that requires forty-plus semester hours of course work (forty if a science is taken).

   Summer 1 (Second Session of UNC-Chapel Hill Summer School)
   Introduction to Teaching (3 semester hours)
   Introduction to Schools (3 semester hours)

   Fall Semester
   Learner and Learning I (3 hours)
   Contexts of Education I (3 hours)
   Fall Internship (3 hours)
   Methods and Materials for Teaching Secondary or K-12 Subjects I (3 hours) with a separate section for each licensure area
   One course in the teaching field (3 or 4 hours)

   Spring Semester
   Learner and Learning II (2 hours)
   Contexts of Education II (2 hours)
   Spring Internship (9 hours)
   Methods and materials for Teaching Secondary or K-12 Subjects II (2 hours)

   Notes: A portfolio of work collected throughout the year will be submitted to the faculty for evaluation at the end of the spring semester.

   Summer II (First Session of UNC-Chapel Hill Summer School)
   Notes:
   Total Hours: Forty-plus (for English, mathematics, and social studies)
   The science program may have forty hours, if a four-hour course is taken.
   Music, English as a second language, and foreign languages will have extra hours for the required K-12 license. For further information on these programs, contact the appropriate advisers.
   Some clinical placements will include multiple settings and levels of instruction. Seminars, methods, contexts, learner, and learning courses are ongoing over the entire twelve-month period and are both interdisciplinary and subject area oriented.

   Master of School Administration (MSA)
   The MSA program, which develops outstanding assistant principals and principals for the schools of North Carolina and the nation, is administered by the School of Education. Please visit the Web site at www.unc.edu/depts/ed or call (919) 966-1354 for program information or an application.

   Doctor of Education (EdD) in Curriculum and Instruction
   The EdD program in curriculum and instruction is designed specifically for individuals seeking to be qualified and licensed as curriculum and instructional specialists at the doctoral level; professors of curriculum and instruction in higher education; and other positions in educational, governmental, and policy institutions.

   The curriculum-instruction specialist is defined as one whose primary concern is improving learning opportunities through providing instructional leadership. The specialist is a decision maker, consultant, and advisor to administrators, teachers, and other professional personnel. Responsibilities include curriculum development, instruction, and staff development.

   Applicants are admitted on the basis of their potential for outstanding contributions to education. They should hold a master's degree in a field of education.

   The EdD program is administered by the School of Education. Visit the Web site at www.unc.edu/depts/ed or call (919) 966-1354 for program information or an application.

   Doctor of Education (EdD) in Educational Leadership
   The School of Education offers and administers an EdD in educational leadership program which develops senior administrative leaders for the schools of North Carolina and the nation. The program is designed to accommodate the needs of in-residence and employed students. For program information or an application please visit the School of Education's Web site at www.unc.edu/depts/ed or call (919) 966-1346.

   Doctor of Philosophy (PhD) in Education
   The schools in North Carolina and in the nation face myriad complex issues and challenges. These challenges range from meeting the educational and social-emotional needs of diverse student populations to designing, implementing, and evaluating educational programs within cultural contexts. The PhD in education prepares leaders in educational research who understand these issues and who can improve educational practice using state-of-the-art knowledge and research skills. The design of the program fosters collaboration among faculty and students from diverse disciplines. Such cooperation across levels and areas of interest provides the opportunity to develop relevant research agendas. Graduates of this program are prepared for leadership positions in research and teaching at major universities and institutes in the state and nation.

   The PhD in education is a single program with three research emphases: culture, curriculum, and change; early childhood, family, and literacy studies; and educational psychology, measurement, and evaluation. These three fields blend areas of inquiry that were formerly discrete.

   The culture, curriculum, and change (CCC) area focuses on the study of educational change and reform through perspectives derived from curriculum studies, educational policy, and social foundations. The CCC specialty accommodates a range of individual interests including traditional curriculum disciplines, teacher education, gender studies, and cultural studies. The CCC specialty is committed to promoting educational equity.

   The early childhood, family, and literacy studies (ECFL) area focuses on the study of curricular and intervention strategies that promote the development and learning of both typically developing children and children with special needs. Individual student programs of study concentrate on early childhood education, early intervention, early literacy, and the roles of cultural context and family in early development.

   The educational psychology, measurement, and evaluation area focuses on the study of individuals interacting within educational contexts. Individual student programs may emphasize human learning and cognition, human development, instructional design, motivation, individual differences and exceptionality, program evaluation, and quantitative methods.
During their first semester of study, all PhD in education students enroll in a school-wide proseminal, a school-wide research methods seminar, a specialty proseminal, and a one-hour supervised research experience. The program requires a total of twelve credit hours of research methods - two courses required and two courses determined by each student in consultation with her/his committee. During the second, third, and fourth semesters of study, students enroll with individual faculty for one credit hour of supervised research and writing. The student and advisory committee determine the remaining courses in the 48-credit hour program.

Students in the PhD program are required to maintain full-time enrollment through the completion of course work, with the expectation that they will graduate in three to four years. A master's degree is required before enrolling in the PhD program.

Year One

Fall
Proseminar in Education
Fundamentals of Educational Research
Specialty Seminar
Supervised Research
Elective

Spring
Foundations of Research
Supervised Research
Elective
Elective

Year Two

Fall
Supervised Research
Elective
Elective
Elective
Elective

Spring
Supervised Research
Elective
Elective
Elective
Elective

Year Three and Four

Fall
Doctoral Dissertation

Spring
Doctoral Dissertation

Note: EDUC 184 (Introductory Statistics) or its equivalent must be completed prior to admission to the program or taken during the first year of study. A minimum of six hours of dissertation credit is required.

Doctor of Philosophy (PhD) in School Psychology

The doctoral program in school psychology, fully accredited by the American Psychological Association and approved by the National Association of School Psychologists, prepares school psychologists as scientist-practitioners to assume leadership positions in academic, research, and applied settings.

Program graduates are eligible for psychological and educational licensing in North Carolina and national certification by the National Association of School Psychologists.

The doctoral program of studies is comprised of seven areas: prerequisite courses, assessment, intervention, consultation, research and evaluation, externship/internship, and foundations. Students are required to take courses from each of the psychological foundations.

I. Prerequisite Courses

Doctoral students in school psychology should enter the program with course work in personality theory, abnormal psychology, history and systems psychology, learning theories, and developmental psychology. Missing prerequisites are added to the program of study.

II. Assessment

EDUC 221-A Psychoeducational Assessment I 3 hours
EDUC 221-B Psychoeducational Assessment II 3 hours
EDUC 221-C Psychoeducational Assessment III 3 hours

III. Intervention

EDUC 222-A Behavioral Intervention I 3 hours
EDUC 222-B Behavioral Intervention II 3 hours
EDUC 222-C Behavioral Intervention III 3 hours

IV. Consultation

EDUC 215-A School Consultation Methods I 3 hours
EDUC 215-B School Consultation Methods II 3 hours

V. Research and Evaluation

EDUC 184 Statistical Analysis of Ed. Data I 3 hours
EDUC 284 Statistical Analysis of Ed. Data II 3 hours
EDUC 384 Statistical Analysis of Ed. Data III 3 hours
EDUC 216 Applied Investigations 3 hours
EDUC 283 Measurement 3 hours
EDUC 266 or EDUC 285 or approved course - Policy and Program Evaluation 3 hours
EDUC 394 Dissertation 3 hours
EDUC 394 Dissertation 3 hours

VI. Externship/Internship

EDUC 224 Externship, Semester I 3 hours
EDUC 224 Externship, Semester II 3 hours
EDUC 224 Externship, Semester III 3 hours
EDUC 224 Externship, Semester IV 3 hours
EDUC 224 Externship, Semester V 3 hours
EDUC 224 Externship, Semester VI 3 hours
EDUC 224 Externship (Optional) 3 hours
EDUC 224 Externship (Optional) 3 hours
EDUC 321 Internship, Semester I 3 hours
EDUC 321 Internship, Semester II 3 hours

VII. Foundations - Professional Standards and Ethics

EDUC 223 Professional Seminar I 3 hours
EDUC 225 Professional Seminar II 3 hours

VII. Foundations - Biological Aspects of Behavior

EDUC 263 Biological Bases of Children's Development 3 hours

VII. Foundations - Social and Cultural Aspects of Behavior

EDUC 214 Cross-Cultural Counseling 3 hours

VII. Foundations - Individual Differences in Behavior

X Covered by EDUC 221 and 222 sequences

VII. Foundations - Human Development

VII. Foundations - Cognitive/Affective

VII. Foundations - Dysfunctional Behavior/Psychopathology

VIII. Electives (Not required)

Licensure

The School of Education recommends eligible graduates of its programs to the North Carolina State Department of Public Instruction for licensure as teachers, administrators, and other specialized school personnel in the public schools of North Carolina. In addition, the school recommends licensure candidates from the following University degree programs: the School of Information and Library Science (for school media coordinators), the School of Social Work (for school social workers), and graduates of the speech language pathology program.

Certain (very limited) nondegree licensure programs, offered by the School of Education, provide a route for already-licensed educators who
wish to add another area of licensure. Areas covered include early interven-
tion and family support (birth through kindergarten and preschool), learning
disabilities, English as a second language, reading K-12, and instruc-
tional supervision preparation for a system-level position.

Course Offerings

Course numbers are assigned as follows:
• 100-199 Open to advanced undergraduates and to graduate students
• 200-400 Open to graduate students only
(Courses listed here as offered in the summer are under the control of the
Summer School office. Consult the Summer School Record to verify summer
course offerings.)

EDUC 105 LITERATURE IN MIDDLE SCHOOL (3). Explores literature in
contexts of interdisciplinary middle school curricula and the interests and needs of
young adolescents. Topics include reader response theory, censorship, Internet
resources, school resources, methods. Fall. Staff.

EDUC 106 PEDAGOGICAL ENGLISH GRAMMAR FOR ESL TEACHERS
(3). Reviews the linguistic components of English to help educators understand
potential challenges that ESL students may have in learning spoken and written

EDUC 107 PEDAGOGICAL LINGUISTICS FOR ESL TEACHERS (3).
Provides future English as a second language teachers with advanced concepts in-
linguistics and comparative linguistics. Topics such as phonology and morphology will

EDUC 109 METHODS OF TEACHING ENGLISH AS A SECOND LAN-
GUAGE (3). Covers teaching methods, assessment, and resource issues related to
helping the ESL learner. Additional topics include theories of language learning and
the relationships between culture and language. As demand warrants. Kobota.

EDUC 114 CHILDREN'S LITERATURE ONLINE (3). Approaches children's
literature in a "genre and issues" manner that focuses on its applicability to elemen-
tary school children and curricula. As demand warrants. Staff.

EDUC 115G EXPLORATIONS IN LITERACY (3). Explores what it means
at a reader and writer, the nature of development of literacy. Fall. Duffy, Fitzgerald,
Smith, Spiegel.

EDUC 116 REINVENTING TEACHING (3). Addresses contexts of teaching,
teaching in the world, and teaching students in schools. This course is designed for
experienced educators to "reinvent teachers and teaching." Prerequisites, admission
to the M.Ed. for Experienced Teachers Program. As demand warrants. Hanley,
Wright.

EDUC 120A REFLECTIVE LITERACY TEACHING I (2). Prerequisite, EDUC
115G. Focuses on reflective literacy teaching: problematizing, processes of under-
standing students' thinking about reading and writing, Fall. Duffy, Fitzgerald,
Smith.

EDUC 120B REFLECTIVE LITERACY TEACHING II (1). Prerequisite,
EDUC 115G. Focuses on reflective literacy teaching: problematizing, processes of under-
standing students' thinking about reading and writing, Spring, Duffy,
Fitzgerald, Smith.

EDUC 121 REVISITING REAL NUMBERS CONCEPTS (3). Uses a problem-
based format and group work to explore the mathematics of the real numbers with
an emphasis on rational numbers. As demand warrants. Staff.

EDUC 122 INTRODUCTION TO SCHOOL PSYCHOLOGY (3). Introduces
the student to concepts and methods involved in school psychology. As demand
warrants. Staff.

EDUC 125 INDEPENDENT STUDY (1-3). Prerequisite, permission of the
instructor. Provides readings and research under the direction of a faculty member.
May be repeated for a maximum of six credit hours. Fall, spring, and summer. Staff.

EDUC 126 CONTENT-AREA READING AND WRITING (3). Focuses on cur-
rent theory, research, and issues in the teaching and use of reading and writing in
the content areas. Spring. Duffy

EDUC 127 INTRODUCTION TO EXCEPTIONAL CHILDREN (3). Surveys
giftedness and of various disabling conditions: mental retardation, emotional distur-
bance, learning disabilities, speech impairment, hearing impairment, vision impair-
ment, orthopedic impairment, and neurological impairment. Fall, spring, and sum-
mer. Staff.

EDUC 128 INTRODUCTION TO COMMUNICATION DISORDER
(COMM 183) (3). Explores the etiology, epidemiology, assessment, and educational
implications of speech and language disorders. As demand warrants. Staff.

EDUC 130 BEHAVIORAL SUPPORT TECHNIQUES (3). Emphasizes effective
behavior management and applied behavior analysis techniques for intervening in
the environments of exceptional children to increase learning. As demand warrants.
Staff.

EDUC 131 PROGRAM DEVELOPMENT FOR SPECIAL POPULATIONS
(3). Prerequisite, permission of the instructor. Reviews that issues associated with
program development for children who are experiencing uneven success in school
because of poor attendance, poverty, drug and alcohol abuse, disabling conditions,
parental abuse, or violent behaviors. Fall. Malloy, Wynn.

EDUC 132 SCHOOL REFORM AND CHANGE (3). Introduces effective strate-
gies and tactics for changing schools, varieties of school restructuring, importance of
multicultural education and client-friendly school environments in site-based organi-
sations. Fall. Schneirker, Shippman.

EDUC 133 SCHOOL BASED INQUIRY (3). Examines the quantitative and
qualitative research methodologies appropriate to school settings; evaluates the
research and its application to schools. Spring. Staff.

EDUC 134 INTERNSHIP SEMINAR ON INSTRUCTIONAL LEADERSHIP
AND SUPERVISION (3). Relates internship experiences and applications about
instructional design techniques of teaching/learning, evaluation of teaching/learning
process, and ways in which school-based leaders can support excellence in educa-
tion. Fall. K. Brown, Schneirker.

EDUC 135 INTERNSHIP SEMINAR ON SCHOOL BUILDING MANAGE-
MENT (3). Prerequisites, six semester hours in educational administration, includ-
ing EDUC 237, and permission of the instructor. Relates internship experiences and
applications of school business management practices, such as transportation,
food services, plant planning, etc., to schools. Spring. K. Brown, Schneirker.

EDUC 136 PRE-INTERNSHIP SEMINAR IN EDUCATIONAL ADMINIS-
TRATION (1). Provides opportunities to keep students linked with school practice
by examining administrative services in schools. May be repeated for credit. Fall and
spring. Schneirker.

EDUC 137 SEMINAR AND SUPERVISED INTERNSHIP IN EDUCATION-
AL ADMINISTRATION I (1-6). Provides supervised internship in school adminis-
tration to facilitate the student's progress toward certification in the principalship.
May be repeated for credit. Fall. Staff.

EDUC 138 SEMINAR AND SUPERVISED INTERNSHIP IN EDUCATION-
AL ADMINISTRATION II (1-6). Provides supervised internship in school adminis-
tration to facilitate the student's progress toward certification in the principalship.
May be repeated for credit. Prerequisites, six semester hours in educational adminis-
tration, including EDUC 237, and permission of the instructor. Spring. Staff.
EDUC 139 CURRICULUM LEADERSHIP (3). Examines the theories and related practices of applied curriculum leadership including curriculum planning based on selected trend data; high-risk accountability systems; topological/deep curriculum alignment options and issues; curriculum audits and classroom curriculum "walk-throughs." Summer. English.

EDUC 140 GROUP DYNAMICS, DECISION MAKING, AND PROBLEM SOLVING (3). Develops understanding and skills for working with various organizational groups. Focus is on teams, leadership of teams, team problem solving, and team decision making. Spring. Schaefer.

EDUC 141 INTRODUCTION TO TEACHING (3). Prerequisite, admission to the MAT program. Introduces the principles of effective teaching with emphasis of the first year of teaching. Summer. Staff.

EDUC 142 INTRODUCTION TO SCHOOLS (3). Prerequisite, admission to the MAT program. Provides an examination and overview of schools that introduces topics such as the cultures of schools, professionalism, connections with other communities, multiculturalism, and special populations. Summer. Staff.

EDUC 143 PRACTICA IN SECOND LANGUAGES (1). Provides students an opportunity to observe and become involved with all school aspects of teaching and learning second/foreign languages. Open by permission of instructor. Fall. Heininger-Boynston, Kubora, Villalva.

EDUC 144 LEARNER AND LEARNING I (3). Prerequisites, EDUC 141, 142. Provides prospective teachers a conceptual understanding of child/adolescent development in order to enable them to interpret student behavior in a valid manner. Fall. Hannum.

EDUC 145 CONTEXTS OF EDUCATION I (3). Prerequisites, EDUC 141, 142. Provides the instructor. Focuses on the social contexts of schools, conditions of teaching, relations between students, teachers and administrators, plus equitable educational opportunity, and educational philosophies. This course is part 1 of a two-course sequence. Fall. Stone, Levine.

EDUC 146 PRACTICA STUDENT INTERNSHIP (3). Prerequisites, EDUC 141, 142. Provides students the opportunity to observe and become involved with all aspects of teaching and schools within their content area. Fall. Staff. (Formerly EDUC 165.)

EDUC 147 METHODS AND MATERIALS FOR TEACHING SECOND FOREIGN LANGUAGES I (3). Prerequisites, EDUC 141, 142. Prepares students to teach the English language arts at the secondary level. The immediate purpose of this course is to prepare participants for full-time teaching during the spring semester. Fall. Trier, Rong, Heininger-Boynston, Huff, Kubora, C. Malloy, Veal, Villalva.

EDUC 148 METHODS AND MATERIALS FOR TEACHING ELEMENTARY MUSIC I (2). Prerequisites, EDUC 141, 142. Equips students with resources and experiences to facilitate entry as a specialist in the elementary music classroom. Fall. Raley.

EDUC 150 LANGUAGE MINORITY STUDENTS: ISSUES FOR PRACTITIONERS (3). Prerequisite, open by permission of instructor. Explores issues of culture and language associated with teaching English as a second language. Fall. Kubota, Villalva.

EDUC 151 PRINCIPLES OF INSTRUCTIONAL DESIGN (3). Prerequisite, EDUC 72 or related course. Studies the design and production of instructional materials incorporating goal analysis, learning task analysis, behavioral objectives, entry behavior, criterion tests, instructional strategies, design planning, and formative evaluation. Fall. Hannum.

EDUC 153 INTRODUCTION TO CURRICULUM (3). Surveys the nature of curriculum development and contemporary changes as they relate to social aims, learner characteristics, and social problems. Open to graduate students in education or by permission of the instructor. As demand warrants. Ten.

EDUC 155 SEMINAR IN LEARNING DISABILITIES EDUCATION (3). Prerequisites, EDUC 191A, EDUC 191B (may be taken concurrently with EDUC 191A, and students enrolled in the licensure-only program require initial competencies with regard to law and assessment that are not currently available). Instructs students about the requirements of IDEA and case law, particularly those pertaining to learning disabilities. Students will also learn the basics of measurement concepts (reliability, validity, error, etc.). Fall. Boudah, Farmer.

EDUC 156 PROBLEMS IN SPECIAL EDUCATION (3). Prerequisite, permission of the instructor. Provides an opportunity for post-master's students who wish to engage in supervised field and pilot research. May be repeated for credit. Fall, spring, and summer. Staff.

EDUC 159 COLLABORATION WITH FAMILIES AND OTHER PROFESSIONALS (3). Instructs students about the resources available to them, their students and their students' families. Students will develop skills in working with parents and professionals as partners in the instruction and planning of programs for students with learning disabilities. As demand warrants. Boudah, Farmer.

EDUC 160 MASTER'S INTERNSHIP IN LEARNING DISABILITIES EDUCATION (3). Prerequisites, EDUC 153, EDUC 191A, EDUC 191B (may be taken concurrently with EDUC 191B). Provides supervised experience in a phase of special education or literacy studies appropriate to the student's qualifications and future educational goals. Requires a minimum of three hundred clock hours at the internship site per semester. Fall, spring, and summer. Boudah.

EDUC 162 EMERGENT LITERACY (3). Focuses on the development of literacy processes (reading and writing) at the birth through first grade level. Strategies for facilitating emergent literacy are represented for typical and atypical developing children. Literacy resources and programs are explored. Fall. Fitzgerald, Smith.

EDUC 164 FAMILIES AND TEAMS IN EARLY CHILDHOOD INTERVENTION: INTERDISCIPLINARY PERSPECTIVES (3). Explores issues and models of family-professional and interprofessional relationships in early childhood settings. Collaborative communication and problem solving strategies are emphasized in the context of diversity. Open to graduate students only. Summer and as demand warrants. Boone.

EDUC 165 EARLY CHILDHOOD ASSESSMENT STRATEGIES (3). Provides an overview and application of strategies for developmental screenings, normative evaluations, curriculum, and play-based assessments for children ages birth through 5. Open to graduate students only. Fall. Boone, Gallagher.

EDUC 166 PRESCHOOL/Kindergarten CURRICULUM AND LEARNING ENVIRONMENTS (3). Focuses on individualized, developmentally, and culturally appropriate learning environment and curriculum strategies for young children with and without disabilities ages 3 to 5. Open to graduate students only. Fall. Boone.

EDUC 167 INFANT/TODDLER CURRICULUM AND LEARNING ENVIRONMENT (3). Focuses on infant/toddler development and mental health strategies for facilitating development in the home and child care. Summer. Boone, staff.

EDUC 168 B-K INTERNSHIP (1-2). Provides an opportunity for students to synthesize and apply research and recommended practices in their work settings or in an assigned internship setting. Fall, spring, summer. Staff.

EDUC 169 CHILD DEVELOPMENT AND DISABILITY (3). Focuses on early childhood development and developmental delay exhibited by children in cognitive, language, social, and affective area. Spring. Simonsson, staff.

EDUC 171 SEMINAR IN SOCIAL FOUNDATIONS OF EDUCATION (1). Explores topics in the social and philosophical context of American public education. Spring. Staff.

EDUC 178 SEMINAR IN EDUCATIONAL STUDIES (3). Focuses on educational issues involving culture, curriculum and change. Issues addressed will vary. Fall. Staff.
EDUC 181 PSYCHOLOGY OF CHILDHOOD AND ADOLESCENCE (3). Emphasizes theories of child and adolescent development plus research findings that aid in the understanding of human behavior and development. Open only to majors in the School of Education. As demand warrants. Meere.

EDUC 182 PSYCHOLOGY OF LEARNING IN THE SCHOOL (3). Prerequisite, EDUC 72 or equivalent. Studies learning in the school setting, with emphasis on fundamental concepts, issues, evaluation of materials and experiences. Fall and spring. Boudah.

EDUC 183 EDUCATIONAL MEASUREMENT AND EVALUATION (3). Identifies the basic concepts in measurement and evaluation, describes the role of evaluation in curriculum construction and revision, and describes the development and use of teacher-constructed tests. Fall. Cizek.

EDUC 184 STATISTICAL ANALYSIS OF EDUCATIONAL DATA I (4). Studies descriptive and inferential statistics for educational research, including an introduction to fundamentals of research design and computer data analysis. Fall and summer. Cizek, Ware.

EDUC 186 THE PSYCHOLOGY OF ADULT LEARNING (3). Focuses upon knowledge and application of learning principles and conditions for facilitating learning in adults. Fall or spring. Frierson, Hannum.

EDUC 191A READING AND WRITING METHODS FOR STUDENTS WITH LEARNING DISABILITIES (4). Explores characteristics of students with learning disabilities in the areas of reading and writing. Students will learn assessment techniques and instructional methods specific to addressing these characteristics. Fall. Boudah.

EDUC 191B MATH AND CONTENT AREAS FOR STUDENTS WITH LEARNING DISABILITIES (4). Explores characteristics of students with learning disabilities in math, social studies, and science. Students will also learn assessment techniques and instructional methods specific to addressing these characteristics. Spring, Boudah, Farmer.

EDUC 193 STUDY GROUP RESEARCH I (2). Prerequisites, EDUC 116, enrollment in the M.Ed. for Experienced Teachers program. Explores the meanings of research and the potential roles of teachers in conducting research. Teachers formulate possible individual or small group research projects that they can carry out during the year. As demand warrants. Dally.

EDUC 194A ASSESSMENT AND DIFFERENTIATION (1). Prerequisites, EDUC 116, enrollment in the M.Ed. for Experienced Teachers program. Enhances teachers' understanding of how to differentiate assessment. As demand warrants. Staff.

EDUC 194B TEACHING AND DIFFERENTIATION (1). Prerequisites, enrollment in the M.Ed. for experienced teachers program. Enhances teachers' understanding of how to differentiate instruction. Using a case-based approach, teachers examine the areas of human development, special education and inclusion, cultural diversity, linguistic diversity, cognitive styles, and multiple intelligences as frames through which to consider creative environments to promote students' classroom success. As demand warrants. Staff.

EDUC 205 INTRODUCTION TO SCHOOL COUNSELING (3). Prerequisite, graduate standing. Studies philosophical bases of pupil personnel services, with emphasis on elementary and secondary school guidance programs. Summer. D. Brown.

EDUC 206 THEORIES OF COUNSELING (3). Prerequisite, permission of the instructor. Explores current theories of counseling, with emphasis on theory as a means of conceptualizing behavior change in the counseling process. Summer. Galasi.

EDUC 207 CAREER DEVELOPMENT AND COUNSELING (3). Examines major theories of career development. The use and appraisal of student information in career counseling are major topics. Fall. D. Brown.

EDUC 208 PRE-PRACTICUM IN COUNSELING (3). Prerequisites, EDUC 201 (may be taken concurrently), permission of the instructor. Develops interviewing techniques, at specified levels of competence, through role playing and video and audio feedback. Summer. Staff.

EDUC 209 TESTS AND MEASUREMENTS (3). Prerequisite, EDUC 205. Studies basic concepts in measurement and their application in the use and interpretation of tests. The student may be required to purchase tests. Fall. Cizek.

EDUC 210 GROUP COUNSELING PROCEDURES (3). Prerequisite permission of the instructor. Applies counseling theory and research to the organization and implementation of group counseling. Fall. Staff.

EDUC 211 PRACTICUM IN SCHOOL COUNSELING (3-0). Prerequisites, EDUC 206, 208, permission of the instructor. Develops individual counseling skills and an understanding of the school as a setting for counseling through an apprenticeship experience. Fall. Akos, Brown, Galassi.

EDUC 212 INTERNSHIP IN SCHOOL COUNSELING AND CONSULTATION (3-0). Prerequisites, EDUC 206, 208, permission of the instructor. Places students in counseling and consultation under supervision in a school setting in order to develop competencies in individual counseling, group counseling, and consultation. May be repeated for credit for a maximum of twelve credit hours. Spring. Akos, D. Brown, Galassi.

EDUC 213 ISSUES IN ORGANIZING GUIDANCE SERVICES (3). Prerequisite, eighteen hours in counseling courses. Emphasizes organizing guidance services to meet such problems as those related to the special needs of women, minority groups, and the drug problem. Summer. D. Brown.

EDUC 214 CROSS-CULTURAL COUNSELING (3-0). Prerequisite, permission of the instructor. Explores the cognitive and affective considerations of counseling in culturally different social systems. This includes ways to incorporate specific sociocultural dimensions into the counseling process. Spring. Moore.

EDUC 215 SCHOOL CONSULTATION METHODS (3-12). Examines various models of consultation, the role of the consultative model in the schools and related agencies, and uses role playing and experience in the school. May be repeated for credit. Spring. D. Brown, Knorck.

EDUC 216 SEMINAR IN APPLIED INVESTIGATIONS (3). Prerequisite, permission of the instructor. Provides opportunities to explore specific areas of research interest in counseling and school psychology in depth. Fall, some springs, and summer. Galassi, O'Sullivan, Simeonsen, Wasik.

EDUC 217 PSYCHOLOGY OF CAREER DEVELOPMENT (3). Reviews theories and research in the psychology of career development and counseling. Emphasis is on theory and implications for practice. Open to doctoral students. Fall. D. Brown.

EDUC 221 PSYCHOEDUCATIONAL ASSESSMENT (1-3). Prerequisite, permission of the instructor. Addresses knowledge and skills in techniques of observation, interviewing, assessment of environment, intelligence, achievement, perceptual motor skills, and interpersonal perceptions. May be repeated for credit. Fall and spring. Beatley, Simeonsen.

EDUC 222 BEHAVIORAL INTERVENTION IN COUNSELING AND SCHOOL PSYCHOLOGY (3). Prerequisite, permission of the instructor. Covers behavior management and therapy and individual and group therapy. (The school psychology sections include consideration of theoretical interventions beyond those of a behavioral perspective.) May be repeated for credit. Fall and spring. Knorck, Simeonsen, Wasik.

EDUC 223 SEMINAR IN PROFESSIONAL SCHOOL PSYCHOLOGY (2-3). Deals with the goals and roles of school psychology, ethical concerns, privileged information, certification and licensing, and other relevant areas. May be repeated for credit. Fall. Beatley.
EDUC 224 EXTERNSHIP IN SCHOOL PSYCHOLOGY (1-6). Prerequisite, permission of the instructor. Provides supervised observation and participation in school psychological services in schools and school-related field facilities. May be repeated for credit. Fall and spring. Brantley, Knotek, Simeonsson, Wasik.

EDUC 225 DOCTORAL SEMINAR IN PROFESSIONAL SCHOOL PSYCHOLOGY (3). Prerequisites, appropriate courses and permission of the instructor. Considers advanced topics in the field of school psychology such as professional issues, standards and ethics, and interdisciplinary relations. Fall. Brantley.

EDUC 226 MASTER'S INTERNSHIP IN SCHOOL PSYCHOLOGY (1-6). Prerequisites, EDUC 224 and permission of instructor. Provides supervised full-time field experience for master's students in school psychology in a school setting. Fall, spring, summer. Brantley, Wasik.

EDUC 231 SCHOOL LAW: JUSTICE AND EQUITY. Prerequisite, six semester hours of graduate school work in school administration (3). Provides an overview of the legal structure of education, liability, constitutional rights, contractual relationships, federal regulations, and collective action. May be repeated for credit. Fall. F. Brown.

EDUC 232 SCHOOL GOVERNANCE (3). Prerequisite, permission of the instructor. Focuses on governance and policy at the school building level and how district wide governance, state educational policy, federal involvement in education, and educational special interest groups impact school-sized governance. Fall, spring, Staff.

EDUC 233 PLANNING IN EDUCATIONAL ORGANIZATIONS (3). Examines a conceptual and practical approach to planning in educational organizations. Includes a focus on environmental scanning, futures research, and strategic planning. Fall, English.

EDUC 234 THE SOCIAL CONTEXT OF EDUCATIONAL LEADERSHIP (4). Provides a retrospective, contemporary, and prospective examination of the social, cultural, political, and philosophical contexts from which the current issues that affect schools and schooling have evolved. Fall and spring. K. Brown.

EDUC 235 EDUCATIONAL POLITICS AND POLICY (3). Examines theory of competing conceptions of policy. Actors and agencies are examined at federal, state, and local levels. Interactions across levels are studied in relation to current policy alternatives. Fall, Marshall.

EDUC 236 LEADING SYSTEM FUNCTIONS (3). Prerequisites, EDUC 331, EDUC 332, permission of the instructor. This course is focused on the issues pertaining to personnel, planning, facilities, administrative applications of technology, superintendent/board relations, district-level curriculum and assessment issues, and creating and sustaining community inter-agency partnerships. Spring. Schankier.

EDUC 237 ORGANIZATIONAL BEHAVIOR AND THEORY IN EDUCATION (3). Prerequisite, permission of the instructor. Analyze the theoretical assertions and empirical knowledge claims that have led to the dominant structures, power relationships, and performance expectations of American schools. Fall. F. Brown.

EDUC 238 MANAGING SCHOOLS WITHIN A DISTRICT CONTEXT (3). Prerequisites, EDUC 237, permission of the instructor. Examines the processes of management and their relationship to the success of the instructional programs in schools and school systems. Fall, spring. Schankier.

EDUC 239 INSTRUCTIONAL LEADERSHIP FOR SUPERVISION, CURRICULUM AND TECHNOLOGY (3). Provides fundamental knowledge of instructional design, techniques of teaching/learning, evaluation of teaching/learning process and ways in which school-based leaders can support excellence in classroom instruction. Fall and spring. Staff.

EDUC 240 SCHOOL FINANCE AND ECONOMIC EQUITY (1-3). Covers the area of financing school corporations in the current economic and political setting, with emphasis on interrelationships of educational, economic, and political decisions. May be repeated for credit. Fall, spring, summer. F. Brown.

EDUC 241 PRACTICUM IN ESL II/FL (3). Provides an internship to teach ESL/FL under the supervision of an experienced ESL teacher. Spring. Heinig-Boytan, Kubota, Villalva.

EDUC 242 LEARNER AND LEARNING II (2). Prerequisites, EDUC 144. Provides basic psychological principles upon which prospective teachers can design effective instructional programs and validly assess these programs of instruction. Spring. Hannum.

EDUC 243 CONTEXTS OF EDUCATION II (2). Prerequisites, EDUC 145. Provides a weekly seminar (part two of a two-semester sequence) for interns with full-time teaching responsibilities. Interns will connect their teaching experience to social, cultural, and philosophical issues in education. Spring. Stone, Levine.

EDUC 244 PRACTICA STUDENT INTERNSHIP (3). Provides full-time internship in teaching in the content area under the supervision of experienced teachers and a university supervisor for the semester. Open by permission of instructor. Spring. Staff.

EDUC 245 METHODS AND MATERIALS FOR TEACHING SECONDARY K-12 SUBJECTS II (2). Prerequisites, EDUC 170. Teaches intern social studies teachers to be aware of trends and issues in social studies in North Carolina and the nation, therefore improving their understanding and skills in curriculum development and instruction. Spring. Rong, Trier, C. Malloy, Heinig-Boytan, Huff, Kubota, Veal, Villalva.

EDUC 246 REFLECTING AS TEACHERS ON LEARNERS, SOCIAL CONTEXT, AND TEACHING METHODS (3). Prerequisite, EDUC 244. This seminar asks teacher interns to reflect on their experiences concerning learners and learning, social contexts of education, and teaching methods. Curriculum development and evaluation will also be explored. Summer. Staff.

EDUC 247 ADVANCED PEDAGOGY (3). Prerequisite, admission into MAT. Advanced Pedagogy is the first course of a two-course module that completes the MAT year-long program of study. The module emphasizes advanced license preparation. Summer. Staff.

EDUC 248 TEACHING SECONDARY STUDENTS WITH DISABILITIES (1) Following a case format and utilizing online instruction, MAT students learn to teach secondary learners in inclusion settings. Spring. Boudah.

EDUC 249 CURRICULUM LEADERSHIP (3). Prerequisite, admission into MAT. Curriculum Leadership is the second course in the summer capstone experience for MAT students that is taken concurrently with Advanced Pedagogy. The module emphasizes advanced licensure preparation. Summer. Staff.

EDUC 250 INDEPENDENT STUDY 200 LEVEL (1-12). Prerequisite, permission of instructor. Fall, spring, summer. Staff.

EDUC 251 CURRICULUM THEORY (3). Relates curriculum development to relevant theories and research in humanistic and behavioral studies. This is an advanced course. As demand warrants. Tom.

EDUC 252 INSTRUCTIONAL THEORIES (3). Prerequisites, a prior course on learning and permission of the instructor. Examines the nature and application of various theories of instruction to instructional goals, individual differences, teaching strategies, sequencing, motivation, and assessment. As demand warrants. Bolick.

EDUC 253 INSTRUCTIONAL SYSTEMS DEVELOPMENT (3). Delineates strategies for developing instructional systems, including needs assessment, job analysis, goal setting, use of criterion tests, delivery systems, program management, and evaluation of learners and programs. As demand warrants. Hannum.

EDUC 254 TEACHER EDUCATION IN THE UNITED STATES (3). Studies the research relating to teacher effectiveness and programs for the preparation of teachers. Designed for students planning to work in teacher education. As demand warrants. Tom.
EDUC 255 SUPERVISION AND INSTRUCTION (3). Examines the history, nature, and purposes of educational supervision, with an emphasis on the supervisor's role in improving teaching, curriculum development, and staff development. Spring. (Formerly EDCCI 294.)

EDUC 256 PRINCIPLES AND METHODS IN PARENT EDUCATION AND INVOLVEMENT (3). Examines principles, theory, models, and methods for work with parents and families in educational settings, with relevant research and practical applications. As demand warrants. Staff.

EDUC 257 COLLEGE TEACHING (3). Introduces students to the planning of courses and educational programs for college students. Emphasis is on a systematic approach to developing, implementing, and evaluating instruction. This course is intended for graduate students in any academic department who plan teaching careers. As demand warrants. Staff.

EDUC 258 IMMIGRATION AND EDUCATION (3). Investigates social (including political, economic, legal, and demographic) and cultural impacts on immigration and education. Spring. Rong.

EDUC 259 THEORY AND RESEARCH IN EDUCATION TECHNOLOGY (3). This course is based on the review and critique of research and theoretical literature in the field of education technology. Students will conduct critical analyses of theories, research, and methodology in the field of education technology and design a proposed education technology research study. (Alternate years.) Balick.

EDUC 261 PROFESSIONAL DEVELOPMENT AND LEADERSHIP IN EARLY CHILDHOOD INTERVENTION (3). Prerequisites: EDUC 164, 165, and 166. Focuses on leadership skills in mentoring, supervision, staff development, resource gathering, and applied research related to early childhood settings. Spring. Boone, staff.

EDUC 262 SPECIAL EDUCATION/EARLY CHILDHOOD INTERVENTION AND FAMILY SUPPORT (3). Explores issues, theories, models, and research relevant to family-professional and inter-professional relationships in early childhood intervention. Fall. Boone.

EDUC 263 BIOLOGICAL BASES OF CHILDREN'S DEVELOPMENT (3). Focuses on the theory and research related to the biomedical and psychological aspects of exceptionality. Fall. Simeonson, Hooper.

EDUC 264 MULTIDISCIPLINARY APPROACHES TO EXCEPTIONALITY II (3). Focuses on the theory and research related to the sociological, legal, and educational aspects of exceptionality. Spring. Staff.

EDUC 265 CURRICULUM DEVELOPMENT IN SPECIAL EDUCATION (3). Helps the student put diagnostic and assessment procedures into practice in the classroom. Includes development of IEPs, a thorough understanding of legislative mandates directed toward special education populations, and development of evaluation techniques for accountability. (As demand warrants.)

EDUC 266 PROGRAM PLANNING, POLICY ANALYSIS, AND EVALUATION OF SPECIAL POPULATIONS (3). Introduces program planning, policy analysis, and program evaluation related to special education issues. Prerequisite: permission of the instructor. As demand warrants. Staff.

EDUC 269 CULTURE AND POLITICS IN SECOND LANGUAGE EDUCATION (3). This course provides an overview of current issues in second language teaching (ESL, foreign languages, and bilingual education) with a focus on culture, politics, and diversity. Spring. Ryuko, Villalva.

EDUC 271 EDUCATIONAL SOCIOLOGY (3). Applies sociological theory and research to problems of concern to educators. Fall. Noblit.

EDUC 272 SOCIAL CHANGE AND EDUCATION (3). Analyzes social change within a theoretical framework and describes its probable impact on education. Considers the role of the school in the development of human capital. Spring. Staff.

EDUC 274 SOCIAL AND EDUCATIONAL HISTORY OF THE UNITED STATES (3). Provides a survey of the social forces influencing the development of American education from the period of colonization to the early years of the twentieth century. Fall of odd-numbered years. Staff.

EDUC 275 FIELD TECHNIQUES IN EDUCATIONAL RESEARCH (3). Prerequisite, EDUC 164. Introduces students to field research methods and analysis of qualitative data that focuses on the application of these techniques in educational and policy research. Fall and spring. Marshall, Noblit.

EDUC 276 GENDER, RACE, AND CLASS ISSUES IN EDUCATION (3). Provides an understanding of and remedies for the racism, sexism, and class divisions that schools can perpetuate in curriculum, counseling, and interaction in classrooms; structure and leadership; and fundamental assumptions. As demand warrants. Staff.

EDUC 277 GENDER, POLICY AND LEADERSHIP IN EDUCATION (3). Covers feminist critiques of organizational and political power structures in readings and discussions leading to group and individual research projects. As demand warrants. Marshall.

EDUC 278 SEMINAR IN EDUCATIONAL STUDIES (3). Focuses on educational issues and theories involving culture, curriculum and change. Issues and theories addressed will vary. Fall. Cortina, Hamann, Hanley, Kubota, C. Smith.

EDUC 279 INTRODUCTION TO PHILOSOPHY OF EDUCATION (3). Provides a comparative study of current philosophies of education with particular attention to their impact on solutions offered to problems currently recognized in American education. As demand warrants. Stone.

EDUC 280 INTRODUCTION TO ETHICS AND EDUCATION (3). Identifies issues arising in the professional activities of education personnel in the context of systematic consideration of the nature of ethical choice. Fall, summer. Stone.

EDUC 281 THEORIES AND RESEARCH IN HUMAN DEVELOPMENT (3). Covers the basic theories and research bases for instructional decisions. This is an advanced-level course in human development Prerequisite, permission of the instructor. Spring. Hamm, Meece.

EDUC 283 APPLIED MEASUREMENT THEORY FOR EDUCATION (3). Prerequisite, EDFO 180. An examination of the logic and theory of educational measurement. Practical applications of measurement theory to the construction and use of a variety of educational measurement devices. Spring. Cizek.

EDUC 284 STATISTICAL ANALYSIS OF EDUCATIONAL DATA II (4). Prerequisite, EDUC 164 or permission of the instructor. A linear model approach to the analysis of data collected in educational settings. Topics include multiple regression, analysis of variance, and analysis of covariance, using computer packages. Spring and summer. Ware.

EDUC 285 PROGRAM EVALUATION IN EDUCATION (3). Prerequisites, EDUC 184 and 329. An examination of major approaches to program evaluation with emphasis on differences between evaluation and research. Fall and spring. Frierson.

EDUC 289 PROBLEMS IN EDUCATIONAL PSYCHOLOGY (3-6). Prerequisite, permission of the instructor. Study and development of original investigations in the area of educational psychology. Fall, spring, and summer. Boudah, Cizek, Frierson, Hamm, Meece.

EDUC 290 PROBLEMS IN EDUCATIONAL MEASUREMENT (3). Prerequisites, EDUC 184, 283, permission of the instructor. Provides an opportunity for advanced doctoral students to study a particular problem area in educational measurement under the supervision of a faculty mentor. May be repeated for credit. Fall, spring, and summer. Cizek, Frierson, Ware.

EDUC 294A REVISITING LITERACY (3). Prerequisite, EDUC 185G. Explores literacy topics as capstone course for Master's or licensure program in literacy; co-requisite is Restructuring Schools and Teaching. Fall. Duffy, Smith.
EDUC 300 PROSEMINAR IN EDUCATION (3). Students develop an in depth understanding of scholarly traditions within education, histories of curricular area and current issues facing these areas and education as a whole, and application of these histories and issues to real classrooms and schools. Fall. Noblit.

EDUC 301 FUNDAMENTALS OF EDUCATIONAL RESEARCH (3). Explores and analyzes the range of educational research designs including experimental, correlational, survey, descriptive, case study, ethnography, narrative, policy and longitudinal research. Fall.

EDUC 302 FOUNDSATIONS OF EDUCATIONAL RESEARCH (3). Applies the philosophies of science, social science, language, and history, including recent theoretical issues, to the understanding of how educational research is conducted and what contribution is makes. Spring. Stone.

EDUC 304 SEMINAR IN CULTURE, CURRICULUM, AND CHANGE (3). Critical examination of topics and policy issues related to curriculum and educational change, considered in cultural context. Open to doctoral students. Fall. Trier.

EDUC 305 SEMINAR IN EARLY CHILDHOOD, FAMILIES, AND LITERACY (3). Critical examination of topics related to the development of young children and early literacy, and the role of families in this development. Open to doctoral students. Fall. Staff.

EDUC 306 SEMINAR IN PSYCHOLOGICAL MEASUREMENT AND EVALUATION (3). Critical examination of experimental and research issues related to learning, development, teaching, assessment, and quantitative methods of research, from a psychological perspective. Open to doctoral students. Fall. Hamm.

EDUC 307 SUPERVISED RESEARCH (1-6). Provides students with the opportunity to work with individual faculty members in collaborative research activities in association with a seminar during the second, third, and fourth semesters of study. May be repeated. Open to graduate students only. Fall, Spring. Staff.

EDUC 311 DOCTORAL INTERNSHIP IN SCHOOL PSYCHOLOGY (1-6). Prerequisite: permission of the instructor. Supervised field placement experiences for doctoral-level students in school psychology, integrating training with field responsibilities at a systems level in schools and school-related settings. Fall and Spring. Staff.

EDUC 326 INDEPENDENT STUDY 300 LEVEL (1-12). As demand warrants. Staff.

EDUC 329 SEMINAR IN EDUCATION (3). Provides for seminar treatment of appropriate topics. Prerequisites, two courses in graduate education and permission of the instructor. As demand warrants. O'Sullivan.

EDUC 330 DOCTORAL RESEARCH SEMINAR (3). Prerequisites: two courses in graduate education and permission of the instructor. Provides an opportunity for group development and evaluation of research in a particular area of concern. Fall and spring. Staff.

EDUC 331 THE EXCELLENT SCHOOL SEMINAR (3). Research and models on high performing organizations, instructionally effective schools and school systems, and national school reform efforts presented in the context of traditional and emerging organizational theory and research. Prerequisite: permission of the instructor. Fall. Staff.

EDUC 332 THE EXCELLENT SCHOOL SEMINAR (3). Prerequisite, permission of the instructor. Research and models on high performing organizations, instructionally effective schools and school systems, and national school reform efforts presented in the context of traditional and emerging organizational theory and research. Spring. Staff.

EDUC 333 ADVANCED LEADERSHIP THEORIES (3). Prerequisites, EDUC 234, 235, and 238. Requires students to integrate previous studies to focus on management applications, dilemmas, and conflicts. Spring. English.

EDUC 334 THE DEVELOPMENT OF A RESEARCH PROPOSAL (3). Prerequisites, EDUC 234, 235, and 237. Requires students to integrate previous studies to focus on theory, inquiry, and organizational practice. Spring. English.

EDUC 335 ADVANCED SEMINAR AND SUPERVISED INTERNESHIP IN EDUCATIONAL ADMINISTRATION (1-6). Prerequisites, EDUC 235, 234, 237, 238, permission of the instructor. An advanced internship and seminar relevant to the program in administration and to the student’s progress toward advanced administrative certification. May be repeated for credit. Fall, spring, and summer. W. Malloy.

EDUC 336 PROBLEMS IN EDUCATIONAL ADMINISTRATION (3 or 4). Prerequisite: permission of the instructor. Provides an opportunity for advanced students to do independent study under supervision. May be repeated for credit. Fall, spring, and summer. Schainker.

EDUC 337 PROBLEMS IN SUPERVISION (3 or 4). Prerequisite, permission of the instructor. A study of major problems in the supervision of instruction, investigations of new trends, and recent research. As demand warrants. Staff.

EDUC 338 PROBLEMS OF SUPERVISORY PRACTICE (3). Prerequisite, admission to the Master of School Administration program. Focuses on the role of school administrators in facilitating the continuous improvement of the clinical supervision process and on a variety of observation and conferencing skills that school leaders may employ with teachers and other support staff. (On request.) Velitch.

EDUC 351 RESEARCH IN CURRICULUM AND INSTRUCTION (3). Prerequisites, EDUC 153, 184, 251, 252, 284, or permission of the instructor. Review and interpretation of existing research in the area of curriculum and instruction, including an exploration of areas of needed research. Spring. Staff.

EDUC 352 PROBLEMS IN CURRICULUM AND INSTRUCTION (3-6). Prerequisites: two courses in graduate education. May be repeated for credit. Provides an opportunity for advanced students to do independent study under supervision in an area. (Sections include early childhood, intermediate, secondary subjects, media, literacy, and general.) Fall and spring. Staff.

EDUC 353 PRACTICUM IN CURRICULUM AND INSTRUCTION (3-6). Experiences may include projects, field studies, or internships with one of a number of agencies concerned with education. (Sections include early childhood, intermediate, secondary subjects, media, literacy, and general.) Fall and spring. Staff.

EDUC 361 SEMINAR IN SPECIAL EDUCATION (3). Emphasis on development disability exhibited by exceptional children in cognitive, language, social, and affective development. Spring. Simonsen.

EDUC 363 SUPERVISED POST-MASTERS INTERNSHIP IN SPECIAL EDUCATION (3, 6, or 9). Prerequisite, permission of the instructor. A full-time field placement under the joint direction of a University staff member and a select professional at the internship site. Fall and spring. Staff.

EDUC 371 ADVANCED QUALITATIVE ANALYSIS AND INTERPRETATION (3). This advanced seminar focuses on the needs of doctoral students immersed in qualitative research, with an emphasis on data analysis. Spring. Marshall, Noblit.

EDUC 372 SEMINAR IN EDUCATIONAL STUDIES (3-6). May be repeated for credit. Topics in educational philosophy to be determined by the students with the instructor. As demand warrants. Stone.

EDUC 373 PROBLEMS IN THE PHILOSOPHICAL FOUNDATIONS OF EDUCATION (3 or more). Provides an opportunity for advanced doctoral students to do independent study under supervision. Prerequisite, EDUC 279 or equivalent. As demand warrants. Staff.

EDUC 374 PROBLEMS IN THE SOCIOLOGICAL FOUNDATIONS OF EDUCATION (3 or more). Prerequisite, EDUC 271 or equivalent. Provides an opportunity for advanced doctoral students to do independent study under supervision. Fall and spring. Noblit.

EDUC 375 PROBLEMS IN THE ANTHROPOLOGICAL FOUNDATIONS OF EDUCATION (3 or more). Prerequisite, permission of the instructor. Provides an opportunity for advanced doctoral students to do independent study under supervision. As demand warrants. Noblit.
EDUC 376 PROBLEMS IN THE HISTORY OF EDUCATION (3 or more). Prerequisite, EDUC 274 or equivalent. Provides an opportunity for advanced doctoral students to do independent study under supervision. As demand warrants, Unks.

EDUC 377 CRITICAL MULTICULTURAL EDUCATION (3). Examination of the current issues in multicultural education, cultural study, and the development of curriculum for critical multicultural education. Fall. Hanley.

EDUC 378 SEMINAR IN EDUCATIONAL STUDIES (3). Involves an in-depth exploration of theories and issues involving culture, curriculum, and change. Topics will vary. As demand warrants. Staff.

EDUC 381 SEMINAR IN HUMAN DEVELOPMENT AND INDIVIDUAL DIFFERENCES (3). Prerequisite, at least one course in human development at the graduate level, or permission of the instructor. Analyzes research data and theoretical positions pertaining to individual differences in human development in the educational setting. Spring of even-numbered years. Mezzo. (Formerly EDUC 301.)

EDUC 382 SEMINAR IN HUMAN LEARNING AND COGNITION (3). Prerequisite, one or two courses in educational and developmental psychology. Studies theoretical aspects and practical implications of psychologies of learning. Fall or spring of odd-numbered years. Staff.

EDUC 384 STATISTICAL ANALYSIS OF EDUCATIONAL DATA III (3). Prerequisites, EDUC 184, 284. An extension of the general linear model to analysis of educational data with multiple dependent variables, with computer applications. Fall and summer. Ware.

EDUC 391 INDEPENDENT PROJECTS (1). Provides enrollment for students taking the master's exam but not registered for any course.

EDUC 392 MASTER'S PROJECT (3). Focuses on the development of a master's project or a major paper other than a thesis.

EDUC 393 MASTER'S THESIS (3).

EDUC 394 DOCTORAL DISSERTATION (3).

DEPARTMENT OF ENGLISH

JAMES P. THOMPSON, Chair

Professors
William L. Andrews (101) African American, American
Christopher M. Armington (1) Renaissance, Poetry
Laurence G. Avery (2) Twentieth-Century American and British, Drama, Southern, Creative Writing
A. Reid Barbour (83) Renaissance, Renaissance Studies
James W. Coleman (89) American, African American, Twentieth-Century American, Southern
Alan C. Dessen (6) Renaissance, Drama
Pam Durban (114) Creative Writing
Connie C. Eldt (9) English Language, Medieval
Joseph M. Flora (13) American, Twentieth-Century American and British, Southern
Darrell J. Glass (62) Renaissance
Johnny Lee Greene (57) American, African American, Twentieth-Century American, Southern
Philip Gura (78) American, American Studies
William R. Harmon (17) Twentieth-Century American and British, Poetry, Comparative Literature, Southern
Trudier Harris (60) Twentieth-Century African American, African American, American, Southern, Novel, Poetry
Mae Henderson (102) African American, Twentieth-Century American, Critical Theory
Fred Hobson (84) American, Southern, Twentieth-Century American, American Studies
Joy Kasson (90) American, American Studies

Edward D. Kennedy (22) Medieval, Medieval Studies, Comparative Literature, Drama
Laurie Langbauer (97) Nineteenth-Century British, Critical Theory
George S. Lensing Jr. (26) Twentieth-Century American and British, Poetry
Erika C. D. Lindemann (63) Rhetoric, Composition and Literacy
Michael A. McCre (99) Creative Writing
John P. McGowan (92) Critical Theory, Nineteenth Century British, Comparative Literature, Cultural Studies, Novel, Women's Studies
Jeanie Moskal (77) Nineteenth-Century British, Critical Theory, Women's Studies
Patrick R. O'Neill (66) Medieval, English Language, Celtic, Medieval Studies
James Sos (87) Creative Writing
Alan R. Shapiro (96) Twentieth-Century American, Creative Writing
Beverly W. Taylor (70) Twentieth-Century British, Novel, Women's Studies
James P. Thompson (72) Eighteenth-Century British, Critical Theory, Novel
Joseph S. Viscomi (76) Nineteenth-Century British
Linda Wagner-Martin (80) American, Twentieth-Century American, Southern, Comparative Literature, Novel, Poetry, Women's Studies
Joseph S. Witting (51) Medieval, English Language

Associate Professors
Daniel R. Anderson (104) Rhetoric, Composition and Literacy
Pamela Cooper (88) Twentieth-Century British, Cultural Studies, Novel, Women's Studies
Jane M. Danielewicz (98) English Language, Rhetoric, Composition and Literacy
Marianne Gingher (111) Creative Writing
Randall Kenan (113) Creative Writing
Ritchie D. Kendall (64) Renaissance, Drama, Renaissance Studies
Theodore H. Leinhau (65) Medieval, Medieval Studies, Comparative Literature
Allan R. Life (55) Nineteenth-Century British
Megan Matchinske (94) Renaissance, Cultural Studies, Renaissance Studies, Women's Studies
Thomas Reinert (103) Eighteenth-Century British, Novel, Poetry
Brendan Simpson (100) Creative Writing
Todd W. Taylor (105) Rhetoric, Composition and Literacy

Assistant Professors
Nicholas Allen (117) Irish Literature, Twentieth-Century British
Erin Carlson (108) Twentieth-Century American and British, Comparative Literature, Cultural Studies, Women's Studies
Tyler Curtain (109) Critical Theory, Cultural Studies, Novel
Maria DeGuimaraes (110) Latin American Studies, Twentieth-Century American, Critical Theory
Gregory Flaxman (118) Film Studies, Twentieth-Century British
Mary Floyd-Wilson (116) Renaissance
Jane Thrailkill (112) American, Twentieth-Century American
Rashmi Varma (107) Twentieth-Century American and British, Critical Theory, Comparative Literature, Cultural Studies, Women's Studies, Post-Colonial Studies
Jessica Wolfe (106) Renaissance

Professors Emeriti
Doris W. Bets
Charles E. Edge
Howard M. Harper Jr.
J. Kimball King
C. Townsend Ludington Jr.
William A. McQueen
Jerry L. Mills
Margaret A. O'Connor
Daniel W. Patterson
Julius R. Peiper III
Mark L. Reed
Richard D. Rust
Louis D. Rubin Jr.
H. Maxwell Steele
The English department offers work leading to the doctor of philosophy degree. The MA degree, earned in the first two years of graduate study, aims at mastery of scholarly techniques and broad knowledge of British and American literature. Building on the MA, the PhD is a more specialized degree, with a major in one of the following areas of specialization:

- English literature from the beginning to 1485
- English literature from 1485 to 1660 (including Milton)
- English literature from 1660 to 1789
- English literature from 1789 to 1900
- American literature to 1900
- American literature from 1900 to the present
- British literature from 1900 to the present
- Critical theory and cultural studies
- Rhetoric, composition, and literacy
- African American literature
- Southern literature

PhD students also focus on a minor, chosen from one of these fields just listed, or from a genre (drama, novel, poetry) or the English language, or from the following alternative minors: American studies, Celtic, comparative literature, cultural studies, Latina/Latino literature, medieval studies, Renaissance studies, and women's studies. Alternatively, students may take an appropriate minor outside the department, with the approval of the director of graduate studies.

Admissions Requirements

Application for admission must be made on forms provided by The Graduate School or by The Graduate School's electronic application process. These also serve as applications for fellowships and assistantships if the applicant marks the appropriate statement on the form.

Applicants for advanced degrees must have completed an undergraduate degree, customarily with a major in English, at the time of enrollment. To be reviewed for admission by the department's Graduate Advisory Committee, applications must be supported by Graduate Record Examination scores, at least three letters of recommendation, and official transcripts showing courses, grades, and degrees awarded. A writing sample and a personal statement should also be submitted. Only applicants with an MA in English are eligible for admission directly into the PhD program. Students who complete an MA in the English department and wish to proceed into the PhD program are reviewed by the Graduate Advisory Committee for possible permission to do so. More information about the department can be obtained via its Web page: www.english.unc.edu.

Fellowships and Assistantships

Financial support for graduate students is described in the Admissions and Financial Information chapter. All applicants to the English department are eligible to compete for University fellowships and assistantships. In addition, the department awards two types of assistantships - research assistantships and teaching fellowships. Neither is usually available in the summer. Research assistants are assigned to faculty members to help with research projects. Teaching fellows have full instructional responsibility for sections of beginning composition courses. Graduate students in the third year of the PhD program who also have taught at least four sections of composition become eligible for teaching literature courses. Only persons beyond their first year of study in the MA program are eligible for teaching fellowships. Non-native speakers are not considered for teaching fellowships until they have been enrolled in the PhD program for at least a year. The stipend for a teaching fellow is $5,000 per section, the initial assignment usually being one section a semester. A full teaching load is typically three courses per academic year. Teaching fellows are trained and supervised by the directors of composition and Undergraduate Studies and are subject to student and faculty evaluation.

The MA Program

Candidates for the MA must complete nine courses, demonstrate a reading knowledge of a foreign language, pass a written comprehensive examination, and either write a thesis (ENGL 393) or fulfill a non-thesis option (ENGL 392). The courses elected by an MA student must include one course in the English language, chosen from among the following: ENGL 237 (Old English); 238 (History of the English Language); 136 (Modern English Language); 250 (Old English Literature: Beowulf, prerequisite 237); or, with permission of the director of graduate studies, a graduate course in linguistics, theory of language, or philosophy of language. MA candidates must also take Rhetorical Theory and Practice (ENGL 131); and six courses from at least four of the literary fields previously enumerated. A student must also complete three additional credit hours in any course offered within the department or in any of the fields described as alternative minors. If a minor outside the department (normally nine semester hours) is chosen, the program must be adjusted and the adjustment approved by the student's advisor and the director of Graduate Studies. Students must also satisfy residence credit requirements set by The Graduate School. Most students take one and a half years to complete the MA degree. With permission of the director of graduate studies, a regularly admitted graduate student whose native language is not English may follow a special program of studies leading to a terminal master's degree with a concentration in American literature.

The PhD Program

Graduate School requirements for the doctor of philosophy degree are set forth under the heading "Graduate Degrees and Degree Requirements." A PhD student must fulfill the following course requirements: ENGL 131; two seminars in the major; and one seminar in the minor. In addition to course work, a candidate for the PhD must pass two examinations administered by the department for which they prepare by working closely with a faculty committee a year in advance: a written examination in the major and minor, and an oral examination in the major and minor and on the dissertation subject area. Doctoral candidates must also demonstrate a reading knowledge of two foreign languages (one of which fulfilled a requirement for the MA). The program culminates with the candidate writing a dissertation (and registering for at least 3 semester hours of ENGL 394) and successfully defending it in an oral examination. Students must also satisfy residence credit requirements set by The Graduate School. The department strongly recommends that candidates for the PhD have supervised classroom teaching experience before receiving the degree. Such experience, when it can be offered, is considered as fulfilling a requirement for the degree. Students generally take four years beyond the MA to complete the degree.

Foreign Language Proficiency

The English department considers a reading knowledge of foreign languages essential to the educational and professional aims of its degree programs. MA candidates must show proficiency in one foreign language and PhD candidates in two. The department recommends Latin, French,
German, Italian, or Spanish. The use of other languages to fulfill the requirement must be approved by the director of Graduate Studies. An undergraduate major in an approved language automatically satisfies the requirement. Ordinarily, however, students fulfill the requirements by passing an examination administered through the University; by completing reading courses for graduate students offered by the Classics, German, and Romance Languages departments; or, while enrolled as a graduate student, by completing with a grade of at least B an undergraduate literature course in a foreign language. The foreign language requirement for the MA must be satisfied before the student can be admitted to candidacy for the PhD.

Library and Research Facilities
The library system at the University of North Carolina at Chapel Hill is ranked among the top twenty research libraries in the United States. It has excellent holdings for the study of English philology and British and American literature, including the Southern Historical Collection (containing manuscripts, letters, and diaries) and the Hanes Collection of incunabula, early printed books, and manuscripts. Through cooperative arrangements, university libraries in the Triangle area are open to graduate students from the University of North Carolina at Chapel Hill.

Publications
Early American Literature, Studies in Philology. The Southern Literary Journal, and Albion/Biography Studies are edited by English department faculty members and have their editorial offices in the English department building.

Courses for Graduates and Advanced Undergraduates
101X ENGLISH SPEAKERS OF OTHER LANGUAGES (3). English for non-native speakers. Emphasis on spoken or written English according to needs of students enrolled. Auditors not permitted. Fall and spring.

130 ADVANCED EXPOSITORY WRITING (3). Open to graduate students in all disciplines. This course strengthens the writing of graduate students and guides them in the body of knowledge available to help them confront the writing problems most frequently faced in the worlds of thought, work, and teaching.

131 RHETORICAL THEORY AND PRACTICE (3). A study of rhetorical theories and practices from classical to modern times. Emphasis is on translation of theories into practice in contemporary college rhetoric.

132 HISTORY OF RHETORIC AND COMPOSITION. A history of rhetoric, beginning with classical rhetoric, but emphasizing contemporary rhetorical theory. Focuses on how language functions in society. Includes a history of composition in American higher education.

134 ADVANCED CREATIVE WRITING (3). Permission of the instructor. Advanced workshop in fiction. Written exercises in the use of scene, point of view, narration, and dialogue. Student projects in short story or beginning novel. Offered infrequently.

134S CREATIVE WRITING FOR TEACHERS (3). For students who undertake creative writing or a study of literary forms. Recommended for teachers of creative writing. Offered infrequently.

136 MODERN ENGLISH GRAMMAR (3). A study of current English structure and usage, using a traditional approach modified by appropriate contributions from structural and generative grammar, with some attention to the application of linguistics to literary analysis.

140 INTRODUCTION TO LITERARY THEORY (3). A study of various contemporary theoretical issues and critical approaches relevant to the study of literature.

142 LITERATURE AND FILM (3). An examination of several books made into films, with stress on the relationship of literature to the filmed image.

144 STUDIES IN ENGLISH LITERATURE AND THE CLASSICS (3). A study of the influences of classical literature upon English authors, for example, Horace and Pope.

146 INTRODUCTION TO FOLKLORE (FOLK 146) (ANTH 146) (3). A survey of the primary genres (song, narrative, proverb, riddle, custom, belief, drama, game) with attention to their forms, transmission, and functions in traditional and urban societies.

147 BRITISH AND AMERICAN FOLKSONG (FOLK 147) (3).

151 ENGLISH LITERATURE OF THE MIDDLE AGES (3). A survey of Old and Middle English literature exclusive of Chaucer. Old English texts and Middle English texts with difficult language are read in translation. For non-specialists.

153 MEDIEVAL ROMANCE (FOLK 153) (CMPL 153) (3). British and continental Arthurian literature in translation from the early Middle Ages to Sir Thomas Malory.

154 SIXTEENTH-CENTURY LITERATURE, EXCLUDING DRAMA (3). A survey of major nondramatic genres and about twenty authors from the period 1485 to 1605.

160 SEVENTEENTH-CENTURY LITERATURE, EXCLUDING DRAMA (3). A survey of representative English poetry and prose from Donne to Marvell.

166 ENGLISH LITERATURE, 1660-1780 (3). A survey of English literature from Dryden to Burke. Though the emphasis falls on Swift, Pope, and Johnson, a considerable amount of reading in minor authors provides essential background for the period.

172 ROMANTIC LITERATURE (3). A survey of the major English Romantic writers, including Blake, Wordsworth, Coleridge, Shelley, Byron, and Keats, with an introduction to the chief scholarly and critical problems of this period.

174 VICTORIAN LITERATURE (3). A survey of the major Victorian writers, such as Tennyson, Browning, Arnold, Carlyle, Mill, Ruskin, Dickens, and Eliot.

179 LITERATURE OF THE AMERICAS (CMPL 179) (3). An introduction to United States-Latin American political, social, and cultural interaction, drawing on a multidisciplinary analysis of texts from both the United States and Latin America, selected from a variety of genres. Readings and class sections in both English and Spanish.

181 AMERICAN LITERATURE TO 1900 (3). A survey of American authors and literary trends from the seventeenth through the nineteenth centuries, with emphasis on the works of Franklin, Irving, Cooper, Poe, Emerson, Thoreau, Hawthorne, Melville, Whitman, Dickinson, Mark Twain, James, and Crane.

184 AFRO-AMERICAN FICTION AND POETRY (3). An intensive study of either fiction or poetry aimed at some comprehension of Black literature as a whole.

185 WOMEN IN FOLKLORE AND LITERATURE (FOLK 185) (WMST 185) (3). The images of women depicted in the folk imagination from ancient times to the present: sorcerers, conjurers, witches, sexual objects, tricksters, healers, heroines, avengers, and carriers of family tradition.

186 FOLK NARRATIVE (FOLK 186) (3). An intensive study of myths, legends, and folktales (Märchen, tall tale, animal tale, fable) with attention to their aesthetic and cultural applications.

187 FOLKLORE IN THE SOUTH (FOLK 187) (3). Exploration of folklore in the South with emphasis on genres such as tales, Black and White spirituals, chant-traditional music, work songs, blues, and dance music. Attention to social and historical backgrounds.
188 SOUTHERN AMERICAN LITERATURE (3). The literature of the South, with special attention to the Southern literature renaissance of 1930 to 1950.

189 AFRO-AMERICAN FOLKLORE (FOLK 189) (3). A study of folklore within the Black community, concentrating on African and slave backgrounds and covering rural and urban folktales, spirituals, work songs, blues, toasts, and folk beliefs.


194 LITERATURE OF THE APPALACHIAN REGION (FOLK 194) (3). Intensive analysis of a broad array of literary works from and about the Appalachian region (e.g., fiction, poetry, drama, autobiography, ballad and song, sermon), with special attention to social and cultural context.


196 IMAGES OF WAR IN TWENTIETH-CENTURY LITERATURE (PWAD 196) (3). A study of literary works in English concerning World War I, the Spanish Civil War, World War II, and the Vietnam War.

196A IMAGES OF WAR IN TWENTIETH-CENTURY LITERATURE: THE FIRST WORLD WAR (PWAD 196A) (3). A study of the responses to World War I as reflected in poems, novels, memoirs, etc., by British, American, Canadian, and Australian writers and by European writers in translation.


196C LITERATURE OF WORLD WAR II (PWAD 196C) (3). The course focuses on novels, poetry, drama, and memoir by writers from the major combatant nations in the war, beginning with its preliminary, the Spanish Civil War.

Courses for Graduates

201 INTRODUCTION TO MEDIEVAL STUDIES (3). An interdisciplinary course to introduce graduate students to the sources, methods, and approaches of Medieval Studies.

231 TECHNOLOGY IN THE HUMANITIES (3). Open to graduate students in all disciplines. A study of the influence of technology on the humanities, typically with an emphasis on teaching with computer and network technologies.

237A OLD ENGLISH GRAMMAR AND READINGS (3). Introduction to the early history of the English language through a study of the phonology, inflections, and syntax of Old English prose and poetry. Not intended for those who wish to major or minor in Old and Middle English.

237B OLD ENGLISH GRAMMAR AND READINGS (3). Introduction to Old English language and literature in its historical and cultural contexts, with emphasis on the phonology, inflections, and syntax of Old English. Required of those who wish to major or minor in Old and Middle English.

238 HISTORY OF THE ENGLISH LANGUAGE (3). Prerequisite, ENGL 237. A study of the linguistic development of the sounds and vocabulary of English from 1000 to the present, with emphasis on the English language in America.

240 HISTORICAL STUDIES IN CRITICISM AND LITERARY THEORY (3). An examination of the major movements in criticism and theory, organized by historical period or topic.

241 TOPICS IN CULTURAL STUDIES (3). An interdisciplinary examination of core historical and contemporary issues in cultural studies through discussion of both textual and non textual materials.


244 STUDIES IN THE ENGLISH NOVEL OF THE NINETEENTH CENTURY (3). Examination of the major nineteenth-century novelists, such as Austen, Scott, Dickens, Thackeray, Eliot, the Brontës, Trollope, Hardy, Meredith, with particular attention to problems of technique.

250 OLD ENGLISH LITERATURE: BEOWULF (3). Prerequisite, ENGL 237. Translation, interpretation, and background of selected Old English poetry, including Beowulf.

251A EARLY MIDDLE ENGLISH LITERATURE (3). Prerequisite, Old English. Close reading of Middle English texts before 1300. For students intending to specialize in the medieval field.

251B MIDDLE ENGLISH LITERATURE TO 1400 (3). Prerequisite, a working knowledge of Middle English. Historical and critical study of Middle English literature with particular attention to the fourteenth century.

251C LATER MIDDLE ENGLISH LITERATURE (3). A historical and critical study that includes consideration of medieval drama and the Scottish "Chaucerians."

252 CHAUCER (3). Critical and historical study of Chaucer's poetry.

254 STUDIES IN LITERATURE OF THE ENGLISH RENAISSANCE, EXCLUDING DRAMA (3). Selected themes and authors from the period 1485 to 1605.

255 STUDIES IN THE ENGLISH DRAMA TO 1600 (3). Major figures and forms of medieval, Tudor, and Elizabethan drama exclusive of Shakespeare.

258 STUDIES IN SHAKESPEARE: THE EARLY PLAYS (3). The romantic comedies, the history plays, and the early tragedies.

259 STUDIES IN SHAKESPEARE: THE LATE PLAYS (3). The major tragedies, the problem plays, and the romances.

260 STUDIES IN ENGLISH LITERATURE, 1600-1660 (3). Studies in English poetry from 1600 to 1660.

261 STUDIES IN ENGLISH DRAMA, 1600-1642 (3). Jacobean and Caroline drama exclusive of Shakespeare, with emphasis on Jonson, Webster, and Middleton.

264 STUDIES IN MILTON (3). A study of all of Milton's major poetry, of selected minor poems, and of selections from the prose.

265 RESTORATION AND EIGHTEENTH-CENTURY DRAMA (3).

266 STUDIES IN ENGLISH LITERATURE, 1660-1740 (3). A study of the works of Dryden, Swift, and Pope.

267 STUDIES IN ENGLISH LITERATURE, 1740-1800 (3). A study of the major authors (exclusive of novelists and dramatists) of the late eighteenth century. Authors considered are Gray, Collins, Boswell, Johnson, Goldsmith, Burke, Reynolds, and Gibbon.

272 STUDIES IN ENGLISH LITERATURE, 1780-1832 (3). Sections: (1) Blake, Wordsworth, Coleridge; (2) Byron, Shelley, Keats. Examination of the major romantic poets, supplemented by readings in other Romantic authors.

273 STUDIES IN VICTORIAN LITERATURE: PROSE (3). Examination of major Victorian critics with regard to the issues they confront and the literary structure of their works.

274 STUDIES IN VICTORIAN LITERATURE: POETRY (3). Examination of the poetry of Tennyson, Browning, and Arnold.

280 STUDIES IN AMERICAN LITERATURE (3). An introduction to the emerging genres of American literature during the colonial and early national period, with an emphasis on prose narrative.

281 STUDIES IN AMERICAN LITERATURE, 1830-1855 (3). Interpretation of selections from Emerson, Thoreau, Poe, Hawthorne, and Melville, with attention to these writers as American Romantics.
282 STUDIES IN AMERICAN LITERATURE, 1855-1900 (3). A survey of American writing from 1855 to 1900, with emphasis on Whitman, Dickinson, Mark Twain, Henry James, and the local colorists.

283 STUDIES IN THE AMERICAN NOVEL (3). Historical survey of the American novel from its beginnings to the first World War, with some attention to the cultural and social conditions out of which it comes. Representative novels are read to examine the history of genres, techniques, critical schools, and modes.

284 STUDIES IN AFRO-AMERICAN LITERATURE 1750-1950 (3). A study of major trends, movements, periods, and authors in the literature of Afro-America between 1750 and 1950.


288 THE DEVELOPMENT OF LITERATURE IN THE SOUTH (3). A study of important themes, motifs, social and historical relationships, and formal problems in the literature and life of the South from colonial times onward.

290 STUDIES IN TWENTIETH-CENTURY ENGLISH AND AMERICAN LITERATURE (3). Studies in special modern literary topics: e.g., the Irish literary renaissance, politics and the modern American novel, realism and fantasy in recent American fiction, cultural influences in modern American literature.

291 STUDIES IN RECENT LITERARY AND CULTURAL THEORY (3). Usually taught as a survey of one or more major movements in contemporary literary and cultural theory.

292 STUDIES IN ENGLISH AND AMERICAN POETRY OF THE TWENTIETH CENTURY (3). Usually taught as a survey of major poets: Yeats, Frost, Stevens, Williams, Pound, Eliot, Auden, with some more recent poets.

293 STUDIES IN ENGLISH AND AMERICAN FICTION OF THE TWENTIETH CENTURY (3). Usually taught as a survey of major writers: Joyce, Lawrence, Woolf, Hemingway, Faulkner, with some other writers.

293C POSTCOLONIAL LITERATURE (3). Course focuses on literatures in English outside the Anglo-American literary traditions. Designed as a comparative study of the traditions and innovations of twentieth-century English literatures in postcolonial locations such as Africa, the Caribbean, South Asia, etc. Fall and spring.

294 STUDIES IN ANGLO-IRISH LITERATURE (3). Typical topics: Some aspects of the literary renaissance, e.g., Yeats and Joyce in their literary milieu; or nineteenth-century Anglo-Irish novel, modern Irish fiction, contemporary Anglo-Irish poetry. Fall and spring.

295 STUDIES IN ENGLISH AND AMERICAN DRAMA OF THE TWENTIETH CENTURY (3). Usually taught as a survey of major playwrights of the modern era, from the continental influences (Ibsen and Strindberg) to such contemporary figures as Pinter and Snappard.

298 INTRODUCTION TO GRADUATE STUDY (3). Introduction to the materials and methods of research in literary study, including textual criticism, and to research in specific fields.

299 RESEARCH IN RHETORIC, COMPOSITION, AND LITERACY. This interdisciplinary field develops new knowledge through various research methods. The course introduces students to qualitative and quantitative studies, training them to read and conduct such research.

300 SEMINAR IN SELECTED TOPICS (1-4).

341 SEMINAR IN CULTURAL STUDIES (3). Topics vary: e.g., ethnicity and regionalism; public cultural representation; cultural Diaspora; cultural resistance, survival and revitalization; cultural nationalism; cultural policy and cultural institutions.

343 SEMINAR IN THE ENGLISH NOVEL (3). Topics concerning major novelists and critical issues in the field of the novel.

350 SEMINAR IN OLD ENGLISH LANGUAGE AND LITERATURE (3).

351 SEMINAR IN MIDDLE ENGLISH LITERATURE (3). Seminars on particular authors and genres.

354 SEMINAR IN TUDOR LITERATURE (3). Selected topics in the non-dramatic literature of the English renaissance.

358 SEMINAR IN SHAKESPEARE (3). Selected topics.

360 SEMINAR IN SEVENTEENTH-CENTURY LITERATURE (3). Selected topics in the literature of the period 1600 to 1660.

366 SEMINAR IN EIGHTEENTH-CENTURY LITERATURE (3).

372 SEMINAR IN NINETEENTH-CENTURY ROMANTICISM IN ENGLAND (3). Topics concerning major authors and issues of the Romantic period.

373 SEMINAR IN VICTORIAN LITERATURE (3). Topics concerning major authors and issues of the Victorian period.

381 SEMINAR IN AMERICAN LITERATURE TO 1855 (3). Topics vary: e.g., New England response to American literary nationalism; Emerson; Hawthorne; Irving, Hawthorne, and Poe and the development of the American short story.

382 SEMINAR IN AMERICAN LITERATURE, 1855-1900 (3). Topics vary: e.g., Native American humor, Whitman, and Mark Twain.

383 SEMINAR IN THE AMERICAN NOVEL (3). Topics vary: e.g., time, space, and history in the American novel; the literary artist as American.

384 SEMINAR IN AFRO-AMERICAN LITERATURE (3).

388 SEMINAR IN SOUTHERN AMERICAN LITERATURE (3). Topics vary: e.g., Mark Twain, Southern literary identity, Southern literature of memory.

390 SEMINAR IN TWENTIETH-CENTURY LITERATURE, ENGLISH AND AMERICAN (3).

390C SEMINAR IN POSTCOLONIAL LITERATURE (3).

391 SEMINAR IN LITERARY AND CULTURAL THEORY (3). Topics vary: e.g., feminist theory, cultural materialism, new historicism, interdisciplinary examinations of the aesthetic.

392 NON-THESIS OPTION (3).

393 MASTER'S THESIS (3).

394 DOCTORAL DISSERTATION (3).

395 SEMINAR IN MODERN DRAMA (DRAM 395) (3).

397 DIRECTED READINGS (3). Topics vary according to the needs and interests of the individual student and the professor directing the reading and writing project.

398 THE USE OF MIDDLE ENGLISH MANUSCRIPT MATERIALS (3). Prerequisite: a working knowledge of Middle English. Training in reading English vernacular hands of the Middle Ages, with an introduction to the theory and practice of textual criticism.

Celtic Courses

105A OLD IRISH (3). Old Irish language and literature (600-900), with the main emphasis on grammar; readings from selected Old Irish glosses (Scrachan) and from Aislinge Óengus (Shaw).

105B OLD AND MIDDLE WELSH (3). An introduction to Medieval Welsh language and literature, with selected readings from the Mabinogian and the early nature poetry. From time to time as alternative to CELT 105A.
106A READINGS IN OLD IRISH (3). Prerequisite, CELT 105A. Readings in genres of Old Irish literature: Stories from the Táin (Strachan), Cínél Gabhach (Bintny), Cambrai Homily, early Irish lyrics (Murphy), Seána Mucce Meic Dathó (Thurneysen).

106B READINGS IN OLD AND MIDDLE WELSH (3). Prerequisite, CELT 105B. Selected readings from medieval Welsh poetry (Cynfeidd, Gogynfeidd, and cywydd poets), song (Branwen), and laws (The Laws of Hywel Dda). From time to time as alternative to CELT 106A.

107 INTRODUCTION TO MODERN IRISH (3). A basic course in modern Irish grammar and pronunciation: background readings in Irish history and culture.

108 READINGS IN MODERN IRISH (3). Prerequisite, CELT 107. Selected readings from various genres: the autobiography (Mo Scéal Féin, Peig, Fiche Illán agus Pá) and poetry (the ailing and caoineadh).

109 INTRODUCTION TO CELTIC CULTURE (3).

Graduate Courses for American Studies

200 INTERPRETATION OF AMERICAN CULTURE (3). Examination of problems and methods of interdisciplinary study through analysis of classic interpretations of American culture including works of intellectual history, social history, literary history, popular culture studies, regional studies. Fall and spring. Staff.

260 TOPICS IN AMERICAN STUDIES (3). Advanced study of selected interdisciplinary topics in American Studies. Subject varies with instructor. Emphasis on the practice of American culture study, with some attention to theoretical issues. Fall and spring. Staff.

299 AMERICAN STUDIES THEORY AND METHODOLOGY (3). Seminar in theoretical and methodological issues. In addition to examples of scholarly practice, students will pursue their own research interests and develop reading lists for their American Studies minor examinations. Fall and spring. Staff.

DEPARTMENT OF EXERCISE AND SPORT SCIENCE
FREDERICK O. MUELLER, Chair

Professors
M. Deborah Bialoski (32) Recreation and Leisure Studies
Kevin M. Cuskiewicz (24) Sports Medicine, Anatomy
Anthony C. Hackney (21) Exercise Physiology, Metabolism and Endocrinology
Karla A. Henderson (23) Recreation and Leisure Studies
Ronald W. Hyatt (05) Intramurals, Health Education, Sport Administration, Social Issues
Robert G. McMurray (13) Exercise Physiology
Frederick O. Mueller (07) Sport Administration, Sports Medicine
William E. Prentice (15) Athletic Training, Sports Medicine
John M. Silva (17) Sport Psychology

Associate Professors
Bonita L. Marks (26) Exercise Physiology
Barbara Osborne (29) Legal Issues, Sport Administration

Assistant Professors
Michael P. Groff (34) Recreation and Leisure Studies
Richard G. Mynark (23) Motor Control, Motor Learning, Statistics
Darin A. Padua (22) Anatomy, Biomechanics, Sports Medicine
Nathan T. Tomasinii (31) Economics and Finance in Sport, Sport Marketing

Adjunct Professors
John Anderson, Nutrition in Exercise
Robert Cantu, Neurosurgery
Michael T. Gross, Biomechanics
Timothy Taf, Sports Medicine

Adjunct Assistant Professors
Elizabet Hedgeth (30) Sports Psychology
Daniel Hooker, Sports Medicine
Donald Kirkendall, Statistics
Sandra Schultz, Sports Medicine
Ted Worrell, Sports Medicine

Professors Emeriti
John F. Billing
Patrick F. Earey
Frank Pleasants Jr.
H. Douglas Sessions

Mission
The primary objective of the master's program in the Department of Exercise and Sport Science is to prepare individuals for work as biologists, educators, and practitioners. The program offers graduate training leading to a master's degree in one of four specialization areas: athletic training (MA), exercise physiology (MA), recreation administration (MSRA), or sport administration (MA). The departmental graduate faculty provides leadership in research and scholarship in these specializations. Supervised assistantships and internships outside the department help to develop students' practical skills in their respective fields of study. The program is designed to offer students a global understanding of exercise, sport, and recreation, as well as a more focused understanding of problems facing the areas of athletic training, exercise physiology, recreation administration, and sport administration.

The Department of Exercise and Sport Science is committed to attracting top-level graduate students who are interested in pursuing advanced study in the exercise and sport sciences. One of the department's primary goals is to offer students quality practical experiences. Toward this end, the department has taken advantage of an association with other campus units such as athletics, emergency medicine, cardiology, orthopaedics, HEELS for Health, Orange Cardiovascular Foundation, Student Health Service, Carolina Adventures, Campus Recreation, as well as community based programs such as the North Carolina High School Association, and local public parks and recreation departments. Additionally, the required research experience is an integral part of every student's program of study, and students are expected to become actively involved in conducting research while studying at Carolina.

Additional information regarding the Department of Exercise and Sport Science can be found at www.unc.edu/depts/exercise.

Specialization Descriptions

Athletic Training
The primary mission of the graduate athletic training specialization is to recruit graduate students who are NATA Board of Certification certified athletic trainers or at minimum, who have completed requirements for certification, and provide them with an opportunity to gain advanced knowledge and experience in their chosen area of expertise through a combination of didactic lecture in the classroom, supervised practical application of this knowledge in a clinical setting, and a strong research experience oriented toward some aspect of clinical practice. Students gain research and practical experience in the prevention, evaluation, management, and rehabilitation of athletic-related injuries. The primary objective is to develop outstanding athletic training clinicians, teachers, and researchers. The athletic training specialization is one of only fourteen NATA-accredited programs.
All students admitted to the specialization serve as graduate assistant athletic trainers through the UNC-Chapel Hill Department of Athletics. Thirty hours of graduate coursework are required, including a minimum of twenty-one hours specific to athletic training/sports medicine: EXSS 230, 232, 233, 235, 236, 239, and HMSC 293.*

Go to www.unc.edu/depts/exercise/sport_administration.htm for additional information.

**Exercise Physiology**

The graduate specialization in exercise physiology is designed to prepare individuals to pursue research careers in exercise physiology related fields, or to prepare students for immediate careers in the wellness industry, including hospital and corporate fitness centers, as well as clinical settings. The students in fitness/wellness are provided the background, knowledge, testing skills, and practical experience so they can prescribe safe fitness/wellness programs in a variety of settings. The student also learns the knowledge to act as a liaison between the medical community and the layperson regarding the health implications of exercise. Students preparing for the PhD are provided an advanced understanding of how the physiological constructs are applied to exercise and the environment, as well as an understanding of the research process. At the same time, the student develops an understanding of laboratory techniques and acquires laboratory skills. Many graduate students have presented their thesis at the American College of Sports Medicine National and Regional Meetings, as well as other professional meetings. Thirty hours of graduate coursework are required, including a minimum of twenty-one hours specific to exercise physiology: EXSS 110, 110L, 280, 281, 282, 283, 285, 289.*

Go to www.unc.edu/depts/exercise/exercise_physiology.htm for additional information.

**Recreation Administration**

The recreation administration specialization offers a master of science in recreation administration (MSRA). This professional degree provides an interdisciplinary approach to the study of recreation and leisure that emphasizes inclusion and social justice. Students are educated to function effectively as professionals and advocate for the value of leisure in their own lives and the lives of the people they serve. Each student has an opportunity through other coursework and concurrent learning experiences to gain an expertise in a specific area of study such as outdoor leadership, community recreation management, disability studies, youth services, or aging. Students can complete the eligibility requirements for Certified Therapeutic Recreation Specialist (CTRS) with combined study at UNC-Chapel Hill, other local universities, or through distance education. This two-year professional MSRA degree specialization is a thirty-three to thirty-six credit program (with a minimum of twenty-four hours taken in residence) that may combine both academic and practical experience. Required courses specific to recreation administration include: RECR 210, 250, 251, 310 (1-3 credits), 365, 375,*

Go to www.unc.edu/depts/exercise/recreate.htm for additional information.

**Sport Administration**

The sport administration specialization prepares students for leadership positions in collegiate-level athletic administration. The intensive two-year program combines formal course work, practicum experiences, and a full-time internship in an UNC-Chapel Hill athletic department. Thirty hours of graduate coursework are required, including a minimum of eighteen hours specific to sport administration: EXSS 240, 244, 246, 248, 249, and 255.*

Go to www.unc.edu/depts/exercise/sport_administration.htm for additional information.

**Law JD/MA Sport Administration Dual Degree Program**

The dual degree program provides an opportunity for students who are interested in both law and sport administration to earn both degrees over four years of study. Students benefit from a respected law curriculum, combined with a sport administration curriculum with a unique focus on intercollegiate athletics. There is a growing market in college athletics for professionals with both degrees. Graduates of the dual degree program are likely to work in NCAA compliance and enforcement at a university, conference office, or national governing body such as the NCAA. Legal positions in athletics department fundraising and development, and at law firms that represent colleges and conferences are also likely. Students must apply and be accepted by both the law school and the Department of Exercise Science, and the student will be responsible for paying tuition and fees separately.

*Departmental Requirements*

In addition to specialization course requirements (see above), statistics and research methods (EXSS 220, 225, 250, 251, and EXSS/RECR 393) are required of all graduate students in the Department of Exercise and Sport Science. Other formal requirements for the master's degree include passing the written comprehensive examination covering content specific to the student's specialization, a formal written thesis, and an oral defense of the thesis.

**Admission**

The master's degree programs in exercise and sport science are open to individuals from differing backgrounds. However, the majority of past entrants into the program have earned undergraduate degrees in exercise science, kinesiology, physical education, or recreation/leisure studies. The department offers only fall admission. The department does not admit nondegree seeking students. Candidates should check with the department for admission information pertaining to their specific area of specialization or go to www.unc.edu/depts/exercise.

**PhD Study**

An interdisciplinary doctoral program in human movement science is offered with the cooperative effort of the following departments at UNC-Chapel Hill: allied health sciences - division of physical therapy; exercise and sport science: biomedical engineering; physical medicine and rehabilitation; orthopaedics; and the Program on Aging.

This curriculum is designed to provide students an opportunity for doctoral study in areas that will increase knowledge of human movement performance. The program focuses on contributing to the scientific basis of human movement, developing theory and methods for maintaining health, preventing disability, and improving movement ability. Areas of concentration include: 1) biomechanics of human movement; 2) physiology of human movement; and 3) neuromuscular control of human movement.

Go to www.alliedhealth.unc.edu/hmst for additional information.

**Assistantships**

The Department of Exercise and Sport Science awards a number of graduate assistantships annually to help fund students' education and to provide them with practical experiences related to their area of study. Assistantships may involve any of the following activities or combination of activities: exercise and fitness instructor, certified athletic trainer, cardiovascular rehabilitation consultant, athletic department assistant, recreation programmer,
recreation research assistant, or teaching assistant in exercise and sport science. Students wishing to apply for one of these assistantships should complete and return the appropriate application form. Contact the student service assistant in the Department of Exercise and Sport Science for additional information at (919) 962-0018.

Courses for Graduate Students

**EXSS 110 EXERCISE TESTING AND PRESCRIPTION IN A HEALTHY POPULATION (3).** Prerequisites, EXSS 76 and EXSS 89. Methods and protocols for screening, evaluating, and prescribing exercise programs in apparently healthy and higher risk adult populations. Emphasis is placed on exercise testing procedures and the interpretation of the data results to promote a healthy, physically active lifestyle. Spring. Marks, McMurray.

**EXSS 110L LABORATORY FOR EXERCISE TESTING (0).** Available to upper level undergraduate and graduate students who have completed EXSS 76 and EXSS 89 or equivalent. EXSS 110L is a laboratory course that accompanies EXSS 110. Spring. Marks, McMurray.

**EXSS 220 APPLIED STATISTICS AND RESEARCH METHODS IN EXERCISE AND SPORT SCIENCE (3).** Prerequisite, general undergraduate statistics course. Selected research techniques and design, with emphasis on planning, conducting, and reporting of research; and applied statistical analysis and interpretation of data from the field of exercise and sport science. Fall and spring. Shields.

**EXSS 225 APPLIED STATISTICS AND RESEARCH METHODS LABORATORY (3).** Prerequisite, general undergraduate statistics course. Problem-solving and practical experience in planning, conducting, and reporting of research; and applied statistical analysis and interpretation and presentation of data from the field of exercise and sport science. Fall and spring. Gukiewicz, McMurray, Shields.

**EXSS 230 MANAGEMENT OF ATHLETIC INJURIES (3).** Prerequisite for nonmajors, permission of the instructor. Designed to provide basic knowledge and skill that aid in the prevention and treatment of injuries common to athletics. Fall. Prentice.

**EXSS 232 HUMAN ANATOMY FOR ATHLETIC TRAINERS (4).** Prerequisite, graduate standing in exercise and sport science or permission of the instructor. The study of gross human anatomy with emphasis on the functional and clinical aspects of the neck, back, and extremities as related to athletic injuries. Fall. Gukiewicz.

**EXSS 233 PSYCHOLOGICAL CONSIDERATIONS FOR INJURY AND REHABILITATION (3).** Prerequisite, athletic training graduate students. This seminar is designed to assist the athletic training graduate student in exercise and sport science to understand the psychological impact that injury and rehabilitation has on the injured athlete. The stress resulting from injury will be addressed along with a working knowledge of coping skills to deal with the rigors of rehabilitation. The athletic training graduate student will learn to improve communication skills in order to improve the relationship between the athletic trainer, the injured athlete, and the injured athlete's coach. Fall. Hedgpeth.

**EXSS 235 SPORTS MEDICINE ANALYSIS: SPECIAL PROBLEMS RELATED TO SPORTS MEDICINE (3).** Prerequisite, permission of the instructor for nonmajors. Problem and research oriented. Spring. Prentice.

**EXSS 236 CLINICAL METHODS IN ATHLETIC TRAINING (3).** Prerequisite, EXSS 230. Analysis of theories and techniques used in clinical sports medicine settings. Spring. Prentice.

**EXSS 239 PRACTICUM IN ATHLETIC TRAINING (3).** Prerequisite, graduate standing in exercise and sport science or permission of the instructor. The implementation of theories and practices in a professional setting under the direction of a competent practitioner. Spring. Prentice.

**EXSS 240 ADMINISTRATION OF SPORT (3).** Prerequisite, instructor's permission for nonmajors. Policies and problems of organization and administration of athletic programs in colleges. Fall. Mueller.

**EXSS 264 LEGAL ISSUES IN COLLEGIATE SPORT (3).** Provides an introduction to the United States legal system, legal principles, and legal issues related to intercollegiate athletics. Fall. Osborne.

**EXSS 266 ORGANIZATIONAL AND FINANCIAL MANAGEMENT OF SPORT (3).** Prerequisite, graduate standing in exercise and sport science or permission of the instructor. The study of administrative structures and financial concerns of collegiate athletic programs. An intensive study of NCAA regulations is included. Fall. Osborne.

**EXSS 268 COLLEGIATE SPORT MARKETING (3).** Prerequisite, graduate standing. This course is designed to develop a thorough understanding of sport marketing principles and their application to collegiate athletics. Spring. Tomassini.

**EXSS 269 PRACTICUM IN SPORT Administration (3).** Prerequisite, EXSS 260. The implementation of theories and practices in a professional setting under the direction of a competent practitioner. Spring. Osborne.

**EXSS 270 GROUP DYNAMICS IN SPORT (3).** Prerequisite, graduate standing in exercise and sport science or permission of the instructor. The study of the influence of teams/groups upon the individual performer within exercise and sport as well as the influence of individuals upon teams/groups. Spring. Graduate faculty.

**EXSS 275 SOCIAL ISSUES IN EXERCISE AND SPORT (3).** A comprehensive study of race and gender discrimination, adherence, value development, violence, and other socialization factors in youth, collegiate, and Olympic sport. Fall. Hyatt.

**EXSS 277 MOTOR LEARNING (3).** Prerequisite, EXSS 80 or permission of the instructor. A study of the physical and psychological factors that influence skill acquisition and performance in sport and exercise including applications to teaching and coaching. Spring. Mynark.

**EXSS 276 PHYSICAL EDUCATION FOR THE DISABLED (3).** Prerequisites, anatomy and physiology, or equivalents. This course is concerned with physical education for the handicapped, with emphasis on the problems of specific disabilities. Students gain actual experience in working with the handicapped. Spring. Graduate faculty.

**EXSS 280 PHYSIOLOGY OF EXERCISE (4).** Prerequisite, graduate standing in physical education or permission of the instructor. The study of the physiological, biochemical, and environmental factors that influence human performance. Emphasis is placed on metabolic, cardiovascular, respiratory, muscular, and endocrine systems. Three hours of lecture and two hours of laboratory per week. Fall. Hackney, McMurray.

**EXSS 281 CLINICAL EXERCISE TESTING AND PRESCRIPTION (3).** Prerequisite, EXSS 110 and 110L or equivalent. This course concentrates on the knowledge and skills necessary for providing exercise testing and prescription in the clinical setting, emphasizing cardiovascular rehabilitation. Fall or spring. Marks, McMurray.

**EXSS 282 NUTRITIONAL ASPECTS OF EXERCISE (3).** Prerequisite, graduate standing in physical education or permission of the instructor. Exploration of the role of macronutrients and micronutrients as they apply to exercise, physical conditioning, and competition. Students obtain experience in dietary analysis as it applies to athletic populations. Spring. McMurray.

**EXSS 283 ASSESSMENT OF PHYSIOLOGICAL FUNCTIONS IN EXERCISE (3).** Prerequisite, EXSS 280 or equivalent, or permission of the instructor. Designed to develop laboratory techniques and experimental design skills as applied to the physiology of human performance. Spring. Hackney, McMurray.

**EXSS 285 SEMINAR IN EXERCISE PHYSIOLOGY (3).** Prerequisite, graduate standing in exercise and sport science or permission of the instructor. In-depth study of selected advanced topics in exercise physiology. Emphasis on metabolism, biochemical, and cardiopulmonary physiology with student presentations on selected topics. Fall. Hackney, McMurray.
ESS 289 PRACTICUM IN EXERCISE PHYSIOLOGY (3). Prerequisites: ESS 280 and ESS 110, 110L, or ESS 281, or permission of the instructor. The implementation of theories and practices of health or cardiac rehabilitation in a professional setting under the direction of an experienced practitioner. Fall and spring. McMurray, Hackney, Marks.

ESS 300 SPECIAL TOPICS IN EXERCISE AND SPORT SCIENCE (1-3). Prerequisite, graduate standing or permission of the instructor. The study of special topics directed by an authority in the field. Fall and spring. Graduate faculty.

ESS 320 RESEARCH IN EXERCISE AND SPORT SCIENCE (1-3). Prerequisite, graduate standing in exercise and sport science or permission of the instructor. Individually designed research projects conducted by students under the direction of a graduate faculty member. Fall and spring. Graduate faculty.

ESS 393 MASTER'S THESIS (3-6). Fall, spring, and summer. Graduate faculty.

Graduate Recreation Degree Coursework

RECR 210 WORK, LEISURE, AND ORGANIZED RECREATION IN THE UNITED STATES (3). A description and analysis of the scope of organized recreation systems, the evolution of work and leisure attitudes, and the trends of individual recreation behavior. Fall. Henderson.

RECR 250 RESEARCH DESIGN AND METHODS I (3). An appraisal of current recreation research. Introduction to research techniques and analysis; application of quantitative and qualitative methods to research problems. Spring. Bialecki.

RECR 251 RESEARCH DESIGN AND METHODS II (3). Prerequisite, RECR 250 and a course in statistics. Students review qualitative research methods and apply them to recreation issues. Design and preparation of a research proposal and completion of a mini-research project. Fall. Bialecki.

RECR 310 SEMINAR IN LEISURE STUDIES (1-3). A survey of contemporary views of society and their structures and functions, as they relate to concepts of leisure and recreation behaviors. Fall and spring.

RECR 365 RECREATION MANAGEMENT SEMINAR: SELECTED TOPICS, PROBLEMS, AND ISSUES (3). An in-depth treatment of various issues, problems, and concerns such as professionalism, liability, recent legislation, and others as they relate to the provision of recreation services. Spring. (Alternate years.) Henderson.

RECR 376 ISSUES AND PROBLEMS IN THERAPEUTIC RECREATION (3). An in-depth study of various issues such as professionalism, credentialing, accessibility, mainstreaming, recent legislation, and other topics as they relate to the provision of therapeutic recreation services. Spring. (Alternate years.) Groff.

RECR 393 MASTER'S THESIS (3-6). Fall, spring, and summer. Graduate Faculty.

Other RECR Courses That Might Appeal to Graduate Students:

RECR 40 OUTDOOR RECREATION AND ENVIRONMENTAL ISSUES (3). A survey course taught from a psychosocial perspective addressing the role of public and private agencies in meeting increased demand for outdoor recreation. Emphasizes the implications of environmental awareness on outdoor recreation. Fall or spring. Staff.

RECR 101 WOMEN, WORK, AND LEISURE (3). Implications of the relationship between women and leisure from a lifestyle perspective, and an analysis of the changing role of women and changing leisure concepts from a feminist perspective.

RECR 120 PROGRAM PLANNING FOR RECREATION SERVICES (3). A study of the principles of planning recreation programs and the factors which affect their implementation and functioning. Fall or spring. Staff.

RECR 160 ADMINISTRATION OF RECREATION SERVICES (3). Analysis of recreation from the standpoint of organization, administration, finances, training, legislation, public relations, and coordination of community resources. Fall. Staff.

RECR 175 INTRODUCTION TO THERAPEUTIC RECREATION SERVICES (3). History and philosophy of therapeutic recreation. A survey of basic counseling/interaction styles, clinical and administrative skills, and interdisciplinary approaches to a variety of clinical settings. Fall. Groff.

RECR 230 MANAGING ORGANIZATIONAL BEHAVIOR IN RECREATION SERVICES (3). This course addresses organizational behavior and theory to promote insight into micro and macro issues confronting professionals in organized recreation services. Spring. Staff.

RECR 280, 281 INTERNSHIP IN RECREATION ADMINISTRATION. (2, 3). Fall, spring, and summer. Staff.

RECR 290 INDEPENDENT FIELD STUDY (3). Permission of faculty. May be repeated for credit. Fall, spring, and summer. Staff.

CURRICULUM IN FOLKLORE

GLEN HINSON, Chair

Professors
Carole L. Crumley (22) Archaeology, Complex Societies, Europe
Kaja Finster (21) Medical Anthropology, Latin America
Jacquelyn Hall (18) American History, Southern Oral History
Trudi Harris (5) African American Folklore and Literature
Norris B. Johnson (21) Cultural Anthropology, Art and Literature
Edward Donald Kennedy (6) Medieval Romances, Arthurian Literature
H. Craig Melcher (23) Indo-European Linguistics
Patrick P. O'Neill (20) Medieval Literature, Celtic Languages and Culture
James L. Peacock (10) Culture Change, Symbolic Systems, Southeast Asia
Jack M. Saison (17) Ancient Near East
Ruel W. Tyson Jr. (15) Philosophy and Anthropology of Religion

Associate Professors
Robert Edward Daniels (2) Social Anthropology, Culture and Personality, Africa
John W. Florin (16) Population Geography, Medical Geography, and Historical Anglo-America
Glenn D. Hinson (25) Ethnography of Communication, African American Expressive Culture, Belief Systems, Public Folklore
Della Pollock (9) Performance of Literature, Performance Theory and Criticism, Cultural Studies

Assistant Professor
Patricia E. Sawin (1) Feminist Theory, Ethnography of Speaking, Performance, Southwest Louisiana

Professors Emeriti
Daniel W. Patterson
Charles Gordon Ziegler

The Curriculum in Folklore focuses on the study of creativity and aesthetic expression in everyday life, and on the social and political implications of this expression as it unfolds in the contested arenas of culture. Not bound to traditional definitions of folklore, and committed to preparing students for ethical practice in a multicultural world, the curriculum offers a flexible MA program that readies students for both public practice and further academic study.

The millennium's turn marked five decades of the curriculum's presence at UNC-Chapel Hill. Founded with an eye to regional study, and deeply integrated with the University's long-standing focus on Southern history, literature, and culture, the curriculum maintains its commitment to the study of regional folklore. This commitment, however, in no way limits the curriculum's vision. Though students and faculty still do much of their fieldwork in the South, they are just as likely to be working with poets in

CONSCIOUSNESS AND SYMBOLS (ANTH 135) (CMPL 135) (3). Fall. Peacock.

GENDER AND PERFORMANCE (ANTH 137) (3). Examines the cultural construction of gender identity by the gender-specific assignment of artistic forms and performance roles in various parts of the world. Spring. Sawin.


RELIGION AND ANTHROPOLOGY (ANTH 142) (RELI 142). Religion studied anthropologically as a cultural, social, and psychological phenomenon in the works of classical and contemporary social thought. Spring. Peacock and Tyson.

INTRODUCTION TO FOLKLORE (ANTH 146) (CMPL 146) (ENGL 146) (3). A survey of the primary genres (song, narrative, proverb, riddle, custom, belief, drama, game) with attention to their forms, transmission, and functions in traditional and urban societies.

BRITISH AND AMERICAN FOLKSONG (ENGL 147) (3). Explores the forms, functions, and relationships of British and American folksongs, charting the emergence of Anglo- and African American vernacular music and the dynamic processes of tradition, creativity, innovation, and revival.

TRADITIONAL CRAFTSMANSHIP (3). This course introduces students to material folk culture, the study of the origins and transmission, forms and construction, and functions and meanings of traditional architecture, arts, crafts, food, clothing, tools, and technology.

SOUTHERN MUSIC (HIST 142) (3). This seminar explores the history of music in the American South from its roots to twentieth century music forms, revealing how music serves as a window on the region’s history and culture. Fall. Ferris.

HISTORICAL GEOGRAPHY OF THE UNITED STATES (GEOG 154) (3). A study of selected past geographies of the United States with emphasis on the significant geographic changes in population, cultural, and economic conditions through time. Florin.

ETHNOHISTORY (ANTH 155) (3). Integration of data from ethnographic and archaeological research with pertinent historical information. Familiarization with a wide range of sources of ethnohistorical data and practice in obtaining and evaluating information. Pertinent theoretical concepts are explored. Fall (Alternate yrs.) Crumley.

SOUTHERN LITERATURE AND THE ORAL TRADITION (3). This seminar considers how Southern writers employ folklore genres such as folktales, sermons, and music and how such genres provide structure for literary forms like the novel and the short story. Spring. Ferris.

ORAL HISTORY AND PERFORMANCE (COMM 161) (HIST 173) (WMST 173) (3). This course combines readings and field work in oral history with study of performance as a means of interpreting and conveying oral history texts. Emphasis on women’s history.

RITUAL, THEATRE, AND PERFORMANCE IN EVERYDAY LIFE (COMM 165) (3). This course explores the dynamics of performance as it is broadly produced within the texture of individual experiences, the interaction of community memberships, and the dramas of cultural aesthetics.


174 INTRODUCTION TO ORAL HISTORY (HIST 170)  (3). Introduces students to the uses of interviews in historical research. Questions of ethics, interpretation, and the construction of memory will be explored, and interviewing skills will be developed through field work. Fall.

175 ETHNOGRAPHIC METHOD (ANTH 175)  (3). Intensive study of and practice in many of the most commonly used anthropological data-collection techniques. Staff.

184 DISCOURSE AND DIALOGUE (ANTH 184)  (3). Anthropological study of language as a pivot of mediation of humans’ mental, social, and cultural lives; the constitution of social relations through speech and social symbolism of speech styles. Fall, Spring.

185 WOMEN IN FOLKLORE AND LITERATURE (ENGL 185) (WMST 185)  (3). The images of women depicted in folk imagination from ancient times to the present: sorcerers, conjurers, witches, sexual objects, tricksters, healers, heroines, avengers, and carriers of family tradition.

186 FOLK NARRATIVE (ENGL 186)  (3). An intensive study of myths, legends, and folktales (mimarchen, tall tale, animal tale, fable) with attention to their aesthetic and cultural applications. (Alternate years.)

187 FOLKLORE IN THE SOUTH (ENGL 187)  (3). An issue-oriented study of Southern folklore, exploring the ways that vernacular artistic expression (from barns and barbecue to gospel and well-told tales) come to define both community and region.

189 AFRICAN AMERICAN FOLKLORE (ENGL 189)  (3). A study of folklore within the Black community, concentrating on African and slave backgrounds, and covering rural and urban folktales, spirituals, work songs, blues, and folk beliefs. Fall, Spring.

190 VERNacular TRADITIONS IN AFRICAN AMERICAN MUSIC (AFAM 190)  (3). Explores performance traditions in African American music, tracing the music's development from African song to blues, jazz, gospel, and contemporary vernacular expression. Focuses on continuity, creativity, and change within African American aesthetics. (Alternate years.) Fall.

195 TOPICS IN FOLKLORE (3). Fall and Spring. Staff.

198 FIELD RESEARCH (3). Fall and Spring. Staff.

199 DIRECTED READINGS IN FOLKLORE (3). Fall and Spring. Staff.

Courses for Graduates

241 PERFORMANCE ETHNOGRAPHY (COMM 241)  (3). This seminar focuses on methods of ethnography and fieldwork ethics. Performance as theory and practice informs methodological inquiries as well as the analysis of specific ethnographic texts and case studies.

288 OBSERVATION AND INTERPRETATION OF RELIGIOUS ACTION (ANTH 188) (RELJ 288)  (3). Exercises (including field work) in learning to read the primary modes of public action in religious traditions: sermons, testimonies, rituals, and prayers. Primary focus on construction and interpretation of text from field observation. Spring, Peacock.

290 PUBLIC FOLKLORE (3). A graduate seminar addressing theory and praxis in public sector cultural work. Focusing on public folklore, this course explores broad issues of representation, cultural politics, and cultural tourism. (Alternate years.) Fall. Hinson.

295 STUDIES IN FOLKLORE (3). Fall and spring. Staff.

296 APPROACHES TO FOLKLORE THEORY (3). A systematic overview of the major issues and perspectives informing two centuries of folklore study, including social base, tradition, evolution, diffusion, structure, function, interpretation, performance, feminism, ideology. Fall. Sawin.

297 ART OF ETHNOGRAPHY (ANTH 297)  (3). A field-based exploration of the pragmatic, ethical, and theoretical dimensions of ethnographic research, addressing issues of experience, aesthetics, authority, and worldview through the lens of cultural encounter. Field research is required. Spring. Hinson.

342 SEMINAR IN PERFORMANCE AND CULTURAL STUDIES (COMM 342)  (3). This course focuses on performance-related issues in the emergent field of cultural studies.

343 SEMINAR IN PROBLEMS IN CONTEMPORARY PERFORMANCE THEORY (COMM 343)  (3). An advanced graduate seminar, this course will address recent developments and problems in performance theory. It will consider cross- and multidisciplinary approaches to performance art sites for consideration and debate. Pollock, Long, Madison.

393 MASTER’S THESIS (3-6). Research in a special field under the direction of staff members. Fall and spring.

395 SEMINAR IN FOLKLORE. An irregularly offered graduate seminar exploring selected topics in the theory and practice of folklore. Staff.

CURRICULUM IN GENETICS AND MOLECULAR BIOLOGY

ROBERT DURONIO, Director

Professors

Steven L. Bachenheimer (30) Alterations to Cell-Cycle and Signal Transduction Pathways Following Herpes Simplex Virus Infection

Albert S. Baldwin (79) Regulation of Gene Expression; Control of Oncogenesis and Apoptosis

Kerry S. Bloom (45) Mechanisms of Chromosome Segregation in Yeast; Chromosomal and Spindle Dynamics

Janne G. Cannon (46) Molecular Biology of Bacterial Pathogens

Stephen H. Clarke (82) Molecular Immunology; B-Cell Differentiation and Tolerance; Autoimmunity

Stephen T. Crews (61) Molecular Genetics of Nervous System Development in Drosophila; Gene Regulation

Jeffery L. Dangl (106) Plant Genetics and Cellular Biology; Plant Disease Resistance and Cell-Death Control

Channing J. Der (88) Oncogenes; ns Superfamily Proteins; Signal Transduction

Beverly J. Edred (44) Yeast Molecular Genetics; MAP-Protein Activation Pathways; Regulation of Cell Differentiation

Rosann A. Faber (71) Cancer Genetics; Human Molecular Genetics; Somatic-Cell Genetics; Microsatellite Instability

Jeffrey A. Frelinger (49) Molecular Immunogenetics, Function of Major Histocompatibility Complex in Virus Infection

Jack Griffith (35) HIV; Transcription; Electron Microscopy

Clyde A. Hutchison III (10) Molecular Genetics; Genomics; Transposable Elements; Directed Mutagenesis

Alan M. Jones (114) Signal Perception; Regulation of Growth and Development; Programmmed Cell Death

Ryszard Kole (64) RNA Processing, RNA-Protein Interactions; Antisense Oligonucleotides as Chemotherapeutic Agents

Susan T. Lord (53) Role of Fibrinogen in Vascular Disease; Fibrinogen Structure-Function Analysis

Nobuyo Maeda (72) Genetic Modeling of Atherosclerosis in Mice

Terry Magnuson (123) Mammalian Genetics, Genomics, Development

William F. Marzluff (85) Regulation of RNA Metabolism in Animal Cells

Steven W. Marson (54) Biochemistry and Genetics of DNA Helicases from E. coli and Yeast

Ann G. Marthyse (24) Molecular Genetics of Bacterial Plant Pathogens

Beverly S. Mitchell (97) Gene Expression; Purine Pyrimidine Metabolism; Leukemogenesis

Joseph S. Pagano (96) Infectious Diseases and Cancer; Regulation of Latency and
Replication Genes of Epstein-Barr Virus; Mechanisms of Antiviral Agents
Leslie V. Parise (113) Adhesion Receptors and Signaling in Platelets, Sickle Cells, and Cancer
Mark Pfeffer, Cell Adhesion; Signal Transduction and Cancer
Thomas D. Pesch (69) Analysis of Recombination and Chromosome Structure in Yeast
John R. Pringle (86) Yeast Genetics and Cell Biology: Cytoskeletal Function; Cellular Morphogenesis
Kathleen W. Rao (60) Human Cytogenetics; Somatic-Cell Genetics
R. Jude Samulski (103) Development of Virus-Based Delivery Systems for Use in Human Gene Therapy
Aziz Sancar (58) Structure and Function of DNA Repair Enzymes; Biological Clock
Gwendolyn B. Sancar (75) Regulation of Damage-Inducible Genes in Eukaryotes
Oliver Smithies (70) Targeted Modification of Genes for Use in Gene Therapy
Patrick F. Sullivan (140) Genetic Dissection of Schizophrenia; Ancillary Interests in All Aspects of Complex Traits
Ronald I. Swanson (51) Retroviruses; Molecular Biology of AIDS Virus
Jenny Pan-Yun Ting (104) Molecular Immunology; Molecular Regulation of Eukaryotic Genes; Cancer Biology; Immunology; Transplantation and Neuroinflammation
Michael D. Topal (42) Protein-DNA Interactions; Protein Engineering
Terry A. Van Dyke (101) Regulation of Cell Growth Control
Bernard E. Weisman (77) Tumor Suppressor Genes; Cancer Genetics

Associate Professors
Victoria L. Bauch (73) Molecular Genetics of Blood Vessel Formation in Mouse Models
Robert B. Bourret (95) Molecular Mechanisms of Signal Transduction in Bacteria, Including Protein Phosphorylation; Adrienne D. Cox, Ras Family Oncogenes and Signaling, Cellular Differentiation Responses; Lipid Modification and Drug Development.
Robert J. Dutraio (57) Genetics of Cell Cycle Control During Drosophila Development
Cora-Jean S. Edgell (47) Somatic Cell Genetics and Molecular Genetics of Differentiated Gene Expression in Human Endothelial Cells
Joseph Kiefer (117) Molecular Genetic Analysis of Ethylene and Cytokinin Action in Arabidopsis
Beverly H. Keller (92) Generating Animal Models of Human Diseases
Anthony-Samuel LaMania (122) Control of Gene Expression in the Developing and Adult Central Nervous System
Deborah A. O'Brien (115) Molecular Regulation of Mammalian Spermatogenesis-Gene Expression, Cell Cycle, Paracrine Signaling
Patricia J. Pukkila (34) Molecular Mechanisms of Chromosome Pairing and Meiosis in Prunus sp.
Jason W. Reed (108) Plant Development; Auxin Signaling; Light Responses
Lillie L. Sears (66) RNA Processing Control in Drosophila Developmental Genetics
Lishan Su (109) T Cells during Normal and Pathogenic Hematolymphopoiesis
Ellen R. Weiss (94) Regulation of G-Protein-Coupled Receptor Signal Transduction Pathways
Brent W. Weston (112) Molecular Genetics of Glycosyltransferases; Tumor Cell and Leukocyte Adhesion
Yue Xiong (78) Cancer Biology. Mammalian Cell Cycle, Tumor Suppressor Genes

Assistant Professors
Shawn Ahmed (125) Lifespan, Telomeres, and the DNA Damage Checkpoint
Miriam Braunstein (126) Protein Secretion and the Pathogenesis of Mycobacterium Tuberumosis
Jay Brennan (133) Neuronal Dendrite Development Using Drosophila Genetics
Christina Burch (142) Experimental Evolution of Viruses
Kathleen Caron (139) Genetically Engineered Animal Models in Study of Human Disease
Frank Conlon (127) Molecular Basis of Congenital Heart Disease

Gregory B. Copenhaver (134) Regulation of Meiotic Recombination in Higher Eukaryotes
Blossom Damania (128) Functional Analysis of K1 Viral Oncogene of Kaposi's Sarcoma-Associated Herpesvirus
Bob Goldstein (120) Generation of Cell Diversity in Early Development of C. elegans
Sarah R. Grant (107) Genetics of Sex Determination in Flowering Plants
Jason Lieb (131) Exploring Specificity and Function in Protein-Genome Interactions Using DNA Microarrays
John O'Bryan (137) Receptor Tyrosine Kinases (RTKs), Adapter Proteins, Endocytosis, Ubiquitinylation
Fernando Pardo-Manuel de Villena (129) Transmission Genetics, Non-Mendelian Inheritance, and Chromosome Segregation During Female Meiosis
Larysa H. Penry (141) Neural Induction, Neurogenesis, SOX Proteins
Charles Perou (130) Molecular Characterization and Classification of Human Breast Tumors Using Genome-Wide Expression in Patterns
Dale Ramsden (118) V(D)J Recombination; DNA Double Strand Break Repair
Jeff Sekelsky (119) Meiotic Recombination; DNA Repair
Norman E. Sharpless (135) Tumor Suppressor Genes, Genetic Cancer and Aging
Brian Strebl (132) Histone Modification of Genes for Use in Gene Therapy
Joan Taylor (138)
David Thraenbig (124) Modifiers of the Ebb Gene Family, Colorectal Cancer Susceptibility Genes
Todd Vision (136) Genome Evolution and the Architecture of Complex Trait
Christopher E. Walsh (111) Genetic Correction of Inherited Hematopoietic Stem Cell Disease; Stem Cell Biology

The Curriculum in Genetics and Molecular Biology is an interdisciplinary predoctoral training program leading to a PhD degree in genetics and molecular biology. The goal of this program is to train students to be creative, sophisticated research scientists within the disciplines of genetics and molecular biology. To this end we emphasize acquisition of a foundation of knowledge, accumulation of the laboratory skills required for implementing research objectives, and development of the ability to formulate experimental research to solve contemporary problems in the biological sciences. During their first year, students enroll in graduate-level courses and participate in laboratory rotations. Subsequently, students select a faculty research adviser and establish an advisory committee. Research work is done in the laboratory facilities of the individual faculty member and is supported primarily by faculty research grants.

The curriculum faculty have appointments in twelve departments in the School of Medicine and the College of Arts and Sciences. The faculty represent diverse research interests and are particularly strong in the areas of molecular genetics, genetic selection, genetic complementation, and gene targeting to approach questions regarding regulation of gene expression and control of cellular processes. Students are able to choose from a variety of biological systems and questions for their thesis research.

Requirements for Admission for Graduate Work
Applications from students with good academic records and interest in research careers in genetics and molecular biology are favorably considered. Applicants preferably have majored or minored in one of the following dis-
Disciplines: genetics, biology (zoology or botany), microbiology, chemistry, mathematics, physics, or biophysics. They usually have taken calculus and organic and physical chemistry although these are not essential. Applicants are accepted to begin their initial studies in the fall. They must apply to both The Graduate School and the Curriculum in Genetics and Molecular Biology. Graduate Record Examination scores, transcripts of records, three letters of recommendation (submitted on the Graduate School official form) and a genetics application form should be received with the application. Those whose application portfolio places them highest on the admission list are asked to visit Chapel Hill for interviews. Students are encouraged to apply as early as possible, preferably before January 1. (Applicants seeking a master's degree are not considered for admission.)

Requirements for the PhD Degree
In addition to the dissertation requirements of The Graduate School (four full semesters of credit including at least six hours of GNET 394, Doctoral Dissertation; a written preliminary examination; an oral examination; and a dissertation), curriculum students are required to take GNET 110, 111, 112 (BIOL 161, Principles of Genetic Analysis), GNET 113, and one seminar course in which at least one-third of the final grade is based upon class participation, act as a teaching assistant for one semester, participate in GNET 275 (a student seminar series) as an attendee in the first and second years and as a presenter in the later years, participate in the curriculum's retreat, and attend the weekly seminar series sponsored by the curriculum. Students are required to rotate through at least three laboratories before choosing a thesis adviser. It is strongly recommended that students attend national meetings in order to understand better how their research fits with progress in their field.

Financial Aid
Stipends for predoctoral students are available from an NIH predoctoral training grant and the University.

Courses for Graduates and Advanced Undergraduates

105 MOLECULAR BIOLOGY (BIOL 165) (3). Prerequisite, BIOL 100 or equivalent. Mechanisms of replication, transcription, and translation of genetic material in prokaryotic and eukaryotic systems, gene sequence and organization, biochemical genetics, and regulatory mechanisms. Three lecture hours a week. Fall. Crews, Van Dyke, Xiong, Marchluff.

110 ADVANCED MOLECULAR BIOLOGY I (BIOL 110) (MCBO 108) PHCO 136 (BIOL 178) (3). Prerequisites for undergraduates, at least one undergraduate course in both biochemistry and genetics. DNA structure, function, and interactions in prokaryotic and eukaryotic systems, including chromosome structure, replication, recombination, repair, and genome fluidity. Three lecture hours a week. Fall. Griffith, Sancar.

111 ADVANCED MOLECULAR BIOLOGY II (BIOL 111) (MCBO 109) PHCO 137 (BIOL 179) (3). Prerequisites for undergraduates, at least one undergraduate course in both biochemistry and genetics. RNA structure, function, and processing in biological systems including transcription, gene regulation, translation, and oncogenes. Three lecture hours a week. Spring. Baldwin, Marchluff.

112 PRINCIPLES OF GENETIC ANALYSIS I (BIOL 161) (4). Prerequisite for undergraduates, BIOL 50; for graduate students, an undergraduate genetics course or permission of instructor. Genetic principles of genetic analysis in prokaryotes and lower eukaryotes. Fall. Peters, Pringle.


122 HUMAN GENETICS (BIOL 122) (3). Prerequisite, BIOL 50. Pedigree analy-

sis, inheritance of complex traits, DNA damage and repair, human genome organization, DNA fingerprinting, the genes of hereditary diseases, chromosomal aberrations, cancer and oncogenes, immunogenetics, and tissue transplants. Three lecture hours a week. Spring. Maroni.

125 CLINICAL AND COUNSELING ASPECTS OF HUMAN GENETICS (BIOL 125) (3). Prerequisites, BIOL 122 or GNET 174 and permission of instructor. Topics in clinical genetics including pedigree analysis, counseling/ethical issues, genetic testing, screening, and issues in human research taught in a small group format. Active student participation if expected. Spring. Roche.

150 ELEMENTS OF PROBABILITY AND STATISTICAL INFERENCE (BIOS 150) (3). Prerequisite, integral calculus. Fundamentals of probability theory; descriptive statistics; fundamentals of statistical inference, including estimation and hypothesis testing. Three lecture hours a week. Fall. Biosciences Staff.

160 DEVELOPMENTAL GENETICS (BIOL 160) (3). Prerequisites, BIOS 50 and 52, and permission of instructor required for undergraduates. Genetic and molecular control of plant and animal development. Extensive reading from primary literature. Fall. Bauch, Reed.

170 MUTAGENESIS AND GENETIC TOXICOLOGY (TOXC 170) (2). Prerequisite, course in general genetics and general biochemistry. A survey of basic mechanisms of mutagenesis, its impact on populations, mutagenicity screening systems and their deployment. Two lecture hours a week. Spring. Toxicology Staff.

174 ADVANCED HUMAN GENETICS (PATH 174) (3). Prerequisites, graduate students: a previous genetics course or permission; undergraduates: a previous genetics course and permission. Topics in human genetics including the molecular basis of genetic disease, special methods used in human genetics research, and molecular genetic principles learned from studies of humans. Three lecture hours a week. Fall. (Alternate years.) Farber.

190 EUKARYOTIC GENE ORGANIZATION (MCBO 190) (3). Prerequisites, organic chemistry, permission of the instructor. Basic concepts of classical chromosomal structure, function, and mechanics. Eukaryotic molecular genetics and cellular regulation are emphasized. Readings, short answer examinations, term project. Three lecture hours. Spring. Staff.

Courses for Graduates

201/202 GENETIC LECTURE SERIES (1). Open to genetics students only. Diverse but current topics in all aspects of genetics. Relates new techniques and current results in genetics in the fields of genetics. Fall and spring. Staff and invited guest lecturers.

210 SEMINAR/TUTORIAL IN PROKARYOTIC MOLECULAR BIOLOGY (MCBO 210) (3). One or two faculty and a small number of students consider in-depth current research of importance. Emphasis is on current literature, invited speakers, etc., rather than textbooks. Fall. Borr.

240 SPECIAL TOPICS IN GENETICS (2-4). Prerequisite, permission of the instructor. Fall. Staff.

241 SPECIAL TOPICS IN GENETICS (2-4). Prerequisite, permission of the instructor. Spring. Staff.

249 GENETICS OF COMMON DISEASES (EPID 249) (3). Prerequisite, BIOS 150, GNET 122, or EPID 160, or permission of the instructor. Critical analysis of genetic issues in human disease. The genetics of cancer, heart disease, diabetes, mental illness, mental retardation, hypertension, and arthritis are covered. The application of genetic and epidemiological techniques are examined. Three lecture hours a week. Spring.

270 SEMINAR IN GENETICS (BIOL 270) (2). Prerequisite, permission of the instructor. Two seminar hours a week. Fall and spring. Bauch, Maroni, Peters, Peller, Pukkila, Searles, Sekelsky.

275 GENETICS SYSTEMS (MCBO 275) (BIOL 275) (1). A course
to provide public, lecture experience to advanced genetics students. Students present personal research seminars based on their individual dissertation projects. Lectures are privately critiqued by fellow students and genetics faculty. Required of all candidates for the degree in genetics. Fall and spring. Genetics staff.

281 Statistical Methods in Human Genetics (Bios 281) (3). Prerequisite: permission of the instructor. An introduction to statistical procedures in genetics, Hardy-Weinberg equilibrium, linkage disequilibrium, segregation analysis, linkage analysis methods (including usage of genetics of software packages), and analysis of molecular genetic data. Three lecture hours a week. Spring. (Alternate years.) Biostatistics staff.

305 Research in Genetics (3 or more). May be continued for credit two or more semesters. Hours and credits to be arranged. (Throughout the year.) Genetics staff.

350 Training in Genetic Teaching (3). Prerequisites: two courses in genetics and permission of the instructor. Principles of genetic pedagogy. Students are responsible for assistance in teaching genetics and work under the supervision of the faculty with whom they have regular discussion of methods, content, and evaluation of performance. (Throughout the year.) Staff.

393 Master's Thesis (3 or more). (Special permission required.) Students are not accepted directly into M.S. program. (Throughout the year.) Staff.

394 Doctoral Dissertation (3 or more). (Throughout the year.) Staff.

DEPARTMENT OF GEOGRAPHY

Lawrence E. Band, Chair

Professors
Lawrence E. Band (21) Voit Gilmore Distinguished Professor. Geographic Information Systems, Hydroecology, Geomorphology
Stephen S. Birdsal (5) Cultural Landscapes, North America
Melinda S. Meade (10) Medical Geography, Population, and Southeast Asia
Peter J. Robinson (9) Climatology, Climatic Impacts, Hydroclimatology

Associate Professors
Alda J. Cravey (17) Latin America, Social
John W. Florin (8) Population, Medical, Historical Anglo-America
Charles E. Konrad (16) Synoptic Climatology and Meteorology
Aaron Moody (18) GIS, Biogeography
Thomas M. Whitmore (13) Cultural Ecology, Latin America, Population

Assistant Professors
Martin Doyle, Hydro-Ecology, Geomorphology, and Environmental Policy
Scott L. Kirsch (23) Historical and Political Geography, Science, Technology, and Environment
Conghe Song (24) GIS, Remote Sensing, Earth Systems Science
Wendy Wolford (25) Latin America, Social Movements

Research Faculty
Wilbert M. Gealer (11) Health Care, Cultural, Africa, Quantitative

Adjunct Faculty
Richard Bilibnow (Biostatistics), Dendrochronology, Development and the Environment, Environment and Society, Research Methods
Barbara Enzweiler (Sociology), Demography, Social Change, GIS and Geographical Approaches in Population Studies
Arturo Escobar (Anthropology), Ecological Anthropology, Social Movements, Political Ecology, Latin America, Complexity
James Fraser (Center for Urban and Regional Studies), Urban Studies, Social Inequality, Identity, Community, and Belonging, Research Methods
Kenneth Hillis (Communication Studies), Place, Space and Landscape, Virtual Geographies, and Space and Social and Political Identities
James H. Johnson Jr. (School of Business), Urban and Metropolitan Competitiveness, Business Demographics, Sustainable Economic and Community Development
Helena Mitess (North Carolina State University), Geoinformation Science, Modeling and Monitoring Landscape Processes, Sustainable Land Use Management, Dynamic Cartography
Sethu Ramas (North Carolina State University), Fluid Dynamics, Modeling Surface/Atmosphere Interactions, Hurricanes, Monsoon Dynamics, Air Pollution Modeling, Numerical Weather Forecasting and Mesoscale Dynamics
Ronald Hinduss (Sociology), Population and Environment, Family, Fertility Michael J. Welsh (Family Health International), Health/Population and Development, HIV/AIDS Prevention Programs, Reproductive Health Service Delivery and Evaluation Research, Diffusion of Innovation

Professors Emeriti
David G. Baile
Clyde E. Browning
John D. Eyre
Wilbert M. Gealer
Richard J. Kopc

The Department of Geography offers advanced work leading to the master of arts and doctor of philosophy degrees. Both the MA and PhD degrees are offered, but the major emphasis of the program is the PhD, even for those not yet possessing an MA. Incoming students are roughly evenly mixed between those with and without a master's degree.

The Department of Geography has faculty strength in five overlapping areas of concentration. These represent areas of active faculty research and coherent foci—non mutually exclusive territories. Indeed, many students and faculty work on projects that span more than one. So, while intensive training is offered in a number of diverse areas, the program is noted for its integrative and cross-cutting approach. The department's diverse graduate students are pursuing a wide variety of research at UNC-Chapel Hill.

Departmental research specializations include:

Biophysical Geography and Earth System Science. Here the biophysical environment is examined as an integrated system emphasizing the linkages and feedbacks between terrestrial and atmospheric form and function. The focus is on the interactions between the structure and composition of the earth's surface, its soils and vegetation, and the atmosphere with those processes that actively cycle energy and material through them.

Geographic Information and Analysis. Here geographic information science are applied as an integrated set of spatial digital technologies including tools, techniques, concepts, and data sets associated with geographic information systems, remote sensing, data visualization, global positioning systems, spatial analysis, and quantitative methods.

Nature-Society Studies and Human-Environment Interactions. Drawing on analytical and theoretical perspectives from ecology, socio-cultural processes and values, political ecology, science studies, and cultural ecology, UNC-Chapel Hill geographers focus on geographies of environmental change, the political-economic and social contexts of environmental change, human uses of the environment, and the consequences of such uses.

Social Spaces. Here UNC-Chapel Hill geographers examine cultural geographies of people, places, regions, landscape and resources, space, identity, and representation. Social geographies of race, space, gender, urban and community dynamics, rural landscapes and regional change, health, migration, inequality, and social movements; economic geographies of
agrarian and industrial change, science, technology, and regional change, post-socialism, political economy, and globalization and international development; and political geography, geopolitics, and political ecology.

**Globalization and International Development.** Here UNC-Chapel Hill geographers study the consequences of the processes of globalization (and the antiglobalization and global justice movements they have stimulated) that are reshaping the geographies of international and local capital, labor, technology, information, goods and services, and the post-war Fordist geographies of economic, social, and political life in the United States and globally.

Graduate students in the department participate in most departmental governance activities and maintain their own organization, the Graduate Association of Geography Students (GAGS). UNC-Chapel Hill professional and graduate students also have an active organization, Graduate students have access to extensive research and computing facilities within the department and across campus and many of our students are involved in specialized departmental research groups. Students and faculty have strong ties to other departments and research centers at UNC-Chapel Hill, including the Carolina Population Center, the Odum Institute for Research in Social Science, the Institute of Latin American Studies (UNC-Chapel Hill and Duke University), the Sheps Center for Health Services Research, the Curriculum in Ecology, the Center for Urban and Regional Studies, the Carolina Environmental Program, and UNC-Chapel Hill’s schools of public health and medicine. There are also opportunities for course work and research associated with nearby Duke University and North Carolina State University, while many students take advantage of the government and private research facilities in Research Triangle Park.

Incoming graduate students are required to complete three core courses (GEOG 202, 203, 204) presenting the foundations of geographical theory, communication, and research. Thereafter the program of study is flexible and tailored to the needs of the individual student. Students select the appropriate course work and dissertation topic in consultation with their adviser and research committee.

A large proportion of graduate students receive financial assistance. Sources of aid include teaching assistantships and work on sponsored research projects within the department; University-wide competitive assistantships, non-service fellowships and merit scholarships; and externally awarded fellowships.

The department, soon to be relocated in a newly renovated Saunders Hall, maintains the extensive computational laboratories needed to fulfill its research and teaching mission, with specialized facilities dedicated to spatial analysis and the use of geographic information systems. A wide range of geographic data sets are readily available. An extensive collection of geographic books and periodicals, including an exceptionally strong collection of foreign periodicals, is held in the nearby Davis Library, while Wilson Library houses a large map library.

**Courses for Graduates and Advanced Undergraduates**

**110 Modeling Environmental Systems (3).** Prerequisite, GEOG 10 or equivalent. Use of systems theory and computer modeling to understand general issues in climate, vegetation, geomorphology, soils, and hydrology crossing time and space scales and for linear and dynamic systems. Staff.

**112 Synoptic Meteorology (3).** Prerequisite, GEOG 10 or 11. An analysis of synoptic weather patterns and the processes responsible for them. Climatological aspects of these weather patterns are emphasized. Konrad, Robinson.

**114 Physical Climatology (3).** Prerequisite, GEOG 10 or 11. The factors causing climates and their spatial variation are considered. Particular attention is paid to climate models and to the nature, causes, and impacts of climate change. Konrad, Robinson.

**116 Applied Climatology (3).** Prerequisites, GEOG 112 or 114. Students investigate the ways climate information and techniques can be applied to societal problems such as energy production, food production and health. Discussion of case studies utilizing North Carolina data. Konrad, Robinson.

**119 Field Methods in Physical Geography (3).** Involves evaluation of landscapes by examining nature and biophysical elements influencing landscape form and function. Course emphasis data collection, analysis, and interpretation using GIS and field methods. Doyle, staff.

**120 Fundamental Concepts of Human Geography (3).** A systematic study of the approaches, key concepts, and methods of human geography. Emphasis is given to the cultural landscape and location analysis within a thematic rather than a regional framework. Florin.

**123 Social Geography (3).** A study of spatial components of current social problems such as poverty, race relations, environmental deterioration and pollution, and crime. Cravey, staff.

**125 Space, Place, and Difference (WMST 125) (3).** Gender, race, and class are examined in terms of the spatial patterns of everyday life, regional patterns, and global patterns. Cravey.

**128 Urban Geography (3).** A geographical study of the spatial structure and function of urban settlements. Emphasis is on the regional relations of cities and central place theory. Staff.

**132 Agriculture, Food, and Society (3).** A study of environmental parameters, cultural preferences, technological developments, and spatial economic infrastructure that result in the world patterns of food consumption, production, and distribution. Whitmire, Florin.

**134 The Cultural Ecology of Urbanization, Agriculture, and Disease (3).** Examines the role of interactions of cultures, environments, and human diseases in the quest for sustainable agriculture by examining the cultural ecology of ecosystems and their human diseases. Meade.

**135 Environmental Politics (3).** This course brings geographical perspectives on place, space, scale, and environmental change to the study of environmental politics. In lectures, texts, and student research, we examine topics including environmental health risks, globalization and urban environments, and the role of science in environmental politics. Kirsch.

**137 Natural Resources (3).** An analysis of selected biological and mineral resources of the world with particular emphasis on their distribution, utilization, management policies, and on their social and economic implications. Staff.

**140 Earth Surface Processes (GEOG 147) (3).** Prerequisite, GEOG 10 or GEOG 11. Focuses on the processes of soil formation, erosion, and landform evolution, with an emphasis on the interaction of geomorphic processes with surface hydrology and ecosystems. Band.

**141 Introduction to Watershed Systems (3).** Prerequisite, GEOG 10. Introduction to hydrologic and geomorphic processes and forms in watersheds as applied to problems in flood analysis, water quality, and interactions with ecosystem processes. The course will cover the structure of drainage networks, nested catchments, and distribution and controls of precipitation, evaporation, runoff, soil, and groundwater flow. Band.

**142 Fluvial Geomorphology (3).** Introduction to landforms and processes associated with flowing water at the earth's surface. Course includes hydrology, sedimentology, and theories of channel formation, and drainage basin evolution. Doyle.

**143 Ecological Plant Geography (BIOL 143) (3).** Prerequisite, BIOL
11 or GEOG 38. Description of the major vegetation types of the world and their distribution. Discussion of the principles that determine these patterns. Subdivisions and communities. Such as climate, soils, and history. Alternate: Bob Rees (biology).

144 LANDSCAPE BIOGEOGRAPHY (3). This course is concerned with the application of biogeographical principles and techniques to the study of natural and human-modified landscapes. Includes local and extra-regional case studies. Moody.

145 MEDICAL GEOGRAPHY (3). The human ecology of health is studied by analyzing the cultural/health-environmental interactions that lie behind world patterns of disease distribution, diffusion, and treatment, and the ways these are being altered by development. Meade.

146 GEOGRAPHY OF HEALTH CARE DELIVERY (3). This course covers the health care system, including personnel and facility distribution, accessibility, regionalization, and location allocation models; spatial analysis and GIS; and the cultural geography of health care, including humanist and political economic perspectives. Staff.

150 POPULATION GEOGRAPHY (3). A study of the spatial dimensions of population growth, density, and distribution, and of the shifts in these patterns as they relate to changes in selected sociocultural, environmental, and economic conditions. Florin, Meade, Whitmore.

152 MOBILE GEOGRAPHIES: THE POLITICAL ECONOMY OF MIGRATION (3). This course explores the contemporary experience of migrants. Various theoretical approaches are introduced, with emphasis on the political economy approach. Cravey.

153 POLITICAL GEOGRAPHY (3). The geography of politics is explored at the global, national, and local levels in separate units, but the interconnections between these geographical scales are emphasized throughout. Cravey, Kirsch.

154 HISTORICAL GEOGRAPHY OF THE UNITED STATES (FOLLK 154) (3). A study of selected past geographies of the United States with emphasis on the significant geographic changes in population, cultural, and economic conditions through time. Florin.

157 RURAL LATIN AMERICA: AGRICULTURE, ENVIRONMENT, AND NATURAL RESOURCES (3). Prerequisite, GEOG 59 or permission of instructor. Explores a systems view of agriculture, environment, natural resources, and rural development issues in Latin America. Whitmore.

158 URBAN LATIN AMERICA: POLITICS, ECONOMY, AND SOCIETY (3). Prerequisite, GEOG 59 or permission of instructor. Examines contemporary issues and trends in urban Latin America, including urbanization, political trajectories of individual countries, and urban-based activism. Cravey.

160 GEOGRAPHIES OF ECONOMIC CHANGE (3). This course is designed to explore changing geographies of production and consumption in theory and practice. Wolford.

161 THE SOUTH (3). Present-day southern United States, approached historically through a study of its physical, economic, and cultural environment. Florin.

164 EUROPE TODAY: TRANSNATIONALISM, GLOBALISMS, AND THE GEOGRAPHIES OF PAN-EUROPE (INTS 120) (3). A survey by topic and country of Europe west of Russia. Those features that have made Europe a distinct and important region today are emphasized. Pickles.

165 POPULATION AND ENVIRONMENT IN SOUTHEAST ASIA (SOCI 165) (3). Sociological, biophysical, and geographical elements are integrated to examine population-environment interactions in Thailand and neighboring countries. Diverse data sources and perspectives will examine local to global issues. Walsh and Randfluss (sociology).

166 EASTERN ASIA (ASIA 166) (3). Students study the geographical structure of population, urbanization, agriculture, industrialization, and regional links in China, Japan, and Korea. Staff.

167 TROPICAL ASIA (ASIA 167) (3). The cultural diversity and regional organization, emphasized in the spatial structure and contemporary dynamics of population, agriculture, urbanization, and economic development, primarily of the nations of Southeast Asia. Meade.

168 AFRICA (3). This course emphasizes the dynamic spatial organization of Africa south of the Sahara. Individual countries will be studied in view of their geographic characteristics and problems. Staff.

177 INTRODUCTION TO REMOTE SENSING AND DIGITAL IMAGE PROCESSING (3). Prerequisite, GEOG 70 or equivalent. Emphasizes methods of data analysis that offer an automated approach to spatial and nonspatial data synthesis which combines a system of data capture, storage, management, retrieval, analysis, and display. Fall. Moody, Song, Walsh.

178 ADVANCED REMOTE SENSING (3). Prerequisite, GEOG 70, 177 or equivalent. Acquisition, processing, and analysis of satellite digital data for the mapping and characterization of landcover types. Moody, Song, Walsh.

191 INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (3). Prerequisite, GEOG 70 or equivalent. Studies the spatial analysis and modeling capabilities of organizing data within a geographic information system. Moody, Song, Walsh.

192 APPLIED GEOGRAPHIC INFORMATION SYSTEMS (3). Prerequisite, GEOG 170, 191, or equivalent. Applied issues in the use of geographic information systems in terrain analysis, medical geography, biophysical analysis, and population geography. Walsh, Moody, staff.

195 ECOLOGICAL MODELING (3). Prerequisites, STAT 101 and GEOG 143 (or BIOL 143) and equivalent with instructor's permission. This course focuses on developing models of forest ecosystems, including population dynamics, energy, water, nutrients, and carbon flow through the ecosystem. Song.

Courses for Graduates

202 CONTEMPORARY GEOGRAPHIC THOUGHT (3). History and philosophy of geographic discipline, with particular emphasis on developments in recent decades. Kirsch.

203 COMMUNICATING GEOGRAPHY (1). This informal seminar introduces new students to departmental faculty and resources outside the department. Whitmore.

204 GEOGRAPHIC RESEARCH DESIGN (3). Introduction to the theory and practice of geographic research. The range of methods available for problem identification and solution are considered through development of specific research proposals. Staff.

205 ADVANCED QUANTITATIVE METHODS IN GEOGRAPHY (3). Application of selected multivariate statistical techniques to the analysis of geographic phenomena and problems. Moody, Konrad.

210 ADVANCED PHYSICAL GEOGRAPHY – BIOGEOCHEMISTRY (3). Examination of the major processes controlling environmental cycling of materials and energy at the landscape level and development of a quantitative understanding of the physical and ecosystem processes responsible for landscape pattern and evolution. Staff.

211 ADVANCED PHYSICAL GEOGRAPHY - HYDROCLIMATOLOGY AND BIOCLIMATOLOGY (3). Examination of topics focused on the atmospheric and vegetation and land surface parts of the hydrologic cycle at the micro to global spatial scale and short-term to millennial temporal scale. Band, Doyle.

215 LAND USE/LAND COVER DYNAMICS AND HUMAN-ENVIRONMENT
INTERACTION. (3). Examination of topics that integrate social, natural, and spatial sciences within the context of human-environment interactions, with an emphasis on landscape dynamics and spatial digital technologies for linking landscape form and function. Walkh.

260 GEOGRAPHIES OF ECONOMIC CHANGE (3). This course is designed to explore changing geographies of production and consumption in theory and practice. Wolfdorf.

290 SPATIAL ANALYSIS AND COMPUTER MODELING (3). This course introduces students to spatial analysis techniques involving points, lines, areas, surfaces, and nonmetric spaces and programming basic geographic models on microcomputers. Staff.

299 SPECIAL WORK IN GEOGRAPHY (2 or more). Prerequisites, two courses in the one hundred bracket, or permission of the instructor. (On demand.) Staff.

Seminars for Graduates

301 RESEARCH SEMINAR IN EARTH SYSTEM SCIENCE AND BIOPHYSICAL GEOGRAPHY (3). An in-depth seminar devoted to contemporary faculty research topics in earth system science and biophysical geography. Topics and instructors vary. Staff.

302 RESEARCH SEMINAR IN GEOPHYSICAL INFORMATION SCIENCES (3). An in-depth seminar devoted to contemporary faculty research topics in geophysical information sciences. Topics and instructors vary. Staff.

303 RESEARCH SEMINAR IN NATURE-SOCIETY STUDIES AND HUMAN-ENVIRONMENT INTERACTIONS (3). An in-depth seminar devoted to contemporary faculty research topics in nature-society studies and human-environment interactions. Topics and instructors vary. Staff.

304 RESEARCH SEMINAR IN SOCIAL GEOGRAPHY (3). An in-depth seminar devoted to contemporary faculty research topics in social geography. Topics and instructors vary. Staff.

305 RESEARCH SEMINAR IN INTERNATIONAL AREA STUDIES, DEVELOPMENT, AND GLOBALIZATION (3). An in-depth seminar devoted to contemporary faculty research topics in international area studies, development, and globalization. Topics and instructors vary. Staff.

311 SEMINAR/READINGS IN EARTH SYSTEM SCIENCE AND BIOPHYSICAL GEOGRAPHY (3). An in-depth seminar devoted to contemporary readings in earth system science and biophysical geography. Topics and instructors vary. Staff.

312 SEMINAR/READINGS IN GEOPHYSICAL INFORMATION SCIENCES (3). An in-depth seminar devoted to contemporary readings in geographic information sciences. Topics and instructors vary. Staff.

313 SEMINAR/READINGS IN NATURE-SOCIETY STUDIES AND HUMAN-ENVIRONMENT INTERACTIONS (3). An in-depth seminar devoted to contemporary readings in nature-society studies and human-environment interactions. Topics and instructors vary. Staff.

314 SEMINAR/READINGS IN SOCIAL GEOGRAPHY (3). An in-depth seminar devoted to contemporary readings in social geography. Topics and instructors vary. Staff.

315 SEMINAR/READINGS IN INTERNATIONAL AREA STUDIES, DEVELOPMENT, AND GLOBALIZATION (3). An in-depth seminar devoted to contemporary readings in international area studies, development, and globalization. Topics and instructors vary. Staff.

393 MASTER'S THESIS (3 or more). Fall or spring. Members of the graduate faculty.

394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Members of the graduate faculty.
Doctor of Philosophy
Normally a student must have completed a master's degree before being admitted to the doctoral program. A student may be permitted to bypass the master's degree after one year of residence upon demonstration of superior scholastic performance and research potential, recommendation of his or her graduate committee, and approval by the geological sciences faculty.
Admission to the PhD program after completing the MS degree in the Department of Geological Sciences requires faculty approval.
Requirements for the PhD degree are: a minimum of forty-five semester hours of graduate credit (which may include thirty hours from the MS degree) plus a minimum of six hours of credit for the dissertation; a written comprehensive examination and an oral comprehensive examination; a dissertation; and a final oral examination in defense of the dissertation.

Facilities and Research Interests
The Department of Geological Sciences occupies the 50,000 square feet of floor space in Elisha Mitchell Hall, and houses a departmental library, which contains more than 47,000 volumes as well as periodicals, maps, and electronic resources in the geosciences.

Research equipment and facilities include: thermal ionization mass spectrometer; two Class 100 clean labs; direct current plasma spectrometer; X-ray diffraction; flame- and graphite-furnace atomic absorption spectrometer; scanning electron microscope; counting laboratory (alpha-, beta-, and gamma-emitting radionuclides); benzene 14C laboratory; gas chromatograph-combustion-isotope ratio mass spectrometer; ICP mass spectrometer and electron microprobe (at Duke University); chimp sonar and side-scan sonar imaging systems; Landmark Graphics Geological Interpretation System; seismic reflection system; grain-size analysis equipment; core-extrusion equipment; and a Cray supercomputer cluster is available at the North Carolina Supercomputing Center. UNC-Chapel Hill and Duke University jointly operate the RV Cape Hatteras, a part of the UNOLS oceanographic research fleet, which is docked at the Duke Marine Lab in Beaufort, North Carolina.

Financial Aid
Approximately seventeen graduate and teaching assistantships with stipends of $11,000-$12,600 per academic year (2000-2001 stipends) are available to graduate students.
The department nominates one or two students to be considered by the Graduate School for non-service fellowships; no additional federal fellowship is necessary. Faculty research grants support some research assistantships. Out-of-state students are recommended for remission of out-of-state tuition costs; all students are recommended for an in-state tuition award. Most students are eligible for both, and therefore, are responsible only for the payment of student fees.

Courses for Graduates and Advanced Undergraduates

101 OCEANOGRAPHY (MASC 101) (BIOL 162) (ENVR 127) (5).
Prerequisites: major in a natural science or at least two college-level courses in natural sciences. The origin of ocean basins, chemistry and dynamics of seawater, biological communities and processes, the sedimentary record, and the history of oceanography. Term paper. Intended for students with college science background; other students should see GEOL 12. Fall, spring. Staff.

102 ARCHAEOLOGICAL GEOLOGY (ANTH 102) (3).
Prerequisite: permission of the instructor. The application of geological principles and techniques to the solution of archaeological problems. Geological processes and deposits pertinent to archaeological sites, geological framework of archaeology in the southeastern United States, and techniques of archaeological geology and site analysis are studied. Field trips to three or more sites are conducted; written reports on geological aspects of the sites are required. Not open to geology graduate students for graduate credit. (On demand.) Staff.

105 CHEMICAL OCEANOGRAPHY (ENVR 128) (MASC 105) (4).
Prerequisites: one semester of physical chemistry or ENVR 122 or CHEM 180, or permission of the instructor. Variation and abundance of sea constituents and the chemical, physical, and biological processes contributing to their distribution, as well as problems of dispersion of conservative and nonconservative substances. Three lecture and two recitation hours a week. Spring. Martens, Aronson, Alperin.

106 PHYSICAL OCEANOGRAPHY (MASC 106) (4).
Prerequisites: MATH 21, PHYS 24, 25, or permission of the instructor. Descriptive regional oceanography, equations of motion, the Ekman layer, wind-driven currents, thermohaline circulation, modern observations, waves, tides. Four lecture hours a week. Fall. Bane.

111 EARTH PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 101) (MASC 111) (4).
Prerequisites: MATH 21, CHEM 21, PHYS 25 or 27, GEOL 41 or 45, or permission of the instructor. Principles of geological and related earth systems sciences are applied to the analysis of environmental phenomena. The link between the lithosphere and other environmental compartments is explored through case studies of environmental issues. Three lecture hours and one lab hour a week. Fall. Benninger, Band.

112 OCEANIC PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 102) (MASC 112) (4).
Prerequisites: MATH 21, BIOL 11, CHEM 21, PHYS 25 or 27, MASC 54, or permission of the instructor. Principles of analysis of the oceanic, coastal, and estuarine environments, and the processes that control these environments, are applied to the analysis of environmental phenomena. The link between the hydrosphere and other environmental compartments is explored through case studies of environmental issues. Three lecture hours and one lab hour a week. Fall. Staff.

115 BIOGEOCHEMICAL PROCESSES (ENST 105) (4).
Prerequisites: MATH 21, BIOL 11, CHEM 51 or 61, PHYS 25 or 27, GEOL 41 or 45, or permission of the instructor. Principles of chemistry, biology, and geology are applied to analysis of the fate and transport of materials in environmental systems, with emphasis on those materials that form the most significant cycles. The course examines these processes in systems that contain the hydrosphere, lithosphere, atmosphere, and biosphere. Three lecture hours and one lab hour a week. Fall. Staff.

116 ENVIRONMENTAL SYSTEMS MODELING (ENST 106) (MASC 116) (3).
Prerequisites: MATH 83, PHYS 25 or 27 (may be taken concurrently), or permission of the instructor. Methods for developing explanatory and predictive models of environmental processes are explored. Includes discussion of the relevant scientific models of modes of analysis, mathematical methods, computational issues, and visualization techniques. Two lecture hours and one computer lab hour a week. Spring. Rial, Werner.

117 PALEOCEANOGRAPHY (3).
Prerequisite, GEOL 57 or 188, or permission of the instructor. Origin and distribution of pelagic sediments. Review of the major Mesozoic and Cenozoic events in the world oceans. Glacial-interglacial changes in the ocean-atmosphere system. Fall. Staff.

118 GEOLOGICAL RESEARCH TECHNIQUES (2).
Prerequisite, permission of the instructor. An introduction to methods of obtaining, analyzing, and presenting geological and paleontological data. Fall. Carter.

119 GEOLOGICAL AND OCEANOGRAPHIC APPLICATIONS OF GEOGRAPHICAL INFORMATION SYSTEMS (MASC 129) (4).
Prerequisites: four natural science courses or permission of instructor. Focus is on applying GIS concepts and techniques to mining and petroleum geology, resource assessment,

123 MARINE CARBONATE ENVIRONMENTS (MASC 123) (4). Prerequisite, permission of the instructor. Chemical and biological origins of calcium carbonate, skeletal structure, and chemo-mineralogical preservation, sedimentation, and early diagenesis are studied in a variety of deep and shallow environmental settings, in order to understand skeletal genesis, limonite origin, and carbonate facies variability. Field trip to Florida, Bahamas, or Bermuda. Lab exercises; research report. Spring. (Alternate years.) Staff.

125 COASTAL SEDIMENTARY ENVIRONMENTS (MASC 125) (3). Prerequisite, GEOG 57. An introduction to modern shallow-water deltaic environments and their sediments, emphasizing barrier islands, deltas, estuaries, wetlands, and tidal flats. Includes local field trips and discussion/application of data collecting techniques. Fall. Barnhardt, Wells.

128, 129 SUMMER FIELD COURSES IN GEOLOGY (6). Prerequisites, GEOG 52, 53, 56, 57, 58. Six-week field camp conducted in New Mexico, Arizona, and Colorado. Field interpretation of rocks and their deformation; construction of geological maps; introduction to hydrology. Includes field trips to classic localities such as the Grand Canyon. First summer session only. Staff.

130 TOPICS IN EARTH AND ENVIRONMENTAL SCIENCES (3). Key topics and resources for high school teachers preparing to teach Earth and Environmental Sciences. Includes lithosphere, tectonic processes, hydrosphere, atmosphere, origin of solar system and life, and environmental stewardship. Spring, summer. Fullagar.

132 INVERTEBRATE PALEONTOLOGY (BIOL 110) (4-5). Prerequisite, GEOG 16 or BIOL 11, or permission of the instructor. Study of major invertebrate phyla in the geologic record. Five credit hour class includes an internship (once a week) at the North Carolina Museum of Natural History as part of the APPLES service learning program in addition to the laboratory taught on campus. Fall. Carter.

133 MICROPALEONTOLOGY (MASC 133) (4). Prerequisite, GEOG 132, MASC 146, or permission of the instructor. An in-depth study of the biotastrigraphic, paleoecology, and taxonomy of various microfossil groups (i.e., Foraminifera, ostracodes, conodonts, coccoliths, Radiolarians, diatoms, actinarians, dinoflagellates, etc.) depending on individual student objectives. Three lecture and three laboratory hours a week. (On demand.) Braulover.

136 SEQUENCE AND SEISMIC STRATIGRAPHY (3). Prerequisite, GEOG 57. Examination of lithostratigraphic principles and the sequence stratigraphic paradigm. Students study use of variation of well log signature reflection attributes and reflection termination patterns to identify and correlate sequences and systems and interpret the lithology and depositional history of subsurface stratigraphic units. Fall. Barre.

137 FIELD PALEONTOLOGY (4). Prerequisites, GEOG 11, 16, 18 or 41 and GEOG 57 or 132, or permission of the instructor. A field-oriented course on the Triassic through recent strata of the southeastern United States, including their geological framework and their litho- and biostratigraphic classification. Three lecture and two laboratory hours a week. Fall. (Alternate years) Carter.

138 GEOMORPHOLOGY (3). Prerequisite, GEOG 11 or 41. The origin of landforms. Includes those formed by weathering, mass wasting, streams, dissolution of limestone, coastal processes, glaciation, and wind. Fall. Dennison.

138L GEOMORPHOLOGY LABORATORY (1). Prerequisite or corequisite, GEOG 138. Two laboratory hours a week. Fall. Dennison.

139 RIVER SYSTEMS OF EAST COAST NORTH AMERICA (3). Prerequisites, GEOG 11 or 41, GEOG 48 or 138; at least junior status. Analysis of twenty-three rivers from St. Lawrence to the Everglades, from headwaters to oceanic terminus of turbidite fan. Focus on stream processes, geological development, hydrology, utilization history, ecology, and planning. Spring. (Alternate years.) Dennison.

140 BIOGEOCHEMICAL CYCLING (MASC 140) (3). Prerequisites, GEOG 145, 146, or 164, or ENVR 153 or MASC 105 or permission of the instructor. Biogeochemical cycling explores interfaces between marine, aquatic, atmospheric, and geological sciences, emphasizing processes controlling chemical distributions in sediments, fresh and salt water, the atmosphere, and fluxes between these reservoirs. Spring, Martins, Alperin, Arnosti.

141 MODELING OF MARINE AND EARTH SYSTEMS (MASC 152) (1-3). Prerequisites, MATH 32 or permission of the instructor. Mathematical modeling of the dynamic systems, linear and nonlinear. The fundamental budget equation. Case studies in modeling convective transport, biogeochemical processes, population dynamics. Analytical and numerical techniques, chaos theory, fractal geometry. Three lecture hours per week. Spring. Werner, Ral.

142 INTRODUCTION TO GEOPHYSICS (3). Introduction to the fundamentals of global geophysics: gravity, seismology, magnetism, heat and plate tectonics. Both shallow and deep processes are considered. Emphasis is placed on problem solving by applying concepts. Fall. (Alternate years.) Lees.

143 DESCRIPTIVE PHYSICAL OCEANOGRAPHY (MASC 156) (3). Prerequisites, MASC 106 or permission of the instructor. Observed structure of the large-scale and mesoscale ocean circulation and its variability, based on modern observations. In situ and remote sensing techniques, hydrographic structure, circulation patterns, ocean-atmosphere interactions. Spring. (Alternate years) Bane.

144 ORGANIC GEOCHEMISTRY (MASC 144) (3). Prerequisites, MASC 105 or CHEM 61 or permission of the instructor. Sources, transformations, and fate of natural organic matter in marine environments. Emphasis on interplay of chemical, biological, and physical processes affecting organic matter composition, distribution, and turnover. Fall. (Alternate years.) Arnosti.

145 GEOCHEMISTRY (MASC 145) (3). Prerequisites, GEOG 11 or 41, CHEM 21, or permission of the instructor. Introduction to the application of chemical principles to geological problems, with emphasis on isotopic methods. Spring. (Alternate years.) Benninger.

146 PHYSICAL GEOCHEMISTRY (4). Prerequisites, CHEM 21, MATH 32, or permission of the instructor. An introduction to physical geochemistry and chemical thermodynamics with special emphasis on geological applications. Three lecture and three laboratory hours a week. Fall. (Alternate years.) Benninger.

147 EARTH SURFACE PROCESSES (EGOG 140) (3). Prerequisite, GEOG 10 or GEOG 11. Focuses on the processes of soil formation, erosion, and landform evolution, with an emphasis on the interaction of geomorphic processes with surface hydrology and ecosystems. Band.

150 HISTORY OF THE EARTH (3). Prerequisites, GEOG 11, 13, 15, 18, or 41 and 52, 53, 57, and 58, or permission of the instructor. History of the earth’s surface and internal systems including biologic evolution; development of oceans, atmosphere, and climate; plate tectonic processes; evolution of crust and mantle. Fall. Staff.

151 GEODYNAMICS (3). Prerequisites, GEOG 11 or 41, MATH 32, PHYS 24, 25, CHEM 21. Interior of the earth deduced from seismology, gravity, heat flow, magnetism; geophysics of continents and ocean basins; age of earth. Spring. Staff.

152 DATA ANALYSIS IN THE EARTH SCIENCES (3). Prerequisites, an introductory geology science course, Calculus I and II, or permission of instructor. Introduction to quantitative analysis in earth sciences: solid earth, atmospheres, oceans, geochemistry and paleontology. Topics covered: univariate and multivariate statistics, testing, non-parametric methods, time series, spatial and cluster analysis, shapes. Spring. Lees.
157 PROBLEMS IN VERTEBRATE EVOLUTION (BIOL 157) (3). Prerequisite, BIOL 63 or permission of the instructor. A study of the major transitions in vertebrate evolution and associated problems in evolutionary biology, structural change, paleoecology, biogeography and earth history, physiology and behavior. (On occasion.) Feduccia.

163 APPLIED HYDROLOGY (3). Prerequisites, GEOL 11 or 41, MATH 31, PHYS 25, or permission of the instructor. An introduction to methodologies and instrumentation for quantifying the movement of water in the earth system focusing on components of the hydrologic cycle. Emphasis is divided between analytical aspects and field procedures. Spring. Daniel.

164 GEOCHEMISTRY OF NATURAL WATERS (3). Prerequisites, GEOL 11, 13, 15, 18, or 41, CHEM 21, MATH 31, or permission of the instructor. Survey of processes affecting the compositions of streams, lakes, the ocean, and shallow groundwater. Spring. (Alternate years.) Benninger.

165 GROUNDWATER (3). Prerequisites, GEOL 11, 13, 15, 18, or 41, CHEM 21, MATH 31, PHYS 24, 26, or permission of the instructor. Introduction to physics, chemistry, and geology of groundwater. Fall. (Alternate years.) Benninger.

173 TOPICS IN PETROLOGY (4). Prerequisite, GEOL 53. Origin of magmas and evolution of igneous and metamorphic rocks, combined with petrographic study of selected sites and individual examples. Two lecture and six laboratory hours a week. Spring. Glazner.

181 FLUID DYNAMICS (MASC 151) (PHYS 151) (3). Prerequisite, PHYS 103 or permission of the instructor. The physical properties of fluids, kinematics, governing equations, viscous incompressible flow, vorticity dynamics, boundary layers, irrotational incompressible flow. Fall. Shay.

182 ADVANCED STRUCTURAL GEOLOGY (3). Prerequisites, GEOL 58, PHYS 24 or 26. Theoretical and experimental methods in structural geology; strain analysis; mechanical behavior of rocks. Spring. (Alternate years.) Stewart.

184 ADVANCED FIELD SEMINAR IN GEOLOGY (1-4). Prerequisites, GEOL 128 and 129 or equivalent. A field course that emphasizes advanced field methods. Emphasis is placed on large-scale, detailed field work in complex structural terrains and on independent mapping that will lead to thesis/dissertation and/or publication. (On demand.) Glazner.

188 GEOLOGICAL OCEANOGRAPHY (MASC 103) (4). Prerequisites, GEOL 11 or 41, or permission of the instructor. Ocean basin origins, continental margin development, coastal geology, carbonate platforms, and pelagic sediments are subjects covered; paleoceanographic reconstructions are emphasized. Three lecture and two laboratory hours a week. Spring. Neumann.

197 PALEOBOTANY (BIOL 181) (5). Prerequisites, BIOL 11-11L, and permission of the instructor. An introduction to the morphology, stratigraphic occurrence, and evolutionary relationships of fossil plants. Both macrofossils and microfossils are considered. Three lecture and three laboratory hours a week. Spring. (Alternate years.) Gesell.

199 SPECIAL PROBLEMS IN GEOLOGY (1-4). Independent research under the direction of a geology faculty member on an interesting geological topic. Registration requires the approval of the department chair. Fall and spring. Staff.

Courses for Graduates

202 SEDIMENTARY GEOLOGY I (3). Prerequisites, GEOL 57, or equivalent, or permission of the instructor. Stratigraphic, sedimentologic, geochemical, petrologic, and paleontologic principles will be emphasized. Emphasis is placed on both the techniques used in sedimentary geology and the characteristics and processes that distinguish sedimentary environments. Fall. Brabower, Baruck.


204 ADVANCED PETROLOGY I (3). Prerequisites, CHEM 21, MATH 33, PHYS 25, GEOL 53. Application of thermodynamics, phase equilibria, thermobarometry, radiogenic and stable isotope geology, and geochemical modeling to the study of igneous and metamorphic rocks and crustal evolution. Fall. Fullagar, Glazner.

205 ADVANCED PETROLOGY II (3). Prerequisite, GEOL 204. Continuation of GEOL 204. Spring. Fullagar, Glazner.


225 CLASTIC DEPOSITIONAL SYSTEMS: PROCESSES AND PRODUCTS (3). Prerequisite, GEOL 57. Examination of the use of lateral and vertical changes in sedimentary facies to identify depositional processes and environments of deposition within the terrestrial, marginal marine, shelf, and deep sea clastic depositional systems. These systems will be examined in a sequence stratigraphic framework. Spring. Barek.

246 ADVANCED MINERALOGY (3). Prerequisite, GEOL 52. Principles of crystal chemistry, X-ray diffraction methods, linear algebraic and computer methods in crystallography. (On demand.) Glazner.


264 ADVANCED IGNEOUS PETROLOGY (4). Prerequisites, GEOL 146 and 173. Applications of phase equilibria and thermodynamics to studies of the origin and evolution of magmas. Three lecture and three laboratory hours a week. (On demand.) Glazner.

265 METAMORPHIC PETROLOGY (4). Prerequisites, GEOL 53 and 173, or permission of the instructor. Studies in the occurrence of metamorphic rocks in orogenic belts and their mineralogical, textural, and structural evolution. Two lecture and six laboratory hours a week. Spring. (On demand.) Staff.

266 IGNEOUS GEOCHEMISTRY (4). Prerequisite, GEOL 146. Study and critique of thermobarometry; major- and trace-element modeling, and isotopic methods in igneous petrology, using case studies from current literature. Three lecture and three laboratory hours a week. (On demand.) Glazner.


280 TECTONOPHYSICS (3). Prerequisites, MATH 34, PHYS 52, 58, or permission of the instructor. Fundamental physical processes necessary for an understanding of plate tectonics: stress and strain in solids; elasticity and flexure; heat transfer; gravity; mantle rheology and convection. Fall. (Alternate years.) Lec. Rial.

300 RESEARCH SEMINAR (1). Required of all entering graduate students or permission of the chair. A topical seminar in current research topics in the earth sciences. Presentations by selected faculty with an emphasis on in-depth, critical analysis of current research literature. Two hours a week. Fall. Staff.

301 SEMINAR (1 or more). Offered as needed. Staff.

302 SEMINAR IN STRATIGRAPHY (1 or more). Offered as needed. Staff.

306 SEMINAR IN PALEEOECOLOGY (1 or more). Offered as needed. Staff.
DEPARTMENT OF GERMANIC LANGUAGES

CLAYTON KOELB, Chair

Professors Emeriti
Walter K. Francke
Richard H. Lawson
Christoph E. Schweizer
Sidney R. Smith
Petrus W. Tax

The Department of Germanic Languages offers graduate programs leading to the degrees of master of arts and doctor of philosophy. Students concentrate in either German literature and culture, or Germanic linguistics.

PLEASE NOTE: At this time the department is accepting applications for the German literature and culture program only.

The faculty welcomes and encourages the pursuit of interdisciplinary interests, and students regularly take courses offered by other academic units in the University (e.g., the Curriculum of Comparative Literature, the Program in Cultural Studies, and the departments of history and linguistics). Within the broad requirements of the Graduate School and the department, every effort is made to meet the student's individual needs.

The department ordinarily expects at least one year of teaching experience as part of the graduate program and provides rigorous training in German language teaching methodology (GERM 205).

Prospective students should examine the document "Guide to Graduate Studies in German," which describes departmental curricula and requirements in detail. It is available on the Web at www.unc.edu/depts/german/.

Master of Arts in Germanic Languages

Admission: Applicants normally should have completed an undergraduate degree with a major in German or a related field.

Requirements: The MA degree is designed to be completed in four semesters. A minimum of thirty semester hours (typically ten courses) is required, and must include GERM 205 and 393 (MA thesis credit), and two of the following: GERM 160, 165, 171. Ordinarily it is expected that MA students will write a minimum of three course papers during the first year.

Students concentrating in German literature are also required to take GERM 111-112 and to take a comprehensive MA examination, ordinarily at the beginning of the fourth semester. The reading list for the examination consists of a list of at least twenty-five titles, compiled by the student in consultation with his/her advisor, and representing all the major periods and genres of German literature. The twenty-five titles may include as many works from the GERM 111-112 reading lists as the student and advisor deem suitable. The GERM 111-112 syllabi are included in the "Guide to Graduate Studies in German."

Students concentrating in Germanic linguistics take an MA examination in Germanic linguistics during the second year of MA studies at a time determined by the director of graduate studies in linguistics. Toward the end of the first year of MA studies, students concentrating in Germanic linguistics select four examination topics for research.

The MA thesis is a scholarly paper of approximately forty-five pages, the final signed copy of which is due no later than the last day of classes of the fourth semester.

Doctor of Philosophy in Germanic Languages

Admission: Applicants normally should have completed a master's degree in German or the equivalent. Only those students who have demonstrated academic excellence at the MA level will be admitted to the PhD program.
Requirements: The PhD requires a total of twenty-four semester hours beyond those required for the MA. This typically amounts to six courses beyond the MA degree (if received from UNC-Chapel Hill) one of which must be GERM 160, 165, or 171, with an additional six hours of dissertation credit (GERM 394). For the most part, PhD students pursue individualized programs of study.

Students concentrating in German literature elect courses in consultation with their adviser so as to gain exposure to different periods (medieval, early modern, eighteenth, nineteenth, and twentieth centuries) and to a variety of critical approaches to the study of literature. PhD students are expected to enroll in no fewer than four courses (beyond those required for the MA) for which a final paper is required.

Students concentrating in Germanic linguistics take a variety of courses involving older Germanic dialects, comparative grammar, contemporary Germanic linguistics, Indo-European, and/or general linguistics.

Students who have earned MA degrees at other institutions should consult with the director of graduate studies regarding the transfer of credit. Students from other institutions take GERM 205 during their first year of teaching at UNC-Chapel Hill.

PhD students must demonstrate reading knowledge of one foreign language (other than German) deemed relevant to a particular course of study. This is usually French, but students may petition the department to substitute some other language. Students normally take the PhD examination at the end of the second year of doctoral studies. In both concentrations — German literature and Germanic linguistics — the PhD examination allows students to investigate areas of particular interest (from which a dissertation topic will emerge), while it observes The Graduate School’s requirement of comprehensiveness.

To be admitted to candidacy for the degree of doctor of philosophy, students must have completed all course work, fulfilled the foreign language requirement, passed the PhD examination, and developed a satisfactory dissertation prospectus. All students must write an acceptable dissertation based on independent research.

Financial Aid

The department nominates outstanding students for competitive non-service fellowships awarded by The Graduate School. In order to be fully considered for these competitive fellowships, applicants should ensure that all application materials arrive by January 1. A varying number of teaching assistantships are awarded annually to qualified graduate students. Duties involve teaching German at the elementary or intermediate level, or leading recitations (in English or in German) for large undergraduate lecture courses on German literature, culture, and philosophy. The department recommends those receiving assistantships for special tuition awards, including remission of out-of-state tuition. To receive priority consideration for such departmental financial aid, applications must be received by January 31.

The duration of financial aid is usually two years at the master’s level and three to four years at the doctoral level. However, reappointment and continuation of support depend critically on satisfactory academic progress and performance of duties (where applicable).

Graduate students are also encouraged to apply for external fellowships (Fulbright, DAAD) that will enable them to spend a year in residence at a German university. The Graduate School offers dissertation fellowships on a competitive basis to support dissertation research both on- and off-campus.

Mannheim Exchange

Each year, the department selects one graduate student to go to Mannheim, Germany, to take part in an educational and teaching exchange program. A graduate student from Mannheim spends the year here, studying at UNC-Chapel Hill, teaching in the department, and acting as the resident assistant for the German House.

Library and Research Facilities

The University library has outstanding holdings in German literature, Germanic linguistics, literary theory, and general linguistics, with further materials available from nearby Duke University (especially valuable for the Jantz Collection of Baroque Literature and German-Americans). A good collection of basic reference works and standard editions is available to students in the department reading room. The language laboratory has not only instructional tapes but also much other recorded material such as German plays, songs, and dialect recordings.

Courses without Credit for Graduate Students

101X, 102X ELEMENTARY GERMAN FOR GRADUATE STUDENTS (3). Designed as preparation for the reading knowledge examination for higher degrees. Passing of the examination at the end of 102X certifies that this requirement has been satisfied, although the course does not count for graduate credit. Three hours a week. Fall and spring. (NOTE: 101X or permission of instructor is required as a prerequisite for 102X.)

Courses for Graduates and Advanced Undergraduates

*Courses numbered 115-140 may be taken for three credit hours (final examination required) or students may concurrently enroll in an Essay (E) section (115E-140E, respectively) for an additional one credit hour. The four-credit-hour option requires a term paper and is available to German department graduate students only.

100 ADVANCED GERMAN GRAMMAR (3). A study of current German structure and usage. This course strengthens the writing of graduate students and helps them confront the problems most frequently faced in speaking and teaching.

111 HISTORY OF GERMAN LITERATURE I (3). This course is the first part of a two-semester sequence offering students a comprehensive, text-based survey of German literary history from the High Middle Ages to the present.

112 HISTORY OF GERMAN LITERATURE II (3). This course is the second part of a two-semester sequence offering students a comprehensive, text-based survey of German literary history from the High Middle Ages to the present.

115* EARLY MODERN LITERATURE (3). German literature of the fifteenth, sixteenth, and seventeenth centuries. Close readings, lectures, and discussions of representative texts.

120* EIGHTEENTH-CENTURY LITERATURE (3). German literature in the Age of Enlightenment. Close readings, lectures, and discussions of representative texts.

125* EARLY NINETEENTH-CENTURY LITERATURE (3). German literature of the Romantic Period. Close readings, lectures, and discussions of representative texts.

130* LATER NINETEENTH-CENTURY LITERATURE (3). The literature of Realism, Naturalism, and related movements. Close readings, lectures, and discussions of representative texts.

135* EARLY TWENTIETH-CENTURY LITERATURE (3). Major figures of the period from the turn of the century to the Second World War. Close readings, lectures, and discussions of representative texts.

140* LATER TWENTIETH-CENTURY LITERATURE (3). Literature since World War II in the Federal Republic, the former GDR, Austria, and Switzerland. Close readings, lectures, and discussions of representative texts.

155 STYLISTICS: THEORY AND PRACTICE (3). A survey of stylistic theories and practices in literature and linguistics; analysis of a large variety of texts; written exercises; training in the use of stylistic devices.
160 HISTORY OF THE GERMAN LANGUAGE (3). Prerequisite, a good reading knowledge of German. Development of sounds and forms from ancient times to the present. Political, social, and literary forces influencing the language. Recommended for first semester of graduate study.

165 THE STRUCTURE OF MODERN GERMAN (3). Introduction to the formal analysis of German grammar (phonology, morphophonemics, prosodics, morphology, syntax) within the framework of generative grammar.

171 MIDDLE HIGH GERMAN (3). Introduction to medieval German language and literature.

172 PIDGINS AND CREOLES (3). Examination of the linguistic features of pidgin and creole languages, the sociohistorical context of their development, and their import for current theoretical issues (acquisition, universal, language change).

175 VARIATION IN GERMAN (3). A comprehensive account of major topics in German sociolinguistics: development of the German language, traditional dialects, variation in contemporary colloquial speech, German as a minority language (Alsace, Belgium), German outside of Germany (Austria, Switzerland, Luxembourg).

180 PROBLEMS IN GERMANIC LINGUISTICS (3). Special problems will be selected for intensive investigation. The subject matter of the course will be adapted to the particular interests of the students and instructor.

Courses for Graduates

205 TEACHING METHODS AND MATERIALS (3). For prospective teachers of German. Required of all teaching assistants. Fall.

206 ADVANCED TOPICS IN FOREIGN LANGUAGE PEDAGOGY (3). Prerequisite, GERM 205. This course provides experienced teaching assistants the opportunity to revisit the fundamentals in foreign language pedagogy while exploring in greater depth advanced issues like content-based instruction, technology, and supervising.

210 TOPICS IN MEDIEVAL LITERATURE (3).

215 TOPICS IN EARLY MODERN LITERATURE (3).

220 TOPICS IN EIGHTEENTH-CENTURY LITERATURE (3).

225 TOPICS IN EARLY NINETEENTH-CENTURY LITERATURE (3).

230 TOPICS IN LATER NINETEENTH-CENTURY LITERATURE (3).

235 TOPICS IN EARLY TWENTIETH-CENTURY LITERATURE (3).

240 TOPICS IN LATER TWENTIETH-CENTURY LITERATURE (3).

245 TOPICS IN GERMAN CULTURAL STUDIES (3).

246 TOPICS IN GENDER STUDIES (3).

247 TOPICS IN GERMAN JEWISH STUDIES (3).

248 TOPICS IN GERMAN CINEMA (3).

250 TOPICS IN AESTHETICS AND CRITICISM (3).

255 GOTHIC (3). Reading and linguistic analysis of Gothic biblical texts, with study of phonology, morphology, and syntax; comparison with other older dialects of Germanic. (On demand.)

260 OLD NORSE I (OLD ICELANDIC) (3). Reading and linguistic analysis of Old Norse (Old Icelandic) texts, with study of phonology, morphology, and syntax; comparison with other older dialects of Germanic. (On demand.)

261 OLD NORSE II (OLD ICELANDIC) (3). Continuation of Old Norse I. (On demand.)

270 OLD HIGH GERMAN (3). Reading and linguistic analysis of Old High German texts, with study of phonology, morphology, and syntax; comparison of the various dialects with other older dialects of Germanic. (On demand.)

272 EARLY NEW HIGH GERMAN (3). Reading and linguistic analysis of Early New High German texts, with study of phonology, morphology, and syntax. (On demand.)

275 OLD SAXON (3). Reading and linguistic study of biblical texts (Helaund, Genesis) in Old Saxon, with study of phonology, morphology, and syntax; comparison with Old English, Old High German, and other Germanic dialects. (On demand.)

280 COMPARATIVE GERMANIC GRAMMAR (3). Analysis of phonological and morphological development from Indo-European to the older stages of Germanic dialects. Special attention to laryngeal hypothesis, Benveniste root theory, and structure of nouns, pronouns, and verbs. Student presentations.

285 TOPICS IN GERMANIC LINGUISTICS (3).

299 INDEPENDENT READINGS (Var). Prerequisite, permission of instructor and director of graduate studies. Special readings and research in a selected field or topic outside the scope of current course offerings.

345 SEMINAR IN GERMAN LITERATURE (3).

361 SEMINAR IN GERMANIC LINGUISTICS (3).

393 MASTER'S THESIS (Var).

394 DOCTORAL DISSERTATION (Var).

SCHOOL OF GOVERNMENT

Michael R. Smith, Dean

Albert Coates Professor
James C. Drennan, Courts Law and Judicial Administration

Gladys Hall Coates Professor
Janet Mason, Social Services Law

Charles Edwin Hinsdale Professor
Joan G. Brannon, Courts Law and Judicial Administration

William R. Kenan Jr. Professor
David M. Lawrence, Local Government Law

Professors
David N. Ammons, Public Administration
A. Fleming Bell II, Local Government Law
Frayda S. Bluestein, Local Government Law
William A. Campbell, Editor, Legislative Reporting Service; Environmental Protection
Anne M. Dellinger, Legal Issues in Health Care
Robert L. Farb, Criminal Law and Procedure
Joseph S. Ferrell, Property Tax Law; Secretary of the Faculty
Milton S. Heath Jr., Environmental Law
Robert P. Joyce, Education Law
Ben F. Loeb Jr., Criminal Law
Laurie L. Mesibov, Education Law
David W. Owens, Environmental and Land Use Law
John Rubin, Criminal Law and Procedure
John L. Saxon, Social Services Law
Michael R. Smith, Dean
Carl W. Stenberg III, Public Administration
Thomas H. Thornburg, Associate Dean for Programs
A. John Vogt, Governmental Finance and Accounting
Gordon P. Whitaker, Public Administration
Associate Professors
Mark F. Botos, Mental Health Law
Phillip Boyle, School Boards and Public Management
Mary Maureen Brown, Information Technology and Management
Anita R. Brown-Graham, Local Government Law
Richard D. Duck, Land Use Law
Cheryl D. Howell, Judicial Education and Administration
John B. Stephens, Inter-Agency and Public Policy Dispute Resolution
Richard B. Whitman, Environmental Law

Assistant Professors
Shea R. Denning, Property Tax Law
Willow S. Jacobson, Human Resource Management
Diane M. Juffra, Employment Law
Jill D. Moore, Public Health Law
William C. Rivera, Public Administration
Jessica Smith, Criminal Law and Procedure
Amae N. Wall, Public Health Law

Instructor
Jonathan Q. Morgan, Economic Development

Albert and Gladys Hall Coates Term Lecturers for Teaching Excellence
Gregory S. Allison, Governmental Accounting and Financial Reporting
Joseph E. Hunt, Property Tax Appraisal and Assessment Administration

Adjunct Faculty
Cynthia Bizell, Professional Communications
Margaret Henderson, Nonprofit Management
W. Calvin Horton, Local Government Management
Angela Williams, Professional Communications

The School of Government (www.sog.unc.edu) has its roots in the Institute of Government, established in 1931, and has long focused on state and local government in the broader study of government, public law, public finance, and public administration. Today, it is the nation’s leading university-based provider of instructional and advisory services to state and local government practitioners. Through the Institute of Government instructional programs, advising, research, and publishing, the school advances general understanding about government and shares that information with practitioners and other scholars. The school offers a program of courses leading to the master of public administration (MPA) degree.

MASTER OF PUBLIC ADMINISTRATION DEGREE PROGRAM

DAVID AMMONS, Director

MPA Program Teaching Faculty
Allison; Ammons; Bizell; Bluestein; Brown; Henderson; Horton; Michelle Hoyman, Department of Political Science; Jacobson; Morgan; Owens; Rivera; Sax; Steinburg; Stephens; Isaac Unab, Department of Political Science; Vogt; Whitman; Whitaker; Williams; Deil Wright, Department of Political Science.

Program Overview
The School of Government offers the master of public administration (MPA) degree. Rated among the nation’s best, the MPA program offers a curriculum that blends the development of practical skills in analysis, communication, finance, and management with an overarching emphasis on the enhancement of individual leadership skills.

Accredited by the National Association of Schools of Public Affairs and Administration, the MPA program has produced graduates now serving as officials in local, state, and federal government. At the local level alumni serve as city and county managers, budget and finance directors, personnel directors, other department heads, and professional staff. In state government, alumni direct departments and serve in management and staff positions in policy planning, finance and management, personnel, water resources, health services, education, and other areas. At the federal level, alumni serve as administrators and analysts in a variety of agencies, including the Office of Management and Budget, the Environmental Protection Agency, the Department of Health and Human Services, the Department of Labor, the Administrative Office of the Courts, and Senate and House committee staffs. In the nonprofit sector, MPA alumni administer programs in the arts, in education, in economic development, and in human services.

More information is available at www.mpa.unc.edu.

Admission Requirements
The MPA program welcomes individuals from different backgrounds. A majority of past entrants into the program have had undergraduate majors in the social sciences, especially political science and economics, but applicants have been accepted with undergraduate majors in architecture, business administration, engineering, English, French, history, industrial relations, music, and many other fields.

The requirements for admission are:
• a bachelor’s degree;
• at least a B average in the undergraduate major and a generally strong academic record;
• a minimum of three semester hours credit in American government and politics;
• a minimum of three semester hours credit in economics;
• good verbal and quantitative scores on the GRE;
• a one-page statement of purpose that indicates student aspirations that are consistent with the focus and strengths of the MPA program;
• three letters of recommendation;
• oral interview with the MPA Admissions Committee.

All admissions decisions are made during the spring for fall semester matriculation. Applicants are encouraged to meet Graduate School application deadlines. However, the MPA program continues to accept applications through February 1. After a preliminary screening of applications, notifications are made concerning the oral interview.

Financial Aid
The MPA program provides financial assistance to many of its students. Research assistantships or partial scholarships are available to top candidates. Furthermore, some students become involved with Institute of Government projects or work with other university, governmental, or nonprofit organizations as paid, part-time graduate assistants.

Course Work and Degree Requirements
A minimum of fifty-four semester hours of credit, an internship, and a final oral examination are required for the MPA. The two years of study and work are designed to combine three essential components of professional development: (1) a rigorous core of education in the theory and practice of public management; (2) a choice of an in-depth elective specialization in the second year; and (3) a summer-long internship in between the first and second years, in a position with substantive responsibilities.

Core course requirements are:
• Public Organization Theory and Behavior (3).
• Introductory Policy Evaluation Methods (3).
• Professional Communication (3).
• Politics of the Administrative Process (3).
• Public Management and Leadership (3).
• Methods for Policy Analysis and Evaluation (3).
• Public Personnel Law and Administration (3).
• Government Budgeting and Finance (3).
• Governmental and Non-For-Profit Accounting and Reporting (2).
• Public Policy Analysis (3).
• Managing Public Policy (3).
• Values and Ethical Perspectives on Public Policy (1.5).
• MPA Professional Development Seminar I and II (2 each).

In addition to the common core, each student completes 16.5 semester hours of elective courses.

Courses

160 MUNICIPAL ADMINISTRATION (4). This course covers municipal government organization and management, finance, personnel, planning and economic development, and the administration of specific municipal functions. Spring. Allison.

161 COUNTY GOVERNMENT (4). This course covers county government organization and management, finance, personnel, planning and economic development, and the administration of specific municipal functions. Spring. Allison.

205 PUBLIC POLICY ANALYSIS (POLI 205) (3). The roles of expertise in policy discourse; the place of values in policy analysis; summarizing preferences; benefits and costs; policy models; policy expertise and democratic political systems. Fall. Whissant.

210 PUBLIC ORGANIZATION THEORY AND BEHAVIOR (3). Exposition, comparison, and case-based application of basic models of organizations, with emphasis on public sector entities. Fall. Whitaker.

211 PUBLIC MANAGEMENT AND LEADERSHIP (POLI 211) (3). Prerequisite, PADM 210. Development of administrators' skills in working with others to accomplish organization goals. Conceptual and experimental models of learning used to examine a variety of administrative behaviors. Spring. Whitaker.

212 INTRODUCTORY POLICY EVALUATION METHODS (POLI 212) (3). The application of statistical methods to programs of evaluation of public programs and problems facing public managers. Theory and basic techniques up to an introduction to linear regression analysis. Fall. Staff.

213 MANAGING PUBLIC POLICY (POLI 213) (3). Prerequisites, POLI 210, 211, 212, 214, 226. The role(s), function(s), and strategy of public administrators in the formulation, adoption, and implementation of public policies. Policy from the perspective of the policy maker; cases exploring the relationship of theories to actual policy processes. Spring. Wright, Stenberg.

214 GOVERNMENT BUDGETING AND FINANCE (3). An introduction to the revenue and expenditure structure of the public sector including revenue policy, expenditure policy, and budget structure and administration. Topics are examined from an applied perspective using analytic criteria from public sector economics, public administration, and political science. Spring. Rivieuburk.

215 NONPROFIT MANAGEMENT (3). Examination of the managerial challenges posed by nonprofit organizations and of techniques and practices used by managers of nonprofit organizations. Fall. Henderson.

216 LOCAL GOVERNMENT LAW (1.5). Overview of key legal concepts affecting local government operations. Topics include relation to federal/state governments, legal structures, finance and regulatory powers, plus introduction to the legal system and analysis. Spring. Bluestein.

217 MPA PROFESSIONAL DEVELOPMENT SEMINAR I (POLI 217) (2). Integration of learnings from MPA students' professional field experience ("internship") through site visits, conferences, and seminars. Fall. Ammons.

218 MPA PROFESSIONAL DEVELOPMENT SEMINAR II (POLI 218) (2). Continued integration of learnings from MPA students' professional field experience ("internship") through site visits, conferences, and seminars. Spring. Ammons.

219 POLITICS OF THE ADMINISTRATIVE PROCESS (POLI 219) (3). The motivations of public agency officials, interactions between bureaucracies and other political actors, and alternative strategies to control bureaucratic power and discretion in making, implementing, and evaluating public policies. Fall. Hoyman.

220 POLITICS OF COMMUNITY ECONOMIC DEVELOPMENT: STRATEGIES AND CHOICES (POLI 310) (3). This course covers economic development from the community's perspective. The class develops criteria that a community should use in making economic development choices. The course presents a wide range of strategies. Fall. Hoyman.


223 ADMINISTRATIVE LAW DEVELOPMENT AND APPLICATIONS (3). Addresses legal issues in the exercise of governmental power by federal, state, and local agencies in the United States. Topics include legislative and executive oversight, rule making, adjudication, and judicial review. Fall. Owens.

224 PRODUCTIVITY IMPROVEMENT IN LOCAL GOVERNMENT (3). This course will acquaint students with the concept of productivity, its importance in the public sector, principal techniques used to improve productivity in local government, and barriers to productivity improvement initiatives. Fall. Ammons.

225 CITY AND COUNTY MANAGEMENT (3). Nature of city or county manager's job; expectations of elected body, staff, public and public servants. Examines contemporary issues in departmental operations that have a significant effect on how manager's performance is perceived. Fall. Anmon, Horan.

226 HUMAN RESOURCE MANAGEMENT (3). Examination of political and institutional environment of public management, the evolution of the United States civil service system, competing values and principles shaping contemporary human resource management, and traditional human resource management functions. Spring. Jacobson.

227 NAVIGATING NONPROFIT LOCAL GOVERNMENT RELATIONSHIPS (1-3). This course is designed for graduate students who are seeking professional positions in local government or nonprofit. The overall objectives are to exchange information about issues of mutual concern to both nonprofits and government. Spring. Henderson.

228 ELECTRONIC GOVERNMENT: PRACTICES AND METHODOLOGIES (3). This course focuses on the issues involved in administering and managing e-government activities. Special emphasis is placed on the particular challenges endemic to public performance. Fall. Brown.

229 MANAGING INFORMATION TECHNOLOGY IN LOCAL GOVERNMENT AND NONPROFITS (1-3). The course explores information technology policies, development, training, assessment, and organizational behavior. Spring. Staff.

230 LAW FOR PUBLIC ADMINISTRATION (3). An introduction to law for students in public administration or related disciplines. Topics: sources of law and legal resources, personnel law, administrative law, and selected topics in constitutional law relevant to public administration. Fall. Bluestein.

233 GOVERNMENTAL AND NOT-FOR-PROFIT ACCOUNTING AND REPORTING (2). Teaches the principles of accounting and financial reporting in governmental and not-for-profit environment. Provides skills for analyzing the financial condition of governments and the efficiency and effectiveness of governmental programs. Spring. Allison.
234 PROFESSIONAL COMMUNICATIONS (3). Grounds students in fundamental techniques of writing and oral presentation in a range of formats suited to public service. Fall. Bizell, Williams.

235 VALUES AND ETHICAL PERSPECTIVES ON PUBLIC POLICY (1-3). Understanding and clarifying the valuational base of administrative and policy choices. Ethical problems encountered in public officials' personal actions. Spring. Staff.

237 METHODS FOR POLICY ANALYSIS AND EVALUATION (POLI 237) (3). Prerequisite, PUBA 212, PLAN 130, or equivalent. Introduction to selected techniques such as the following: multiple regression, decision theory, research design, social experiments and quasi-experiments, program evaluation, and policy-related models. Spring. Utah.

238 INTERGOVERNMENTAL RELATIONS (POLI 238) (3). Examines conflict and cooperation among governmental officials representing national, state, and local government in the United States; changing roles of governments; and new mechanisms for intergovernmental collaboration. Fall. Wright.

240 SPECIAL TOPICS IN PUBLIC ADMINISTRATION (3). Prerequisite, permission of the instructor. Seminar in selected areas of public administration. Topics will vary from year to year. May be repeated for credit. Fall and spring. Staff.

241 DIRECTED READINGS IN PUBLIC ADMINISTRATION (1-3). Directed readings in a special field under the direction of a member of the graduate faculty. Fall and spring. Staff.

395 RESEARCH IN PUBLIC ADMINISTRATION (POLI 395) (0-6). Fall, spring, and summer. Staff.

702 FINANCIAL MANAGEMENT OF NONPROFIT ORGANIZATIONS (SOWO 702) (3). This course provides basic financial skills for leaders of nonprofits, including bookkeeping fundamentals, interpreting financial statements, budgeting, cash management and investment, and legal compliance. Fall. Staff.

DEPARTMENT OF HISTORY

LLOYD S. KRAMER, Chair

Professors

William L. Barney (92) The Political History of Nineteenth-Century America
Judith M. Bennett (37) European Women's History (Especially Medieval), Medieval England
Christopher R. Browning (30) Twentieth-Century Germany; the Holocaust
W. Fitzhugh Brundage (96) U.S. South since the Civil War, New South
Melisa M. Bullard (38) Renaissance, Mediterranean and Early Modern Europe
John C. Chasten (45) Nineteenth-Century Latin America (Especially Brazil), Populism and Political Culture
Stanley Chojnacki (29) Late Medieval, Renaissance (Especially Italy and Venice), European Women's History
Peter A. Codnans (85) U.S. Economic and Business History, Colonial History
William Ferris (65) U.S. South, with Emphasis on Literature, and Documentary Studies
Peter G. Filee (83) Twentieth Century: American Social and Cultural History, U.S. Gender Roles
W. Miles Fletcher (52) Japanese History
David M. Griffiths (66) Russia in the Eighteenth Century: Social and Intellectual, Marxism
Jacquelyn D. Hall (90) U.S. Women's History, Oral History, U.S. South
Barbara J. Harris (24) European Women's History (Especially Early Modern, Tudor-Stuart England)
R. Don Higginbotham (84) Colonial and Revolutionary America
Michael H. Hunt (97) U.S. Diplomatic History, U.S.-East Asian Relations, Chinese Foreign Relations
Konrad H. Jarasch (32) Nineteenth- and Twentieth-Century Europe

John F. Kasson (88) American Intellectual and Cultural History, Technology and Society, Art and Literature
Richard H. Kohn (82) Military History
Lloyd S. Kramer (39) European Intellectual History
Roger W. Labkovsky (81) Urban Political History, 1800 to the Present
Gernot R. Meinl (86) African American History
Michael R. McVeaugh (15) History of Science
Theda Perdue (95) Native American History
Louis A. Perez Jr. (46) Latin America, Caribbean, Cuba
Donald J. Raleigh (66) Twentieth-Century Russian/Soviet History
Donald M. Reid (36) Modern French History
John E. Semenovitch (77) American Legal and Constitutional History
Richard A. Soltoway (23) Nineteenth-Century Britain: Social, Intellectual, and Church History
Richard J. A. Talbert (18) Ancient Rome, Classic
Harry L. Watson (93) North Carolina History

Associate Professors

E. Willis Brooks (61) Russia in the Nineteenth Century: Social, Administrative, and Intellectual
Kathryn Burns (47) Colonial Latin American Gender/Women's History
James L. Chadwick (56) History of China
Reginald F. Hildebrand (75) African and African American Studies
James L. Leloudis (91) North Carolina History, U.S. South, Education History
W. James McCoy (17) Ancient, Particularly Greek History
Terence V. McIntosh (33) Early Modern European, Economic and Social
Sarah D. Shields (55) Islamic Civilization
Jay M. Smith (34) France 1550-1815

Assistant Professors

Chad Bryant (66) Twentieth-Century Eastern European History
Kathleen DuVal (67) Early America, Early American Women
Jerma A. Jackson (96) African American History
Lisa A. Lindsay (80) West Africa; African Diaspora
Yasmin Sultana (50) South Asia
John Sweet (68) Early American History

Semi-Retired Professor

Richard W. Pfaff (16) English Medieval History; Ecclesiastical, Cultural, and Political History

Joint Appointments

Robert C. Allen (73) American Studies
Michael D. Green (74) Native American History
Reginald F. Hildebrand (75) African and African American Studies
Sylvia D. Hoffer (72) U.S. Women's History
Gerald C. Horne (78) American and African American History

Professors Emeriti

Josef Anderele
Samuel H. Baron
Stephen B. Baxter
Frederick O. Behrends
Herbert L. Bodman Jr.
Henry C. Boren
John M. Headley
Lawrence D. Kasler
Frank W. Klinkenberg
William E. Leuchtenberg
Robert M. Miller
John K. Nelson
William S. Powell
Frank W. Ryan Jr.
George V. Taylor
Graduate students in history develop both depth and breadth of historical knowledge. Each student works primarily within one of nine major fields: ancient history; European history; history of science; history of women; global history; Latin American history; military history; Russian and East European history; and United States history. Students who advance to the doctoral level also develop expertise in a second field chosen from an even broader range of possibilities — that is, not only any of the above major fields but also African history, Middle Eastern history, and Asian history.

Extensive information about the graduate program in history is available at www.unc.edu/depts/history/grad, and the regulations that guide students progress can be seen at www.unc.edu/depts/history/grad/reg.html. Please use these to supplement the brief summary below.

Admission

The department considers applications from those holding undergraduate degrees and those who have obtained MA degrees elsewhere. Students admitted to the department with an MA from another university will be reviewed by the faculty at the time of entry into the history program to determine whether they should take second MA degrees here or proceed directly to PhD training. Preference in admission is given to students who intend to proceed to doctoral work, either directly or after completion of the MA degree.

The MA Program

The courses required for the MA degree usually include an introduction to research (HIST 200) and introductory seminar (HIST 300), to be taken in the first year of study; a two-semester reading colloquium or its equivalent in the student’s major field; one additional seminar (300-level course); three hours of thesis credit (HIST 393); and four other courses, of which as many as three may be taken in fields other than that in which the student is concentrating or even in other disciplines. MA candidates must also pass a reading-knowledge examination in an appropriate foreign language, prepare an acceptable thesis, and pass an oral examination on the thesis.

Students are expected to complete the MA after four semesters in residence.

The PhD Program

Satisfactory completion of the MA does not automatically entitle a student to continue at the doctoral level. After the MA oral examination, the student’s committee reaches a formal written decision about whether he or she should continue toward the PhD.

All courses taken at UNC-Chapel Hill for the MA (except HIST 393) may be credited toward the doctoral program. The Graduate School approves for transfer credit graduate courses taken elsewhere, these may be credited as well. Candidates for the PhD complete the following minimum course program (in addition to the requirements for the MA): research seminar; two courses in a second field of study; research design (HIST 399); and dissertation credit (HIST 394). A reading knowledge of two foreign languages is required for the PhD degree.

Each doctoral student must pass written comprehensive examinations in the major field, as well as an oral examination that focuses on the dissertation. The final requirements for the PhD are a dissertation and an oral examination on it.

The department expects doctoral students to proceed quickly with their work. For those pursuing both the MA and the PhD, all course work and the comprehensive written and oral examinations must be completed by the end of the seventh semester. For those who enter the program with an acceptable MA from another institution, ABD status must be achieved within four semesters. The dissertation must be completed within a period of eight years.

Fellowships and Assistantships

The department funds most of its students through teaching assistantships or fellowships, and also offers research grants and dissertation fellowships. In addition, The Graduate School awards fellowships to both entering students and students in the later phases of their doctoral training. More details about funding for history students can be found at www.unc.edu/depts/history/grad/funding.html.

Libraries and Research Opportunities

The Davis and Wilson libraries have many collections of great value, and the University itself is conveniently situated close to a number of other research centers, particularly the Duke University Library and the North Carolina State Department of Archives and History (www.nchist.state.nc.us). The library houses many outstanding special collections, including the William Henry Hoyt Collection on revolutionary France and the Peabody Collection on international law and diplomacy. Especially notable are the Southern Historical Collection (one of the most important manuscript collections on the subject), and the North Carolina Collection (a repository of books, magazines, pamphlets, and newspapers published in or about North Carolina). The Southern Oral History Program and the Center for the Study of the American South further enhance research and training in the history of our region.

The University Center for International Studies, the Center for European Studies, and the Triangle Institute for Security Studies (TISS) sponsor fellowships, seminars, speakers, and other opportunities in their respective areas. The Ancient World Mapping Center forms part of the Department of History, and there is no other unit worldwide that matches its mission of promoting cartography and geographic information science within ancient studies. For research and other initiatives at the center, visit www.unc.edu/awmc. The department also sponsors the Project for Historical Education, an outreach program for teachers in secondary schools. In addition, a wide variety of workshops regularly bring together faculty and graduate students who share interest in particular historical topics or approaches.

Courses for Graduates and Advanced Undergraduates

100 SPECIAL TOPICS IN HISTORY (3). Instructors use this course to focus on particular topics or historical approaches. Specific course descriptions are available each semester on the departmental Web site (www.unc.edu/depts/history).

101 ALEXANDER (3). The rise of Macedonia; the careers of Philip II and Alexander (with emphasis on the latter’s campaign) and the emerging Hellenistic Age. The course integrates computer (including a Web site) and A-V materials throughout. Spring. McCoy.

102A ANCIENT GREEK WARFARE (PWAD 102) (3). War and the warrior in the archaic and classical Greek world, seventh through fourth centuries B.C. Spring. McCoy.


102C ANCIENT ATHENS (3). The life and times of the ancient Athenians from the 6th to 4th centuries B.C. History 52 strongly recommended. Fall. McCoy.
103 ROMAN HISTORY 154 B.C.-14 A.D. (3). Explores the transformation from Republic to Principate. Conducted in considerable part by student reports and classroom discussions. Talbert.


108 EUROPE IN THE HIGH MIDDLE AGES, 900-1300 (3). A survey of the political and institutional development of primarily Western Europe from late Carolingian times to the end of the thirteenth century. McVaugh.

110 THE MEDIEVAL UNIVERSITY (3). The origins and development of the university during the period 1100-1400: types of organization, curricula and degrees, intellectual life, town-gown and student-master relationships. McVaugh.

111 WOMEN AND MEN IN THE RENAISSANCE (3). Gender roles and relationships in Europe, 1350-1550: Renaissance state and domestic patriarchy, marriage, sexuality, and religious change; new ideas about sex and gender; economic change and domestic roles. Chojnacki.

112 THE RENAISSANCE (3). Italy, birthplace of the Renaissance, 1300-1550. A study of the people, culture, and intellectual achievements of the Italian Renaissance with emphasis on the interaction between culture and society. Bullard.

113 MEDITERRANEAN SOCIETIES AND ECONOMICS IN THE RENAISSANCE WORLD (3). A picture of Mediterranean social and economic life 1500-1600, with special focus on rural and urban society, family structure, patronage, work and wages, public and private finance. Bullard.


115 EUROPE IN THE SEVENTEENTH CENTURY (3). The century marks the watershed in the European development. Emphasizes: statecraft, the emerging state-system, the new scientific world view, the impact upon European society. Headley.

116 FRANCE IN THE AGE OF REASON (3). This course examines the Age of Enlightenment in France (1660-1787). The ideas of the 'philosophes' will be placed in a broad social, political, and international context. Smith.

117 THE FRENCH REVOLUTION, 1787-1815 (3). France's rejection of traditional social and culture in the first 'modern' Revolution. Topics include royal absolutism, the Reign of Terror, popular violence, Napoleon, the language and ideology of revolution. Smith.

118 EUROPE, 1871-1918 (3). Emphasizes the disintegration of Europe, culminating in the First World War and the fall of the continental empires. Jarausch.

119 EUROPE SINCE 1918 (3). The main currents in European history since the first half of the twentieth century. Browning.

120A FRANCE: FROM JOAN OF ARC TO LOUIS XIV (3). This course covers the social, political, and cultural history of France from the later Middle Ages to 1715. Smith.

120B FRANCE FROM 1789 TO 1870 (3). The French people from the era of the Revolution to the Commune: cultural and social sources of political instability, the revolutionary tradition, liberal and conservative movements, and industrialization. Reid.

121 FRANCE SINCE 1870 (3). French society and culture from the Paris Commune of 1871 to the student revolt of May 1968. Reid.

122 GERMANY, 1815-1918 (3). The nature of Prussian society, the rivalry between Prussia and Austria for the command of German affairs, and the quality of Prussian leadership in the German Empire of 1871. Jarausch.

123 HISTORY OF GERMANY SINCE 1918 (3). Politics and culture in the Weimar Republic, Nazi totalitarianism, and the reshaping of East and West Germany since World War II. Browning, Jarausch.

124 HISTORY OF SPAIN (3). A survey of Spanish history from the Islamic invasion to Napoleon. Particular attention is given to the period of the Habsburgs, 1516-1700. Headley, Burns.

125 INTELLECTUAL HISTORY OF EUROPE, EARLY PERIOD (3). The course examines the gradual erosion of and criticism within the classical Christian tradition that led to the emergence of a new mentality by the end of the seventeenth century. Headley.

126 MODERN EUROPEAN INTELLECTUAL HISTORY (3). The main developments in European thought from the Enlightenment to the twentieth century, with some attention to social context. Readings include Voltaire, Rousseau, Hegel, Marx, Toqueville, Mill, Ruhbert, Nietzsche, and Freud. Kramer.

127A SOCIETY AND FAMILY IN EARLY MODERN EUROPE (3). A survey of changes in urban and rural social structures organization, family life, courtship practices, sexual behavior, and the relations between the economy and population that occurred in preindustrial Europe 1500-1815. McIntosh.

127B WAR AND SOCIETY IN EARLY MODERN EUROPE (PWAD 127B) (3). A critical examination, from the Renaissance to the Napoleonic period, of the changes in European land and naval warfare and their impact on society and government. McIntosh.

128 EUROPEAN SOCIAL HISTORY, 1815-1970 (3). The social transformation of Europe from agrarian through postindustrial society, discussing population growth, family history, spread of education, class structure, social conflict, group ideologies, and mass politics as well as everyday lives and popular lifestyles. Jarausch.

129 THE SCIENTIFIC REVOLUTION (3). Traces the creation of scientific thought 1500-1700, from Leonardo to Newton, examining the various strands - Greek science, art, engineering, experimentation, occultism, etc. - woven into it. McVaugh.

130 HISTORY OF SCIENCE FROM NEWTON TO EINSTEIN (3). A survey of the development since 1700 of the various branches of physical and biological science, culminating in the twentieth-century revolution in physics. McVaugh.

131 EARLY WESTERN MEDICINE (3). Shows how the age of Shakespeare and Newton (sixteenth-seventeenth century England) fused old and new ideas about medicine and health, anticipating some of our own beliefs and practices. McVaugh.

133 ENGLISH SOCIETY, 1200-1700 (3). This course examines critical issues in the development of English society and economy in the centuries before industrialization. Bennett.

134 MEDIEVAL ENGLAND (3). A consideration of England's origins, unification, and development as a national monarchy. Primary emphasis is on political, ecclesiastical, and cultural aspects. Pfaff.

135 TUDOR AND STUART ENGLAND, 1485-1660 (3). A lecture course, open to juniors, seniors, and graduate students. Harris.

137 GREAT BRITAIN IN THE NINETEENTH CENTURY, 1815-1901 (3). Emphasizes the social and economic foundations of the political, intellectual, religious, and cultural history of Victorian Britain. Soloway.

138 GREAT BRITAIN IN THE TWENTIETH CENTURY (3). Explores the economic and social foundations of British political, intellectual, and cultural history from 1901 to the present. Soloway.
139 TECHNOLOGY AND IMPERIALISM (3). Comparative cultural history of Euro-American empire building in the nineteenth and twentieth centuries focusing on technological change, public display, popular entertainment, and encounters between colonizer and colonized. Hevia.

140 IMPERIALISM AND THE THIRD WORLD (3). This course explores the processes by which nineteenth-century imperialism set the contours of the modern world, establishing relations among societies and reconfiguring both colonial cultures and European cultures. Lindsay.

141 MUSEUMS, MONUMENTS, AND COLLECTIVE MEMORY IN THE MODERN ERA (INTS 132, ART 132) (3). This course explores the relation between museums and monuments, historically and theoretically, and relates them to national and international developments in the nineteenth and twentieth centuries. Hevia.

142 SOUTHERN MUSIC (3). This course explores the history of music in the American South from its roots to twentieth-century forms, revealing how music serves as a window on the region's history and culture. Ferris.

143 HISTORY OF SOCIALIST THOUGHT (3). An examination of the origins and development of Marxist ideas, and their application to specific historical conditions in Germany, Russia, China, Algeria, Cuba, and modern industrial society. Griffiths.

145 THE AMERICAN COLONIAL EXPERIENCE (3). Major topics: European reconnaissance; founding of new societies; character and structure of institutions; thought and feeling from Cotton to Franklin; privilege and cost of empire. Higginbotham.

146 REVOLUTION AND NATION-MAKING IN AMERICA, 1763-1815 (PWAD 146) (3). Major topics: constitutional conflicts in the British empire; independence and war; Confederation and Constitution; growth of political parties and nationality in a period of domestic change and international conflict. Higginbotham.

147 JACKSONIAN AMERICA, 1815-1848 (3). The society and politics of the United States during the period dominated by President Andrew Jackson. Topics include economic development, the expansion of slavery, religion and reform, the changing roles of women, and the political movements associated with “Jacksonian democracy.” Watson.

148 CIVIL WAR AND RECONSTRUCTION, 1868-1877 (PWAD 148) (3). Focus is on the causes, nature, and consequences of the Civil War. Barney.

149 SEXUALITY IN AMERICA (3) This course explores the history of the sexual practices, desires, and understandings of Americans, from earliest colonial encounters to the late twentieth century. Svetlana.

150 UNITED STATES HISTORY SINCE 1945 (3). Diverse developments as interpreted within the framework of certain broad and open-ended themes: particularly, individual freedom, social welfare, mass culture, and community. Finkle.

151A THE ETHNOHISTORY OF NATIVE AMERICAN WOMEN (WMST 151A) (3). Introduces students to the study of Native American women through the perspectives of anthropology, history, and autobiography. Perlman.

152 U.S. FOREIGN RELATIONS IN THE TWENTIETH CENTURY (PWAD 152) (3). How the United States came to occupy a leading role in world affairs as a diplomatic, military, economic, and cultural power and what that role has meant to Americans and to other peoples, especially during the Cold War. Hunt.

153A THE VIETNAM WAR (PWAD 117) (ASIA 153) (3). A wide-ranging exploration of America's long war -- from nineteenth-century origins to 1990s legacies, from village battlegrounds to the Cold War context, from national leadership to popular participation and impact. Hunt.

156 POPULAR CULTURE AND AMERICAN HISTORY (3). Study of the popular arts and entertainments of the nineteenth and twentieth centuries and the ways in which they illuminate the values, assumptions, aspirations, and fears of American society. Kasson.

157 AMERICAN CONSTITUTIONAL HISTORY TO 1876 (3). In a classroom environment characterized by discussion, simulation, and interaction, the antecedents, formation, and interpretation of the Constitution are confronted in a broad historical matrix. Semone.

158 AMERICAN CONSTITUTIONAL HISTORY SINCE 1876 (3). Utilizing a classroom environment similar to 157, constitutional adjustments and change are related to psychological, political, social, and economic factors and to Supreme Court members. Semone.

159 PUBLIC RELIGION IN U.S. HISTORY (RELI 159) (3). Prerequisite, introductory history or religious studies course. A study of public religion in United States history including the relations of religion and government, the idea of American exceptionalism and destiny, and the role of religious movements. Mathews.

160 WOMEN AND RELIGION IN U.S. HISTORY (WMST 160) (3). Prerequisite, introductory course in women's studies or U.S. history. An interdisciplinary consideration of women's roles, behavior, and ideas in the religious life of Americans from 1626 to 1982. Mathews.

161 TECHNOLOGY AND AMERICAN CULTURE (3). Technology's impact on American thought and society and the response it has engendered. Topics include the factory town; search for utopia; impact of Henry Ford; war and depersonalization. Kasson.


163 THE OLD SOUTH (3). Economic, cultural, and social history of the antebellum South. The region's political history serves as a supporting part of the study. Watson.

164 THE SOUTH SINCE RECONSTRUCTION (3). A survey of the South during the past one hundred years, covering developments in politics, economics, culture, and society. Course begins at the end of Reconstruction.

166 HISTORY OF AFRICAN AMERICANS, 1865 TO PRESENT (3). Examination of role of Blacks in U.S. history after 1865. Focus on Black subculture. Analysis of theories about the Black experience in America.

167 WHITE CULTURE AND RACE RELATIONS IN THE SOUTH (3). This course describes and analyzes the evolution of southern white culture with emphasis on the years since 1831, and describes it as the result of the black presence. J. Williamson.

168 WOMEN IN THE SOUTH (WMST 168) (3). An exploration of the distinctive themes in southern women's lives, using the evidence of history and literature. Hall.

169 AFRICAN AMERICAN WOMEN'S HISTORY (WMST 169) (AFAM 169) (3). This course covers the history of black women in United States history from the eighteenth century to the present. It deals with such themes as work, family, community, sexuality, politics, religion, and culture. Jackson.

170 INTRODUCTION TO ORAL HISTORY (FOLK 174) (3). Introduces students to the uses of interviews in historical research. Questions of ethics, interpretation, and the construction of memory will be explored, and interviewing skills will be developed through field work. Hall.

171 RELIGIOUS HISTORY OF THE SOUTH (3). A historical analysis of the religious life of southerners from the Great Awakening to the present with an emphasis on how religion, social institutions, and cultural practices interact. History 21 or 22 or Religious Studies 29 recommended. Mathews.

172 MEDICINE AND SOCIETY IN AMERICA (3). A survey of major developments in the history of American medicine. Emphasis is placed upon seeing the practice of medicine as well as the experience of health and disease into broad social, cultural, and political contexts.
173 ORAL HISTORY AND PERFORMANCE (COMM 173) (WMST 173) (3). This course combines readings and field work in oral history with study of performance as a means of interpreting and conveying oral history texts. Emphasis on women's history. Hall.

175 HISTORY OF MEXICO (3). Topical approach to the history of Mexico, from pre-Columbian civilizations through the Spanish conquest and colonial system. Emphasis will be given to the nineteenth and twentieth centuries. Pérez.

176A HISTORY OF THE CARIBBEAN (3). This course is organized around a thematic approach to the history of the West Indies, with emphasis on the period from European conquest through the twentieth century. Topics include colonialism, slavery, monoculture, United States-Caribbean relations, and decolonization. Pérez.

176B HISTORY OF CUBA (3). Thematic approach to Cuban history from conquest to the revolution. Attention is given to socioeconomic developments, slavery and race relations, the nineteenth-century independence process, and the twentieth-century republic. Pérez.

177 HISTORY OF BRAZIL (3). This course is concerned primarily with the creation of a new society through race mixture and culture change, and with the political and economic development of Brazil. Chaseen.

180 THE AFRICAN DIASPORA (3). A comparative examination of the movements, experiences, and contributions of African and peoples of African descent from the period of the Atlantic slave trade to the present. Lindsay.


182 WOMEN AND GENDER IN AFRICAN HISTORY (AFRI 182) (3). Analysis of historical transformations in Africa and their effects on women's lives and gender relations. Particular themes include precolonial societies, colonialism, religious change, urban labor, nationalism, and sexuality. Lindsay.

184 RUSSIA AND THE WEST IN THE EIGHTEENTH CENTURY (3). A comparative approach, centering on Russia's contacts with the West, the resulting interaction, and the efforts of Russians to define the unique nature of their own society. Griffiths.

185 RUSSIA, 1796-1917 (3). The diplomatic, military, and ideological confrontations with the West; the decline and fall of the Russian autocracy; the evolution of reform thought and revolutionary opposition. Brooks.

186A REVOLUTION IN RUSSIA, 1900-1930 (3). A close study of Russia's age of revolution from the reign of the last tsar to the turbulent Stalin Revolution of 1929, with emphasis on the revolutions of 1917. Raleigh.

186B STALIN AND AFTER: RUSSIA, 1924-PRESENT (3). An in-depth examination of Soviet social and political history from 1924 to present. Raleigh.

190 EASTERN EUROPE SINCE WWI (3). An examination of the countries of Eastern Europe, their origins and development since World War II, their cohesion and conflict.

192 THE ECONOMIC HISTORY OF SOUTHEAST ASIA (3). This course is intended as a broad overview of Southeast Asian economic history from "pre-modern" times to the present day. Carola.

195A WOMEN IN THE MIDDLE EAST (3). This course explores the lives of women in the Middle East and how they have changed over time. Focus changes each year. Shields.

196 REVOLUTION IN THE MIDDLE EAST (3). This course focuses on revolutionary change in the Middle East during the last century, emphasizing internal social, economic, and political conditions as well as international contexts. Shields.

197 MIDDLE EAST AND THE WEST (3). This course explores the changing interactions between the Middle East and the West, including trade, warfare, scientific exchange, and imperialism, and ends with an analysis of contemporary relations in light of the legacy of the past. Shields.

Courses for Graduates

200 INTRODUCTION TO HISTORICAL METHODS AND RESEARCH (3). Introduction to research. Required for all first-year students. Fall.

201 INTRODUCTION TO MEDIEVAL STUDIES (3). This is an interdisciplinary course to introduce graduate students to the sources, methods, and approaches of Medieval Studies.

202 INTRODUCTION TO HISTORICAL EDUCATION (3). Provides an introduction to teaching history. Topics include the history of historical education, planning courses, the role of the teacher, goals and methods, using new technologies, and evaluating students. Spring, Fall, Shields.

203A INTRODUCTORY COLLOQUIUM ON EARLY MODERN EUROPE (3). Directed readings on early European history, from Britain through European Russia. Fall. (Alternate years.)

203B INTRODUCTORY COLLOQUIUM ON MODERN EUROPE (3). Directed readings on modern European history, from Britain through European Russia. Spring.

204 READINGS IN RUSSIAN AND EAST EUROPEAN HISTORY. A sequence of four courses on the several periods and the main themes of Russian and Soviet History. Brooks, Griffiths, Raleigh.

204A READINGS IN RUSSIAN HISTORY BEFORE 1796 (3). Griffiths.

204B READINGS IN RUSSIAN HISTORY, 1796-1917 (3). Brooks.

204C READINGS IN SOVIET HISTORY (3). Raleigh.

204D SPECIAL TOPICS IN RUSSIAN AND EAST EUROPEAN HISTORY (3).

205A READINGS IN EUROPEAN EXPANSION AND GLOBAL INTERACTION, 1400-1800 (3). Examines the dynamics of cross-cultural contacts and exchange between Europe and other civilizations in the context of a growing global interconnectedness. Spring. (Alternate years.)

205B READINGS IN CONTEMPORARY GLOBAL HISTORY (3). Focus on the nineteenth and twentieth centuries. Mixing theory, case studies, and comparisons, readings reflect disciplinary diversity. Fall.

206 PROBLEMS IN GREEK HISTORY, 600-323 B.C. (3). Prerequisite, consent of the instructor. McCoy.

207A INTRODUCTORY COLLOQUIUM IN LATIN AMERICAN HISTORY BEFORE 1810 (3). Directed readings on Latin American history from pre-conquest to 1810; required for students entering the field. Fall, Burns.

207B INTRODUCTORY COLLOQUIUM IN THE HISTORY OF LATIN AMERICA SINCE 1810. Directed readings on Latin American history in the National Period; required for students entering the field. Spring, Chaseen, Perez.

208 HISTORY OF ROME, 27 B.C.-180 A.D. Talbert.

209A INTRODUCTORY COLLOQUIUM IN UNITED STATES HISTORY TO 1865 (3). Directed readings on American history through the Civil War, required for students entering the field. Fall.

209B INTRODUCTORY COLLOQUIUM IN UNITED STATES HISTORY SINCE 1865 (3). Directed readings on American history from the Civil War to the present; required for students entering the field. Spring.

210 READINGS IN EAST EUROPEAN HISTORY (3). Directed readings on modern East European history.
217 READINGS IN URBAN HISTORY (3). A readings course to introduce students to the main topics in urban history. Lotchin.
218 READINGS IN THE HISTORY OF GENDER AND SEXUALITY (WMST 218) (3). Readings on the historical study of gender and sexuality and on definitions of femininity and masculinity in different historical contexts. Fall and spring. Hoffert, Chojaicki.
220 READINGS IN MODERN EUROPEAN WOMEN'S HISTORY (WMST 220) (3). A readings course in the history of women in Europe since 1500. Bennett, Harris.
221 READINGS IN AMERICAN WOMEN'S HISTORY (WMST 221) (3). A readings course on the history of women in the United States. Hall, Hoffert.
222 SELECTED READINGS IN THE COMPARATIVE OR GLOBAL HISTORY OF WOMEN (3). Directed readings on selected topics in the comparative or global history of women. (Alternate springs.) Staff.
223 READINGS IN MEDIEVAL WOMEN'S HISTORY (3) (WMST 223). A readings course on the history of women, gender, and sexuality in Medieval Europe. Bennett.
225 COLLOQUIUM IN WORLD MILITARY HISTORY (3). Reading colloquium in world military history, emphasizing Europe, focusing on the most significant issues, methods, and approaches in the field today. Kohn.
227 READINGS IN EARLY MODERN EUROPEAN HISTORY (3). Bullard.
228 FEMINIST THEORY FOR HISTORIANS (WMST 228) (3). Readings in contemporary feminist theory, focused especially on theories that address the construction, writing, and general practice of history. Spring. (Alternate years with HIST 222.)
229 READINGS IN THE HISTORY OF SCIENCE AND MEDICINE (3). Examines the principal historiographical problems in the history of science and medicine, focusing on a different topic each year. McVauugh.
230 EARLY MODERN GERMANY (3). A topical survey of the political, social, and economic history of early modern Germany. McIntosh.
232 TOPICS IN FRENCH HISTORY (3). Open to graduate students from all departments. This course examines one period or one set of problems within French history since the Renaissance. Topics determined by instructor. Kramer, Reid, Smith.
234 TOPICS IN MODERN EUROPEAN HISTORY (3). Jarausch.
235 READINGS IN EUROPEAN SOCIAL HISTORY (3). Reid.
236 READINGS IN MODERN EUROPEAN HISTORY, 1918-1945 (3). Browning.
239 MEDIEVAL ENGLAND (3). Prerequisite, HIST 137 or equivalent. Pfaff.
240 STUDIES IN MODERN ENGLISH HISTORY (3). Directed readings in nineteenth- and twentieth-century English history. Topics vary from year to year. Soloway.
243 LATE MEDIEVAL ENGLAND (3). Prerequisite, HIST 133, 134, or equivalent. Readings in English history, ca. 1300-1500, with a focus on social, economic, political, and legal topics. Bennett.
244 HISTORY OF U.S. FOREIGN RELATIONS (3). Hunt.
248 READINGS IN NATIVE AMERICAN HISTORY (AMST 248) (3). Readings in and discussions of the major works in Native American history. Perdue, Green.
249 READINGS IN EARLY AMERICAN HISTORY (3).
250 THE AMERICAN REVOLUTIONARY ERA, 1763-1789 (3). Higginbotham.
251 THE UNITED STATES IN THE FEDERAL PERIOD, 1789-1820 (3). Readings, discussion, and book lists designed to give familiarity with the historiographical problems, research opportunities, and bibliography of the period. Higginbotham.
252 THE UNITED STATES IN THE MIDDLE PERIOD, 1815-1860 (3). An analysis of the material and ideological transformations within the antebellum republic, which climaxd in the sectional crisis of the 1850s. Barney.
254 CIVIL WAR AND RECONSTRUCTION, 1860-1876 (3). Barney.
256 RECENT AND CONTEMPORARY UNITED STATES (3).
259 POLITICAL AND SOCIAL HISTORY OF MODERN AMERICA (3). A course of readings for advanced students that relate social history to the history of the state in America in the period from the Great Depression and the New Deal to the present.
261 INTRODUCTION TO MILITARY HISTORY (3). An introduction to the methods, issues, and literature of military history, including classic works and scholarship representative of a variety of approaches from history and other disciplines. Fall. Kohn.
262 COLLOQUIUM IN UNITED STATES MILITARY HISTORY (3). Reading colloquium in United States military history focusing on the most significant issues, methods, and approaches in the field today. Kohn.
263 READINGS IN THE ANTEBELLUM SOUTH (3). A review of traditional and modern literature on the pre-Civil War South, focusing on the interrelationships of its economy, society, culture, and politics. Watson.
264 READINGS IN THE SOUTH SINCE RECONSTRUCTION (3). Readings, reports, and discussions on selected topics with a view to gaining familiarity with the literature of the field. Leloudis.
265 READINGS IN AFRICAN AMERICAN HISTORY (3). Graduate students compile bibliographies and read important contributions to various aspects of African American history, stressing shifts in African American historiography and including very recent works.
269 TOPICS IN AMERICAN CULTURAL HISTORY (3). Kasen.
270 PROBLEMS IN LATIN AMERICAN HISTORY (3). Burns, Chasseen, Pérez.
281 TOPICS IN FILM AND MEDIA HISTORY (3). Varying in specific focus and period from term to term, this course considers both the rise of film and electronic media as an historical phenomenon and the ways in which film and media texts might be employed as evidence in the writing of history. Allen.
CURRICULUM IN HUMAN MOVEMENT SCIENCE

CAROL A. GIULIANI, Curriculum Director

Professors
William Garrett, Orthopedics and Sports Medicine
Carol A. Giuliani (28) Neural Basis of Motor Control, Disability in Aging, Stroke Recovery, Movement Analysis
Michael T. Gross (29) Biomechanics, Sports Medicine, Orthopedics, Orthotics
Kevin M. Guskiewicz (24) Athletic Training, Anatomy
Anthony C. Hackney (29) Exercise Physiology, Metabolism, Endocrinology
Henry S. Hsiao (03) Medical Instrumentation, Interfacing Microprocessors to Physiological Transducers, Telemedicine
Carol L. Lucas (01) Digital Signal Processing, Mathematical Modeling and Simulation, Pulmonary Circulation in Newborns and Infants
Robert G. McMurray (13) Physiology of Exercise Disease, Energy Expenditure of Children
Frederick O. Mueller (07) Epidemiology of Athletic Injuries, Administration, Sports Medicine
Richard G. Mynark, Motor Control, Motor Learning, Aging, and Statistics
Darwin Padua, Biomechanics and Sports Medicine
William E. Prentice (15) Athletic Training, Sports Medicine

Associate Professors
Jan Bushy-Whitehead (08) Geriatric Medicine
Edward Grant
Michael Y. Lee (04) Neurological Rehabilitation, Clinical Neuropsychology, Acupuncture
Philip L. Lins (22) Ergonomics Intervention, Research Design, Orthopedics, Spinal Dysfunction
Bing Yu (43) Biomechanics, Rehabilitation, Movement Analysis

Assistant Professors
Janet K. Freburger (45) Health Sciences Research, Research Design, Biomechanics, Orthopedics
Bonita Marks (26) Exercise Physiology
Steve Marshall, Injury Epidemiology, Occupational Epidemiology, Methodology
Vicki S. Mercer (40) Motor Control, Motor Learning, Posture and Balance across the Lifespan
Debbie E. Thorpe (44) Pediatrics, Motor Learning, Developmental Disabilities, Aquatics

Research Assistant Professor
Paul S. Weinhold (02) Biomechanics of Repetitive Motion Injury, Tissue Engineering

Clinical Associate Professors
Don Kirkendall, Orthopaedic Medicine, Human Performance – Its Measurement and Quantification
Marie A. Reilly (35) Early Human Behavior and Development, Behavioral Motor Control, Developmental Disabilities
Deliane K. Sekercioğlu (25) Pediatrics, Health Policy, Research Utilization

Instructor
Angela Rosenberg, Pediatrics and Community Resources

Program Description: Doctor of Philosophy

The Department of Allied Health Sciences in the School of Medicine offers an interdisciplinary program of study in human movement science leading to the doctor of philosophy degree. The intent of this program is to develop research and teaching scholars who are capable of producing and disseminating new knowledge in the field of human movement science.

The doctoral program in human movement science is offered with the cooperative effort of the following departments at UNC-Chapel Hill: allied...
health sciences-Division of Physical Therapy; exercise and sport science; biomedical engineering; orthopedics; physical medicine and rehabilitation; and the Program on Aging. This program is designed to provide students an opportunity for doctoral study in areas that will increase our knowledge of human movement performance. The program focuses on contributing to the scientific basis of human movement, developing theory and methods for maintaining health, preventing disability, and improving movement ability. Focusing on normal movement and movement disability requires a special emphasis in research and education that draws upon yet differs from the focus of related sciences. Students of varied academic disciplines are accepted into the program. Students choose one of three tracks as a focus for their coursework and research experiences:

(A master of science degree in human movement science, designed for physical therapists and graduates in related fields, is a separate program which is offered by the Division of Physical Therapy. Please refer to the departmental listing for physical therapy for information about that program.)

1. Biomechanics of human movement, including musculoskeletal mechanics and external mechanical constraints;
2. Physiology of human movement, including exercise response and training in nondisabled and special populations;
3. Motor control and motor learning, including neuromuscular control and behavioral analyses of human movement.

Program Requirements
The curriculum core requirements allow flexibility in designing programs of study to meet the needs of each track and the student's interests. Other specific requirements will vary depending on the student's background and program track. Each student's program of study is developed under the guidance of his or her advisor and committee. Among these requirements are the core courses HMSC 200 A, B, and C: Scientific Basis of Human Movement. Degree requirements also include a first year review, a doctoral written exam, a preliminary oral exam, a dissertation defense, and a written dissertation. Other specific requirements will vary depending on the student's background and program track.

Research Facilities
Several research facilities are available for students in the departments participating in the program. These include: the Orthopedic Biomechanics Laboratory in the Department of Orthopedics; the Motion Analysis, Motor Behavior, and Observational Studies Laboratories in the Division of Physical Therapy's Center for Human Movement Science; and the Applied Physiology, Cadaver/Anatomy, and Sports Medicine Laboratories in the Department of Exercise and Sport Science. These laboratories are equipped with state-of-the-art instruments for measuring a wide range of human performance which includes behavioral, physiological, biomechanical, and computer modeling.

Admission
Student selection is based primarily on academic records and research experience. Requirements include the following:
1. A master's degree in a field related to human movement (e.g., physical therapy, exercise science, biomedical engineering, anatomy.)
2. A grade point average of 3.0 or better in the last two years of the student's undergraduate program.
3. Graduate Record Examination (GRE) with minimum scores in the 50th percentile for both the verbal and quantitative sections, and TOEFL scores above 550 for international students, with a minimum score of 50 on all three sections.
4. Prerequisite courses:
   a. Introductory graduate-level statistics
   b. Human anatomy
   c. Human physiology
   d. Physics
   e. Chemistry
   f. Psychology
Because of the varied backgrounds of applicants, decisions on additional prerequisite preparation for each student will be decided by the Graduate Education Committee.
5. Three letters of academic recommendation.
7. Written statement of the academic/career goals and research interests.
   Applicants should indicate the name of the faculty member who has agreed to mentor them.
8. Applicants are strongly encouraged to contact a faculty member in their area of interest.

Courses
Course work appropriate for the student's area of interest may be taken from a wide range of departments. The courses listed here are examples, but are not meant to be inclusive. (Please refer to departmental listings for full course descriptions.)

Biomedical Engineering
BMME 106 SIGNALS AND SYSTEMS
BMME 111 INTRODUCTION TO BIOMEDICAL INSTRUMENTATION
BMME 112 BIOMATERIALS/BIOCOMPATIBILITY
BMME 120 REAL-TIME COMPUTER
BMME 121 DIGITAL SIGNAL PROCESSING
BMME 132 LINEAR CONTROL THEORY
BMME 160 FUNDAMENTALS OF MATERIALS ENGINEERING
BMME 232 DIGITAL CONTROL THEORY
BMME 260 MATERIALS ENGINEERING

Exercise and Sport Science
EXSS 230 MANAGEMENT OF ATHLETIC INJURIES
EXSS 232 GROSS ANATOMY FOR ATHLETIC TRAINERS
EXSS 235 SPORTS MEDICINE ANALYSIS: SPECIAL PROBLEMS RELATED TO SPORTS MEDICINE
EXSS 239 PRACTICUM IN ATHLETIC TRAINING
EXSS 255 SOCIAL ISSUES IN PHYSICAL EDUCATION AND SPORT
EXSS 280 PHYSIOLOGY OF EXERCISE
EXSS 281 ADULT FITNESS/CARDIAC REHABILITATION
EXSS 282 NUTRITIONAL ASPECTS OF EXERCISE
EXSS 283 ASSESSMENT OF PHYSIOLOGICAL FUNCTION IN EXERCISE
EXSS 285 SEMINAR IN EXERCISE PHYSIOLOGY
EXSS 300 SPECIAL TOPICS IN EXERCISE AND SPORT SCIENCE
EXSS 320 RESEARCH IN EXERCISE AND SPORT SCIENCE

Human Movement
HMSC 200ABC SCIENTIFIC BASIS OF HUMAN MOTION
HMSC 210 MUSCLE MECHANICS AND ELECTROMYOGRAPHIC KINESIOLOGY
HMSC 243 TOPICS IN MOTOR CONTROL AND MOTOR LEARNING: THERAPEUTIC IMPLICATIONS
HMSC 280 INTRODUCTION TO OUTCOMES RESEARCH IN HEALTH CARE
HMSC 282 INFANT AND FAMILY ASSESSMENT
HMSC 282L LABORATORY IN INFANT AND FAMILY ASSESSMENT
HMSC 290 ADVANCED KINESIOLOGY AND BIOMECHANICS
HMSC 291 ANALYSIS OF HUMAN MOTION
HMSC 301 SEMINAR IN HUMAN MOVEMENT SCIENCE
HMSC 303 PROBLEMS IN HUMAN MOVEMENT SCIENCE
HMSC 311 BASIC ASPECTS OF AGING (MEDI 486) (DECO 486)
HMSC 377 INDEPENDENT STUDY IN HUMAN MOVEMENT SCIENCE
HMSC 379 RESEARCH IN HUMAN MOVEMENT SCIENCE
HMSC 381 THE NEURAL BASIS OF MOTOR CONTROL
HMSC 386 UNDERSTANDING RESEARCH
HMSC 387 DEVELOPMENTAL MOTOR CONTROL
HMSC 604 AGING AND HEALTH
HMSC 607 AGING AND PUBLIC POLICY
HMSC 611 MOVEMENT AND BALANCE IN AGING

Interdisciplinary Human Movement Science
IHMS 350 ISSUES IN MOTOR CONTROL AND MOTOR LEARNING
IHMS 370 DOCTORAL DEVELOPMENT SEMINAR
IHMS 394 DOCTORAL DISSERTATION

SCIENCE

JOANNE GARD MARSHALL, Dean
Paul Solomon, Associate Dean
Barbara Wildemuth, Associate Dean

Professors
Evelyn H. Daniel (36) Information Resources Management, Organization Theory
Special Librarianship, School Librarianship, Distance Education, Management, Marketing, User Education
Joe A. Hewitt (21) Administration of Technical Services, Academic Librarianship, Management
Robert M. Losee (40) Information Retrieval, Information, Reasoning Systems, Decision Making
Joanne Gard Marshall (96) Health Information Needs and Services, Value and Impact of Library and Information Services, Information Technology and the Aging Workforce, Competencies of Library and Information Professionals
Barbara B. Moran (30) Academic Librarianship, Management of Information Agencies, Human Resources Management, Popular Materials, Organizational Design and Leadership
Jerry D. Saye (37) Organization of Information, History of Books and Libraries, Cataloging and Classification, Technical Services, Abstracting and Indexing, Metadata

Helen R. Tibbo (46) Archives and Records Management, Information Services for the Humanities, Electronic Information Retrieval, Reference Service
Barbara M. Wildemuth (45) Information-Seeking Behaviors and Information Use, Design and Evaluation of Information Systems, Adoption and Use of Information Technologies

Associate Professors
David Carr (90) Cultural Institutions and Thinking, Reading for Pleasure, Tools and Cognition, Collections, Reference, Concepts of Service
Claudia J. Gollop (69) Information and Reference Services, Consumer Health Information, Health Sciences Librarianship, Information Services for Diverse User Groups, Public Libraries
Jane Greenberg (92) Metadata, Information Organization and Retrieval, Abstracting and Indexing, Archives
Stephanie W. Haas (47) Natural Language Processing, Information Retrieval, Sublanguage and Terminology, Genre and Discourse Structure
Brian W. Snurr (87) Storytelling and Folklore, Children’s and Young Adults’ Literature and Public Library Services, Children and Technology, Bibliotherapy

Assistant Professors
Deborah Barreau (78) Information Systems, Organizational Behavior, Human-Computer Interaction, Communication, Digital Libraries
Catherine L. Blake (122) Collaborative Technologies, Information Retrieval, Knowledge Discovery, Medical Informatics, Text Mining, User Information Behaviors
Miles Efion (Visiting) (118) Information Retrieval, Data Mining, Organization of Information
Bradley M. Hensinger (109) Medical and Bio-Informatics, Computer-Human Interfaces, Computer-Supported Collaborative Work and Information Visualization
Diane Kelly (123) User Modeling, Relevance Feedback, Personalization, Information-Seeking Behavior, Experimental Design and Analysis, Research Methods
Jeffrey Pomerantz (121) The Integration of Digital Reference Services into Digital and Physical Libraries, Automation of Library Services, Classification, Information Retrieval

Instructors
Kristin Challin (110) Database Management, Web Databases
Paul Jones (74) Director of Shibboleth Internet Issues and Applications Including: Digital Librarians, Electronic Publishing, Online News, Virtual Communities, Legal and Social Issues Relating to Networked Information and Access

Adjunct Faculty
Mark Bernstein, Law Librarianship
Paul Conway, Archives
Beth Doyle, Preservation
David A. Festenmacher, Bioinformatics
Julie Garrison, Health Science Librarianship
Scott Garrison, Health Science Librarianship
Laura N. Gasaway, Copyright, Law Librarianship
Jim Gogan, Networking
Bil Hays, Internet Applications, Networking, Systems Administration
Carol G. Jenkins, Health Sciences Librarianship
Anne Kleinfelter, Law Librarianship
Julia Kochi, Health Science Librarianship
Selden Durum Lamoureux, Serials Librarianship
Charles B. McNamara, Rare Book Librarianship
Anne L. Morisseau, E-learning, Online Searching
Susan Wolf Neilson, Business Information
Lisa Norberg, User Instruction, Reference Services
David Rankin, Networking
Connie Schadt, Health Science Librarianship
Eric Schnell, Health Science Librarianship
Gerry Solomon, School Library Media, Instructional Materials Evaluation
Michael VanFossen, Government Documents
B. Lynn Whitener, Health Information Resources
Mary C. Whitton, Collaborative Information Technologies

Distinguished Research Professor
Frederick Kilgour (48) Use of "Known-Item" Books for Information Retrieval

Professors Emeriti
Robert Broadus
Raymond L. Carpenter
Mildred H. Downing
Jean Freeman
James F. Govan
Edward G. Holley
Mary E. Kingsbury
Gertrude London
Charles Haynes McMullen
Mary W. Oliver
Jerold Orne
William M. Shaw Jr.

The programs of the School of Information and Library Science (SILS) are designed to prepare students for professional employment and advanced study in the fields of information and library science. The school offers graduate instruction leading to the degrees of master of science in information science (MSIS) and master of science in library science (MSLS), certificate of advanced study (CAS), and doctor of philosophy (PhD) in information and library science. The school also offers an undergraduate minor in information systems and undergraduate major in information science (BSIS).

The MSIS is designed to prepare students to contribute to the design, development, and maintenance of information systems and networks; to provide leadership in the development of new technologies and new applications relating to the delivery of information to people seeking and utilizing information; and to demonstrate a theoretical knowledge of information science, including the theory of information storage and retrieval, systems science, and social, political, and ethical implications of information systems. Within this degree program, students complete a core set of courses and build their own specialized programs of study on this foundation. Areas where students find jobs include (among others): database design and administration, interface design and usability testing, network administration, systems analysis and design, systems administration, user training and support, information resources/knowledge management, information systems security, competitive intelligence, and Web site design and management.

The MSLS program prepares students for professional employment in information and library service. The degree is designed to prepare students for work involving the collection, organization, storage, and retrieval of recorded knowledge for a variety of individuals, groups, and contexts. Analysis and design skills are emphasized. Areas where students find jobs include: library administration, administration of archives and manuscript collections, records management, documents librarianship, cataloging, public and reference services, acquisitions and collection management, children's librarianship, access and manipulation of database information, special collections, various subject areas, and systems librarianship.

Graduates of the program are ready to practice within various settings: academic, public or special libraries, information centers, or school library media centers.

Students must have a basic knowledge of computing applications (e.g., word processing, spreadsheets, and email) prior to admission. Each master's student is required to complete one course in each of the curriculum's five functional areas: organization, collection/retrieval, human information behavior, design/evaluation, and management. A course in Information Tools (INLS 102), which provides students with a foundation in various tools (e.g., html database) employed in the curriculum is also required as is a course in Research Methods (INLS 201). The remainder of the forty-eight credit hours of course work is then selected, in consultation with the student's faculty advisor, from the information and library science curriculum, or as appropriate, from related subject fields in other schools and departments of the University. A master's paper is also required of each master's student. A theme within the curriculum for both master's degrees is evidence-based practice, which requires students to interpret and apply the research of others to their professional situations as well as to be able to design and conduct their own research where necessary data is not otherwise available.

The School of Information and Library Science participates in several dual or cooperative degree programs. These include dual degree programs with:

- Kenan-Flagler Business School, which combines the master of business administration (MBA) degree and the master of science in information science (MSIS) degree.
- the Department of Health Policy Administration, School of Public Health, which combines the master of health administration (MHA) degree with either the master of science in library science (MSLS) or master of science in information science (MSIS) degree.
- the School of Nursing, which combines the master of science in nursing with either the master of science in information science (MSIS) or master of science in library science (MSLS) degree.
- the Department of Art, which combines the master of arts in art history with either the master of science in information science (MSIS) or master of science in library science (MSLS) degree.
- the School of Government, which combines the master of public administration with either the master of science in information science (MSIS) or master of science in library science (MSLS) degree.
- the School of Law, which combines the MSLS and MSIS with the JD degree.

There is also a cooperative archival program, which allows students to combine the master of arts (MA) in public history at North Carolina State University with either the master of science in library science (MSLS) or master of science in information science (MSIS) with specializations in archival science.

Participation in any of these programs requires separate admission to both degree programs. Additional dual degree programs are under development with Duke University's School of Medicine.

The basic requirement for admission to the master's programs is a bachelor's degree from a recognized college or university. The student's undergraduate work should demonstrate a strong foundation in liberal arts and sciences; a course in information and computer literacy will be helpful. Admission involves meeting the requirements for the Graduate School, which include submission of acceptable scores on the General Test of the Graduate Record Examination. For details about the entrance requirements and the curriculum for the master's programs, see the catalog of the School of Information and Library Science, which is available at ils.unc.edu.
The certificate of advanced study in information and library science is a 30-semester-hour post-master's degree program that is designed for practitioners who seek an articulated and systematic continuing education program to enhance their professional career development in information and library science.

The doctor of philosophy in information and library science is a research degree. Thus, the purpose of the doctoral program in SILS is to educate scholars who are capable of addressing problems of scholarly consequence in the field of information and library science. Toward this end each student develops a program of studies, which is tailored to individual interests and career goals. Required classes include a year-long seminar on Research Issues and Questions (INLS 301/302) and completion of an appropriate sequence of courses in statistics. Additional courses in research methods and theory development are recommended as are research experience and substantive content courses, which are related to a student's research interests. There are also opportunities for students to develop teaching skills through both course work and teaching experience.

The school occupies three floors of Manning Hall, with the administrative and faculty offices, classrooms, ibiblio.org (one of the most popular Web sites on the Internet), and the Information and Technology Resource Center (ITRC) all contained in that building. The ITRC includes the Information and Library Science Library, which holds more than 86,000 volumes, and computer labs. Wireless network access is available in Manning Hall and many other locations on campus; direct connections to the campus network are available in the ITRC also.

Those interested in any of the SILS degree programs should see the school's Web page (ils.unc.edu), or request information from the School of Information and Library Science, CB #3360, 100 Manning Hall, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3360. (E-mail: info@ils.unc.edu)

NOTE: The prefix for all School of Information and Library Science courses is INLS. When a prerequisite is listed for a course, it may be assumed that an equivalent course taken elsewhere or permission of the instructor also fulfills the prerequisite or corequisite. The course instructor must approve the equivalency of the substitute course.

Although graduate students may take courses numbered below 100, they will not receive credit toward a graduate degree for those courses.

Courses for Graduates and Advanced Undergraduates

102 INFORMATION TOOLS (3). Tools and concepts for information use, information literacy, microcomputer software use and maintenance, microcomputer applications, and networked information systems. Lee.

105 INFORMATION ETHICS (3). An overview of ethical reasoning followed by discussion of issues most salient to information professionals, e.g., intellectual property, privacy, access/censorship, effects of computerization, and ethical codes of conduct. Wildermuth.


109 HISTORY OF LIBRARIES AND OTHER INFORMATION-RELATED CULTURAL INSTITUTIONS (3). History of cultural institutions related to information from earliest times to the present day. Includes specific institutions, trends in service and facilities, and individuals important in the development of these institutions. Saye.

110 SELECTED TOPICS (3). Exploration of an introductory-level special topic not otherwise covered in the curriculum. Previous offering of these courses does not predict their future availability; new courses may replace these. Courses offered during past years include:

- 110-40 MACHINE LEARNING. Losee.
- 110-40 STRATEGIC INFORMATION. Losee.
- 110-45 INFORMATION ETHICS. Wildermuth.
- 110-47 INFORMATION SYSTEMS AND SERVICES: WHERE DO WORDS MATTER. Has.
- 110-69 CONSUMER HEALTH INFORMATION. Gallop.
- 110-111 GIS DIGITAL INFORMATION. Ruanwe.
- 110-118 APPLICATIONS OF DATA MINING IN INFORMATION SCIENCE. Efron.

111 INFORMATION RESOURCES AND SERVICES (3). Prerequisite or corequisite, INLS 102. Analysis, use, and evaluation of information and reference systems, services, and tools with attention to printed and electronic modes of delivery. Provides a foundation in search techniques for electronic information retrieval, question negotiation, and interviewing. Gallop, Pomerantz, Norberg.

111L COMPUTER LABORATORY TO SUPPORT INLS 111. Focus on electronic retrieval techniques. Must be taken concurrently with INLS 111.

115 NATURAL LANGUAGE PROCESSING (COMP 171) (3). Prerequisite, COMP 14, 15, or 16. Statistical, syntactic, and semantic models of natural language. Tools and techniques needed to implement language analysis and generation processes on the computer. Haas.

121 PRINCIPLES AND TECHNIQUES OF STORYTELLING (3). An overview of storytelling, its historical development, and the presentation and administration of storytelling programs. The class focuses on performance skills merged with theoretical issues. Sturm.

122 YOUNG ADULT LITERATURE AND RELATED MATERIALS (3). A survey of print and nonprint library materials particularly suited to the needs of adolescents. Sturm.

123 CHILDREN'S LITERATURE AND RELATED MATERIALS (3). Survey of literature and related materials for children, with emphasis on twentieth-century authors and illustrators. Sturm.

124 CHILDREN AND TECHNOLOGY (3). Study of the design of computer interfaces for the uses of technology by children. Includes Internet issues, educational CD-ROMS, and computerized library catalogs. Sturm.

131 MANAGEMENT FOR INFORMATION PROFESSIONALS (3). An introduction to management in libraries and other information agencies. Topics to be studied include planning, budgeting, organizational theory, information sources for managers, staffing, leadership, organizational change, and decision making. Daniel, Marshall, Moran, Solomon.

144 CULTURAL INSTITUTIONS (3). This course will explore cultural institutions — libraries, museums, parks, zoological and botanical gardens, reconstructions and other settings — as lifelong educational environments. Carr.

145 INTRODUCTION TO ARCHIVES AND RECORDS MANAGEMENT (3). Survey of the principles, techniques and issues in the acquisition, management, and administration of records, manuscripts, archives and other cultural and documentary resources in paper, electronic, and other media formats. Tibbo.

150 ORGANIZATION OF INFORMATION (3). Introduction to the problems and methods of organizing information, including information structures, knowledge schemas, data structures, terminological control, index language functions, and implications for searching. Efron, Greenberg, Solomon.

151 ORGANIZATION OF MATERIALS I (3). Introduction to the organization of library materials. Covers formal systems for description, access, and subject cataloging, including AACR2, MARC, Dewey Decimal Classification, Library of Congress Classification, and subject headings. Saye.
153 RESOURCE SELECTION AND EVALUATION (3). Identification, provision, and evaluation of resources to meet primary needs of clientele in different institutional environments. Carr.

156 INTRODUCTION TO DATABASE (Previously INLS 56) (3). Prerequisite or corequisite, INLS 50 or 102. Design and implementation of basic database systems. Semantic modeling, relational database theory, including normalization, indexing, and query construction. SQL. Lee.

157 DATABASE I (3). Prerequisites, INLS 60 or 162, and INLS 156 or proof of equivalency. Intermediate-level design and implementation of database systems, building on topics studied in INLS 156. Additional topics include MySQL, non-text databases, and data warehouses. Haas, Hennig-Thurau.

161 NON-NUMERIC PROGRAMMING FOR INFORMATION SYSTEMS APPLICATIONS (3). An introduction to computer programming for library operations and information retrieval applications. Losee.

162 SYSTEMS ANALYSIS (3). Introduction to the systems approach to the design and development of information systems. Methods and tools for the analysis and modeling of system functionality (e.g., structured analysis) and data represented in the system (e.g., object-oriented analysis) are studied. Haas, Wildemuth.

165 RECORDS MANAGEMENT (3). Introduces the principles of records center design, records analysis and appraisal, filing systems, reprographics and forms, reports and correspondence management. Legal issues and the security of records are also covered. Staff.

170 APPLICATIONS OF NATURAL LANGUAGE PROCESSING (Computer Science 170) (3). Prerequisite, COMP 14, 15, or 16, or graduate standing in information and library science. Study of applications of natural language processing techniques and the representations and processes needed to support them. Topics include interfaces, text retrieval, machine translation, speech processing, and text generation. Haas.

172 INFORMATION RETRIEVAL (COMP 172) (3). Study of information retrieval and question answering techniques, including document classification, retrieval and evaluation techniques, handling of large data collections, and the use of feedback. Losee.

180 HUMAN INFORMATION INTERACTIONS (3). The behavioral and cognitive activities of those who interact with information, with emphasis on role of information mediators. How information needs are recognized and resolved; use and dissemination of information. Barreau, Marchionini.

181 INTERNET APPLICATIONS (3). Prerequisite, INLS 102. Introduction to Internet concepts, applications, and services. Introduces the TCP/IP protocol suite along with clients and servers for Internet communication, browsing, and navigation. Examines policy, management, and implementation issues. Staff.

182 INTRODUCTION TO LOCAL AREA NETWORKS (3). Prerequisite, INLS 102. Introduction to local area network hardware, topologies, operating systems, and applications. Also discusses LAN management and the role of the network administrator. Rankin.

183 DISTRIBUTED SYSTEMS AND ADMINISTRATION (3). Prerequisite, INLS 80, INLS 174, INLS 181, or INLS 182. Distributed and client/server-based computing. Includes operating system basics, security concerns, and issues and trends in network administration. Haas.

184 PROTOCOLS AND NETWORK MANAGEMENT (3). Prerequisite, INLS 80, INLS 181, or INLS 182. Network protocols and protocol stacks. Included are discussions of protocol classes, packet filtering, address filtering, network management and hardware such as protocol analyzers, repeaters, routers, and bridges. Goggin.

187 INFORMATION SECURITY (3). Prerequisite, INLS 181. Aspects of data integrity, privacy, and security from several perspectives: legal issues, technical tools and methods, social and ethical concerns, and standards. Staff.

191 ADVANCED INTERNET APPLICATIONS (3). Prerequisite, INLS 181 or INLS 80. Study of design and implementation of state-of-the-art Internet applications. Example topics include multimedia authoring tools, dynamic content generation techniques, and server-side configuration and programming. Fall. Staff.

Courses for Graduates

201 RESEARCH METHODS (3). Prerequisites: completion of INLS 180 and either INLS 111 or INLS 172. An introduction to research methods used in library and information science. Includes the writing of a research proposal. Kelly, Losee, Solomon.

203 INFORMATION SYSTEMS EFFECTIVENESS (3). Prerequisite, INLS 201. Recommended. Addresses issues of performance measurement and methodology in the evaluation of information systems and services. The role of objectives, performance measures, data collection approaches, and analytical approaches will be considered. Wildemuth.

204 INTERNATIONAL AND CROSS-CULTURAL PERSPECTIVES FOR INFORMATION MANAGEMENT (3). Examines information in society for selected nations/cultures. Compares institutions, processes, and trends in the globalization of information management in the face of barriers of language and culture. Daniel, Solomon.

210 INTERMEDIATE SELECTED TOPICS (3). Exploration of an intermediate-level special topic not otherwise covered in the curriculum. Previous offering of these courses does not predict their future availability; new courses may replace these. Courses offered during past years include:

210-40 EVOLVING OPTIMAL INFORMATION SYSTEMS. Losee.

210-34 COPYRIGHT IN THE DIGITAL AGE. Gasaway.

210-53 LIBRARY INFORMATION SYSTEMS. Kochanek.

210-69 CONSUMER HEALTH INFORMATION. Gollop.

210-96 INFORMATION ENTREPRENEURSHIP. Marshall.

210-112 ARCHIVAL APPROACHES TO CONTENT MANAGEMENT. Marshall.

210-119 DATABASE ADMINISTRATION. Chaffin.

210-02W DEMYSTIFYING OPEN SOURCE SOFTWARE. Garrison, Schnell.

210-03W EVIDENCE-BASED MEDICINE AND THE MEDICAL LIBRARIAN. Garrison, Schadt, Koch.

211 INFORMATION RETRIEVAL SEARCH STRATEGIES (3). Prerequisite, INLS 111 or INLS 172. Investigates information retrieval techniques and strategies from the world of electronic information sources, including commercial and Internet databases and search engines. Data analysis, marketing, and end-user products and services are explored. Morisseau.

213 USER PERSPECTIVES IN INFORMATION SYSTEMS AND SERVICES (3). Explores the role of information in human activity. Resulting insights are directed toward design of user-oriented systems. Psychological, social, economic, political, and other situational perspectives are taken. Solomon, Wildemuth.

214 USER EDUCATION (3). Prerequisite, INLS 111, INLS 180, or permission of instructor. Examines the history and context of LIS training programs. Pedagogy, teaching skills, methods of evaluation are addressed. Students may tailor learning projects to their own interests. Daniel.

216 HEALTH SCIENCES ENVIRONMENT (3). Prerequisite, INLS 111, INLS 131, or permission of instructor. Trends in health care delivery, biomedical research and health sciences education with emphasis on the impact and use of information. Includes observation of clinical and research settings. Gollop, Marshall.
218 INFORMATION SERVICES AND SPECIFIC POPULATIONS (3).
Service, professional, and administrative issues related to information access by non-traditional information service users. The course examines trends, public policy, ethical issues, programming, and evaluation of services. Gollop.

222 SCIENCE INFORMATION (3). Prerequisite, INLS 111. Survey of the communication of scientific information and the information sources in the physical and biological sciences; emphasis on major bibliographic and fact sources including on-line reference services. Staff.

226 HUMANITIES AND SOCIAL SCIENCES INFORMATION (3).
Prerequisite, INLS 111. Survey of information and its needs in the social sciences and humanities, with an emphasis on information use and search strategies and on reference and other information resources. Carr.

227 HEALTH SCIENCES INFORMATION (3). Prerequisite, INLS 111. A survey of information used in the health sciences disciplines and professions: The organization of sources, current techniques, and tools for its control including on-line databases. Gollop.

228 MANAGING SERIALS IN AN ELECTRONIC AGE (3). Prerequisites, INLS 111 and INLS 151. Survey of technical and public services aspects of serials management, including publishing, acquisition, collection development, organization, cataloging, licensing, access, and preservation of print and electronic serials. Lamoureux.

229 BUSINESS INFORMATION (3). Prerequisite, INLS 111. Combines an introduction to basic business concepts and vocabulary with consideration of current issues in business librarianship and of key print and electronic information sources. Nelson.

230 GOVERNMENT DOCUMENTS (3). Prerequisite, INLS 111. A survey of the major publications of the United States federal government, United Nations, United States governments, and British government, with attention to the selection, classification, and administration of a document collection. Van Fossen.

231 LAW LIBRARIES AND LEGAL INFORMATION (3). Prerequisite, INLS 111. An introduction to the legal system and the development of law libraries, their unique objectives, characteristics, and functions. The literature of Anglo-American jurisprudence and computerized legal research are emphasized as well as research techniques. Kleinheider, Bernstein.

234 HUMAN RESOURCES MANAGEMENT (3). Prerequisite, INLS 131. An in-depth look at the management of human resources in libraries and other information agencies. Includes topics such as recruitment, hiring, job analysis, performance appraisal, training, and compensation. Moran.

235 DIGITAL LIBRARIES: PRINCIPLES AND APPLICATIONS (3). Research and development issues in digital libraries including: collection development and digitization, mixed mode holdings, access strategies and interfaces, metadata and interoperability, economic and social policies, and management and evaluation. Marchionini.

237 MARKETING OF INFORMATION SERVICES (3). Application of marketing theory to libraries and other information settings. Includes consumer behavior, market research, segmentation, targeting and positioning, public relations, product design, and sales promotion. Daniel.


243 ADMINISTRATION OF PUBLIC LIBRARY WORK WITH CHILDREN AND YOUNG ADULTS (3). Objectives and organization of public library services for children and young adults designed for those who may work directly with young people or who intend to work in public libraries. Sturm.

244 DIGITAL PRESERVATION AND ACCESS (3). Focuses on best practices for the creation, provision, and long-term preservation of digital entities. Topics include digitization technologies, standards and quality control; digital asset management; grant writing; and metadata. Tibbo.

245 ADVANCED ISSUES AND PRACTICES IN ARCHIVES AND MANUSCRIPTS ADMINISTRATION (3). Prerequisite, INLS 145 or equivalent. Examines issues in the administration of archival, manuscript, and records programs. Explores how theory relates to professional practice. Students process a collection from appraisal through creation of an electronic finding aid. Tibbo.

246 MUSIC LIBRARIANSHIP (3). Survey of the history and practice of music librarianship, with an emphasis on administration, collection development, and public service in academic and large public libraries. Staff.

247 SPECIAL LIBRARIES AND KNOWLEDGE MANAGEMENT (3). Prerequisite, INLS 131. Professional competencies required to work as special librarian or knowledge manager in corporate or nonprofit setting. Strategic planning, Organizational dynamics, Tailoring services. Intranet design. Value-added measures. Intellectual capital. Daniel.

251 ORGANIZATION OF MATERIALS II (3). Prerequisite, INLS 151.

252 METADATA ARCHITECTURES AND APPLICATIONS (3). Prerequisite, INLS 150, 151, or 172. Examines metadata in digital environment. Emphasizes the development and implementation of metadata schemas in distinct information communities and the standards and technological applications used to create machine understandable metadata. Greenberg.

254 PRESERVATION OF LIBRARY AND ARCHIVE MATERIALS (3). An introduction to current practices, issues, and trends in the preservation of materials for libraries and archives with an emphasis on integrating preservation throughout an institution's operations. Doyle.

257 USER INTERFACE DESIGN (3). Prerequisite, INLS 162. Basic principles for designing the human interface to information systems, emphasizing computer-assisted systems. Major topics: users' conceptual models of systems, human information processing capabilities, styles of interfaces, evaluation methods. Wildemuth.

258 DATABASE SYSTEMS II (3). Prerequisite, INLS 256. Advanced study of database systems. Topics include database design, administration, current issues in development and use, object databases, and distributed databases. Chaffin, Haas.

259 WEB DATABASES (3). Prerequisites, INLS 181 or equivalent. INLS 256 or equivalent, and programming experience. Explores concepts and practice surrounding the implementation and delivery of Web-enabled databases. Students will gain experience with and evaluate PC and Unix Web database platforms. Chaffin.

265 ABSTRACTING AND INDEXING FOR INFORMATION RETRIEVAL (3). Prerequisite, INLS 50, INLS 150, or INLS 151. Examines abstracting, indexing, and classification principles and techniques for document and object (non-textual materials) analysis. Human and automated techniques are covered. Greenberg.

279 BIOINFORMATICS RESEARCH REVIEW (1). Develops understanding of information science research issues in the domain of bioinformatics through the review of journal articles, invited talks, and critical group discussions of methods. Hemminger.
281 INTERNET ISSUES AND FUTURE INITIATIVES (3). Prerequisite, INLS 181 or equivalent. Members of this seminar discuss emerging Internet policy issues such as copyright, intellectual property, privacy, and security and explore emerging Internet tools and applications. Jones.

299 SUPERVISED FIELD EXPERIENCE (3). Prerequisites, completion of twenty-one semester hours and permission of advisor. Supervised observation and practice in an information service agency or library. The student will work required amount of time in the work setting under the supervision of an information/library professional and will participate in faculty-led group discussions for ongoing evaluation of the practical experience. Daniel.

300 STUDY IN INFORMATION AND LIBRARY SCIENCE (1-3, repeatable). Prerequisite, permission of the instructor. Study of a specific topic under the direction of a specific faculty member. Six credit maximum for master's students. Graduate faculty.

301 RESEARCH ISSUES AND QUESTIONS I (3). Prerequisite, doctoral status or permission of instructor. Intensive and systematic investigation of the fundamental ideas in information and library science. Exploration and discussion in seminar format. Must be taken in fall semester followed by INLS 302 in spring. Fall. Graduate faculty.

302 RESEARCH ISSUES AND QUESTIONS II (3). Prerequisite, doctoral status or permission of instructor. Intensive and systematic investigation of the fundamental ideas in information and library science. Exploration and discussion in seminar format. Must be taken in spring semester immediately after INLS 301 in fall. Spring. Graduate faculty.

304 SEMINAR IN THEORY DEVELOPMENT (3). Prerequisite, doctoral or advanced master's student status. Discussion and critique of the structural components and processes utilized in theory development. Seminar provides knowledge relating to the various stages of theory building. Staff.

308 SEMINAR IN TEACHING AND ACADEMIC LIFE (3). Prerequisite, doctoral student or advanced master's student status. Examines teaching, research, publication, and service responsibilities. Provides perspective on professional graduate education and ILS educational programs. Explores changing curricula and discusses ethics, rewards, and problems of academic life. Staff.

309 SEMINAR IN TEACHING PRACTICE (1). Pre- or corequisites, doctoral student status, INLS 308. For doctoral students currently involved in teaching activities, regular seminar meetings to discuss relevant literature and aspects of the teaching experience. Staff.

310 ADVANCED SELECTED TOPICS (1-6). Exploration of an advanced special topic not otherwise covered in the curriculum. Previous offering of these courses does not predict their future availability; new courses may replace these. Courses offered during past years include:

310-52 SEMINAR IN RESEARCH METHODS. Solomon.

326 SEMINAR IN POPULAR MATERIALS IN LIBRARIES (3). Selected topics relating to the roles of various types of libraries in the provision and preservation of popular materials (light romances, science fiction, comic books, etc.) existing in various forms (print, recorded sound, etc.). Moran.

327 SEMINAR IN INFORMATION AND CULTURE (3). Exploration of scholarship and observations about information and its social appearances in contemporary culture. Reading, literacy, and cultural values will be emphasized. Carr.

341 SEMINAR IN PUBLIC LIBRARIES (3). Prerequisite, completion of twelve semester hours. Selected topics in public library services, systems, networks, and their management. Current issues are emphasized, along with the interests of the participants. Colllop.

342 SEMINAR IN ACADEMIC LIBRARIES (3). Prerequisite, INLS 131. Study of problems in the organization and administration of college and university libraries with emphasis on current issues in personnel, finance, governance, and services. Moran.

349 SEMINAR IN RARE BOOK COLLECTIONS (3). A study of the nature and importance of rare book collections; problems of acquisition, organization, and service. McNamara.

357 SEMINAR IN HUMAN-COMPUTER INTERACTION (3). Prerequisite, INLS 257 or permission of instructor. Research and development in design and evaluation of user interfaces that support information seeking. Major topics: interactivity, needs assessment, query and browser interactions, interactive design and maintenance, usability testing. Marchionini.

372 SEMINAR IN INFORMATION RETRIEVAL (3). Prerequisites, INLS 172 and doctoral student status or permission of the instructor. A seminar on the basic questions that arise in information retrieval research and the methods and theories that enable observation, analysis, and interpretation. Staff.

382 SEMINAR IN COMMUNICATION (3). Prerequisite, doctoral student status or permission of the instructor. A seminar on the basic questions that arise in communication research and the methods and theories that enable observation, analysis, and interpretation. Staff.

392 MASTER'S PAPER (3). Provides a culminating experience for master's degree students, who engage in independent research or project effort and develop a major paper reporting the research or project under the supervision of a faculty member. Staff.

394 DOCTORAL DISSERTATION (3 or more). Staff.

399 RESEARCH IN INFORMATION AND LIBRARY SCIENCE (1-6, repeatable). Prerequisite, permission of the instructor. Supports individual and small group research undertaken by doctoral students in information and library science intended to produce research results of publishable quality. Staff.

INTERDISCIPLINARY BIOMEDICAL SCIENCES (IBMS) PROGRAM

SHARON L. MILGRAM, Director

Professors
James Anderson, Cellular Signaling Mechanisms of the Tight Junction
William Arendshorst, Function of Retinal Vascular Smooth Muscle Cells: Receptors and Signal Transduction Pathways
Steven Bachmeyer, Molecular Pathology of Hepatitis Simplex Virus; Effects on Signal Transduction Pathways, Cell-Cycle Progression and the Cell-Cycle–Regulated Transcription Factor E2F; Regulation and Function of Viral Immediate-Early Proteins
Albert Baldwin, Regulation of Gene Expression; Control of Oncogenesis and Apoptosis
Vyasa Bankaitis, Signal Transduction, Genetic Models for Neurodegenerative Disease in Mouse, Yeast Genetics and Cell Biology
Kerry Bloom, Mechanisms of Chromosome Segregation in Yeast; Chromosome and Spindle Dynamics
Keith Burridge, Cell Movement, Cytoskeleton, Interactions of Cells with the Extracellular Matrix, Signaling Downstream from Adhesion
Jeanne Cannon, Molecular Genetics of Bacterial Pathogens: Bacterial Cell Surfaces; Pathogenesis of Neisseria Gonorrhoea and Francisella Tularensis; Antigenic Variation and DNA Repair in Pathogenic Bacteria
Charles Carter Jr., Protein Crystallography, Structural Polymorphism and Function
Stephen Charney, DNA Repair; Drug Resistance; Cancer Chemotherapy; Muragene
Frank Church, Molecular and Cellular Mechanisms of Thrombosis, Hemostasis, Vascular Biology, and Tumor Cell Invasion; Structure-Activity Relationships of Serine Proteases and Serine Protease Inhibitors
Marla Cordiero-Stone, DNA Replication in Mammalian Cells and Mechanisms of Chemical Carcinogenesis
Joe Costello, Membrane Biophysics, Intercellular Junctions, Active Transport.
Membrane Fusion, Electron Microscopy
Fulton Crews, Neurodegeneration and Chronic Drug-Induced Changes in Brain Signaling Pathways

Stephen Crews, Developmental Neurobiology

Jeff Dangl, Genetic and Molecular Analysis of Disease Resistance

C. William Davis, Regulation of Macrophage Clearance in Airways

Channing Der, Oncogenes; Ras Superfamily Proteins; Signal Transduction

James Faber, Receptor Signal Transduction by Vascular Smooth Muscle Cells

Roeslan Farber, Cancer Genetics: Human Molecular Genetics; Somatic-Cell Genetics; Microsatellite Instability

Paul Farel, Neural Development and Regeneration

Jeffrey Felgner, Immunobiology of the Mouse and Human Major Histocompatibility Complex; Role of MHC in Regulation of the Immune Response; Vaccines

John Gilmore, Perinatal Brain Development and Risk for Schizophrenia and Other Neurodevelopmental Disorders

Jack Griffith, Structure of DNA; Mechanisms of DNA Recombination and Repair; HIV Research

Kendall Harden, Regulation of Second-Messenger Signaling

Ken Jacobson, Membrane Biology and Biophysics, Cell Migration, Video Image Analysis

Gary L. Johnson, GTP-Binding Proteins, MEK Kinases

Alan Jones, Arachidopiosis, Hormone Perception; Growth and Development; Programmed Cell Death

David Kaufman, Temporal Activation and Genomic Organization of Functional Origins of DNA Replication

William Kaufman, Human DNA Metabolism and Carcinogenesis; Stages of Hepatocarcinogenesis

Hennng Ke, X-Ray Protein Crystallography and Structures of Cytochrome, Calcineurin, HIV Gag Protein

Jean Lander, Developmental Neurobiology- Roles of Neurotransmitters, Growth Factors and Hormones in Brain Development, Neuronal-Glia Interactions

David Lee, Growth Factors and Receptors; Signal Transduction; Tumorigenesis

John J. Lemasters, Cellular and Molecular Mechanisms of Apoptosis and Necrosis to Liver and Heart Cells; Organ Preservation for Transplantation Surgery; Mitochondrial Permeability Transition; Confocal and Multimicroscopy of Living Cells; Mechanisms of Kupffer Cell Activation; Mitochondrial Ca2+ Homeostasis

Barry Lents, Biomembrane Microstructure and Cell Function

Jeffrey Lieberman, Neuroscience of Mental and Behavioral Disorders

Susan Lord, Fibrinogen Structure-Function Analysis; Fibrinogen in Vascular Disease; Modeling Cardiovascular Disease in Mice

Pauline K. Lund, Molecular Biology of Growth Factors and the Gastrointestinal Tract; Transcriptional Mechanisms of Aging Induced Memory Loss

Nobuyo Mada, Genetics Modeling of Atherosclerosis in Mice

Terry Magnuson, Mammalian Genetics; Epigenetics; Genomics

Paul Mania, Cellular Basis of Information Processing in the Auditory System

William Marlafl, Regulation of RNA Metabolism in Animal Cells

Steve Matson, Biochemistry and Genetics of DNA Helicases from E. Coli and Yeast

Ann Matthyse, Genetics of Bacterial Adhesion to Plant Surfaces; Genetics and Biochemistry of Cellulose Synthesis

Ken McCarthy, Glial Cells in Brain Function

D. Lee McIlwain, Chemistry of Spinal Mooneurons

Gerhard Messner, Excitation-Contraction Coupling in Muscle

Beverly Mitchell, Gene Expression; Purine Pyrimidine Metabolism; Leukemogenesis

Michael O'Rand, Cell Biology, Immunology, Reproductive Biology

Leslie Parise, Adhesion Receptors and Signaling in Platelets, Sickle Cells and Cancer

Cam Patterson, Angiogenesis, Vascular Development, Cardiac Failure, and Atherosclerosis

Mark Pfeifer, Cell Adhesion; Signal Transduction and Cancer

Peter Petruss, Neurobiology, Neuroendocrinology, Reproductive Biology

Edward Perl, Specificity in Neural Functioning

Tom Peters, Analysis of Recombination, Chromosome Structure, and Genome Stability in Yeast

Gary Pielak, Protein Biophysics in Vitro and in Vivo

Robert Rosenberg, Regulation of Ion Channels

Aldo Russioni, Neuroanatomy/Neurophysiology

Ted Salmon, Microtubule Assembly, Microtubule Motors, and the Mechanism of Chromosome Movement

Jude Samulski, Development of Virus-Based Delivery Systems for Use in Human Gene Therapy

Gwen Sancar, Regulation of DNA Damage- and Stress-Inducible Genes in Eukaryotes

Robert Sebok, Cell Biology of the Neuromuscular Junction and of Dystrophin-Associated Proteins

William Snider, Developmental Regulation by Neuronal Growth Factors

Patrick Sullivan, Complex Traits in Humans, Psychiatric Genetics, Pharmacoepigenetics, Twin Studies, Schizophrenia, Major Depression, Nicotine Dependence

Ronald Swanson, Molecular Biology of Retroviruses; HIV Pathogenesis and Drug Resistance

Jenny Ting, Molecular Immunology, Molecular Regulation of Eukaryotic Genes; Regulation of Transplantation Genes; Molecular Mechanisms of Neurodegeneration; Molecular Cancer Biology/Immunology and Transplantation

Michael Topal, Regulation of DNA Damage- and Stress-Inducible Genes in Eukaryotes

Tony Van Dyke, Regulation of Cell-Growth Control

Tony Waldrop, Hypertension, Developmental Neurobiology, Effects of Hypoxia on Brainstem Neurons

Bernard Weissman, Tumor Suppressor Genes; Cancer Genetics

Gilbert C. White III, Molecular Mechanisms of Signal Transduction in Human Platelets

R. Mark Wightman, Ultrimicroelectrodes, Electrochemistry, Neurochemistry

Elizabeth Wilson, Androgen Regulation of Gene Expression

Associate Professors

Ralph Baric, Molecular Genetics of Coronavirus Transcription, Replication, and RNA Recombination; Viral Heart Disease

Victoria Baugh, Molecular Genetics of Blood Vessel Formation in Mouse Models

Manohar Bhat, Axon Glial Interactions, Blood-Brain Barrier Formation, Signal Transduction

Bob Bourre, Molecular Mechanisms of Signal Transduction in Bacteria, including Protein Phosphorylation

Patrick Brennwald, Cell Polarity, Tumor Suppressor, Vesicle Transport, Eosinophils, Rhodopsin

Sharon Campbell, Structural Biology, Regulatory Molecules Involved in Cellular Growth Control and Cell Adhesion

Regina Carelli, Neurophysiological and Neurochemical Investigation of Brain Reward Processing

Richard Cheney, Motor Proteins, Cytoskeleton, and Cell Motility

Edward J. Collins, Molecular Recognition by Immune Molecules

Adrienne Cox, Tax Protein Onogenesis and Signaling, Cellular Radiation Response, Lipid Modification and Drug Development

Douglas Cyr, Cyscic Fibrosis, Organelle Biogenesis, Protein Folding, Molecular Chaperones, the Ubiquitin-Proteasome Pathway

Hendrik Dohlman, Regulation of G Protein Signaling

Bob Duronio, Genetics of Cell-Cycle Control during Drosophila Development

Ann Erickson, Cellular Biochemistry; Secretion of Lysosomal Proteases by Transformed Cells

Pat Flood, Host-Microbial Biology, Cellular Immunology, Immune Response, Virology, Antigen Processing and Presentation, Mechanisms of T-Cell Activation, Immune Regulation

Howard Fried, Nucleocytoplasmic Transport and RNA-Protein Interactions

Michael Goy, Biochemical Processing of Information at the Cellular Level

Lee Graves, Biochemistry of Growth Factor-Mediated Signal Transduction

Clayton Hodgson, Neurobiological Systems

L. Fredrik Jareg, Neuropharmacology
Tom Kawula, Bacterial Genetics, Molecular Biology of Gene Regulation and Pathogenicity in Escherichia Coli; Molecular Basis for Haemophilus Ducreyi Pathogenesis
Joe Kiefer, Molecular Genetic Analysis of Hormone Signaling in Arabidopsis
Stephen Kneissl, Electrophysiology, Biophysics. Basic Mechanisms of Electrical Defibrillation
Anthony Lamantia, Control of Gene Expression in the Developing and Adult Central Nervous System
Sharon L. Milgram, Epithelial Biology, Trafficking and Polarity, Signal Transduction in Polarized Cells, Scaffold and Adaptor Proteins
Andrew Morris, Roles of Lipids in Cellular Regulation, Signal Transduction in Normal and Cancerous Cells
A. Leslie Morrow, Molecular Neuropharmacology of GABA Receptors and Mechanisms of Ethanol Tolerance and Dependence
Robert Nicholas, Signaling Mechanisms of G Protein-Coupled P2Y Receptors for Extracellular Nucleotides
Deborah O'Brien, Molecular Regulation of Mammalian Spermatogenesis and Fertilization
Jason Reed, Plant Development: Auxin Signaling, Light Responses
Mike Schaller, the Integrins, Protein Tyrosine Kinases and Signal Transduction
Lillee Sears, RNA Processing Control in Drosophila; Developmental Genetics
Jonathan Serody, Transplantation and Tumor Immunology; Program in Bone Marrow Transplantation
Lisian Su, T Cells during Normal and Pathogenic Hematolymphopoiesis
Roland Tisch, Molecular Immunology, Mechanisms of T-Cell Activation and Tolerance Induction, T-Cell-Mediated Autoimmunity; Development of Antigen-Specific Immunotherapies for the Treatment of Autoimmunity and Cancer
Alexander Trocha, Computer Assisted Drug Design, Combinatorial Chemistry
Yue Xiong, Cancer Biology, Mammalian Cell Cycle; Tumor Suppressor Genes

Assistant Professors
Shawn Ahmed, Telomere Replication and Germline Immortality in C. Elegans
Eva Anton, Molecular Analysis of Neuronal Migration and Layer Formation in Cerebral Cortex
Miriam Braunstein, Microbial Genetics; Pathogenesis of Mycobacterium Tuberculosis; Protein Export
Jay Brennan, Neuronal Dendrite Development Using Drosophila Genetics
Christina Burch, Experimental Studies of Evolution Using Viruses
Kathleen Cannon, Generically Engineered Animal Models in Study of Human Disease
William Coleman, Biology of Liver Stem-Like Cells; Mechanisms of Hepatocarcinogenesis; Genetic Mechanisms of Tumor Suppression
Frank Cordova, Heart Development, Mesodermal Pattern, T Box Genes
Gregory Copenhaver, Regulation of Metastasis in Higher Eukaryotes
Blossom Dumanis, Viral Oncogenes and Transcription Factors Encoded by Kaposi's Sarcoma-Associated Herpesvirus and Its Simian Relative, Rhesus Monkey Rhadinovirus
Moharish Dushamukh, Mechanisms of Neuronal Programmed Cell Death
Azevedo de Silva, Microbial Pathogenesis; Anthropod Vector-Borne Infectious Diseases; Control of Infectious Diseases in Developing Countries
Nikolay Dzhelilyan, Computational Structural Biology
Michael Gładkowski, Bioinformatics; Proteomics; Post-Genomic Complexity; Cellular Modelling; Bacterial Pathogenesis
Bob Goldstein, Generation of Cell Diversity in Early Development of C. Elegans
Scott Hammond, RNA Interference
Mark Hesse, Viral Pathogenesis; Virus-Host Interactions, Genetics of Virulence, Vaccine Development
Tal Kafri, Development of HIV-Based Vectors for Gene Therapy
Suzanne Kirby, Stem Cell Biology, Transplantation Biology, and Gene Therapy
Brian Kushman, Computational Protein Design/Protein-Protein Interactions/Structural Biology
Andrew Lee, Structural Biophysics and Protein NMR Spectroscopy

Jason Lieb, Exploring Specificity and Function in Protein-Genome Interactions using DNA Microarrays
Christopher Mack, Molecular Mechanisms of Cardiac Arrhythmias; Transcription and Cell Signaling Pathways that Regulate Smooth Muscle Cell Differentiation
Carol O’Shey, Mechanisms of Cell Motility and Adhesion
Fernando Paro-Manuel de Villena, Mitotic Drive, Chromosome Segregation, Non-Mendelian Genetics
Charles Perou, Genomic and Molecular Classification of Human Tumors to Guide Therapy
Larysa Pevny, Neural Induction, Neuronal Genes, SOX Proteins
Franck Pollet, Signaling Pathways in the Mammalian Cerebral Cortex
Dale Rasenick, V(DJ) Recombination; DNA Double Strand Break Repair
Scoot Randell, Airway Epithelial Cell Biology – Stem Cells, Host Defense and Response to Injury
Matt Redinbo, Structural Basis of Drug and DNA Metabolism
Jeff Sekelsky, Genetics of Genome Instability in Drosophila
Ned Sharpless, Tumor Suppressor Genes, Genetics of Cancer and Aging
David Sidorenkov, Regulators of G-Protein Signaling (RGS) Family of Proteins
John Sondek, X-Ray Crystallography and Transmembrane Signaling
Brian Strahl, Histone Modifications and Gene Regulation
Nobuyuki Takebayashi, Renal Mechanisms of Essential Hypertension and Diabetic Nephropathy; Generation and Characterization of Genetically Modified Mice by Targeting Kidney Genes Using Homologous Recombination, Computer Simulation, and Gene Therapies
Joan Taylor, Decoding the Cellular Signaling Pathways that Regulate Normal and Aberrant Growth in the Cardiovascular System; Characterizing the Role of Adhesion Signaling and Tyrosine Kinases in Cardiomyocyte Hypertrophy and Smooth Muscle Cell Growth and Migration
David Threadgill, Disease Susceptibility; Muramogenesis; Colon Cancer; Genetic Engineering; Microarrays; Gut Flora
Joan Trejo, Biology of Protein-Activated Receptors
Barbara Vilien, B Cell Receptor Signal Transduction; B Cell Tolerance and Autoimmune Disease; B Cell Malignancies
Todd Vision, Genome Evolution and the Architecture of Complex Traits
Du-Zhi Wang, Genetic Pathways for the Development of Cardiac and Vascular Smooth Muscle Cells
Jennifer Webster-Cyrike, Oral Manifestations of Systemic Disease; Host-Virus Interactions; Viral Oncogenesis; Viral Pathogenesis during Immunosuppression; Signal Transduction; Cellular Biology; Gene Expression
Herbert Whimann, Hemostasis and Thrombosis; Biochemistry and Vascular Biology of Blood Coagulation; Protein Structure-Function
Yi Zhang, Chromatin Dynamics, Gene Expression, and Cancer

Research Associate Professors
Chris Ellin, Bacterial Pathogenesis; Iron Acquisition
Richard Weinberg, Quantitative Immunocytometry, Organization of Glutamate Receptors and Second Messengers, Nitrile Oxide Synthase

Research Assistant Professors
Jeffrey MacDonald, Tissue Engineering
Lawrence Ostrowski, Regulation of Ciliated Cell Differentiation and Gene Expression, the Identification of Novel Ciliary Proteins (by both Molecular Biology and Proteomics Approaches, the Regulation of Ciliary Beat Frequency, Gene Therapy Approaches for Cystic Fibrosis and Primary Ciliary Dyskinesia, and the Response of Ciliated Cells to Inhaled Toxins or Pathogens

The Interdisciplinary Biomedical Sciences (IBMS) Program of the University of North Carolina at Chapel Hill includes faculty from eight departments in the School of Medicine (including biochemistry and biophysics, biomedial engineering, cell and developmental biology, microbiology and immunology, pathology and laboratory medicine, pharmacology, and physiology), one department in the College of Arts and Sciences (biology), and three curricula (genetics and molecular biology, neuroscience, and toxicology). The theme of the various programs is...
the pursuit of biomedical science research. The faculty's collective research activities are broad and diverse regarding both scientific endeavors and techniques. Students are able to choose from a variety of preceptors and projects.

A BS or BA degree is required for admission. The admissions committee considers the perceived benefit a student would receive from participation in this interdisciplinary graduate program. It is generally expected that applicants will have a strong background in the biological sciences, chemistry, physics, mathematics, or engineering (as appropriate for biomedical engineering). Only applicants with both strong academic records and prior research experience will be favorably considered. An on-campus interview is required prior to admission.

Students will acquire a foundation of basic science knowledge, accumulate new laboratory skills required for implementing research goals, and develop the ability to reason scientifically and ask questions/solve problems based in the biomedical sciences. During their first year, students will be required to enroll in graduate-level courses and participate in laboratory research rotations. With the guidance of an advisory committee, students will take courses that embrace an interdisciplinary biomedical science format; they will also take courses that are directly related to their research interests. IBMS students will also be required to enroll in IBMS 301 (Research in IBMS) and IBMS 302 (Seminar in IBMS) each semester of their first year.

Students admitted to the program will be able to choose from more than one hundred seventy faculty members as they pursue the required three research rotations (each about twelve weeks in duration) in the fall and spring semesters of their first year. At the completion of the spring semester, each student will be asked to select an academic advisor who will provide guidance for his or her dissertation research training. The student will then become a graduate student within that advisor's department or curriculum and will complete coursework requirements during the second year.

All students enrolled in the IBMS program receive an annual stipend ($21,500 in 2004), full tuition, health insurance, and fees.

Courses for Graduates
IBMS 301 RESEARCH IN INTERDISCIPLINARY BIOMEDICAL SCIENCES (Var). Prerequisite, enrollment in IBMS program. A research course for IBMS program students to carry on investigations in biomedical science. Fall and spring, Staff.

IBMS 302 SEMINAR IN INTERDISCIPLINARY BIOMEDICAL SCIENCES (1). Prerequisite, enrollment in IBMS program. This course consists of seminars designed to acquaint the student to recent literature in biomedical sciences as it relates to research activity carried on in our departments. Fall and spring, Staff.

SCHOOL OF JOURNALISM AND MASS COMMUNICATION

RICHARD R. COLE, Dean

Professors
Harvy Amano (39) News-Editorial Journalism, Black Press, Minorities and Communication
Richard J. Beckman (40) Visual Communication
Margaret A. Blanchard (30) First Amendment Issues, Mass Media History
Thomas A. Bowers (17) Advertising, Mass Communication and Society, Pedagogy
Jane D. Brown (28) Mass Media Uses and Effects, Health Communication, Qualitative Methods
Richard R. Cole (18) International Communication, Professional Journalism, Mass Communication and Society

Robert F. Lauterborn (34) Advertising
Thomas R. Linden (58) Medical Journalism
Philip Meyer (29) Public Opinion, Media Ethics, Newspapers
Donald L. Shaw (23) U.S. Newspaper History, Agenda Setting
Richard H. Simpson (52) Broadcast and Corporate Production
Robert L. Stevenson (25) Communication Theory and Research Methods, International Communication
Chuck Stone (49) Censorship, Minorities in the Media, Ethnic Press
John Sweeney (46) Advertising, Sports Marketing
Ruth Waiden (33) First Amendment Theory, Media Law and Ethics
Jan Yopp (42) News-Editorial Journalism, Public Relations

Associate Professors
Debashis Akhat (55) Media Technology
Jesse O. Anthony (38) Visual Communication
George W. Cloud (41) News-Editorial Journalism
Patricia A. Curtin (56) Public Relations, Agenda Building, Mass Communication Theory and Methods
Rhonda Gibson (63) Print Journalism, Minorities and Media, Mass Communication Theory
Anne M. Johnston (50) Media Effects, Women and Media, Political Communication
Carley Parker (37) Mass Communication Law
Carol J. Paedun (57) Advertising
Dolcie Strouhan (36) Public Relations
Charles A. Tuggle (59) Broadcast Journalism
Lucia Vargas (53) International/Development Communication, Women and Media, Qualitative Methods
Xinshu Zhao (47) Advertising and Political Communication in the United States and China

Clinical Associate Professor

Assistant Professors
Lois Boyton (61) Public Relations, Ethics
Patrick Davison (62) Visual Communication
Elizabeth Dougall, Public Relations
Frank Fee (60) Public Journalism, Newspapers
Joe Bob Hester (64) Advertising
Michael Hoefges, Mass Communication Law, Advertising Law, Freedom of Information and Access Law, Privacy Issues
Sriram Kalyanaraman (66) New Media and Media Effects
Larry Lamb (65) Public Relations
Chris Roush (67) News-Editorial Journalism, Business Reporting
Linda Walsh (68) Visual Communication and Advertising

Lecturers
Ferrel Guillery, Director, Program on Southern Politics and Media and Public Life; Politics and the Media
Jock Lauterer, Director, Carolina Community Media Project; Community Journalism, News-Editorial Journalism

Professors Emeriti
John B. Adams
A. Richard Elam
Raleigh Mann
James J. Mullen
Carol Reuss

The School of Journalism and Mass Communication offers programs leading to the master of arts in mass communication and the doctor of philosophy in mass communication.
Admission

Applications are available via the Web through gradschool.unc.edu. Completed forms are submitted to The Graduate School, whose admissions decisions are based largely on recommendations from the School of Journalism and Mass Communication. The minimum criteria for admission to a graduate program in journalism and mass communication are:

- A recognized undergraduate degree (or equivalent credential from a foreign university).
- An undergraduate GPA of at least 3.0 (A=4.0) for the last two years of study.
- Graduate Record Examination (GRE) scores of at least the 55th percentile on the verbal section, 50th percentile on the quantitative section, and 4.5 on the analytical writing section.
- Three letters of recommendation. Forms can be found in the online application.
- A statement of career intent, indicating how the applicant intends to use graduate education in journalism and mass communication.
- A current résumé.
- Writing sample. For master's applicants, this could be an academic paper or magazine or newspaper article; for doctoral applicants, a chapter from their master's thesis or a copy of an academic paper.
- PhD applicants should also include a statement that details a problem that they would like to solve during their time as a doctoral student.

Applicants are committed to researching this problem if accepted into the program, but the School of Journalism wants to know their research interests. Applicants should be aware that the number of applications far exceeds the number of spaces available and that many qualified applicants must be rejected because of limited space in the program.

New students are admitted only for the fall semester. The application deadline is January 1 for the following fall.

Financial Assistance

Roy H. Park Fellowships are available to nine new doctoral students and fourteen incoming master's students each year. These fellowships provide handsome stipends, payment of tuition and fees, health insurance, and money for research and travel to professional and academic conferences. The stipend for doctoral students each year is $18,500, and master's students receive a $10,000 annual stipend. Doctoral student funding is for three years, and master's student funding lasts for two years. Continuation of funding beyond the first year is dependent on satisfactory progress in the program. In return for this funding, doctoral and master's students must work as graduate assistants. These are fifteen-hour work weeks, and assignments vary according to the needs of the faculty and interest and skill levels of the students. The Roy H. Park Fellowships are available only to United States citizens. There is no special application for these fellowships. All U.S. citizens qualified for admission to the program are considered for Roy H. Park Fellowships. Fellowship finalists will be invited to participate in on-campus interviews in February or March.

Other financial assistance available for graduate students includes the Pfizer Minority Medical Journalism Scholarship, which provides three semesters of support for a master's student in the medical journalism program with demonstrated financial need; the Graduate Dean's Research Assistantship, awarded each year to an incoming master's student with an interest in print journalism or public relations; and the KnowledgeFoundry@Carolina Graduate Assistantship for a master's student with an interest in multimedia. The school also offers the $8,000 William F. Clingman Award for the study of ethics to continuing students and the $1,000 Tom Wicker Scholarship to continuing master's students interested in news-editorial careers. In addition, limited funds for dissertation or thesis research are available through the Minnie S. and Eli A. Rubinstein Awards.

Any graduate student who receives any funding for his or her education from a school-based source is required to maintain at least a B average each year. This applies to both master's and doctoral students. Grades are reviewed each spring in order to make this determination. I grades must be balanced by H grades in order to maintain this average. If a student gets an L in one of the core courses, he or she must pass a comprehensive examination given during the following semester. If the student fails the exam, he or she will be allowed to retake the course once. The student cannot have the first L removed from his or her transcript by passing the examination or by getting a P upon retaking the course. If the student again earns an L after retaking the course, he or she will not be allowed to continue in the program.

The Master's Program

The master's program has two major sequences. The professional sequence is designed to educate students for professional careers in public relations, advertising, journalism, and other mass communication fields. The mass communication sequence gives students the background needed for teaching or research. In both sequences, students are taught to critically examine the role of mass communication in society and are provided with a firm grounding in theory and analysis. By setting high standards for both scholarly and professional achievement, the school seeks to prepare graduates to be leaders and critical thinkers, no matter what career paths they might take.

The MA is designed to meet the needs of (1) holders of the bachelor's degree in fields other than journalism—mass communication who wish to enter the field, (2) journalists who want more education in a specialized field, (3) experienced journalists or communicators who wish to prepare themselves for teaching, (4) individuals primarily interested in education for media research, and (5) journalism—mass communication graduates who wish to continue their education and career development.

In other words, this is not strictly a professional master's program that aims to teach technical skills in writing, editing, photography, and graphic design. Nor is the focus solely academic and theoretical. Rather, the school seeks to achieve a balance.

Path Options

Early in the program, each master's student, with his or her adviser, designs a path of courses that leads to a coherent goal. The path is usually determined by a career interest and includes courses numbered 100 and above both inside and outside the school. Students in the professional sequence take at least one 300-level seminar, and those in the mass communication sequence take two seminars. All of the path courses are evaluated for consistency with the thesis, series of articles, or project that the student does as the capstone for the MA work. All students must take a research methods course appropriate to the capstone thesis or nontraditional thesis option.

Some examples of paths in the professional sequence:

- Students preparing for careers leading to management and research positions in advertising may choose courses in advertising management and planning, research, new technologies, sales, or some other area. Courses from business, psychology, sociology, and library and information science are suggested as outside courses.
• For careers in writing and editing for the print media, students choose courses that teach the relevant skills. They also learn the theory and analytical skills they need to eventually hold leadership positions in their chosen fields.

• Public relations students prepare for careers leading to management positions in corporations, nonprofit organizations, government, or public relations agencies. Their paths include skills and theory courses in public relations as well as outside areas of interest, including business, organizational and speech communication, and health communication.

• Other fields for which professional paths can be designed include visual communication, electronic communication, online journalism, and multimedia.

• Paths in the mass communication sequence can be just as diverse. Students learn the theory and research methods they need to teach at a small college or to pursue a doctorate in mass communication. They can study mass communication law or history, media effects, new communication technologies, or international communication, among other subjects. Depending on the course of study they select, they may also be prepared for a variety of research positions in the public and private sectors. Students in this sequence do not take professional skills courses such as newswriting and editing.

Requirements

Master's students must earn at least thirty graduate-level credits (ten courses numbered 100 or above) including three credits for a thesis or nontraditional thesis option. Course requirements are divided into three categories: basic competencies, core courses, and path courses. At least six courses (including the thesis or thesis option) must be numbered 200 or above. This includes a research methods course, generally JOMC 210 or 211, appropriate to the thesis or thesis option. Two to four of the graduate-level courses should be taken from other University departments. Students may select from courses offered by other departments or schools at UNC-Chapel Hill, Duke University, and North Carolina State University.

Basic Competencies: All master's students must pass the school's spelling and grammar test by the end of the first semester. This exam is a basic requirement for graduation for our undergraduate students and normally poses no major problems for graduate students. Information on the spelling and grammar test, including instructions on how to study for it, is included in the orientation packet sent to new students each summer.

Master's students also must demonstrate competency in other basic skills related to their chosen paths. For example, students seeking news-editorial careers must demonstrate competency in newswriting and editing, plus one related area such as reporting, photography, graphic design, or feature writing. Regardless of sequence, three competency courses are required, and no credit is given toward the degree. Competency courses may be at any level, including undergraduate. Occasionally students may instead pass examination exams, which are usually given during the orientation period.

Core Courses: All master's students must take Mass Communication Research Methods (JOMC 201) and Mass Communication Law and Ethics (JOMC 264). Master's students in the mass communication sequence must also take Theories of Mass Communication (JOMC 245).

If a student receives an L in either core course, he or she must pass a comprehensive examination given during the second semester. If the student fails the exam, he or she must retake the course the following fall. If the student again makes an L, he or she will not be allowed to continue in the program.

Path Courses: The master's program is designed to allow students, under the direction of their advisors, to design a course of study, or a path, that addresses their research and skills interests. This path may follow traditional sequence lines, i.e., advertising, news-editorial, public relations, or integrated to provide a more convergent program of study, i.e., integrated marketing communications, strategic communications. Regardless of the sequence or path, each student must define a coherent theme connecting courses in the School of Journalism and Mass Communication and outside the school and those courses must be appropriate to the thesis or nontraditional thesis option.

All students must pass the appropriate examinations, which include a comprehensive written examination covering the material in the student's path courses, given at the completion of course work, and an oral examination on the thesis or professional project, given by the student's advisory committee.

MA students must complete the degree within five years of admission to the program. Students who do not finish within five years may petition for an extension.

Thesis, Articles, or Project

In the mass communication sequence, students must do a traditional research thesis. In the professional sequence, students have the option of writing a thesis or presenting a professional-quality series of articles (JOMC 393) or project (JOMC 392). The series of articles or project requires the same effort and professionalism as the traditional thesis. In addition to the professional product itself, the nontraditional thesis option requires an extensive review of the literature and statement of methods.

Students enroll in Master's Thesis, JOMC 393, or Nontraditional Thesis Option, JOMC 392, for three credits as they do the thesis, articles, or project. A maximum of three thesis credits can be counted toward the 30 credits required for the MA.

Length of Program

Most students complete the master's program in two years, typically attending classes full time during three consecutive semesters and completing the thesis, articles, or project in the fourth semester. Some students find it necessary to stay the summer after their second year to complete their theses, articles, or special projects. Although it is possible to complete the degree by taking classes part time, the school does not recommend it and generally admits no more than one part-time MA student per year.

Graduate Committee

To gain the most from the program, students should select a three-member advisory committee early. Led by a member of the school's graduate faculty who serves as the student's adviser, the committee acts as a resource as well as referee of the thesis, articles, or special project. One member of the committee should be a faculty member from outside the school with whom the student has taken a course.

Master's in Medical Journalism

The aim of the master of arts program in medical journalism is to teach the skills needed to work as a medical journalist in both print and electronic media. Students will also gain the knowledge and background necessary to pursue further research in medical journalism.

Requirements

Master's students in medical journalism must earn at least thirty graduate-level credits (ten courses numbered 100 or above) including three credits for a thesis or special project. Course requirements are divided into five categories: basic journalism and mass communication competencies, core
medical journalism courses, related public health and other pertinent courses, core journalism and mass communication courses, and advanced journalism and mass communication courses.

**Basic Competencies:** All master’s students must pass the school’s spelling and grammar test by the end of their first semester. This is a basic requirement for graduation for undergraduate students and normally poses no major problem for graduate students. Information on the spelling and grammar test, including instructions on how to study for it, is included in the orientation packet sent to new students each summer.

Medical journalism students must also demonstrate competency in other basic skills related to their career goals. For example, students interested in careers in print media must demonstrate competency in news writing and editing, plus one related area, such as reporting, photography, graphic design, or feature writing. Those interested in broadcast careers must demonstrate competency in writing for electronic media plus two other relevant areas, such as video production and editing, electronic journalism, or television news production. Three basic competency courses are required, and no credit is given toward the degree. Competency courses may be at any level, including undergraduate. Occasionally students may instead pass examination exams, which usually are given during orientation.

**Core Medical Journalism Courses:** JOMC 195, Medical Journalism, and JOMC 196, Medical Reporting for the Electronic Media.

**Related Public Health and Other Pertinent Courses:** EPID 160, Principles of Epidemiology; HPAA 220, Evolution, Organization, and Financing of the U.S. Health System; and a third core course outside the School of Journalism and Mass Communication approved by the director of the program in medical journalism.

**Core Journalism and Mass Communication Courses:** JOMC 201, Mass Communication Research Methods, and JOMC 264, Mass Communication Law and Ethics. If the student makes an L in either course, he or she must pass a comprehensive examination during the second semester. If the student fails the exam, he or she must retake the course the following fall. If the student again makes an L, he or she will not be allowed to continue in the program.

**Advanced Journalism and Mass Communication Courses:** One or more JOMC 100-level or above course, and one JOMC 300-level seminar.

All students must pass the appropriate examinations, which include a comprehensive written examination covering the material in the student’s path courses, given at the completion of course work, and an oral examination on the thesis or professional project, given by the student’s advisory committee.

**Thesis, Project, or Articles**

Master’s students in medical journalism have the option of writing a traditional thesis or a series of articles (JOMC 393) or doing a nontraditional thesis project (JOMC 392). Examples of projects include preparing a broadcast-quality television or radio report or preparing a medical journalism multimedia project.

**Length of Program**

Students will complete the master’s program in two years by attending classes full time during the first three consecutive semesters and then completing the thesis or project during the fourth semester. There is no provision for part-time students in the master’s program in medical journalism.

**Graduate Committee**

Students select a three-member advisory committee. Headed by the director of the medical journalism program or another appropriate professor who serves as the student’s adviser, the committee acts as a resource as well as referee of the thesis or project. One member of the committee should be from outside the school, preferably from a health- or science-related discipline with whom the student has taken a course.

**PhD Program**

The PhD in mass communication is designed to prepare students for college teaching and research positions or research careers in mass communication industries, advertising agencies, market or opinion research firms, business, or government. The school works closely with each student to develop a program of study that is both interdisciplinary, allowing the student to take full advantage of the University's rich academic offerings, and tailored to meet the specific needs and interests of the student. The goal of the program is to produce outstanding scholars who are highly knowledgeable about mass communication and highly skilled as researchers.

The program is small and very selective; ten to fourteen students are admitted each year. Admissions decisions are based not only on the standard criteria described elsewhere in this catalog — GRE scores, grade averages, and letters of recommendation — but also on a determination of whether the applicant’s interests and goals fit with those of the program and faculty. For that reason, the statement of purpose and statement of research interests that must accompany an application to The Graduate School are extremely important, and applicants are encouraged to be as specific as possible in outlining their research interests and career goals.

**Requirements**

PhD students are required to develop 1) a broad understanding and knowledge of mass communication in modern society, 2) expertise in two areas of specialization in mass communication and 3) competence in an appropriate research methodology. Students have considerable flexibility in designing their programs around a core of four courses, which should be taken during the first year of study. The four core courses are Mass Communication Research Methods (JOMC 201), Readings in Mass Communication History (JOMC 242), Theories of Mass Communication (JOMC 245), and Mass Communication Law and Ethics (JOMC 264). If a student receives an L in any core course, he or she must pass a comprehensive examination given during the second semester. If the student fails the exam, he or she must retake the course the following fall. If the student again makes an L, he or she will not be allowed to continue in the program.

Forty-eight graduate credits (100-level and above courses), in addition to at least six dissertation credits, are required for the PhD. Those forty-eight hours must be arrayed into three groups of courses: a major area of study, consisting of at least fifteen credits; a minor area of study, consisting of no more than twelve credits; and research methods, consisting of at least six credits. Major and minor areas of study include, but are not limited to, such fields as communication effects, communication and society, international communication, history of mass communication, communication law and policy, public opinion, and communication technology, and should come from the list of approved research streams set by the program. The research methods a student chooses to study must be appropriate to the student’s areas of specialization and dissertation topic.

Other requirements include: - At least twenty-four credits of 200- and 300-level courses within the School of Journalism and Mass Communication; - Satisfactory performance on written and oral comprehensive exams; - At least four semesters in residence, with a minimum of two semesters in continuous study at UNC-Chapel Hill; - Successful completion and oral defense of a dissertation.
Length of Program

Students normally spend two years taking courses, then take comprehensive exams very early in their third fall semester. They then write their dissertation proposals. After the proposal is approved by the student's doctoral committee, the dissertation must be completed and defended. The nature of the dissertation research will govern the length of time a student spends on the project, but many students find it takes about one year to complete a dissertation. In general, it takes three years - and often more - to complete the PhD. The Graduate School requires students to complete the degree within eight years of entry into the program. Students who do not finish within eight years may petition for an extension.

Doctoral Committee

Each PhD student selects a five-member supervisory committee, which is approved by the associate dean for graduate studies. This committee consists of three School of Journalism and Mass Communication faculty members and two graduate faculty members from outside the school. The student's adviser serves as chair of the committee. The committee should consist of professors with whom the student has taken courses. The committee guides the student's academic development, administers and evaluates the comprehensive exams, and approves the dissertation proposal and dissertation.

Courses for Graduates and Advanced Undergraduates

102 MASS COMMUNICATION EDUCATION IN HIGH SCHOOL (3).
Degree-seeking students must have permission of instructor. Readings, discussion, and projects fostering excellence in teaching journalism/mass communication in the high school, from philosophy and practice to professional skills. Hill.

103 MASS COMMUNICATION LAW IN HIGH SCHOOL (3).
Degree-seeking students must have permission of instructor. Application of First Amendment speech and press freedoms to secondary school media, including libel, privacy, access to information, journalistic privilege, prior restraint, advertising and broadcast regulation and ethical practices. Hill.

104 MASS COMMUNICATION WRITING AND EDITING IN HIGH SCHOOL (3).
Degree-seeking students must have permission of instructor. High school journalism students and advisees learn to teach the skills journalists need to produce publications. Emphasis on writing and thinking skills necessary to convert information into clear messages. Hill.

105 DESIGN AND PRODUCTION OF SCHOOL PUBLICATIONS (3).
Degree-seeking students must have permission of instructor. High school journalism teachers and advisees learn to teach the skills journalists need to produce publications. Designed for persons with no background in design. (Note: Degree-seeking students may not use both JOMC 85 and 105 to complete degree requirements.) Hill.

111 MINORITIES AND COMMUNICATION (3).
An examination of racial stereotypes and minority portrayals in U.S. culture and communication. Emphasis is on the portrayal of Native Americans, African Americans, Hispanics, and Asian Americans in the mass media. Amana.

112 THE BLACK PRESS AND U.S. HISTORY (AFAM 112) (3).

115 WOMEN AND MASS COMMUNICATION (WMST 115) (3).
An examination of women as media producers, subjects, and audiences with a focus on current practices and possibilities for change. Johnston, Vargas.

120 INTRODUCTION TO VIDEO PRODUCTION AND EDITING (3).
Prerequisites, JOMC 21 and permission of the instructor. Project-based, hands-on advanced video production course giving close attention to refining creative and technical skills while preparing media programs. Students create and produce professional-quality video projects. Simpson.

121 ELECTRONIC JOURNALISM (3).
Prerequisites, JOMC 21, 120, and permission of instructor. Examination and application of in-depth broadcast news reporting techniques, especially investigative reporting, special events coverage, and the documentary. Students film and produce radio and television programs of actual news events. Tuggle.

122 PRODUCING TELEVISION NEWS (3).
Prerequisites, JOMC 120 and 121, and permission of instructor. Students work under faculty guidance to produce "Carolina Week," a television news program, and are responsible for all production tasks: producing, reporting, anchoring, directing, and graphics. Tuggle.

130 PRINCIPLES OF PUBLIC RELATIONS (3).
Internal and external public relations concepts and practices for businesses and other organizations, with emphasis on identification and analysis of their publics and design, execution, and assessment of appropriate communication strategies. Boynton, Curtin, Doughall, Lamb, Straughan.

131 CASE STUDIES IN PUBLIC RELATIONS (3).
Prerequisite, JOMC 130. Analysis of public relations practices, including planning, communication, evaluation exercises, and management responsibilities. Boynton, Curtin, Doughall, Lamb, Straughan.

132 PUBLIC RELATIONS WRITING (3).
Prerequisites, JOMC 53 and 130. Education and practice in communication skills required of public relations practitioners. Boynton, Curtin, Lamb, Straughan.

133 VIDEO COMMUNICATIONS FOR PUBLIC RELATIONS AND MARKETING (3).
Prerequisite, JOMC 130. Introduction to the use of video as a means of communication with a variety of an organization's internal and external publics. Simpson.

134 PUBLIC RELATIONS CAMPAIGNS (3).
Prerequisite, JOMC 131 OR 132. Capstone course that builds on concepts and skills from earlier courses. Students use formal and informal research methods to develop a strategic plan, including evaluation strategies, for a client. Fall and spring. Boynton, Curtin, Lamb, Straughan.

140 CURRENT ISSUES IN MASS COMMUNICATION (3).
Analysis of the interrelationships between U.S. mass media and the society that they serve. Brown, Gibson, Vargas.

141 PROFESSIONAL PROBLEMS AND ETHICS (3).

142 MASS MEDIA AND U.S. HISTORY (3).
An examination of the development of the mass media in the context of U.S. history. Emphasis is on major developments and trends within a chronological framework. Blanchard, Shaw.

144 CENSORSHIP (3).
Its history, conflicting philosophies, and practice through politics, government, ethnicity, religion, pressure groups, the media, and the law with emphasis on events and personalities. Stone.

145 PROCESS AND EFFECTS OF MASS COMMUNICATION (3).
Mass communication as a social process, incorporating literature from journalism, social psychology, philosophy, political science, and history. Acquaints students with factors in message construction, dissemination, and reception by audiences. Brown, Klaynaram, Shaw, Stevenson.

146 INTERNATIONAL COMMUNICATION AND COMPARATIVE JOURNALISM (3).
Development of international communication; the flow of news; the role of communication in international relations; communication in developing nations; comparison of press systems. Stevenson, Vargas.
149 INTRODUCTION TO INTERNET ISSUES AND CONCEPTS (3). Students develop an understanding of social, legal, political and other issues related to access to and use of the Internet. Offered online. Aikat.

154 ADVANCED REPORTING (3). Prerequisites, JOMC 53 and 54. Rigorous, in-depth instruction and critiques of students’ news and feature assignments done with different reporting methodologies: interviewing, official records, direct and participant observation, and survey research (the Carolina Poll). Aikat, Meyer.

156 MAGAZINE WRITING (3). Prerequisites, JOMC 53 and 56. Instruction and practice in planning, writing, and editing copy for magazines. Stone.

157 ADVANCED EDITING (3). Prerequisite, JOMC 57. Concentration on the editing and display of complex news and feature stories and other print media content with a special emphasis on newspaper design and graphics. Cloud, Fee.

160 FREEDOM OF EXPRESSION IN THE UNITED STATES (3). An examination of the development of freedom of expression in the United States within the context of the nation's history. Blanchard.

170 PRINCIPLES OF ADVERTISING (3). A survey of the economics, psychology, philosophy, and history of advertising, with particular reference to research bases, copy, layout, media planning, production, and testing of advertisements. Bowers, Hester, Lauferborn, Pardun, Sweeney.

171 ADVERTISING COPY AND COMMUNICATION (3). Prerequisites, JOMC 53, 170 or equivalent, and permission of the school. Application of findings from social science research; social responsibility of the copywriter and advertiser; preparation of advertisements for the mass media; and research in copy testing. Hester, Lauferborn, Sweeney.

172 ADVERTISING MEDIA (3). Prerequisites, JOMC 53 and 170 or equivalent. The media-planning function in advertising for both buyers and sellers of media; the relationships among media, messages, and audiences; computer analysis. Bowers, Zhao.

173 ADVERTISING CAMPAIGNS (3). Prerequisites, JOMC 53 and 171 or 172. Planning and execution of advertising campaigns; types and methods of advertising research; and the economic function of advertising in society. Lauferborn.

174 SPORTS MARKETING AND ADVERTISING (3). Examines the range of promotional techniques used in the modern sports industry. Topics include sponsorships, advertising, merchandising, and the effects of commercialization. Sweeney.

175 CONCEPTS OF MARKETING (3). Designed for students anticipating careers in advertising, public relations, or related areas, this course teaches the vocabulary and basic concepts of marketing as it will be practiced, emphasizing the role of mass communication. Lauferborn.

176 ADVANCED ADVERTISING COPYWRITING (3). Prerequisites, JOMC 53, 170 or equivalent, 171 and permission of the instructor. Rigorous, in-depth instruction and critiques of student advertising writing. Sweeney.

178 RETAIL ADVERTISING (3). Prerequisites, JOMC 53 and 170 or equivalent. Principles and practices of retail advertising in all media, with emphasis on selling, writing, and layout of retail advertising for the print media. Bowers.

179 ADVERTISING AND PUBLIC RELATIONS RESEARCH (3). Prerequisite, JOMC 130 or 170. Critical understanding and application of quantitative methods used in the strategic planning and evaluation of advertising and public relations campaigns. Curtis, Zhao.

180 ADVANCED PHOTOJOURNALISM (3). Prerequisites, JOMC 80 and 53, or take 53 concurrently. Advanced course in black and white photojournalism, concentrating on the newspaper and magazine picture story, advanced camera and darkroom techniques, and picture editing. Beckman, Davison.

181 DOCUMENTARY PHOTOJOURNALISM (3). Prerequisite, JOMC 180 and permission of instructor. Students study and produce work on the social documentary tradition of photojournalism. Beckman, Davison.

185 PUBLICATION DESIGN (3). Prerequisites, JOMC 85 and 53, or take 53 concurrently, and permission of instructor. Detailed study and application of graphic design techniques in magazines, newspapers, advertising, and corporate communications. Anthony.

186 PROMOTION DESIGN (3). Prerequisites, JOMC 85 and permission of instructor. Study and application of graphic design and promotional techniques to creating advertisements and other marketing materials. Practice in conceiving and executing finished layouts and graphics. Anthony.

187 INFORMATION GRAPHICS (3). Prerequisite, JOMC 85. Detailed study and application of graphic design and information-gathering techniques to create charts, tables, diagrams, icons, and maps. Practice in visually presenting information with clarity and originality. Anthony.

188 CYBERCASTING AND CYBERPUBLISHING (3). Prerequisites, JOMC 88 and permission of instructor. Issues and applications in cybercasting and cyberpublishing. Class will create, cyberpublish and cybercast projects on the Internet while exploring the effective use of Internet technologies and current issues. Beckman, Jones.

189 MULTIMEDIA AND COMPACT DISC PRODUCTION (3). Prerequisites, JOMC 88 and permission of instructor. Advanced course in which students blend a variety of story-telling media into journalistic multimedia products. Students design and produce projects combining photography, audio, video, type and informational graphics. Beckman.

191 PROSEMINAR IN CONTEMPORARY MASS COMMUNICATION (1-3). Small classes on various aspects of journalism and mass communication with subjects and instructors varying each semester. Staff.

195 MEDICAL JOURNALISM (3). Prerequisite, JOMC 53 or permission of instructor. Prepares students to work as medical journalists for a variety of media, including print, broadcast, and the Internet. The course emphasizes writing skills and interpreting medical information for consumers. Linden.

196 MEDICAL REPORTING FOR THE ELECTRONIC MEDIA (3). Prerequisite, JOMC 195 or permission of instructor. Teaches students how to conceive, script, report, and produce medical stories for electronic media, especially television. Students work in teams to produce projects for professional media outlets. Linden.

197 SCIENCE DOCUMENTARY TELEVISION (3). Students learn skills needed to produce a science documentary for broadcast on television, including research and script writing. Linden.

Courses for Graduates

201 MASS COMMUNICATION RESEARCH METHODS (3). Covers a broad range of research methods used in industry and academic research. Course content includes the process and organization of writing research, applying a variety of quantitative and qualitative research methods, evaluating research design and ethical issues inherent in research. Required of all graduate students. Curtin, Meyer.

202 MASS COMMUNICATION PEDAGOGY (3). Investigation of college teaching and academic life, including course planning, syllabus preparation, interpersonal skills, presentation modes, evaluation, and balancing teaching with other expectations. Bowers.

210 QUALITATIVE METHODS FOR MASS COMMUNICATION RESEARCH (3). Survey of naturalistic methods applied to mass communication research, including ethnography, in-depth interviews, life histories, and text-based analysis. Curtin, Vargas.
211 STATISTICS FOR MASS COMMUNICATION RESEARCH (3). Prerequisite, JOMC 201. Statistics with emphasis on application to studies in mass communication. Prior knowledge of statistics and familiarity with computer software are NOT assumed. Stevenson, Zhao.

242 READINGS IN MASS COMMUNICATION HISTORY (3). Directed readings in mass communication history. Required of PhD students. Blanchard.

245 THEORIES OF MASS COMMUNICATION (3). Students prepare analytical papers on theories of mass communication based upon extensive review of behavioral science literature. Required of PhD students and MA students in the mass communication sequence. Brown, Curtin, Fee, Shaw.

250 MEDIA MANAGEMENT (3). A study of planning policy functions related to media management concerns. Fee.

254 SPECIALIZED REPORTING (3). Prerequisite, JOMC 54 or permission of instructor. Reporting of complicated topics, using in-depth backgrounding, investigative reporting techniques, story conferences and documents, and other research data. Required of news-editorial master's students who plan to complete the articles option. Meyer, Shaw.

264 MASS COMMUNICATION LAW AND ETHICS (3). Intensive study of press freedom and the First Amendment, including libel, privacy, access to information, free press-fair trial, advertising and broadcast regulation, journalistic privilege, prior restraints. Required of all graduate students. Packer, Walden.

301 SEMINAR IN MASS COMMUNICATION RESEARCH METHODS (3). Prerequisites, JOMC 201 or equivalent, and permission of instructor. Advanced work in quantitative data analysis and research preparation. Stevenson, Zhao.

302 SEMINAR IN MEDIA ANALYSIS (3). Students participate in the design and execution of a media research project. Staff.

330 SEMINAR IN PUBLIC RELATIONS (3). Readings, discussions, and research in public relations. Curtin, Straughan.

340 SEMINAR IN MASS COMMUNICATION AND SOCIETY PERSPECTIVES (3). Readings, discussion, and papers on the roles and responsibilities of mass communication in society. Johnston.

342 SEMINAR IN MASS COMMUNICATION HISTORY (3). Readings, discussion, and projects in mass communication history. Blanchard, Shaw.

346 SEMINAR IN INTERNATIONAL COMMUNICATION (POLI 346) (3). Prerequisite, JOMC 146 or permission of instructor. Reading and research in selected topics. Focus in recent years has included global news flow, communication and social change, communication in the collapse of communism, Western dominance in international communication, global culture, and influence of technology. Stevenson, Vargas.

347 SEMINAR IN COMMUNICATION FOR SOCIAL CHANGE (3). Examines how grassroots and participatory strategies are being combined with communication technologies to promote social change in Third World settings of developing and developed nations. Vargas.

360 SEMINAR IN DEVELOPMENT OF FIRST AMENDMENT FREEDOMS (3). Readings and discussions about development of and interrelationships among the First Amendment freedoms of speech, press, assembly, petition, association, and religion. Blanchard.

364 SEMINAR IN MASS COMMUNICATION LAW AND ETHICS (3). Prerequisite, JOMC 264 or permission of instructor. Readings, discussion, and projects in major issues of mass communication law, including libel, privacy, access, court-press relations, the First Amendment, and regulation of telecommunications. Packer, Walden.

370 SEMINAR IN SOCIAL AND ECONOMIC PROBLEMS IN ADVERTISING (3). Readings, discussion, and papers on advertising as a social and economic force in contemporary society. Bowers, Pardin.

379 SEMINAR IN ADVERTISING RESEARCH (3). Readings and discussion examining theories underlying advertising and the testing of those theories through research projects. Zhao.

390 READING AND RESEARCH (3). Prerequisite, permission of instructor. Advanced reading or research in a selected field. Staff.

391 SPECIAL TOPICS SEMINAR (3). Seminar on various aspects of mass communication with content and instructors varying each semester. Staff.

392 NONTRADITIONAL THESIS OPTION (3). Staff.

393 MASTER'S THESIS (3). Staff.

394 DOCTORAL DISSERTATION (Need at least 6 credits). Staff.

DEPARTMENT OF LINGUISTICS

RANDALL HENDRICK, Chair

Advisory Committee


Professors

Randall Hendrick (11) Syntax Morphology, Psychology of Language
Laura Janda (16) West Slavic Linguistics
H. Craig Melchert (10) Historical Linguistics, Indo-European Linguistics
Paul Roberge (17) Historical Linguistics, Germanic Linguistics, Pidgins and Creoles

Assistant Professors

Maia Becker (12) Language Acquisition, Psycholinguistics, Cognitive Science
Elliott Moreton (8) Phonetics, Phonology
Jennifer L. Smith (7) Phonology, Phonetics, Japanese
J. Michael Terry (9) Semantics

Associated Faculty

Connie Elbe, English Linguistics
Lawrence Fenberg, Slavic Linguistics
Peter C. Gordon, Psychology of Language
Larry D. King, Spanish and Portuguese Linguistics
William Lycan, Philosophy of Language
Catherine Maley, Romance Linguistics
Edward D. Montgomery Jr., Romance Linguistics and Philology
Patrick O'Neill, Celtic Languages

The Department of Linguistics, comprised of specialists teaching core courses as well as faculty from nearly a dozen different departments, offers graduate work leading to the degrees of master of arts and doctor of philosophy in linguistics.

Degree candidates must demonstrate both a basic knowledge of the field of linguistics as a whole and the ability to do independent study in a chosen specialty. Basic knowledge of linguistics is acquired by taking certain required courses; knowledge of a specialty is gained through elective courses as well as by writing a thesis.

The elective courses are expected to form a coherent program in a subfield of linguistics (e.g., phonology, syntax, historical linguistics, sociolinguisitics, language acquisition) or in the application of linguistics to a closely related discipline (e.g., anthropology, study of a particular language or language family). To this end, each student, after consultation with the director of graduate studies, will by the beginning of the second semester of residence choose a permanent adviser, who will supervise the student's program of study.

Degree programs must satisfy the general requirements of The Graduate School. In addition, the student must fulfill the following curriculum requirements.
Master of Arts in Linguistics

**Course Requirements:** LING 100, 101, 120, 123, 130, four courses within a chosen specialty (selected with guidance of the graduate director), and three hours of thesis credit. A student seeking transfer credit for graduate courses taken at another institution must make a formal request to the director of Graduate Studies, who, after consultation with the instructor of the corresponding course, may recommend acceptance of the transfer credit. A maximum of six semester hours may be so transferred.

**Foreign Language Requirement:** Reading knowledge of one foreign language. For students in historical linguistics, French or German is recommended.

**Comprehensive Examination:** The MA comprehensive examination, normally taken in the fall of the second year of graduate study, will consist of a three-part written examination covering the areas of phonology, syntax, and historical linguistics. The examination will be based on the required courses and a reading list published by the department. A follow-up oral examination may involve residual questions from the written examination but centers primarily upon the topic the student proposes for his or her MA thesis. Upon completion of the thesis the student defends his or her work in the final oral examination.

A student who wishes to bypass the MA degree must submit a written request to the chair of the department after the MA comprehensive examination. The linguistics faculty will consider the request, and the student will be informed, in writing, of the decision.

**Doctor of Philosophy in Linguistics**

**Course Requirements:** Fifty-one credit hours, of which three hours will be dissertation credit. Courses stipulated for the MA are required. Either linguistic field work (LING 293) or an approved philology course (see list of specific language groups) must be taken; in addition, at least one advanced methods course at the 200 level and a course on the history of linguistics. Students in historical linguistics should take one year of a classical language such as Latin, Greek, or Sanskrit.

**Foreign Language Requirements:** (a) All students must complete one year of a non-Indo-European language, or one semester on the structure of a non-Indo-European language. (b) Students in historical linguistics must demonstrate a reading knowledge of French and German; other students must demonstrate a reading of linguistic knowledge of any two foreign languages, one of which may be taken under (a).

**Preliminary Examination:** For students who have taken the MA degree in the department, the MA written comprehensive examination just described will also serve as a diagnostic preliminary examination to assist in determining the student's capability for PhD work and in planning the program of study. For the same purpose, students who enter the program at the PhD level will, upon completion of nine hours of course work, also take the same preliminary examination.

The PhD written comprehensive examination consists of three essays, each from the areas of phonology, syntax, and historical linguistics. While each of these essays may present original research, it is expected that at least one of these papers be a substantial research paper demonstrating the candidate's ability to conduct original research. The topics of these are approved by the respective specialists in each area. The essays may be submitted at any time between the passing of the preliminary examination and the completion of course work. Details concerning the essays may be obtained from the director of graduate studies.

Following successful completion of the written comprehensive examination, the student will undergo an oral examination focusing primarily but not exclusively on the student's dissertation prospectus (a detailed proposal prepared by the student with the guidance of his or her adviser). The oral examination committee consists of five faculty members who remain members of the dissertation committee until the student has successfully defended the completed dissertation.

The department recommends up to a maximum of two years of financial support for MA candidates and up to three years of support beyond the MA for doctoral candidates, but such support is always contingent upon satisfactory progress as a graduate student and satisfactory performance if the stipend requires service. Research assistantships, language laboratory assistantships, teaching assistantships for linguistics courses, and University non-service awards are available. Students proficient in a foreign language are eligible for teaching assistantships in German, French, Italian, Spanish, and other languages. Application for financial support is made in conjunction with application for admission to The Graduate School.

Further information may be obtained by writing to the Director of Graduate Studies, Department of Linguistics, CB# 3155, Dey Hall, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3155.

**Courses for Graduates and Advanced Undergraduates**

**100 INTRODUCTION TO GENERAL LINGUISTICS (ANTH 179) (3).** An introduction to the scientific study of language. The nature of language structure. How languages are alike and how they differ. Fall. Melchert.

**101 INTRODUCTION TO HISTORICAL AND COMPARATIVE LINGUISTICS (ANTH 181) (3).** Theories and methods of historical and comparative linguistics, with emphasis on the Indo-European family. Spring. Melchert.

**104 SYMBOLIC LOGIC (See PHIL 101) (3).**

**109 COGNITIVE LINGUISTICS (See SLAV 109) (3).**

**110 PHILOSOPHY OF LANGUAGE (See PHIL 110) (3).**

**115 TOPICS IN LINGUISTICS (3).** Directed readings on linguistic topics not covered in specific courses. Fall and spring. Staff.

**120 LINGUISTIC PHONETICS (ANTH 180) (3).** Introduction to the general principles of linguistic phonetics; anatomy of vocal tract, physiology of speech production, universal phonetic theory. Practice in the recognition and transcription of speech sounds. Fall. Moreton, Smith.

**123 PHONOLOGY I (ANTH 183) (3).** Prerequisites, LING 100 or equivalent and LING 120. Introduction to the principles of modern generative phonology. Methods and theory of phonological analysis. Spring. Moreton, Smith.

**124 PHONOLOGY II (3).** Prerequisite, LING 123. Intermediate phonological theory and analysis. Fall. Moreton, Smith.

**127 MORPHOLOGY (3).** Prerequisite, LING 30, 100, or permission of the instructor. Cross-linguistic investigation of internal word structure: inflection and derivation, word formation rules versus affixation, autosegmental morphology, morphological and morphophonemic rules, and the interaction of morphology with phonology and syntax. (On demand.)

**130 SYNTAX I (ANTH 190) (3).** Prerequisite, LING 100 or consent of the instructor. Methods and theory of grammatical analysis within the transformational generative framework. Special emphasis on analyzing syntactic and semantic structures of English. Fall. Hendrick.

**133 SYNTAX II (ANTH 193) (3).** Prerequisite, LING 130 or equivalent. Methods and theory of grammatical analysis, with special reference to transformational grammar. Spring. Hendrick.
137 SEMANTICS (3). Prerequisite, LING 30, 100, or permission of the instructor. Semantics as a part of linguistic theory: co- and disjoint reference among nominals, "crossover" phenomena, quantifier scope, lexical semantics, Montague Grammar and compositional semantics, and explanatory universals in semantic theory. (On demand.) Terry.

139 THE LANGUAGE OF TIME (3). Prerequisite, LING 30, 100, or permission of the instructor. The representation of time and temporal relations in natural languages. Cross-linguistic study of tense and aspect distinctions, modality, temporal adverbs, temporal anaphora, and sequences of tenses. (On demand.) Terry.

140 MATHEMATICAL LINGUISTICS (3). Introduction to topics in logic, set theory, and modern algebra with emphasis on linguistic application. Automata theory and the formal theory of grammar with special reference to transformational grammar. No previous mathematics assumed. (On demand.) Staff.

142 INDO-EUROPEAN CULTURE AND SOCIETY (FOLK 143) (3). Survey of nonmaterial aspects of Indo-European society recoverable by linguistic reconstruction, including law, religion, economics, poetics. Review of the Urheimat problem. No previous knowledge of comparative grammar is assumed. (On demand.) Meltzer.

145 LANGUAGE AND MIND/LINGUISTICS AND THE BRAIN (3). Prerequisite, LING 30, LING 100, PHIL 35, ENGL 36, or permission of the instructor. The course treats the relationship among linguistics, artificial intelligence, neurobiology, cognitive psychology, and the philosophies of mind, language, and science. (On demand.) Meltzer.

147 LANGUAGE DEFICITS AND COGNITION (3). Prerequisite, LING 30 or permission of instructor. Survey of the linguistic properties associated with aphasia, autism, Williams Syndrome, dyslexia, and schizophrenia. Emphasis on the implications of these conditions for theories of mind. (On demand.)

150 INTRODUCTION TO INDO-EUROPEAN PHONOLOGY (3). A survey of the phonological systems of the major Indo-European languages and their development from Proto-Indo-European. Fall. (Alternate years.) Meltzer.

151 INTRODUCTION TO INDO-EUROPEAN MORPHOLOGY (3). Prerequisite, LING 150 or permission of instructor. Introduction to the major morphological categories in the Indo-European languages and their development from the proto-language. Spring. (Alternate years.) Meltzer.

161 NATIVE LANGUAGES OF THE AMERICAS (3). Prerequisite, LING 30, 100, or permission of the instructor. This course explores the phonological and morphological structure of selected American languages indigenous to the Americas. Emphasis is on the linguistic analysis of original as well as published primary data. (On demand.)


164 HISTORY OF THE FRENCH LANGUAGE (See FREN 126) (3).

165 FRENCH PHONETICS AND PHONOLOGY (See FREN 145) (3).

166 STRUCTURE OF MODERN FRENCH (See FREN 146) (3).

170 SOCIOLINGUISTICS (ANTH 171) (3). Prerequisite, LING 30, 100, or permission of the instructor. Introduction to the study of language in relation to society; variation as it correlates with socioeconomic status, region, gender, the social motivation of change, language and equality, language maintenance, planning, shift. Spring. Roberge.

172 PIDGINS AND CREELOS (GERM 172) (ANTH 192) (3). Examination of the linguistic features of pidgin and creole languages, the sociohistorical context of their development, and their import for current theoretical issues (acquisition, universal, language change). (On demand.) Roberge.

175 LANGUAGE IN POLITICS (3). Examines language as a political issue in the nineteenth and twentieth centuries. Emphasis placed on American and British politics but attention to one other national context as well. (On demand.) Roberge, Hendrick.

183 HISTORY AND PHILOSOPHY OF LINGUISTICS (3). Linguistic theories from classical times to the present with special emphasis on the origins of contemporary theories. (On demand.)

184 LANGUAGE AND CULTURE (ANTH 184) (3).

Courses for Graduates

204 COMPARATIVE GRAMMAR OF GREEK AND LATIN (3). Designed not only for the student of classics but also as a basic course for students of comparative Indo-European grammar. (Alternate years.)

205 STRUCTURE AND HISTORY OF MODERN GREEK (GREK 205) (3). An introduction to the structure of modern Demotic Greek and its place in Greek linguistic history since Attic-Ionic.

206 THE STRUCTURE OF ARABIC (ARAB 230) (3).

212 ADVANCED PROBLEMS IN PHILOSOPHY OF LANGUAGE (PHIL 212) (3).

215 ADVANCED METHODS IN PHONOLOGY (3). Prerequisite, LING 124. Methods of theoretical argumentation in generative phonology with emphasis on recent proposals in the published literature. Fall. Moellenkamp, Smith.

216 ADVANCED METHODS IN SYNTAX (3). Prerequisite, LING 133 or consent of the instructor. Examination of recent developments in the theory and methods of syntactic analysis. Fall. Hendrick.

220 ADVANCED SOCIOLINGUISTICS (3). Prerequisite, LING 170 or consent of the instructor. Current issues in sociolinguistic research with emphasis on their implications for linguistic theory.

223 SEMINAR IN ANTHROPOLOGICAL LINGUISTICS (ANTH 223) (3).

230 COMPARATIVE GRAMMAR OF ANCIENT LANGUAGES (3). Introductory and advanced work in the earlier stages of extant languages, such as Avestan and Sanskrit, and in extinct languages. Spring. Meltzer.

238 HISTORY OF THE ENGLISH LANGUAGE (ENGL 238) (3). Prerequisite, ENGL 237 or permission of the instructor.

250 DIALECTOLOGY (ANTH 290) (3). Principles and methods of areal linguistics and social dialectology. (On demand.)

283 CURRENT PROBLEMS IN LINGUISTICS (3). This course explores relations of linguistics with neighboring fields and theoretical problems of current relevance within linguistics itself; some attention given to pedagogical methodology. Fall and spring. Staff.

293 LINGUISTIC FIELD WORK (ANTH 293) (3). Analysis and description of a language unknown to the class from data solicited from a native informant. (Alternate years.)

294 LINGUISTIC FIELD WORK II (ANTH 294) (3).

297 SPECIAL READINGS (3). Readings in linguistic topics that are not covered in the existing courses. Fall and spring. Staff.

310 LINGUISTICS AND PHILOSOPHY (PHIL 310) (3).

360 SEMINAR (3). Topics vary to include specialized areas of linguistics study.

361 SEMINAR (3). Seminar in phonological theory.

362 SEMINAR (3). Seminar in grammatical theory.
DEPARTMENT OF MARINE SCIENCES
FRANCISCO E. WERNER, Chair

Professors
John M. Bane Jr. (27) Physical Oceanography, Gulf Stream Dynamics, Ocean-Atmosphere Interactions
Larry K. Benninger (41) Sedimentary Geochemistry
Joseph G. Carter (34) Marine Paleocology, Molluscan Systematics
Jan J. Kohlmeier (22) Marine Botany, Fungi
Niels Lindquist (53) Chemical Ecology, Natural Products
Richard A. Luettich (48) Coastal Water Dynamics and Quality
Christopher S. Mantern (10) Marine Geochemistry
Hans W. Pael (30) Microbial Ecology
Charles H. Peterson (31) Ecology, Population Interactions
Frederic K. Pfrender (13) Microbiology
John T. Wells (47) Marine Geology, Coastal Geomorphy
Francisco E. Werner (8) Physical Oceanography, Coupled Physical and Biological Processes

Associate Professors
Marc J. Alperin (51) Chemical Oceanography, Biogeochemistry
Carol Arnosti (46) Marine Organic Geochemistry
Harvey E. Sein (06) Observational Physical Oceanography, Coastal and Estuarine Dynamics
Andreas Teske (09) Microbial Systematics and Evolution; Microbial Ecology; Microbiology of Hydrothermal Vents and the Marine Subsurface

Assistant Professors
Peter Marko (05) Molecular Biology, Marine Ecology, Evolution
Rachel Noble (18) Dynamics of Marine Microbial Food Webs
Robert Podolsky (94) Ecology and Evolution
Alberto Scotti (07) Computational and Theoretical Fluid Dynamics, Statistical Mechanics, Mathematical Physics

Research Assistant Professors
Dan Albert, Carbon Cycling in Sedimentary Environments; Organic Matter Decomposition in Anoxic Systems
Amy Moran (55) Ecology of Marine Organisms
Thomas J. Shay (50) Gulf Stream Dynamics, Air-Sea Interaction, Turbulence

Adjunct Appointments
Frederick M. Bingham (UNC-Wilmington, Physics) Circulation and Water Mass Transportation
Mark E. Hay (Georgia Tech) Marine Ecology
William M. Kier (Biology) Functional Morphology of Invertebrates, Biomechanics
Kenneth J. Lohmann (Biology) Sea Turtle Navigation Neuroethology of Sea Slug Orientation; Lobster Homing and Navigation
Joseph Pawlik (UNC-Wilmington, Biology) Marine Ecology
Martin H. Posey (UNC-Wilmington, Biology) Population Dynamics of Marine Organisms
Stanley Riggs (ECU, Geology) Marine and Coastal Geology, Sedimentology, Stratigraphy, and Economic Geology
John J. Rogers (Geology) Geochemistry, Crystallography
Stephen A. Skrabal (UNC-Wilmington, Chemistry) Trace Metal Geochemistry in Natural Waters
Mark D. Sobsey (Environmental Sciences) Environmental Health Microbiology
Robert H. Stav (UNC-Greensboro, Biology) Ocean Optical Properties
Joan D. Willey (UNC-Wilmington, Chemistry) Chemical Composition of Rainwater, Silicate Geochemistry

Professor Emeritus
A. Conrad Neumann

The UNC-Chapel Hill graduate program in marine sciences provides teaching and research in estuarine, coastal, and oceanographic sciences, leading to MS and PhD degrees in marine sciences. The two elements of the program are the Department of Marine Sciences (MASC) located in Venable Hall on the Chapel Hill campus and the Institute of Marine Sciences (IMS) located on the waterfront in Morehead City. The Department of Marine Sciences is the degree-granting unit; all Marine Sciences graduate students are enrolled in the department. Most IMS faculty have joint faculty appointments in the department, which enables their participation in graduate student academic activities. Research programs in physical oceanography, marine biology and ecology, marine geochemistry, geological oceanography, and coastal meteorology are conducted in North Carolina and throughout the world by faculty from the department and from the IMS.

Courses and facilities at other coastal laboratories are also available to marine sciences students through cooperative agreements. Courses at North Carolina State University at Raleigh and at Duke University may be taken for credit through an inter-institutional program. Oceanographic experience is available through the Duke/UNC Oceanographic Consortium on the 135-foot research vessel Cape Hatteras, as well as on other ships operated by other oceanographic institutions through the University National Oceanographic Laboratory System.

Each graduate student in the Department of Marine Sciences must gain a broad background in the marine sciences as well as a deep understanding of his or her own subdiscipline. This is accomplished by taking core courses in geological oceanography, biological oceanography, chemical oceanography, and physical oceanography (MASC 103, 104, 105, and 106, respectively) and advanced courses determined by each student's advisory committee, as well as participating in research that ultimately results in an MS thesis or a PhD dissertation. By the end of the 24-month period that begins when the student first enrolls in the department, the student is expected to have completed the core courses, to have taken most or all of the advanced courses required by the student's committee, to have presented an interdisciplinary seminar (MASC 206), and to take a written comprehensive exam in his or her subdiscipline. Further information may be found on the Web at: www.unc.edu/depts/marine

Requirements for Admission
For admission to the Department of Marine Sciences, an undergraduate degree is required in a basic science such as physics, mathematics, chemistry, biology, bacteriology, botany, zoology, geology, or in computer science or engineering. Students are advised to develop a broad undergraduate science major with as many as possible of the following courses:
Mathematics through calculus, computer science, physics, general chemistry, analytical chemistry, organic chemistry, physical chemistry, invertebrate zoology or paleontology, botany, zoology, ecology, physiology, geology, and statistics.

Degree Requirements

Doctor of Philosophy. The academic program for a PhD student is supervised by a faculty advisory committee of five drawn from the graduate faculty. Requirements for the PhD degree are determined by the student's advisory committee. Course requirements normally include the four core courses listed below, additional advanced courses determined by the student's advisory committee, and one hour of Seminar in Oceanography. (A waiver for one or more of the core courses can be arranged with approval of the student's advisory committee and the Department of Marine Sciences Performance Committee for a student who has taken a comparable course, or courses, at another institution.) Additional requirements include: presentation of a satisfactory research seminar; passing a comprehensive examination consisting of a written exam and an oral exam; scientific research resulting in a written dissertation, which is defended by the student; a period of study or research at a marine station or on an oceanographic cruise; and teaching experience sufficient to develop and demonstrate competence. Requirements for comprehensive examinations, admission to candidacy, residence, the dissertation, and final oral examination are provided in the regulations of the Graduate School and in the Department of Marine Sciences Graduate Student Handbook (available on the Web at: www.unc.edu/depts/marine).

Master of Science. The MS degree program is similar to the PhD program except for the following: the advisory committee will be composed of three faculty members; the comprehensive examination is a written exam only; and scientific research will result in a written thesis, to be defended by the student. Requirements for the comprehensive examination, admission to candidacy, residence, thesis, and final oral examination are provided in the regulations of the Graduate School and in the Department of Marine Sciences Graduate Student Handbook (available on the Web at: www.unc.edu/depts/marine).

Marine Sciences Core Courses

103 GEOLOGICAL OCEANOGRAPHY (GEOL 188) (4). Prerequisite, GEOL 11 or 41, or permission. Subjects covered include ocean basin origin, continental margin development, coastal geology, carbonate platforms, and pelagic sediments; paleo-oceanographic reconstructions are emphasized. Three lecture and two laboratory hours a week. Spring. Neumann, Braden.

104 BIOLOGICAL OCEANOGRAPHY (BIOL 140) (ENVR 120) (4). Prerequisite, BIOL 54 or 105, or permission. Physical, chemical, and biological factors controlling animal and plant populations, including experimental approaches and methods of analysis, sampling, and identification. Spring. Lindquist.

105 CHEMICAL OCEANOGRAPHY (ENVR 118) (GEOL 105) (4). Prerequisite, one semester of physical chemistry or Environmental Sciences 122 or Chemistry 180, or permission of the instructor. Variation and abundance of sea water constituents, the chemical, physical, and biological processes contributing to their distribution as well as problems of dispersion of conservative and nonconservative substances. Three lecture and two recitation hours a week. Fall. Alperin, Arnott, Mantua.

106 PHYSICAL OCEANOGRAPHY (GEOL 106) (4). Prerequisite, MATH 31, 32, PHYS 24, 25, or permission. Descriptive regional oceanography; equations of motion, the Ekman layer, wind-driven currents, thermohaline circulation, modern observations, waves, tides. Four lecture hours a week. Fall. Bane, Strain.

Other Marine Sciences Courses

12 THE MARINE ENVIRONMENT (GEOL 12) (3). Introduction to natural science emphasizing physical, chemical, biological, and geological phenomena in oceanic and coastal environments. Human use and impact on marine resources. (Science majors see Marine Sciences 101) Fall and spring. Staff.

101 OCEANOGRAPHY (BIOL 120) (ENVR 127) (GEOL 101) (3). Prerequisites, major in a natural science or at least two college-level courses in natural sciences. The origin of ocean basins, chemistry and dynamics of seawater, biological communities and processes, the sedimentary record, and the history of oceanography. Term paper. Intended for students with college science background; other students should see Geology 12. Three lecture hours a week. Fall and spring. Staff.

104 BIOLOGICAL OCEANOGRAPHY (BIOL 140) (ENVR 120) (4). Prerequisite, Biology 54 or 105 or permission. Physical, chemical and biological factors characterizing estuarine and marine environments emphasizing factors controlling animal and plant populations, including method of analysis, sampling, and identification. Spring. Lindquist.

111 EARTH PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 101) (GEOL 111) (4). Prerequisites, MATH 31, CHEM 21, PHYS 25 or PHYS 27, or permission of instructor. Principles of geological and related earth systems sciences are applied to the analysis of environmental phenomena. The link between the lithosphere and other environmental compartments is explored through case studies of environmental issues. Three lecture hours and one lab hour a week. Fall. Benninger, Band.

112 OCEANIC PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 102) (GEOL 112) (4). Prerequisites, MATH 31, BIOL 11, CHEM 21, PHYS 25 or PHYS 27, MASC 54, or permission of instructor. Principles of analysis of the ocean, coastal and estuarine environments, and the processes which control these environments, are applied to the analysis of environmental phenomena. The link between the hydrosphere and other environmental compartments is explored through case studies of environmental issues. Three lecture hours and one lab hour a week. Spring. Shy.

116 ENVIRONMENTAL SYSTEMS MODELING (ENST 106) (ENVR 160) (GEOL 116) (3). Prerequisites, MATH 83, PHYS 25 or PHYS 27 (may be taken concurrently), or permission of instructor. Methods for developing explanatory and predictive models of environmental processes are explored. Includes discussion of the relevant scientific modes of analysis, mathematical methods, computational issues, and visualization techniques. Two lecture hours and one computer lab hour a week. Spring. Rial, Scott, Wertener.

119 BIOGEOCHEMICAL PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 105) (ENVR 115) (GEOL 119) (3). Prerequisites, MATH 31, BIOL 11, CHEM 51 or 61, PHYS 25 or 27, GEOL 41 or GEOL 45, or permission of instructor. Principles of chemistry, biology, and geology are applied to analysis of the fate and transport of materials in environmental systems, with an emphasis on those materials that form the most significant cycles. The course examines these processes in systems that contain the hydrosphere, lithosphere, atmosphere, and biosphere. Three lecture hours and one lab hour a week. Fall. (Alternate years.) Arnott, Mantua.

123 MARINE CARBONATE ENVIRONMENTS (GEOL 123) (4). Prerequisite, permission of the instructor. Chemical and biological origins of calcium carbonate, skeletal structure and chemoinertialogy, breakdown, preservation, sedimentation, and early diagenesis are studied in a variety of deep and shallow environmental settings, in order to understand skeletal genesis, limestone origin, and carbonate facies variability. Field trip to Florida, Bahamas, or Bermuda. Lab exercises; research report. Three lecture and three laboratory hours a week. Spring. (Alternate years.)

125 COASTAL SEDIMENTARY ENVIRONMENTS (GEOL 125) (3). Prerequisite, Geology 57. An introduction to modern shallow-water clastic environments and their sediments, emphasizing barrier islands, deltas, estuaries, wetlands, and tidal flats. Includes local field trips and discussion application of data-collecting techniques. Spring. (Alternate years.) Staff.
129 GEOLICAL AND OCEANOGRAPHIC APPLICATIONS OF GEOGRAPHICAL INFORMATION SYSTEMS (GEOL 119) (4). Prerequisites, four natural science courses or permission of instructor. Focus on applying GIS concepts and techniques to mining and petroleum geology, resource assessment, hydrogeology, coastal and marine geology, physical oceanography, engineering geology, and a geologic perspective on land use.

133 MICROPALeOLOGY (GEOL 122) (4). Prerequisite, Invertebrate Palontology 132, or Marine Ecology 146, or permission of the instructor. An in-depth study of the biostratigraphy, palaeoecology, and taxonomy of various microfossil groups (i.e., Foraminifera, ostracodes, conodonts, coccoliths, Radiolaria, diatoms, acritarchs, dinoflagellates, etc.) depending on individual student objectives. Three lecture and three laboratory hours a week. (On demand.)

136 COASTAL PROCESSES (4). An interdisciplinary description and analysis of environmental processes that form and maintain coastal habitats. Coastal aspects of geology, fluid dynamics, chemistry, and biology are considered. Two lectures per week and two coastal field trips.

137 ECOLOGY OF WETLANDS (ENVR 114) (4). Prerequisites, one year of biology, one year of chemistry, one semester of ecology, and permission of the instructor. An introduction to the functioning of freshwater and estuarine marsh and swamp ecosystems, with emphasis on systems of the southeastern United States. Fall. Staff.


140 BIOGEOCHEMICAL CYCLING (GEOL 140) (3). Prerequisite, MASC (GEOL) 145 or 146 or GEOL 164, or ENVR 135, or MAS 150, or permission from the instructor. Biogeochemical cycling explores interfaces between marine, aquatic, atmospheric, and geological sciences emphasizing processes controlling chemical distributions in sediments, fresh and salt water, the atmosphere, and fluxes between these reservoirs. Fall and spring. Martens, Arnosti, Teske.

141 SPECIAL PROBLEMS IN MARINE BIOLOGY (BIOL 141) (4). Prerequisites, BIOL 140 and permission of the instructor. Survey of current problems and intellectual approaches in any of the following areas: Marine Biology (Bruno, Marko, Peterson); Marine Chemical Ecology (Lundquist); Marine Microbes (Kuhlmann, Paerl). Hours and credits by prior agreement (with five or more laboratory and conference hours a week per unit credit). Fall, spring, or first or second summer sessions (Offered on demand at the Institute of Marine Sciences, Morehead City, North Carolina, Staff of IMS.

143 BIOGEOCHEMICAL TECHNIQUES (2). Prerequisite, MASC 105. Introduction to fundamental techniques used in biogeochemical research including sampling, instrumental, and wet chemical analytical measurements, use of stable isotopes and rate measurements using radioactive tracers. Spring, Albert.

144 ORGANIC GEOCHEMISTRY (GEOL 144) (3). Prerequisite, MASC 105 or CHEM 61, or permission of the instructor. Sources, transformations, and fate of natural organic matter in marine environments. Emphasis on interplay of chemical, biological, and physical processes that affect organic matter composition, distribution, and turnover. Fall. (Alternate years.) Arnosti.

145 GEOCHEMISTRY (GEOL 145) (3). Prerequisites, GEOL 11 or 41, CHEM 21, or permission of the instructor. Introduction to the application of chemical principles to geological problems, with emphasis on isotopic methods. Spring, Brenninger.

146 MARINE ECOLoGY (BIOL 146) (3). Prerequisite, BIOL 54, BIOL 105, or MASC 148, or permission of the instructor. A survey of the ecological and oceanographic processes that structure marine communities in a broad range of coastal habitats. The course emphasizes recent empirical tests of ecological theory and experimental approaches to addressing basic and applied problems in marine systems. All course readings are from the primary literature. Intended for advanced undergraduates and graduate students majoring in biological and environmental sciences. Three lecture hours a week. Fall. Bruno.

147 MOLECULAR POPULATION BIOLOGY (BIOL 159) (4). Prerequisites, 132 and permission of instructor. Hands-on training, experience, and discussion of the application of molecular genetic tools to questions of ecology, evolution, systematics, and conservation.

148 MARINE BIOLOGY (BIOL 148) (3). A survey of plants and animals that live in the sea: characteristics of marine habitats, organisms, and the ecosystems will be emphasized. Marine environment, the organisms involved, and the ecological systems that sustain them. Fall. Moran.

151 FLUID DYNAMICS (ENVR 152) (GEOL 181) (PHYS 151) (3). Prerequisites, PHYS 103 or permission. The physical properties of fluids, kinematics, governing equations, viscous incompressible flow, vorticity dynamics, boundary layers, irrotational incompressible flow. Three lecture hours a week. Fall. Scotti.

152 MODELING OF MARINE AND EARTH SYSTEMS (ENVR 154) (GEOL 141) (1-3). Prerequisite, MATH 32 or permission of the instructor. Mathematical modeling of the dynamic system, linear and nonlinear. The fundamental budget equation. Case studies in modeling convective transport, biogeochemical process, population dynamics. Analytical and numerical techniques, chaos theory, fractal geometry. Three lecture hours per week. Spring. Rial, Scotti, Werner.


154 ESTUARINE AND COASTAL MARINE SCIENCE (ENST 54) (6). Prerequisites, Math 31 and either PHYS 24 or CHEM 11. Introduction to estuarine and coastal environment: geomorphology, physical circulation, nutrient loading, primary and secondary production, carbon and nitrogen cycling, benthic processes, and sedimentation. Consideration given to human impact on coastal systems with emphasis on North Carolina estuaries and sounds. Includes a mandatory weekend field trip and recreation. Fall. Alperin.

155 TURBULENT BOUNDARY LAYERS (2). Prerequisite, MASC 106 or 151, or permission from instructor. Turbulence and transport in near-bottom boundary regions. Turbulence and mixing theory in boundary layers. Field deployment and recovery of turbulence measuring instruments. Data analysis from turbulence measurements. (Alternate summers.) Scotti.

156 DESCRIPTIVE PHYSICAL OCEANOGRAPHY (GEOL 143) (3). Prerequisite, MASC 106 or permission from instructor. Observed structure of the large-scale and mesoscale ocean circulation and its variability, based on modern observations. In situ and remote sensing techniques, hydrographic structure, circulation patterns, ocean-atmosphere interactions. Three lecture hours a week. Spring. (Alternate years.) Bane, Seim.

197 SPECIAL TOPICS IN COASTAL STUDIES (Var.). Prerequisite, science background or permission. Analysis of coastal zone environments and the processes that control them. Topic selection reflecting faculty specialization, emphasis on field study. Lecture and laboratory hours by arrangement. Fall, spring, or summer. Staff.

198 SPECIAL TOPICS IN PHYSICAL OCEANOGRAPHY (Var.). Topics in physical oceanography not covered in regularly scheduled courses. Fall, spring, or summer. Staff.

199 SPECIAL TOPICS IN MARINE SCIENCES (Var.). Prerequisites, science background and permission of the instructor. Directed readings, laboratory and/or field study of marine science topics not covered in regularly scheduled courses. Lecture and laboratory hours by arrangement. Fall, spring, or summer. Staff.
206 SEMINAR IN OCEANOGRAPHY (1). Discussion of theories and contemporary research in ocean systems. Topics stress interactions between physical, chemical, geological, and biological processes in the sea. For graduate students in Marine Sciences. Students who enroll must present an interdisciplinary seminar. Fall and spring. Staff.

215 MARINE MYCOLOGY (BIOL 215) (6). Prerequisite, BIOL 115. Structure, development, systematics, and ecology of marine fungi. Seven and one-half lecture and fifteen laboratory or field hours a week. (Offered on demand at the Institute of Marine Sciences, Morehead City, North Carolina.) Kohlmeyer.

221 NUMERICAL ODE/PDE I (MATH 221) (ENV 261) (3). Single, multistep methods for ODEs: stability regions, the root condition; stiff systems, backward difference formulas; two-point BVPs: stability theory; finite difference methods for linear advection-diffusion equations. Fall. Minion.

222 NUMERICAL ODE/PDE II (MATH 222) (ENV 262) (3). Elliptic equation methods (finite differences, elements, integral equations); hyperbolic conservation laws (Lax-Friedrich, characteristics, two-step condition, shock tracking; spectral, pseudo-spectral methods; particle methods, fast summation, fast multipole methods. Spring. Minion.

228 MATHEMATICAL MODELING I (MATH 228) (ENV 263) (3). Nondimensionalization and parameter identification leading order physical effects with respect to relevant scales and phenomena; deviation of classical models of fluid mechanics (lubrication, slender filament, thin film, Stokes flow); deviation of weakly nonlinear envelope equations. Fall. Camassa.

229 MATHEMATICAL MODELING II (MATH 229) (ENV 264) (3). Current models in science and technology topics from material science applications (e.g., flow of polymers and LCPS); geophysical applications (e.g., ocean circulation, quasi-geostrophic models, atmospheric dynamics). Spring. Camassa.

248 SEMINAR IN MARINE BIOLOGY (2). Discussion of selected literature in the field of marine biology, ecology, and evolution. Fall, spring, or summer. Mazko, Bruno, Moran.

250 MODELING DIAGENETIC PROCESSES (3). Prerequisite, MASC 152 or permission of the instructor. An introduction to the theory and application of modeling biogeochemical processes in sediments. Diagenetic theory, numerical techniques, and examples of recently developed sediment models. Three lecture hours a week. Spring. (Alternate years.) Alperin.

251 GEOPHYSICAL FLUID DYNAMICS (3). Prerequisite, MASC 151, MATH 128, or permission from instructor. Theory and application of modeling biogeochemical processes in sediments. Diagenetic theory, numerical techniques, and examples of recently developed sediment models. Three lecture hours a week. Spring. (Alternate years.) Bane, Stein, Scotti.

252 OCEAN CIRCULATION THEORY (3). Prerequisite, MASC 106, MASC 151, MATH 129, or permission from instructor. Theories models of large-scale dynamics of ocean circulation. Potential vorticity, quasi-geostrophy, instabilities. Fall. (Alternate years.) Bane, Stein, Scotti, Werner.

253 COASTAL CIRCULATION (3). Prerequisite, MASC 106, MASC 151, MATH 129, or permission from instructor. Dynamics of the coastal ocean. Shallow water equations, boundary layer and long wave theory, wind driven circulation, fronts, estuaries. Fall. (Alternate years.) Werner, Luetich, Stein.

254 OCEAN CIRCULATION MODELING (3). Prerequisite, MASC 106, MATH 129, or permission from instructor. Computational methods used in modeling oceanic circulation. Numerical solution of equations governing mass, momentum, and energy. Spring. (Alternate years.) Werner.


256 SEMINAR IN PHYSICAL OCEANOGRAPHY (2). Prerequisite, MASC 106. Discussion of selected literature in the field of physical oceanography. Spring. Staff.

300 RESEARCH IN MARINE SCIENCES (2 or more).

393 MASTER'S THESIS (3 or more).

394 DOCTORAL DISSERTATION (3 or more).

Courses in Other Departments That Are Considered Appropriate for a Graduate Major in Marine Sciences:

BIOL 54 Ecology and Population Biology. Staff.

BIOL 105 Invertebrate Zoology. Lehman.

BIOL 110 Invertebrate Paleontology. Carter.


BIOL 120 Comparative Physiology. Kier.

BIOL 120L Comparative Physiology Laboratory. Kier.

BIOL 150 Animal Societies and Communication. Wiley.

BIOL 154 Neuroethology. Lehmann.

BIOL 155 Comparative Biomechanics. Kier.

BIOL 184 Conservation Biology. White.


BIOL 186 Community and Systems Ecology. Rice.

BIOL 186L Community and Systems Ecology Laboratory. Rice.

BIOL 213 Advanced Marine Ecology. Staff of the Institute of Marine Sciences.

CHEM 140 Modern Methods of Instrumental Analysis for the Health and Environmental Sciences. Analytical chemistry faculty.

ENV 122 Chemical Equilibrium in Natural Waters. Johnson, Singer.


ENV 124 Environmental Analytical Chemistry. Charles.

ENV 132 Limnology and Water Pollution. Staff.

ENV 133 Sources, Transport, Fate of Environmentally Important Materials. Staff.

ENV 134 Environmental Microbiology. Pfander.


GEOL 146 Physical Geochemistry. Benninger.

GEOL 150 History of the Earth. Rogers.

GEOL 151 Geodynamics. Rogers.

GEOL 164 Geochemistry of Natural Waters. Benninger.

GEOL 165 Groundwater. Benninger.


GEOL 214 Mesozoic Nannos.

GEOL 215 Cenozoic Nannos.

GEOL 216 Paleocenography. Paull.
DEPARTMENT OF MATHEMATICS

CHRISTOPHER K. R. T. JONES, Chair

Professors Emeriti
Robert L. Davis
William H. Graves
Robert G. Heyman
W. Robert Mann
Ansel C. Mewborn
Michael Schlessinger
Johann Sonner
James Stasheff
Fred B. Wright

The Department of Mathematics offers graduate training leading to the degrees of master of arts, master of science, and doctor of philosophy. A master's degree may be included or bypassed in the doctoral program. All of a student's graduate work may be done within the department or, when appropriate, may be done under the direction of an approved adviser in an allied discipline. The MAT degree is also available with a major in mathematics in the School of Education.

The Department of Mathematics is housed in Phillips Hall, as are the Computation Center and the special library for the department of mathematics, physics and astronomy, computer science, and statistics. This departmental library contains an unusually large and complete collection of mathematical books and journals.

The Department of Mathematics offers a number of teaching assistantships and teaching fellowships each year. Applicants for financial aid are also considered for several University fellowships awarded by The Graduate School in the university-wide competition. Applications for admission and financial assistance may be obtained from the dean of The Graduate School. Applications for financial aid should be filed by December 31.

Degree Requirements

The general regulations of The Graduate School govern the work for graduate degrees in mathematics. Specific requirements are explained below. In general, a graduate student in mathematics may receive credit only for mathematics courses numbered 180 and above.

These descriptions summarize the requirements for the master's and PhD degrees. More detailed statements may be obtained from the department. The director of graduate studies must approve all aspects of a student's program. The purpose of the graduate programs is to develop mathematical skills appropriate for competition in academia or industry.

The course schedule for all first year students will depend upon each student's undergraduate training. The normal course load for a graduate student is three courses (nine credit hours) per semester. Graduate students must keep full time status in order to qualify for tuition and health insurance benefits. First year students typically choose courses from five year-long sequences in algebra (186, 187), analysis (193, 196), geometry-topology (180, 181), scientific computation (191, 192) and methods of applied mathematics (198, 199). The PhD comprehensive exams are based on the content of the first year sequences, and they are offered in January and August each year just before the semester begins.

During the second year a typical PhD student will take the PhD comprehensive exams and select courses from a list of sixteen more advanced "second-tier" courses. A typical master's student will complete that degree during the second year. The department considers two years to be the normal time needed to complete a master's degree.

A candidate for a master's degree must satisfy each of the following requirements:
1) Earn at least two semesters of residency credit and complete all requirements within five years.
2) Demonstrate computer programming ability by passing an approved undergraduate or graduate course in programming or by passing an exam administered by the mathematics department.

3) Perform satisfactorily in thirty hours of graduate work in a program approved by the director of graduate studies. At least fifteen of these hours must be in mathematics department courses numbered 180 or above.

4) Complete a master’s project for a master of science degree or a master’s thesis for a master of arts degree.

5) Pass an oral examination upon completion of the master’s project or master’s thesis. The exam will cover course work as well as the project or thesis.

6) For graduate students entering UNC-Chapel Hill in the fall 2001 semester or later, a master’s candidate must pass one of the written comprehensive exams given to doctoral students.

A candidate for a PhD degree must satisfy each of the following requirements:

1) Earn at least four semesters of residency credit and complete all requirements within eight years.

2) Satisfy the same computer programming requirement as a master’s student.

3) Demonstrate reading competence in two approved foreign languages by passing an approved course or by passing a translation exam administered by the mathematics department.

4) Pass three PhD comprehensive exams by the beginning of the sixth semester.

5) Pass at least six courses from the following two lists: a) the second tier courses or b) first year comprehensive courses not required for the three comprehensive exams the student has passed. Of these six courses at least three must be numbered over 200 and drawn from the second tier list.

6) Pass a preliminary oral exam on the chosen PhD specialty area.

7) Write a PhD thesis and defend it successfully during a final oral exam chaired by the thesis advisor.

The student/faculty ratio of about 3/2 makes it possible for graduate students to take reading courses from individual faculty members that are tailored to meet the student's needs.

Minor in Mathematics

Graduate students in other departments who plan to offer mathematics as a (complete or partial) minor field for the PhD should consult the director of graduate studies in mathematics for approval of their programs and for assignment of an adviser in the Department of Mathematics. This should be done at the earliest possible time, in order to prevent disappointment for the student.

Courses for Graduates and Advanced Undergraduates

101 MATHEMATICAL CONCEPTS IN ART (3). Prerequisite, ART 37. Mathematical theories of proportion, perspective (projective invariants and the mathematics of visual perception). Symmetry and aesthetics are expounded and illustrated by examples from painting, architecture, and sculpture. (Alternate years.) Brylawski.

106 MATHEMATICAL METHODS IN BIOSTATISTICS (BIOS 106) (3). Prerequisite, MATH 32 or equivalent. Special mathematical techniques in the theory and methods of biostatistics as related to the life sciences and public health. Includes brief review of calculus, selected topics from intermediate calculus, and introductory matrix theory for applications in biostatistics. Fall.

111 DEVELOPING MATHEMATICAL CONCEPTS (3). Prerequisite, consent of the instructor. An investigation of various ways in which elementary concepts in mathematics can be developed. Applications of the mathematics developed are considered. This course is ordinarily offered as an in-service course for teachers. Spring.

115 HISTORY OF MATHEMATICS (3). Prerequisites, calculus and abstract algebra; graduate students by permission only. A brief general survey of the history of mathematics. Some special problems in depth. Problems in the history of mathematics. Spring.


118 BASIC CONCEPTS OF ANALYSIS (3). Prerequisites, MATH 32 and consent of the instructor. Limits, continuity, differentiability, uniform continuity, Riemann integration. Infinite sequences and series; uniform convergence; power series. A student cannot receive credit for this course after receiving credit for MATH 193. Summer.

121 ADVANCED CALCULUS I (3). Prerequisites, MATH 33 and MATH 81. The real numbers; continuity and differentiability of functions of one variable; infinite series; integration. Fall and spring.

122 ADVANCED CALCULUS II (3). Prerequisite, MATH 121. Functions of several variables; derivative as linear transformation; inverse and implicit function theorems; multiple integration. Spring.

123 FUNCTIONS OF A COMPLEX VARIABLE WITH APPLICATIONS (3). Prerequisite, MATH 83. The algebra of complex numbers, elementary functions and their mapping properties, complex limits, power series, analytic functions; contour integrals, Cauchy's theorem and formula, Laurent series and residue calculus, elementary conformal mapping and boundary value problems. Poisson integral formula for the disk and the half plane. Spring.

124 ELEMENTARY DIFFERENTIAL EQUATIONS (3). Prerequisite, MATH 83. Linear differential systems, power series solutions, Laplace transforms, numerical methods. Fall and spring.

125 COMPUTER-ASSISTED MATHEMATICAL PROBLEM SOLVING (3). Prerequisite, MATH 83. Personal computer as tool in solving a variety of mathematical problems, e.g., finding roots of equations and approximate solutions of differential equations. Introduction to appropriate programming languages. Emphasis on graphics. Fall.

126 INTRODUCTION TO PROBABILITY (STAT 126) (3). Prerequisite, MATH 33. An introduction to the mathematical theory of probability, covering random variables; moments; binomial, Poisson, normal, and related distributions: generating functions; sums and sequences of random variables; combinatorial and statistical applications. Fall and spring.

128 MATHEMATICAL METHODS FOR THE PHYSICAL SCIENCES I (3). Prerequisites, MATH 83 and PHYS 24-25, or equivalent. Theory and applications of Fourier series and transforms. Laplace transforms; Sturm-Liouville problems. Students are expected to do some numerical calculations with a programmable calculator or a computer. Fall.

129 MATHEMATICAL METHODS FOR THE PHYSICAL SCIENCES II (3). Prerequisites, PHYS 24-25, and one of MATH 121, 124, or 128 or equivalent. Introduction to boundary value problems for the diffusion, Laplace, and wave partial differential equations. Bessel functions and Legendre functions. Introduction to complex variables including the calculus of residues. Spring.

130 TOPOLOGY (3). Prerequisite, MATH 33; corequisite, MATH 83 or permission of the instructor. Introduction to topics in topology, particularly surface topology, including classification of compact surfaces, Euler characteristic, orientability, vector fields on surfaces, tessellations and fundamental group. Research problems discussed at elementary level. Spring.
131 EUCLIDEAN AND NON-EUCLIDEAN GEOMETRIES (3). Prerequisite: MATH 81 or permission of the instructor. Critical study of basic notions and models of Euclidean and non-Euclidean geometries, order, congruence and distance. Summer and spring.

133 ELEMENTARY THEORY OF NUMBERS (3). Prerequisites, MATH 32 and 81. Divisibility, Euclidean algorithm, congruences, residue classes, Euler's function, primitive roots, Chinese remainder theorem, quadratic residues, number theoretic functions. Fuzzy and continued fractions, Gaussian integers. Fall and spring.

134 ELEMENTS OF MODERN ALGEBRA (3). Prerequisite, MATH 81. Sets and functions, rings, ordered integral domains, integers, fields and rational numbers, real and complex numbers, polynomials, groups. Fall and spring.

137 LINEAR ALGEBRA (3). Prerequisites, MATH 81 and MATH 83. Vector spaces, linear transformations, duality, diagonalization, primary and cyclic decomposition, Jordan canonical form, inner product spaces, orthogonal reduction of symmetric matrices, spectral theorem, bilinear forms, multilinear functions. Fall and spring.

138 ALGEBRAIC STRUCTURES (3). Prerequisite, MATH 137 or 147. Permutation groups, matrix groups, groups of linear transformations, symmetry groups, finite abelian groups, residue class rings, algebra of matrices, linear maps, and polynomials; real and complex numbers, rational functions, quadratic fields, finite fields. Fall.

147 LINEAR ALGEBRA FOR APPLICATIONS (3). Prerequisite, MATH 33. Algebra of matrices with applications; determinants; solutions of linear systems by Gaussian elimination; Gram-Schmidt procedure; eigenvalues. MATH 116 may not be taken for credit after credit has been granted for MATH 147. Fall, spring, and summer.

148 COMBINATORIAL MATHEMATICS (STAT 156) (3). Prerequisite, MATH 81 or permission of the instructor. Recurrence relations and generating functions; graph and graph algorithms, principle of inclusion-exclusion. Fall.

151 DETERMINISTIC MODELS IN OPERATIONS RESEARCH (STAT 181) (ORS 181) (3). Prerequisite, MATH 147. Linear, integer, nonlinear, and dynamic programming; classical optimization problems; network theory. Fall and spring.

155 INTRODUCTION TO DYNAMICS (3). Topics will vary and may include iteration of maps, orbits, periodic points, attractors, symbolic dynamics, bifurcations, fractal sets, chaotic systems, systems arising from different equations, iterated function systems and applications.

157 TOPICS IN MATRIX THEORY (3). Prerequisites, MATH 137 or 147 or equivalent, and some computer programming language. Quadratic and hermitian series; applications to systems of differential equations; nonnegative matrices. Perron-Frobenius Theorem; integer matrices, some applications in combinatorics. Spring.

161 ACTUARIAL MATHEMATICS I (3). Prerequisite, MATH 33. An introduction to the basic mathematical models of actuarial science. Deterministic and simple stochastic models of compound interest and life contingency theory are studied. Fall.

162 ACTUARIAL MATHEMATICS II (STAT 136) (3). Prerequisites, MATH 161 and STAT 126. The theory introduced in Actuarial Mathematics I is expanded to encompass more complicated models of financial transactions and risks. Spring.

166 INTRODUCTION TO NUMERICAL ANALYSIS (3). Prerequisites, MATH 83 and some knowledge of computer programming. Iterative methods, interpolation, polynomial and spline approximations, numerical differentiation and integration, numerical solution of ordinary and partial differential equations. The subject matter of this course includes the material covered in the Society of Actuaries examination on numerical methods. Fall.

175 TOPICS IN ANALYSIS (3). Prerequisite, MATH 122 or consent of the instructor. Topics may include linear spaces, convexity, mathematical programming, duality, algorithms, and other subjects related to the mathematical theory of optimization. Fall.

176 TOPICS IN ALGEBRA (3). Prerequisite, consent of the instructor. Topics may include number theory, algebraic number theory, field theory, and algebraic geometry.

177 TOPICS IN GEOMETRY (3). Prerequisite, consent of the instructor. Topics may include non-Euclidean geometries, linear geometry, finite geometries, topology, and algebraic geometry.

180 GEOMETRY OF CURVES AND SURFACES (3). Prerequisite, advanced calculus. Topics include: (curves) Frenet formulas, isoperimetric inequality, theories of Crofton, Fenchel, Frenet-Milnor; (surfaces) fundamental forms, Gaussian and mean curvature, special surfaces, geodesics. Gauss-Bonnet theorem. Fall.


186 MODULES, LINEAR ALGEBRA, AND GROUPS (3). Prerequisite, MATH 138 or permission of the instructor. Modules over rings, canonical forms for linear operators and bilinear forms, multilinear algebra, group and group actions. Fall.

187 GROUPS, REPRESENTATIONS, AND FIELDS (3). Prerequisite, MATH 186. Internal structure of groups, Sylow theorems, generators and relations, group representations, fields, Galois theory, category theory. Spring.

189 ENUMERATIVE COMBINATORICS (3). Prerequisite, MATH 138 or permission of the instructor. Basic counting, partitions, recurrences and generating functions, signed enumeration, counting with respect to symmetry, plane partitions and tableaux.

190 COMBINATORIAL STRUCTURES (3). Prerequisite, MATH 138 or permission of the instructor. Graph theory, matchings, Ramsey theory, extremal set theory, network flows, lattices, Mobius inversion, q-analogs, combinatorial and projective geometries, codes and designs.


193 INTRODUCTORY ANALYSIS (3). Prerequisite, advanced calculus. Elementary metric space topology; continuous functions; differentiation of vector-valued functions; implicit, inverse function theorems; series of functions. Measure theory, convergence theorems, L1 spaces. Fall.


197 QUALITATIVE THEORY OF DIFFERENTIAL EQUATIONS (3). Prerequisites, linear algebra and MATH 193, or consent of the instructor. Existence and uniqueness theorems, linear and nonlinear systems, differential equations in the plane and on surfaces, Poincare-Bendixson Theory, Liapounov stability and structural stability, critical point analysis. Spring.
198 METHODS OF APPLIED MATHEMATICS I (3). Topics: Contour integration in the complex plane, asymptotic expansions and steepest descent/stationary phase methods, special functions often arising in physical applications, elliptic functions and theta functions, Smirnov-Liouville spectral theory. Fall.

199 METHODS OF APPLIED MATHEMATICS II (3). Topics: Perturbation methods for ODE and PDE, WKBJ method, averaging, modulation theory for linear dispersive PDEs and nonlinear wave equations; long-time asymptotics of Fourier integral representations of PDEs; Green's functions; physical applications. Spring.

201 INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (3). Prerequisite, MATH 193. Basic methods in partial differential equations. Topics may include: Cauchy-Kowalewski Theorem, Holmgren's Uniqueness Theorem, Laplace's equation, Maximum Principle, Dirichlet problem, harmonic functions, wave equations, heat equation.

203 MEASURE AND INTEGRATION (3). Prerequisite, MATH 193 or consent of the instructor. Lebesgue and abstract measure and integration, convergence theorems, differentiation, Radon-Nikodym theorem, product measures, Fubini theorem, Lebesgue spaces, invariance under transformations, Haar measure and convolution. Fall.

204 INTRODUCTORY FUNCTIONAL ANALYSIS (3). Prerequisite, MATH 203. Hahn-Banach and separation theorems. Hahn-Banach theorem; normed and locally convex spaces, dual of spaces and maps; weak topologies; closed graph and open mapping theorems; uniform boundedness theorems. Spring.

205 ADVANCED COMPLEX ANALYSIS (3). Prerequisite, MATH 196. Laurent series; Mittag-Leffler and Weierstrass Theorems; Riemann mapping theorem; Runge's theorem; additional topics chosen from: harmonic, elliptic, univalent, entire, meromorphic functions; Dirichlet problem; Riemann surfaces. Fall.

206 SEVERAL COMPLEX VARIABLES (3). Prerequisite, MATH 196. Elementary theory, the Cousin problems, domains of holomorphy, Runge domains and polynomial approximation, local theory, complete analytic structures, coherent analytic sheaves and Stein manifolds, Cartan's theorems. Spring. (Alternate years.)

210 TOPICS IN ANALYSIS (3). Prerequisite, consent of the instructor. Subjects may include geometric function theory, Riemann surfaces, Nevanlinna theory, Banach spaces of analytic functions, calculus of variations, distribution theory, partial differential equations, or Fourier Series. Spring.

213 ADVANCED FUNCTIONAL ANALYSIS (3). Prerequisite, consent of the instructor. Subjects may include operator theory on Hilbert space, operators on Banach spaces, locally convex spaces, vector measures, Banach algebras. Spring. (Alternate years.)

215 TOPICS IN COMPUTATIONAL MATHEMATICS (3). Prerequisites, MATH 191, 192. Topics may include: finite element method; numerical methods for hyperbolic conservation laws, infinite dimensional optimization problems, variational inequalities, inverse problems. Spring.

221 NUMERICAL ODE/PDE I (ENVR 285) (MASC 221) (3). Prerequisites, MATH 191, 192. Single, multistep methods for ODEs; stability regions, root condition; stiff systems, backward difference formulas; two-point BVPs; stability theory; finite difference methods for linear advection-diffusion equations. Fall.

222 NUMERICAL ODE/PDE II (ENVR 287) (MASC 222) (3). Prerequisite, MATH 221. Elliptic equation methods (finite differences, elements, integral equations); hyperbolic conservation law methods (Lax-Friedrichs, characteristics, entropy condition, shock tracking); spectral, pseudo-spectral methods; particle methods, fast summation, fast multipole/vortex methods. Spring.

224 HARMONIC ANALYSIS (3). Prerequisite, consent of the instructor. Subjects may include topological groups, abstract harmonic analysis, Fourier analysis, noncommutative harmonic analysis and group representation, automorphic forms, and analytic number theory. Fall. (Alternate years.)

228 MATHEMATICAL MODELING I (ENVR 288) (MASC 228) (3). Prerequisites, MATH 198, 199, 191, 192. Non-dimensionalization and identification of leading order physical effects with respect to relevant scales and phenomena; derivation of classical models of fluid mechanics (lubrication, slender filament, thin films, Stokes flow); derivation of weakly nonlinear envelope equations. Fall.

229 MATHEMATICAL MODELING II (ENVR 289) (MASC 229) (3). Prerequisites, MATH 198, 199, 191, 192. Current models in science and technology: topics ranging from material science applications (e.g., flow of polymers and LCIs), geophysical applications (e.g., ocean circulation, quasigeostrophic models, atmospheric vortices). Spring.

231 COMMUTATIVE ALGEBRA (3). Prerequisite, MATH 230. Field extensions, integral ring extensions, Nullstellensatz and normalization theorem, derivations and separability, local rings, valuations, completions, filtrations and graded rings, dimension theory. Spring.

234 TOPICS IN ALGEBRA (3). Prerequisite, MATH 230. Topics from the theory of rings, theory of bialgebras, homological algebra, algebraic number theory, categories and functions. Spring.

253 TOPICS IN COMBINATORIAL MATHEMATICS (3). Prerequisite, MATH 120 or consent of the instructor. Topics may include: combinatorial geometries, coloring and the critical problem, the bracket algebra, reduced incidence algebras and generating functions, binomial enumeration, designs, valuation module of a lattice, lattice theory. Spring. (Alternate years.)

257 ALGEBRAIC GEOMETRY (3). Prerequisite, MATH 231. Topics may include: algebraic varieties, algebraic functions, abelian varieties, projective and complete varieties, algebraic groups, schemes and the Grothendieck theory, Riemann-Roch theorem. Spring. (Alternate years.)

261 THEORY OF DYNAMICAL SYSTEMS (3). Prerequisite, consent of the instructor. Topics may include: ergodic theory, topological dynamics, stability theory of differential equations, classical dynamical systems, differentiable dynamics. Fall.


272 DIFFERENTIAL GEOMETRY (3). Prerequisite, MATH 271. Riemannian geometry, first and second variation of area and applications, effect of curvature on homology and homotopy, Chern-Weil theory of characteristic classes, recent applications due to Borel, Chern-Simons, and Baum-Cheeger. Spring.


274 LIE ALGEBRAS (3). Prerequisite, MATH 186. Nilpotent, solvable, and semisimple Lie algebras, structure theorems, root systems, Weyl groups, weights, classification of semisimple Lie algebras and their finite dimensional representations, character formulas. Fall.

277 SPECIAL TOPICS IN GEOMETRY (3 each). Prerequisite, MATH 271. Topics may include elliptic operators, complex manifolds, exterior differential systems, homogeneous spaces, integral geometry, submanifolds of Euclidean space. Fall. (Alternate years.)

286 ALGEBRAIC TOPOLOGY (3). Prerequisites, MATH 181 and 186. Homotopy and homology, simplicial complexes and singular homology; other topics may include cohomology, universal coefficient theorems, higher homotopy groups, fibre spaces. Spring.

287 TOPICS IN ALGEBRAIC TOPOLOGY (3). Prerequisite, MATH 286 or permission of the instructor. Topics primarily from algebraic or differential topology, such as cohomology operations and the Steenrod algebra, homotopy groups, fibre bundles, spectral sequences, Postnikov systems, K-theory, cobordism, Morse Theory, surgery, topology of singularities. Fall and spring. (Alternate years.)
390 SEMINAR AND DIRECTED READINGS (1-3).
392 MASTER'S PROJECT (3 or more).
393 MASTER'S THESIS (3 or more). (This should not be taken by students electing nonthesis master's projects.)
394 DOCTORAL DISSERTATION (3 or more).

MEDIEVAL STUDIES
See Department of Classics.

DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY
JEFFREY A. FREILINGER, Chair

Professors
Steven L. Bachenheimer (30) Molecular Biology of Viruses
Janie G. Cannon (43) Genetics of Pathogens, Pathogenesis of Infectious Disease
Stephen H. Clarke (53) Molecular Immunology, Structure and Function of Immunoglobulin Genes
*Myron S. Cohen (55) Biology and Epidemiology of Transmission of STD Pathogens, Including HIV
*Jeff Dangl, Plant Genetics and Cellular Biology, Plant Disease Resistance and Cell Death Control
Marshall H. Edgell (7) Genetic Engineering, Molecular Biology
Susan A. Fiebus (65) HIV Pathogenesis and Diagnostics
*James D. Folds (9) Immunology of Treponema Pallidum Infection, Clinical Immunology
Jeffrey A. Frelinger (47) Immunogenetics, Cellular Immunology, Immune Response to Viruses
Peter H. Gilligan (51) Bacterial Toxins, Clinical Microbiology
Jack Griffith (35) Chromosome Structure: Viruses and Their Host Cells
*Norton M. Hadler (26) Mechanism and Control of Chronic Inflammatory Response
*Eng-Shang Huang (48) Molecular Biology and Pathogenesis of Human Cytomegalovirus
Clyde A. Hutchison III (12) Molecular Genetics, Genetic Engineering
Robert E. Johnston (62) Molecular Genetics of Viral Pathogenesis, Recombinant Viral Vaccines
*Shannon Kenney (73) Epstein-Barr Virus Gene Regulation and Gene Therapy Approaches for Epstein-Barr Virus Associated Tumors
David G. Klaiber (33) Immunochemistry, Immunogenetics, Structure of Proteins of Immunologic Interest
*David C. Lee (54) Extracellular Growth Factors: Oncogenes
*Steven R. Meshnick (81) Malaria and Pneumocystis, Molecular Epidemiology, Pathogenesis, Drug Resistance
John E. Newbold (13) Molecular Virology
*Joseph S. Pagano (14) Epstein-Barr Virus Latency, Antiviral Drugs, Interferon Regulatory Factors
*Dhavalkumar Patel, Inflammation, Chemotaxis, GPCR Signal Transduction
Nancy Raby-Train (52) Molecular Virology and Oncogenesis
*Howard M. Reiner (32) Immunogenetics of Human Plasma Proteins, Particularly IgG and Coagulant Factors VII and IX
*P. Frederick Sparling (18) Bacterial Pathogenesis, Molecular Biology of Bacterial Membranes
*Ronald Swanstrom (74) Molecular Biology and Pathogenesis of HIV
Jeny P. Ting (50) Molecular Immunology, Transcription, Signal Transduction, Apoptosis, Neuroimmunology, Transplantation
*William J. Yount (25) Genetic Control of Antibody Response and Gamma Globulin Synthesis in Humans

Associate Professors
*Ralph Baric (76) Molecular Mechanisms of Virus Cross Species Transmissibility and Pathogenesis
Robert Bournet (64) Signal Transduction in Bacteria, Chemotaxis
Edward Collins (69) Structural Immunology, Immunotherapeutics
*Patrick M. Fodoll (60) T-cell Activation, Regulatory T-cells, Response to HIV Infections
Jean Handy (37) Cellular Mechanisms of Oxygen Toxicity, Role of Iron in Microbial Virulence and Host Defense
*Andrew H. Kaplan (72) Human Immunodeficiency Virus, Infectious Diseases
Thomas Kawula (63) Bacterial Genetics, Microbial Pathogenesis
Glenn Masushima (68) Molecular Neuroimmunology
*Jonathan Serody (82) Transplantation and Tumor Immunology
*Diane C. Shugars, HIV Pathogenesis
Lihan Su (71) Immune Development, Viral Pathogenesis
Roland Tisch (70) Immune Tolerance, T-Cell Antigen Recognition, T-Cell Mediated Autoimmunity, Tumor Antigen-Specific Genetic Vaccines

Assistant Professors
Miriam Braunstein (80) Bacterial Pathogenesis, Molecular Genetics, Tuberculosis
*Christina Burch, Experimental Studies of Evolution Using Viruses
Blissom Damanta (79) Kaposis Sarcoma-Associated Herpesvirus (KSHV/HHV-8), Rhesus Monkey Rhadinovirus (RVM)
Araisinga de Silva (73) Anthrozoid Vector-Borne Infectious Diseases and Microbial Pathogenesis
Michael Giddings, Bioinformatics, Proteomics, Post-Genomic Complexity, Cellular Modeling, Bacterial Pathogenesis
*Mark Heite (83) Molecular Genetics of Viral Pathogenesis
Tal Kafri, Development of HSV-Based Vector for Gene Therapy
Barbara J. Vilen (78) Molecular Immunology, Signal Transduction
*Jennifer Webster-Gryszko (84) Oral Manifestations of Systemic Disease, Host-Virus Interactions, Viral Oncogenesis, Viral Pathogenesis During Immunosuppression, Signal Transduction, Cellular Biology, and Gene Expression
Matthew C. Wolfgang, Microbial Pathogenesis, Bacterial Gene Regulation, and Host-Pathogen Interactions

Research Professors
Larry Arnold, Flow Cytometry, Immunogenetics
Nancy L. Davis (66) Molecular Genetics of Viral Pathogenesis, Recombinant Viral Vaccines

Research Associate Professors
*Christopher Elkins, Bacterial Pathogenesis, Iron Acquisition
*Marcia M. Hobbs, Gonococcal Pathogenesis, STD Pathogen Research and Molecular Diagnostics

Research Assistant Professors
Karen McKinnon, Dendritic Cell Induction of Tumor Specific CD4 and CD8 T Lymphocytes
*Raymond Pickles, Respiratory Viruses, Host Innate Defense in the Airway, Virus-Host Cell Interactions, Gene Therapy for Cystic Fibrosis and Other Lung Diseases
Ruth Silverman, Bacterial Chemotaxis

Professors Emeriti
Kenneth F. Boit
William J. Cromartie
Harry Goodger
G. Philip Manire
John H. Schaff
Myron S. Silverman
William R. Straughn
Robert Twomey
*Joint faculty members
The Department of Microbiology and Immunology, an administrative division of the School of Medicine, is a unit of The Graduate School. It offers instruction leading to the doctor of philosophy degree. A terminal master of science degree is granted only under special conditions. Research in the department, supported by funds from the University, National Institutes of Health, National Science Foundation, American Cancer Society, private foundations, and other granting agencies, focuses on a wide variety of molecularly oriented projects. Areas of investigation include the nature of bacteria and viruses, host-parasite interactions, pathogenic mechanisms, molecular genetics, various areas of immunology, eukaryotic cell and molecular biology, and bioinformatics.

Facilities
The department occupies three floors in the Mary Ellen Jones Building, and has spacious research laboratories supplemented by several darkrooms, facilities for tissue culture, oligonucleotide and peptide synthesis, animal care, computer analysis, and P3 physical containment for hazardous recombiant DNA research. All the routine apparatus and instrumentation required for the most sophisticated modern microbiology research is available.

Individual faculty members are provided with well-equipped laboratories for their own work and that of postdoctoral fellows, graduate students, technicians, and other personnel. In addition, several campuswide facilities provide services such as DNA and protein analysis and sequencing, tissue culture, flow cyrometry, and electron and confocal microscopy among others. There is a highly interactive collaboration with faculty in the Lineberger Comprehensive Cancer Center, the Center for Infectious Disease Research, and the Carolina Vaccine Institute.

Financial Assistance
At present the stipend is $21,500 per year plus tuition, fees, and health insurance. Funds are available from the department, the University, and individual research grants; students are strongly encouraged to apply for a predoctoral fellowship from the Howard Hughes Medical Institute and the National Science Foundation.

Admission Requirements
Although the department has no specific course requirements for admission, applicants with strong undergraduate training in biological sciences, biochemistry, chemistry and/or physics are viewed most favorably. Significant research experience (undergraduate research or relevant work experience) is an important asset. Admission is competitive and limited to an entering class of approximately ten students each year. Along with the Graduate School general application, applicants must submit official transcripts of all post-secondary education, official Graduate Record Examination (GRE) general test scores, three letters of recommendation, and a statement of purpose describing previous research experience and career goals. A personal interview is required and occurs only at the invitation of the Admissions Committee. International students must include a financial certificate and official TOEFL scores.

The department recommends that all application materials be submitted and received by January 1; however, completed applications will be reviewed as early as December. Applicants are therefore strongly encouraged to send in their completed applications as early as possible. Applicants are only admitted into the fall semester.

Curriculum
The graduate program is strongly research oriented. Students admitted to the department generally conduct three laboratory rotation projects during the first year in the process of selecting a research preceptor. First-year students usually take two didactic (lecture) courses each semester, in addition to the laboratory rotations. Most students take MCRO 108 and 109 or MCRO 117 and 118 in the first year, plus an elective didactic course each semester.

In all, students are required to take at least six courses in addition to MCRO 201, 202, and 301; at least two of the courses must be seminar tutorials. Specific courses taken by each student may vary, depending on his/her interests and background. There is no language requirement. Graduate courses in the departments of Anatomy and Cell Biology, Chemistry, Biochemistry, Pathology, and other departments are available for those students seeking special preparation in these areas. Special arrangements can be made with uniquely qualified medical students wishing to pursue a specific MD/PhD program.

The preliminary examination and oral examination scheduled at the end of the second year stress written and oral command of selected scientific disciplines rather than a broad comprehensive test of the field. During subsequent years, students focus on the execution of an independent research project, under the guidance of a faculty advisor. Students are usually required to serve as laboratory assistants for one semester each during their second and third year. Most students complete the work for the PhD in five to six years.

Courses for Graduates and Advanced Undergraduates

108 ADVANCED MOLECULAR BIOLOGY I (GNET 110) (BIOC 116) (PHCO 136) (BIOL 178) (3). Prerequisites for undergraduates, at least one undergraduate course in both biochemistry and genetics, and permission of instructor. DNA structure, function, and interactions in prokaryotic and eukaryotic systems, including chromosome structure, replication, recombination, repair, and genome fluidity. Three lecture hours. Fall. Griffith, staff.

109 ADVANCED MOLECULAR BIOLOGY II (BIOC 111) (GNET 111) (PHCO 137) (BIOL 179) (3). Prerequisites for undergraduates, at least one undergraduate course in both biochemistry and genetics and permission of the instructor. RNA structure, function, and processing in biological systems including transcription, gene regulation, translation, protein and RNA transport. Spring. Fried, staff.

112 INTRODUCTION TO MICROBIOLOGY (3). Open only to dental students. A course covering basic aspects of microbiology including sterilization, disinfection, action of antimicrobial chemotherapeutic agents, concepts of infection and immunity and the study of certain selected infectious agents. Forty-three lecture hours and twelve laboratory hours. Spring. Newbold, staff.

114 IMMUNOBIOLOGY (3). Prerequisites, a strong background in molecular biology, eukaryotic genetics, and biochemistry and permission of instructor. Topics include immunochemistry; genetic mechanisms, and development of cells and cell interactions; hypersensitivity, autoimmunity, resistance to infection. Three lectures. Fall. Collins, staff.

115 SPECIAL TOPICS IN MICROBIOLOGY OR IMMUNOLOGY (3 or more each semester). Permission of the department required except for departmental majors. Designed to introduce the student to research methods. Laboratory research projects are conducted with advice and guidance of the staff. May be repeated for credit two or more semesters. Hours and credit to be arranged, any term. Staff.

117 CELL STRUCTURE, FUNCTION AND GROWTH CONTROL I (BIOC 117) (BIOC 118) (PHCO 117) (3). Prerequisite, undergraduate cell biology and biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Fall. Jacobson, Lee, Meisner, Paris.

118 CELL STRUCTURE, FUNCTION AND GROWTH CONTROL II (BIOC 118) (BIOC 119) (PHCO 118) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Spring. Jacobson, Lee, Meisner, Paris.
130 VIROLOGY (4). Prerequisites, molecular biology and cell biology. Current concepts of the chemistry, structure, replication, genetics, and natural history of animal viruses and their host cells. Fall. Bachnermeier, Kafri, staff.

135 BACTERIOLOGY (3). Selected aspects of bacterial cell structure, physiology, genetics, genomics, gene expression, signal transduction, and growth outside the laboratory environment. Fall. Bouret, staff.

140 MICROBIAL PATHOGENESIS (4). Prerequisites, MICRO 130 and 135, or permission of instructor. Comprehensive course encompassing the molecular and biological basis of bacterial and viral pathogenesis, including the role of the host response in contributing to the infectious disease process. Spring. deSilva, staff.

Courses for Graduates

201, 202 SEMINAR IN MICROBIOLOGY (1 each). Seminars on selected topics in microbiology. Fall and spring. Staff.

210 SEMINAR/TUTORIAL IN PROKARYOTIC MOLECULAR BIOLOGY (Var.). One or two faculty and a small number of students will consider current research of importance in depth. Emphasis is on current literature, invited speakers, etc., rather than textbooks. Fall and spring. Staff.

211 SEMINAR/TUTORIAL IN ANIMAL VIROLOGY (Var.). One or two faculty and a small number of students consider current research of importance in depth. Emphasis is on current literature, invited speakers, etc., rather than textbooks. Fall and spring. Staff.

212 SEMINAR/TUTORIAL IN IMMUNOLOGY (Var.). One or two faculty and a small number of students consider current research of importance in depth. Emphasis is on current literature, invited speakers, etc., rather than textbooks. Fall and spring. Staff.

290 DIRECTED READINGS IN PROKARYOTIC MOLECULAR BIOLOGY (1). Prerequisite, one prior prokaryotic molecular biology course or permission of instructor. Directed readings in prokaryotic molecular biology under the direction of a member of the graduate faculty. May be repeated for credit.

291 DIRECTED READINGS IN VIROLOGY (1). Prerequisite, one prior virology course or permission of instructor. Directed readings in virology under the direction of a member of the graduate faculty. May be repeated for credit.

292 DIRECTED READINGS IN IMMUNOLOGY (1). Prerequisite, one prior immunology course or permission of instructor. Directed readings in immunology under the direction of a member of the graduate faculty. May be repeated for credit.

301 RESEARCH IN BACTERIOLOGY OR IMMUNOLOGY (3 or more each semester). Permission of the department required. Designed to introduce the student to research methods and special techniques. Short-term problems are conducted with advice and guidance of the staff. May be repeated for credit two or more semesters. Hours and credit to be arranged, any term. Staff.

393 MASTER’S THESIS (3 or more each semester). Staff.

394 DOCTORAL DISSERTATION (3 or more each semester). Staff.

Associate Professor
Allen Anderson (4) Theory, Composition
John R. Covach (35) Twentieth-Century Music and Theory, Philosophy of Music, Popular Music
Annegret Fauser (7) Nineteenth- and Early Twentieth-Century Music, French Music, Women’s and Gender Studies, Cultural Studies

Adjunct Associate Professor
Philip Vandermeers, Traditional and American Popular Music

Assistant Professor
Anne MacNeil (8) Sixteenth- and Seventeenth-Century Music, Music and Theater, Gender Studies, Historiography
Jocelyn Neal (5) Twentieth-Century Theory, Popular Music
Sarah Weiss (2) Indonesian and Southeast Asian Performance Traditions, Aesthetics, Gender Studies, Postcolonial Studies

Lecturer

Degrees
The department offers the degrees of master of arts (MA) in musicology and the doctor of philosophy (PhD) in musicology. Conceiving "musicology" in its broad sense to encompass the interrelated disciplines of music history, music theory, and ethnomusicology. The department also supports the School of Education's programs leading to the degrees of master of arts in teaching (MAT), and doctor of education (EdD) with a minor or special project in music applications to these programs are made to the School of Education, from which information is available. More detailed information on the Music Department's faculty and programs may be found on the department's Web site: www.unc.edu/music.

Special Facilities
Central to the departmental resources is the Music Library, which ranks high among the nation's music libraries for its scholarly editions, periodicals, early source materials, iconographic aids, microfilms, folk-music collections, and recordings. Several extensive private collections assembled by individual faculty members for special studies are available to advanced students.

Prerequisites for Degree Programs
The usual prerequisite for admission to graduate work leading to the MA and PhD degrees is a bachelor of arts degree with a major in music, comparable to that given at this university. All applicants for graduate study in music are required to take the departmental diagnostic exam and the verbal and quantitative aptitude tests of the Graduate Record Examination. The GRE should be taken early enough for the score to be submitted with the application for admission, preferably in the summer or fall preceding application for admission. Applicants for the MA or the PhD program must also submit a thesis or research paper with the application.

Language and Course Requirements, Examinations
MA candidates must either pass the departmental diagnostic examination in one modern foreign language or complete the fourth semester of the undergraduate language sequence in that language at UNC-Chapel Hill with a grade of "B" or better; PhD candidates must demonstrate proficiency in two foreign languages in one of the two ways described above. MA candidates must fulfill departmental theory and keyboard proficiency requirements by examination or by completing a series of specified undergraduate courses in the department with a grade of "B" or better. Students entering the PhD program with a completed MA from another institution also must meet these theory and keyboard requirements as early in their
course of study in the department as possible, and in any event, before they can advance to candidacy for the PhD.

MUSC 101 and 102 (Resources and Methods in Musicology I and II) are required of all MA students in their first and second semesters respectively, as is MUSC 393 (Master’s Thesis) in the fourth semester. Other courses are drawn from a range of offerings comprising preseminars (repertory-, method-, or issue-based studies) and seminars (on more precise topics normally requiring significant research on primary sources). Graduate students have the option to include courses from other departments that may be organized as a formal minor (nine hours for the MA, fifteen for the PhD) or as a supporting program. Courses taken outside the department must be approved in advance by the director of graduate study in music and by the departments concerned as directly relevant to a proposed course of study.

MA candidates take courses totaling thirty credit hours and write a thesis that is a revision of a paper prepared for a graduate course. All candidates for a master’s degree take a final oral examination covering course work; a final written examination is not given.

Students entering with an equivalent MA from another institution are required to take MUSC 101 and 102 (Resources and Methods in Musicology I and II) in their first two semesters respectively, in addition to four preseminars or seminars in the department at the graduate level during their first, probationary year.

At the beginning of each spring semester a qualifying examination is given to those who wish to proceed to the PhD program after gaining the MA. Students already in the department’s MA program take the examination in the second year. Those who received the MA at another institution must take the examination in the spring of the first year of study.

Following the completion of an additional twelve hours of seminars above the thirty hours required for the MA and of language requirements, PhD students take a written examination in three areas of specialization to be determined through consultation with the faculty and director of graduate study in music, and an oral examination on a proposed dissertation topic. They then register for at least two semesters of MUSC 394 (Doctoral Dissertation) to complete the dissertation and undergo a second oral examination in its defense.

More detailed explanation of these requirements appears in the music department’s Graduate Handbook (www.unc.edu/music/grad_handbook.html).

Fellowships, Assistantships, and Other Student Aid

In addition to campus-wide grants (discussed elsewhere in this Record), assistantships and special grants are available to selected graduate students in music. The deadline for all graduate applications is January 1; separate application for aid is not necessary but may be indicated on the general application form for admission to the Graduate School. Selected applicants are nominated for university-wide awards that range from $9,000 to $18,000. Assistantships awarded by the department to qualified students require about ten hours of service per week. Departmental awards average $12,000 and usually include tuition remission for out-of-state students, payment of in-state tuition, and other benefits.

Courses for Graduates and Advanced Undergraduates

101 RESOURCES AND METHODS OF MUSICOLOGY (3). Introduction to the scope, methodology, and bibliography of musicology. Extensive use of the music library, preparation for advanced seminars, and proper research procedures are stressed. Fall.

110 ANALYSIS OF EIGHTEENTH- AND NINETEENTH-CENTURY MUSIC (3). Analysis of traditional tonal forms, both homophonic and contrapuntal. Study in detail of two to three large works by major composers such as Bach, Beethoven, Mozart, and Wagner. Fall.

111 ANALYSIS OF TWENTIETH-CENTURY MUSIC (3). Analysis of a wide variety of works by composers such as Scriabin, Schoenberg, Stravinsky, Bartók, Ives, Debussy, Britten, Cage, Copland, and Gershwin. Study of two or three large works in detail. Spring.

Courses for Graduates

101 RESOURCES AND METHODS OF MUSICOLOGY I (3). Introduction to the field of musicology, including its scope, methodology, and bibliography. Taught in three-week modules, each directed by a different member of the academic faculty. Individual modules will include music history, music theory, ethnomusicology, music aesthetics, and cultural studies. Fall.

102 RESOURCES AND METHODS OF MUSICOLOGY II (3). Continuation of MUSC 101. Spring.

248 PROSEMINAR IN MUSIC THEORY (3). Fall and spring.

249 PROSEMINAR IN MUSICOLOGY (3). Fall and spring.

250 PROSEMINAR IN ETHNOHOMOLOGY (3). Fall and spring.

298 SPECIAL STUDIES. The faculty assists and advises graduate students in work on particular research projects. Hours and credits to be arranged. Fall and spring.

336 SEMINAR IN MUSIC THEORY (3). Fall and spring.

337 SEMINAR IN MUSICOLOGY (3). Fall and spring.

338 SEMINAR IN ETHNOHOMOLOGY (3). Fall and spring.

393 MASTER’S THESIS (3). Fall and spring.

394 DOCTORAL DISSERTATION (3). Fall and spring.

CURRICULUM IN NEUROBIOLOGY

PAUL B. MANIS, Director

Professors

W. E. Ballenger (109) Developmental Neuroendocrinology

Thomas W. Bouquin (98) Neurotoxicology, Models of Peripheral Neuropathy, Blood-Nerve Barrier

George B. bree (2) Cellular and Molecular Neurobiology, Neuropharmacology, Alcoholism, Neuropasticity, Transcription Factors, RT/PCR Developmental Disorders, Neuropsychiatric Disorders

Fulton L. Crews (133) Molecular Aspects of Neuronal Virality and Alcohol

Stephen T. Crews (129) Molecular Genetics of Drosophila Nervous System Development, Control of Neural Gene Regulation

Linda Dykstra (31) Behavioral Pharmacology, Opioid Analgesics, Opioid/Immune Interactions

Gregory K. Eisick (106) Somatosensory Psychophysics and Neurophysiology

Paul B. Fanel (11) Regulation of Neuron Number, Axon Guidance

Lawrence L. Gilbert (79) Biochemical and Molecular Insect Neuroendocrinology

John H. Gilmore (137) Human Brain Development, Immune Regulation of Neurodevelopment, Schizophrenia

Robert S. Greenwood (61) Neuropeptide and Neuroendocrine Plasticity and Seizures, Brain Growth and Development in Neuro-Fibromatosis

T. Kendall Harden (59) G-proteins, Phospholipase C, and Receptor-Mediated Regulation of Second Messenger Signaling, P2-Purinergic Receptors

Mark Hollins (125) Somatosensory Information Processing, Tactile Perception, Pain

James F. Howard Jr. (93) Electrophysiology of Neuromuscular Disorders, Synaptic Transmission, Immunology of Myasthenia Gravis
Henry S. Hsiao (18) Sensors and Instrumentation, Computer Interfaces, Human Behavior/Memory, Audience Opinion Research, Telemedicine
Jean M. Lauder (71) Neurotransmitters as Developmental Signals, Prenatal Exposure to Drugs of Abuse and Environmental Neurotoxins, Effects on Developing Neuronal Systems
Jeffrey A. Lieberman (141) Neuropsychology of Psychotic Disorders.
Psychopharmacology, Neuroimaging
P. Kay Lund (88) Growth Factors: Molecular Biology, Signal Transduction and Role in Nervous System During Development and Aging
Donald T. Lytle (122) Neuroimmunology, Learning Processes
Richard B. Mailman (82) Biochemical and Molecular Pharmacology of Dopamine Receptors, Molecular Drug Design
William Mainzer (112) Pain Mechanisms and Analgesia
Patricia F. Mantle (90) Cell Adhesion and Signal Transduction in Developing Neurons
Paul B. Manis (151) Cellular Basis of Auditory Information Processing in Brainstem and Cortex
Ken D. McCarthy (77) Neuronal-Glial Interactions Studied in Hippocampal Brain Slices Using Electrophysiology, Confocal Imaging and Conditional Gene Knockout Mice
David L. McIlwain (23) Chemistry of Regeneration and Degeneration in Spinal Motorneurons
Gerhard W. Measner (55) Excitation-Contraction Coupling, Intracellular Calcium Release Channels
A. Leslie Morrow (121) Molecular Neuropsychology of GABAA Receptors and Alcolholism
Robert A. Nicholas (147) Signaling and Targeting Pathways of P2Y Nucleotide Receptors
Curt A. Pedersen (91) Neuroendocrinology and Neuropsychopharmacology of Parenting and Sexual Behavior, Behavioral and Psychological Role of Oxytocin and Vasopressin, Psychobiology of Postpartum Depression
Edward R. Perl (35) Functional Organization and Synaptic Mechanisms for Pain and Other Somatic Sensations
Peter Petrusz (36) Neuroendocrinology, Reproductive Biology
Joseph Piven, Pathogenesis of Autism Including Neural Mechanisms, Genetic Basis, and Neuropsychological and Behavioral Phenotypes
Aldo Rustioni (50) Excitatory and Inhibitory Neuramitins in Somesthesis
Richard J. Samulski (135) Development of Viral Vectors for Brain Specific Gene Delivery
Robert Sealock (58) Cell Biology and Biochemistry of the Neuromuscular Junction, Dystrophin and Dystrophin-Associated Proteins
Paul C. Shinkman (41) Neural and Behavioral Plasticity in Sensory Systems, Cerebellar Mechanisms of Learning and Memory
William D. Snider (148) Developmental Regulation of Neuronal Growth Factors
Ann E. Stuart (76) Mechanisms and Control of Histamine Release and Uptake at Neurotransmitter Synapses and Their Effect on Signal Transfer
Kathleen K. Sulik (131) Teratology, Embryology
Kimiko T. Suzuki (96) Neuropathology of Inborn Errors of Metabolism, Glial Reactions to CNS/PNS Degeneration
Jenny P. Ting (105) Use of Murine Models to Study the Role and Regulation of Inflammatory Genes in Demyelination and Remyelination
Terry A. Van Dyke (133) Cell Growth Regulation, Cancer, Gene Expression
Barry L. Whitehead (46) Somatosensory Mechanisms
R. Mark Wightman (118) Neurotransmitters, Dopamine Reward Excitoxicity, Neurochemistry
R. Haven Wiley (47) Social Organization and Communication in Vertebrates

Regina M. Carelli (142) Behavioral Neurophysiology, Neurobiology of Drug Abuse, Brain Reward Systems
Richard E. Cheney (136) Molecular Motor in the Nervous System, Cellular and Molecular Neurobiology of the Cytoskeleton
James C. Garbutt (134) Neurobiology and Psychopharmacology of Alcoholism
Michael F. Goy (111) Biochemistry and Physiology of Excitable Cells, Synapse Formation, Second Messenger Mechanisms in Signal Transduction, Epithelial Biology
Clyde W. Hodge (150) Neurobehavioral Pharmacology and Pharmacogenomics of Addiction
Anthony LaMantia (140) Inductive Signaling and Control of Gene Expression in the Developing Forebrain/Inductive Control of Genes Related to Neurological and Psychiatric Diseases
Kenneth J. Lohmann (130) Animal Navigation, Neuroethology of Magnetic Orientation Behavior, Neural Control of Glia
Glenn K. Matsumiya (139) Neuroimmunology, Function of Activated Microglia in Neurodegenerative Disease
Sharon L. Milgram (140) Protein Trafficking and Cell Signaling in Polarized Cells, Role of Scaffolding and Adaptor Proteins in Polarized Cells
Robert L. Rosenberg (115) Regulation of Ion Channels
Ellen R. Weiss (144) Regulation of G Protein Signaling Pathways: Visual Signal Transduction

Assistant Professors
Eva Anton, Molecular Analysis of Neuronal Migration and Layer Formation in Cerebral Cortex
Ayse Filigeri, Cortical Circuits Underlying Attention and Executive Function in the Human Brain
Jay Brennan, Neural Dentrite and Axon Morphologies
Mohamad Dshumukh, Neural Aporosis
Joseph Hopfinger, Reflexive Attention Mechanisms, Spatiotemporal Analyzes of Voluntary Attention, Attentional Control Mechanisms, Studies of Memory Mechanisms
Sela Mager (145) Molecular Physiology of Neurotransmitters Transporters
Carol Oey, Mechanisms of Cell Mobiity and Adhesion
Larya Pevny, Neural Induction, Neurogenesis, SOX Proteins
Franck Polletou, Identification of the Cues and Signaling Pathways Underlying the Development of Connections in the Mammalian Cerebral Cortex

Research Professors
Douglas Fitzpatrick, Sound Localization Pathways
Rick B. Meeker (107) Neuroendocrine Regulation, Glutamate Receptors, Mechanisms of AIDS Dementia
Juli Valscheanoff, Vanilloid Receptors in Nociception

The neurobiology curriculum of the University of North Carolina at Chapel Hill includes faculty from the departments of cell biology and anatomy, anesthesiology, biochemistry and biophysics, biostatistics, chemistry, medicine, neurology, oral biology, oral surgery, pathology, pharmacology, cell and molecular physiology, psychiatry, psychology, biology, biomedical engineering, mathematics, and from the Curriculum in Genetics and Molecular Biology and the Program in Molecular Biology and Biotechnology. The theme unifying members of these diverse departments is a desire to understand the mechanisms through which the nervous system functions. While sharing this fundamental interest in the nervous system, research techniques used by members of the curriculum are quite diverse and provide the student with the opportunity to master a wide variety of laboratory skills.

Graduate students working toward the PhD in neurobiology must take NBIO 111, 112, 122, 201a or 202, 210, 222 and 233, 290, and 394, as well as other courses suggested by the director.

The minor in neurobiology consists of a minimum of fifteen hours of courses selected from the list below with the approval of the director.
Fellowships, commensurate with usual grants-in-aid, are available to support graduate students who are working toward the PhD degree under the direction of a faculty member in the neurobiology curriculum and who major in neurobiology. After the first year, graduate students receive travel awards to attend national scientific meetings.

Applicants are urged to complete their applications by January 1.

Courses for Graduates and Advanced Undergraduates

101C CONDITIONING AND LEARNING (PSYC 101) (3). Prerequisite, Psychology 22. A comprehensive survey of the methods, findings, and theories of classical and operant conditioning. Students develop skills necessary to evaluate, integrate, and summarize significant original literature. Fall. Eckeman.

102B BIOLOGICAL FOUNDATIONS OF BEHAVIOR (PSYC 102) (3). Prerequisite, PSYC 22 or BIOL 11. Ethological, genetic, and physiological variables are studied in relation to their behavior effects. Fall, Garey; Spring, Lysle.

106B PHYSIOLOGICAL PSYCHOLOGY (PSYC 106) (3). Prerequisites, PSYC 10, 23, or permission of the instructor. Elements of neurophysiology, neuroanatomy, and neurochemistry as they apply to the understanding of brain-behavior relationships. As announced. Carelli.

111, 112 NEUROBIOLOGY LABORATORY APPRENTICESHIP (3-9). Prerequisite, permission of the director of training in the neurobiology curriculum. A laboratory-tutorial course to acquaint the student with methods used in several areas of neurobiology. Fall, Spring. Faculty of the neurobiology curriculum.

125 INTRODUCTION TO NEUROPHYSIOLOGY (BIOL 121) (3). Prerequisites, BIOL 52 and 50. Survey of neurobiological principles, including development, morphology, physiology, and molecular mechanisms, in vertebrates and invertebrates. Three lecture hours a week. Spring. Bollenbacher.

150 NEUROBIOLOGY (3). Prerequisite, permission of the instructor. A tutorial in selected topics in neurobiology tailored to meet interests of the students and competencies of instructors. Fall and spring. Staff.

Courses for Graduates

201A BEHAVIOR AND ITS BIOLOGICAL BASES I (PSYC 201) (3). A survey of psychological and biological approaches to the study of sensoory and perceptual information processing: perceptual development. Fall. Staff.

201C BIOMEDICAL INSTRUMENTATION (BMME 111) (3). Topics include basic electronic circuit design, analysis of medical instrumentation circuits, physiology transducers (pressure, flow, bioelectric, temperature, and displacement). This course includes a laboratory where the student builds biomedical devices. Spring. Hsiao, Johnson.

202 BEHAVIOR AND ITS BIOLOGICAL BASES II (PSYC 202) (3). A survey of psychological and biological approaches to the study of basic learning and higher integrative processing. Spring. Staff.

204 ADVANCED BIOLOGICAL PSYCHOLOGY: CENTRAL NERVOUS SYSTEM (PSYC 204) (3). Prerequisite, PSYC 106 or equivalent. Each fall one specific topic is covered in depth, e.g., neural bases of memory storage, homeostasis, and perception. Format includes lecture and seminar meetings with student presentations. Fall. Shinkman.

205 ADVANCED BIOLOGICAL PSYCHOLOGY: AUTONOMIC NERVOUS SYSTEM (PSYC 205) (3). Prerequisites, PSYC 106 and/or 202, or permission of the instructor. The autonomic nervous system bases of emotion, motivation, and learning. Two lecture and two laboratory hours a week, as announced. Staff.

207 APPLICATIONS OF EXPERIMENTAL PSYCHOLOGY TO HEALTH RESEARCH (PSYC 207) (3). This course provides a critical analysis of interdisciplinary research within experimental psychology, including such topics as psychopharmacology, psychoneuroimmunology, psychophysiology, and animal models of brain-behavior disorders. Fall. Carelli, Dykstra, Girdler, Light, Lysle, Picker.

210 MEDICAL NEUROBIOLOGY (PHYI 201) (3). Prerequisite, permission of the course director. A special segment of the Neurobiology course for medical students (for neurobiology graduate students only). Structural and functional organization is analyzed at the level of the cell membrane, the neuron, and integrated neuronal systems. Spring. Fera, staff.

211, 212 SPECIAL TOPICS IN PHYSIOLOGY (PHYI 211, 212) (3-5). Prerequisite, permission of the instructor. Individually arranged in-depth programs of selected topics such as membrane function, transport physiology, renal physiology, etc. Fall and spring. Staff.

222A CELLULAR AND MOLECULAR NEUROBIOLOGY: ELECTRICAL SIGNALING (2). Prerequisite, permission of instructor. Considers the generation of electrical impulses in the nervous system with emphasis on membrane potentials, voltage-gated ion channels, and structural features of neurons that influence coding. Course meets for five weeks with six lecture hours per week. Fall. Stuart.

222B CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-RECEPTORS (2). Prerequisite, permission of instructor. Consideration of membrane receptor molecules activated by neurotransmitters in the nervous system with emphasis on ligand binding behavior and molecular and functional properties of different classes of receptors. Course meets for four weeks with six lecture hours per week. Fall. Stuart.

222C CELLULAR AND MOLECULAR NEUROBIOLOGY: PRESYNAPTIC MECHANISMS (2). Prerequisite, permission of instructor. The mechanisms regulating the release of neurotransmitters from nerve terminals are explored including neurotransmitter, vesicle and terminal membrane proteins, neurotransmitter transporters, and plasticity of synaptic transmission. Course meets for five weeks with six lecture hours per week. Fall. Stuart.

223A CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-INTRACELLULAR SIGNALING (2). Prerequisite, permission of the instructor. Explores biochemical signal transduction events following activation of neurotransmitter receptors including G-protein coupling, desensitization, signal specificity, downstream effectors, calcium signaling and tyrosine kinases. Course meets for five weeks with six lecture hours per week. Spring. Stuart.

223B CELLULAR AND MOLECULAR NEUROBIOLOGY: DEVELOPMENTAL NEUROBIOLOGY (2). Prerequisite, permission of instructor. The molecular and cellular basis for development of neurons and networks. Topics include the basic CNS embryogenesis, molecular basis of neurite extension and pathfinding, specification of cell fate, and synaptogenesis. Course meets for five weeks with six lecture hours per week. Spring. Stuart.

224 PAIN AND SOMATIC SENSATION (PHYI 224) (2). Prerequisite, PHYI 140 or equivalent. Consideration of peripheral and central neural mechanisms for somatic sensation with particular emphasis on pain. Spring. Perl.

225 EXPERIMENTAL NEUROPHYSIOLOGY (BIOL 225) (3). Prerequisite, permission of the instructor. Six or more laboratory hours a week. On occasion. Staff of Neurobiology Curriculum.

235 SEMINAR IN CHEMICAL NEUROBIOLOGY (BIOC 235) (2). Prerequisite, two semesters of biochemistry. Fall 2001 and alternate years. Morell.

259 SEMINAR IN COMPARATIVE ANIMAL BEHAVIOR (BIOL 259) (2). Prerequisite, permission of the instructor. Fall or spring. Lohmann, Wiley.

260 SEMINAR IN COMPARATIVE PHYSIOLOGY (BIOL 260) (2). Prerequisite, BIOL 120 or permission of the instructor. Fall or spring. Staff.

290 SEMINAR IN NEUROBIOLOGY (PHYI 290) (PHCO 290) (3). Prerequisite, permission of the director of the neurobiology curriculum. An intensive consideration of selected topics and problems in neurobiology. The course focuses on the development of presentation and evaluation skills of the trainees. Six credit hours required for neurobiology graduates. Spring. Faculty of the neurobiology curriculum.
302 SEMINAR IN THE BIOLOGICAL FOUNDATIONS OF PSYCHOLOGY (PSYC 302) (3). Prerequisite, permission of the instructor. Limited to graduate students in psychology and neurobiology. Lectures and seminar presentations on a wide range of topics in the areas of psychological and physiological psychology. Fall and spring. Carelli.

310 RESEARCH IN NEUROBIOLOGY (BIOL 310) (PHCO 310) (PHYI 310) (BIOL 302) (3-12). Prerequisite, permission of a staff member. Research in various aspects of neurobiology. Six to twenty-four hours a week. Fall and spring. Faculty of the neurobiology curriculum.

325 BEHAVIORAL PHARMACOLOGY (PSYC 325) (PHCO 325) (3). Prerequisite, PSYC 124 or permission of instructor. Basic principles of pharmacology and behavior analysis are considered in relation to drugs that affect the central nervous system. Spring. Dykstra.

394 DOCTORAL DISSERTATION (Vac.). Fall, spring, summer. Research advisor.

SCHOOL OF NURSING
LINDA R. CRONENWETT, Dean
Richard W. Redman, Associate Dean for Academic Affairs
Jennifer D’Auria, Director of Master’s Programs
Diane Holditch-Davis, Director of Doctoral and Post Doctoral Programs

Professors
Linda Beeber (109) Psychiatric-Mental Health Nursing
Linda R. Cronenwett (105) Measurement of Health Care Quality
Molly C. Dougherty (104) Women’s Health; Urinary Incontinence
Anne H. Fishel (2) Psychiatric-Mental Health Nursing
Catherine I. Fogle (4) Women’s Health Nursing
Sandra G. Funk (32) Research Methodology; Statistics
Barbara Germino (49) Adult Health; Thanatology; Oncology
Jean Goepfinger (89) Community Health Nursing; Community-Based Self-Care, Rural Health
Joanne Harrell (54) Adult Health; Promotion of Cardiovascular Health across the Life Span
Donna Havens (123) Health Care Systems
Diane Holditch-Davis (60) Children’s Health; Neonatology
Diane Kjervik (103) Bioethics; Mental Health
Barbara Mark (5) Health Care Systems
Margaret S. Miles (52) Children’s Health, Parenting
Merle Mishel (82) Uncertainty in Illness, Instrument Development
Mary Palmer (6) Gerontology; Incontinence
Susan Pierce (26) Health Care Systems; Ethics
Richard W. Redman (3) Health Care Outcomes; Patient Assessments of Care
Margaret Sandelowski (64) Women’s Health; Research Methodology

Associate Professors
Jennifer D’Auria (85) Children’s Health; Chronic Illness
Virginia T. Davis (29) Children’s Health
Edward Halloran (79) Health Care Systems
Cheryl Jones (112) Health Care Systems
Mary Lynn (84) Health Care Systems; Quality of Care
Shirley Macon (102) Community Health Nursing
Chris McQuiston (100) Primary Care; Community, HIV/STD Prevention
Virginia J. Neelon (13) Adult Health; Physiology
Pamela Plesch (7) Women’s Health; Community, Prevention
Joyce Rasin (114) Caregivers for Elderly
Pamela Rowsey (44) Physiology
Anne Skelly (99) Primary Care, Chronic Disease Self-Care
Suzanne Thoyer (45) Children’s Health
Marcia Van Riper (8) Ethics; Developmental Disabilities

Assistant Professors
Alice Boyington (108) Community Health Nursing; Urinary Continence; Informatics
Debra Brown (122) Family Health Nursing
Susan Brunsson (125) Children’s Health; Physiology
Barbara Carlson (113) Gerontology
Jamie Diekmann (113) Community Health Nursing; History
Yvonne Eaves (43) Community Health Nursing; Caregiving in Frail Elders
Noreen Esposto (11) Women’s Health

Professors Emeriti
Laurel Archer Copp (22)
Jo Ann Dalton (23)
Margery A. Duffy (42)
Cynthia Freund (17)
Nancy Milo (28)
Marion Woods

Associate Professors Emeriti
Audrey J. Booth
Eleanor M. Browning (14)
Margaret E. Campbell (16)
Mary C. Dow (31)
Bonnie K. Hensley
Margaret F. Hudson (10)
Betsy H. Landisberger
Patricia A. Lawrence (11)
Helen M. Murphy (25)
Barbara Nettles-Carlson
Barbara C. Ryner (19)
Ingrid Swenson

Master of Science in Nursing
The master of science in nursing (MSN) program prepares nurses in specialized areas of advanced nursing practice with role preparation as a nurse practitioner, clinical nurse specialist, and/or health care systems specialist.

Length of Program
The program of study varies from thirty-nine to forty credits of academic course work including clinical practice, an oral comprehensive examination, and a research project or in some cases, a thesis. All nurse practitioner, psychiatric/mental health advanced practice, and health care systems students complete forty credits. Neonatal, pediatric, and women’s health care clinical nurse specialist students complete thirty-nine credits. Students may pursue the MSN degree on a full-time or part-time basis.

The Curriculum
The curriculum consists of four components: the professional core, the research core, the clinical core, and the advanced nursing practice specialty courses. The professional core courses (NURS 146, NURS 147) and research core courses (NURS 274, NURS 275, NURS 392 or 393) are required for all MSN students. The clinical core courses and advanced practice area courses focus on the student’s selected area of specialization and role preparation.

The specialty areas offered by the program reflect a combination of current practice trends as well as available faculty resources. Content in specialty areas and the types of areas of specialization offered are adjusted based on these factors. In some advanced practice specialty areas, electives in nursing or other disciplines or courses to support a focus area are required. Each student is admitted to a specific advanced practice area and a faculty advisor helps design a program of study that is appropriate to the student’s
educational and career goals. Dual programs of study may be developed on an individual basis, but involve a longer program of study. Upon completion of the program, students are eligible to sit for national certification examinations appropriate to their advanced nursing area of preparation.

The current advanced practice areas include: adult nurse practitioner, health care systems (informatics, outcomes management, administration, education), children's health (pediatric nurse practitioner, neonatal nurse practitioner, clinical nurse specialist), primary care nursing (family nurse practitioner), psychiatric-mental health nursing, (clinical nurse specialist, and clinical nurse specialist-nurse practitioner), and women's health nursing (women's health care nurse practitioner, clinical nurse specialist). A rural community-oriented primary care option is available for family nurse practitioner students; this option requires an additional seven credits of course work beyond the forty required hours in the master's program. In addition, for students in the health care systems informatics option, dual MSN/MSIS and MSN/MLS degree options are available through the School of Nursing and the School of Information and Library Sciences. An up-to-date listing of the advanced practice areas being offered and detailed descriptions of the curriculum for each specialty area may be accessed through the School of Nursing home page: click on “Degree Programs.”

Graduate Courses

NURS 212 SEXUAL AND REPRODUCTIVE HEALTH (3). Prerequisites, NURS 210, NURS 226, NURS 229, NURS 230, or permission of instructor. Uses a life span approach to examine principles of primary care management of childbearing couples and sexual reproductive health in women and men. Application is in community-based settings.

NURS 213 SELECTED ISSUES IN ADULT HEALTH (4). Prerequisites, NURS 210, NURS 226, NURS 229, NURS 230. Provides the opportunity for an in-depth examination of management strategies with selected health problems in adults and examines issues inherent in the management of women and elderly populations.

NURS 223 ADVANCED ASSESSMENT AND DIAGNOSTIC REASONING IN NEONATAL AND PEDIATRIC NURSING (4). Prepares the advanced practice neonatal/pediatric nurse to comprehensively assess neonates and children using a diagnostic reasoning process.

NURS 224 ADVANCED DIAGNOSTIC PROCESS IN PSYCHIATRIC/MENTAL HEALTH NURSING (4). Introduces students to the role of the advanced practice psychiatric/mental health nurse. Models for assessment, intervention, and evaluation are explored and tested clinically.

NURS 226 ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING IN PRIMARY CARE NURSING (4). Examines the process of diagnostic reasoning as a framework to synthesize comprehensive assessment of adult patients. It focuses on clinical evaluation of common problems that are present in primary care settings.

NURS 229 PHARMACOTHERAPEUTICS IN ADVANCED NURSING PRACTICE (3). Prerequisites, NURS 230 or NURS 200; NURS 223 or NURS 224 or NURS 226 or permission of instructor. Examines principles of pharmacotherapeutic decision making in advanced nursing practice with application to clinical management of common health problems specific to all age groups, encompassing a life-span approach.

NURS 230 PATHOPHYSIOLOGY FOR ADVANCED NURSING PRACTICE (3). Examines the physiological and pathophysiological responses to injury-effects on cell function, host defense responses, maintenance of vital functions, and neuroendocrine-immune responses.

NURS 236 LEADERSHIP IN ORGANIZATIONS (3). Examines health care and nursing practice organizations, the influence of the external and internal environment on these organizations, and the role and relationship of nurse leaders to the nursing practice environment and to the greater organization.

NURS 237 HUMAN RESOURCES MANAGEMENT (3). Explores the knowledge and skills required for effective human resource management. Managerial behaviors that promote and maintain a professional nursing practice environment are emphasized.

NURS 238 FINANCIAL MANAGEMENT (3). Examines the issues of health care economics, financial management, and budgeting that relate to managerial decision making.

NURS 239 OUTCOMES MANAGEMENT (3). Explores theories and methods related to outcomes management for quality improvement in health care, including improvement science, patient safety approaches, health services, research, evidence based practice, and translation research.

NURS 240 NURSING INTERVENTIONS WITH PSYCHOPHYSIOLOGICAL PROBLEMS OF INFANTS AND CHILDREN (2-3). Prerequisites, NURS 200, NURS 223, NURS 229, NURS 242, or permission of instructor. Prepares the advanced practice neonatal or pediatric nurse to design and implement a coordinated system of interventions that promote optimal health and development status for infants and children with psychophysiological health problems.
NURS 241 FAMILY RESPONSES TO INFANT, CHILD, AND ADOLESCENT HEALTH PROBLEMS (2-3). Prerequisites, NURS 223, NURS 242, NURS 229, NURS 200, permission of instructor. Focuses on family responses to neonatal and pediatric health problems. Students function in an advanced pediatric nursing role, working with families of neonatal and pediatric clients with acute and chronic health problems.

NURS 242 ADVANCED CONCEPTS IN AMBULATORY PEDIATRIC NURSING (4). Prerequisites, NURS 200, NURS 223; pre- or corequisite, NURS 229. Focuses on ambulatory nursing management of children. Content includes health promotion, health maintenance, and common clinical symptomatology/problems in infants, children, and adolescents.

NURS 243 NURSING MANAGEMENT RESIDENCY AND INTEGRATIVE SEMINAR (3). Students develop, implement, and evaluate managerial strategies related to the management of human and material resources, fiscal services, information systems, policies, quality outcomes, and physical facilities in an integrative fashion.

NURS 244 CLINICAL PRACTICUM IN ADVANCED PEDIATRIC NURSING (1-5). Prerequisites, NURS 223, permission of instructor. Supervised practicum in an advanced practice role in a selected health care setting that provides primary care and/or specialized health care to infants, children, or adolescents.

NURS 246 PSYCHIATRIC NURSING INTERVENTIONS WITH INDIVIDUALS (3). Prerequisite, NURS 224 or permission of instructor. Focuses on theories, techniques, and research related to providing individual psychotherapy. Contextual factors affecting the delivery of psychiatric-mental health nursing services are analyzed.

NURS 247 PSYCHIATRIC-MENTAL HEALTH NURSING INTERVENTIONS FOR FAMILIES (3). Prerequisites, NURS 224, NURS 246, or permission of instructor. Students will analyze theories, techniques, and research relevant to therapy with families. Clinical placement with preceptors is used to apply knowledge.

NURS 248 PSYCHIATRIC-MENTAL HEALTH NURSING FOR UNDERSERVED POPULATIONS (3). Prerequisites, NURS 224, NURS 246, NURS 247, or permission of instructor. Utilizing epidemiology, psychoeducation, case management, and health policy, students examine the scope of mental health problems and services for underserved populations.

NURS 253 SPECIALTY CARE IN THE HEALTH OF WOMEN (4). Prerequisites, NURS 226, NURS 229, NURS 230, NURS 210, NURS 212, or permission of instructor. Focuses on the primary care of women with complex gynecological problems, reproductive complications, and socially derived health care problems. Emphasis is placed on assessment, diagnosis, management, and clinical decision making.

NURS 254 HEALTH CARE IN WOMEN PRACTICUM (1-3). Prerequisites, NURS 226, NURS 230, NURS 210, NURS 212, NURS 253. This course gives the student a concentrated, experiential opportunity to provide advanced practice nursing in selected areas of women's health.

NURS 255 MANAGEMENT OF COMPLEX HEALTH PROBLEMS IN ADULTS (4). Prerequisites, NURS 142, NURS 226, NURS 229, NURS 230, NURS 210, NURS 213. This capstone course focuses on the management of complex health problems in adult populations for the adult nurse practitioner.

NURS 258 MANAGEMENT OF THE CRITICALLY ILL INFANT (4). Prerequisites, NURS 200, NURS 223; pre- or corequisite, NURS 229. Prepares the advanced neonatal nurse to manage the high-risk neonate during the critical and convalescent phases of illness, including after hospital discharge.

NURS 259 PRACTICUM IN PRIMARY CARE MANAGEMENT OF ADULTS (1-2). Prerequisite, completion of NURS 226, NURS 210, NURS 230, NURS 229. A preceptor practicum in community-based ambulatory care settings that provides experiences in continuity of care in the delivery of personal health services to adult individuals and their families.

NURS 262 EXTERNSHIP IN THE ADVANCED NURSING MANAGEMENT OF THE HIGH-RISK NEONATE (1-5). Prerequisites, NURS 223, NURS 229, NURS 258 (or concurrent). The advanced neonatal nurse manages the health needs of a caseload of high-risk infants and their families under the supervision of an experienced nurse practitioner or physician.

NURS 269 ADVANCED CLINICAL PRACTICUM IN COMMUNITY ORIENTED PRIMARY CARE (2). Prerequisites, NURS 226, NURS 229, NURS 230, NURS 210, NURS 211, NURS 212. Introduction to supervised clinical practice in primary health care with emphasis on use of history, physical examination, and laboratory data to plan interventions for promoting and restoring health.

NURS 274 RESEARCH FOR NURSING PRACTICE I (3). This two-course sequence explores the philosophy, logic, and methods of research and statistical analysis for use in clinical practice. This first course focuses on the relations between research and practice, the research process, and on non-experimental designs.

NURS 275 RESEARCH FOR NURSING PRACTICE II (3). Prerequisite, NURS 274. This two course sequence explores the philosophy, logic, and methods of research and statistical analysis for use in clinical practice. This second course focuses on sampling, measurement, data management, experimental designs, and the use of data for improving practice.

NURS 278 PRACTICUM IN PSYCHIATRIC MENTAL HEALTH CARE FOR ADVANCED PRACTICE NURSES (1-3). Prerequisites, NURS 224, NURS 246, or permission of the faculty. Students apply knowledge and skill in selected domains of the advanced practice of psychiatric-mental health nursing. Supervision, peer evaluation, and independent readings will enhance the experience.

NURS 290 PRINCIPLES OF TEACHING APPLIED TO NURSING (3). Provides students who have had no previous teaching experience with educational principles necessary to teach nursing. Opportunities for observation and analysis of undergraduate instruction are provided.

NURS 291 INNOVATIONS IN NURSING AND HEALTH CARE CURRICULA (3). This course is designed to examine the curricular foundations and expectations of contemporary nursing and health care education in academic or clinical settings.

NURS 292 INTRODUCTION TO COMMUNITY PRACTICE (2). Introduces fundamental concepts and models of community-oriented nursing practice and the central issues affecting that practice. Focuses on underserved and rural communities.

NURS 293 RURAL COMMUNITY-ORIENTED PRIMARY CARE (3). Introduces principles of community-oriented primary care with rural underserved populations: health assessment, program planning, and evaluation; culturally competent care; and effective and efficient practice management strategies.

NURS 292 RESEARCH PROJECT (3). Students engage in a research project in collaboration with faculty and under the direction of the thesis option adviser. A scholarly paper is required to reflect the project.

NURS 393 THESIS (3-6). Through the thesis, students independently pursue knowledge and understanding, develop competence in solving nursing problems, and increase recognition of possibility to contribute to professional knowledge by systematic investigation.

Supporting Graduate Electives
NURS 113, 114 SPECIAL PROBLEMS (1-6). These courses are available to graduate and advanced undergraduate students. Their goal is to provide the student with opportunities to individualize work in an area of interest not regularly provided for by the ongoing nursing courses. The student studies under the direction of one or more faculty members who are knowledgeable in the area of the student's need and/or interest.

NURS 185 CARE OF THE DYING AND BEREAVED THROUGHOUT THE LIFE SPAN (3). Students from a variety of health sciences-related disciplines gain an understanding of issues in working with dying and bereaved individuals of all ages and their families.
NURS 187 ETHICAL ISSUES IN NURSING PRACTICE (2). Examination and discussion of major ethical issues arising in the professional practice of nursing in the context of systematic consideration of the nature of ethical choice.

NURS 204 SCIENTIFIC WRITING (1). Focuses on the principles and practice of scientific writing, with emphasis on research proposals, theses, research reports, dissertations, and articles for publication. Spring.

NURS 608 MULTIDISCIPLINARY PERSPECTIVES ON MANAGING DIABETES MELLITUS (2). This course examines the current issues involved in managing diabetes mellitus in persons over their life span. Contributions of the multidisciplinary team are an important theme throughout this course.

Doctor of Philosophy in Nursing

The discipline of nursing is concerned with the study of human experiences related to health, illness, and life transitions; and professional practices that enhance well being, promote a healthy life, prevent injury and disease, facilitate recovery from and stimulate adaptive responses to illness and disability, ameliorate the negative effects of the treatment of disease, and promote a dignified and peaceful death. The PhD in nursing program at the University of North Carolina at Chapel Hill School of Nursing is designed to prepare scholars who will contribute to the science of nursing by expanding — generating, evaluating and disseminating — knowledge in these areas for use by nurses and others concerned with health care.

With changes in demography, advances in technology, and changes in the social and economic mandate for health care, the faculty of the School of Nursing has chosen to emphasize scholarship in the prevention and management of chronic health conditions across the lifespan. Of particular interest are populations at special risk for developing chronic health problems and for suffering more intense morbidity and early mortality because of them. These populations are vulnerable to severe manifestations of disease by virtue of such factors as age, gender, geography, history, race/ethnicity, biological markers of risk, and/or socioeconomic class. The prevention of chronic health conditions involves activities that promote health and prevent disease. The management of chronic health conditions involves, in turn, assisting people in managing symptoms and side effects of diseases and their treatment, adjust well to their emotional, family, social, and other sequelae, and generally to live well with these conditions. Another priority area of study is the organizational context in which health services are delivered. This encompasses the study of the interactions among health care organizations, providers of care, processes of care, and recipients of care.

The PhD program in nursing emphasizes study of the understanding of health conditions in varying biographical, cultural, historical, clinical, ethical/legal, and organizational contexts; of the processes by which health, improve health, and prevent health problems, and to evaluate the application of these practices in real-world settings across the continuum of care. Faculty help students link their clinical and research interests with the program emphasis. For example, students may focus their program of study on various kinds of chronic conditions, health-related social problems, or advanced biobehavioral measurement techniques. They may focus on studying and testing theories and concepts from nursing and other disciplines that address chronic conditions or the system of care. They may focus on population groups varying by gender, developmental level, race/ethnicity, or genetic predisposition. They may focus their study on specific theory-driven individual, family, or community-oriented interventions in the biobehavioral, psychosocial, psychosocial educational, and/or technological domains. Or, they may focus on studies that seek to understand how to improve access to care, to investigate the effectiveness, costs, quality, and outcomes of organizational systems that provide services across the continuum of care.

The program emphasizes the value and capability of a variety of methodological and analytic approaches from the biological, behavioral, and social sciences and the humanities; and interdisciplinary and participative collaboration with other scholars and affected populations. The overall goal of the program is to prepare competent, culturally sensitive, and compassionate scholars of nursing who will, through their active engagement with and passion for scholarship, contribute to the goal of a healthy nation.

Doctoral Curriculum

Doctoral students can expect to take two or three years of course work, in addition to completing a dissertation. The curriculum includes four components: a required core curriculum; a dissertation, a minor or secondary area of study, and elective (optional) courses. Recommended curriculum components are listed below.

The doctoral curriculum is designed to increase the understanding of chronic illness prevention and management and the health care system. Methodological course work includes quantitative and qualitative research methods, statistics, measurement, health policy, and theory development. Students also take additional nursing courses and three courses outside of nursing that support the development of a specific focus on a particular age or gender group, population level (families, individuals, communities), a particular response or intervention strategy, a particular disease entity, or nursing systems. Because of the rich resources of this campus, courses are available in fields such as psychology, sociology, anthropology, epidemiology, health policy and administration, and physiology.

Required Core

NURS 279 ORGANIZATIONAL THEORIES APPLIED TO NURSING (3). Examines contemporary issues and programs in nursing systems. Students use a four-level nursing systems model to analyze programs of research related to systems. OR

NURS 335 THEORIES OF PREVENTION OF CHRONIC CONDITIONS (3). Overview of theory and research related to the prevention of chronic conditions across the life span. Concepts such as health, illness, chronicity, risk, vulnerability, resilience, and disability are examined. (On request.) Staff.

OR

NURS 336 THEORIES OF MANAGEMENT OF CHRONIC CONDITIONS (3). Examines theories and concepts related to the management of chronic illness including their historical evolutions, social-political influences, implicit assumptions, and biases. (On request.)

NURS 281 KNOWLEDGE DEVELOPMENT IN NURSING (3). Examines the origin and development of nursing knowledge, theories, and research testing knowledge theories and models.

NURS 352 NURSING, HEALTH ORGANIZATIONS, AND POLICY MAKING (3). Interrelated responses of nursing, the organization of health care and policy over nurse leaders to public policies in policy making, with consequences for organizations, services, staffing, interorganizational linkages, and health of the public.

NURS 370 ADVANCED STATISTICS I: PRINCIPLES OF REGRESSION AND CORRELATION (3). Principles of bivariate and multivariate regression and correlations are studied. Emphasis is on the application of these techniques in the analysis of nursing and health-related data.

NURS 371 ADVANCED STATISTICS II: PRINCIPLES OF ANALYSIS OF VARIANCE (3). Principles of variance and covariance - univariate ANOVA, multiple ANOVA, ANCOVA, repeated measures ANOVA - are studied. Emphasis is on application of these techniques in the analysis of nursing and health-related data.
NURS 376 ISSUES IN SAMPLING AND DESIGN FOR NURSING RESEARCH (3). Discussion of critical analyses of methodologies and design. Quantitative measures, qualitative methods, design, and sampling are examined for the study of nursing phenomena.

NURS 377 QUALITATIVE METHODS (3). Examines the philosophical orientation and methods of qualitative techniques including grounded theory and phenomenology, consideration of research designs, ethical issues, issues of rigor, data collection, and analysis.

NURS 378 PRINCIPLES OF MEASUREMENT (3). Examination of measurement and techniques for assessing validity, reliability, and structure of data collection instruments. Instrumental construction and procedures for critical evaluation of instruments are included.

Six additional credits in the substance of nursing are required from those listed below.

NURS 279 ORGANIZATIONAL THEORIES APPLIED TO NURSING (3). See above.

NURS 300 SPECIAL TOPICS IN NURSING. (Vac.). Topics directed by an authority in the field.

NURS 310 INFANTS AND CHILDREN AT RISK (3). Applies the developmental science perspective to children at risk for health problems. Students examine conceptual models, design, measurement, and ethical issues involved in preventing or ameliorating these health problems.

NURS 335 THEORIES OF PREVENTION OF CHRONIC CONDITIONS (3). See above.

NURS 336 THEORIES OF MANAGEMENT OF CHRONIC CONDITIONS (3). See above.

NURS 338 FROM THEORY TO INTERVENTION IN CHRONIC CONDITIONS (3). In-depth exploration of selected programmatic research in nursing and related fields on prevention and management of chronic conditions in order to generate and evaluate treatment theory and intervention protocol. Staff.

NURS 339 FAMILIES AND HEALTH (3). Theoretical, methodological, and ethical issues related to family research, including health promotion, risk reduction, vulnerability, and health risk, in the context of acute and chronic illness across the life span. Staff.


NURS 384 PROSEMINAR IN NURSING (1-3). Proseminars are offered for 1, 2, or 3 credits. Topics differ each semester.

NURS 394 DISSERTATION REGISTRATION (At least 6).

Minor/Secondary Area of Study
Fifteen credits in a minor or nine credits in a secondary area of study that supports the student's program are required. If a minor is declared, it must be in a department approved for the minor in the nursing doctoral program. A secondary area of study is an alternative to the minor and can be a cluster of courses from one or more departments. Minor and secondary areas of study are approved by the major adviser and the director of doctoral programs and an adviser from one of the other departments selected for study.

Elective (Optional) Courses
Six credits required in these or other courses if minor is not done.

NURS 280 SOCIAL CONTEXT OF THE DISCIPLINE (3). Historical and contemporary analysis of selected topics related to the influence of ethics, economics, and societal imperatives shaping the profession and practice of nursing.

NURS 315 ANALYSIS OF THE ACADEMIC ROLE IN NURSING EDUCATION (3). Knowledge, theories, and skills necessary for transition into an academic teaching role in university schools of nursing. Particular emphasis on the teaching-learning process as used in higher education. Spring. Staff.

NURS 333 HEALTH AND POLICY (3). The course offers a combined theoretical-analytical and policy-focused discussion and experience on the relationship between current health issues and policy making.

NURS 337 DESIGNING INTERVENTION STUDIES (3). Examination of methodological, ethical, and practical issues in the design and implementation of theory-based intervention studies. (Alternate years.) Staff.

NURS 379 QUALITATIVE ANALYSIS (3). Emphasizes the work of analysis and interpretation. Students apply relevant qualitative techniques to their own data.

NURS 380 OBSERVATIONAL METHODS (3). Explores quantitative observational research techniques. Strategies for developing coding systems, determining reliability and validity, and analyzing data are included.

NURS 385 RESEARCH SEMINAR AND PRACTICUM: GUIDED INDIVIDUAL RESEARCH EXPERIENCE (3-5). Directs students to develop research skills related to dissertation and future research.

DIVISION OF OCCUPATIONAL SCIENCE
CATHY NIELSON, Director

Professor
Ruth Humphry (4) Parents and Infants During Co-Occupation/Feeding, Family-Centered Services and Young Children with Developmental Disabilities

Associate Professors
Grace Baranek (10) Autism and Related Developmental Disorders, Sensory Processing and Sensorimotor Performance Related to Childhood Occupations 
Virginia A. Dickie, The Occupation of Quilting: NC Quilters, Psychosocial Rehabilitation, Community-Based Practice
Wendy Wood (8) Environmental, Developmental and Temporal Influences upon the Occupational Behavior of People and Nonhuman Primates; Needs of Caregivers of Older Adults with Dementia

Clinical Professor
Catherine Nelson (3) Administration, Leadership, Occupation-Centered Services, Generalist Practice, Curriculum Development

Clinical Associate Professors
Susan Coppola (9) Geriatric Functional Assessment, Physical Rehabilitation, Fieldwork Effectiveness in Clinic
Jane Roush (6) Occupational Therapy in the Schools, Inclusive Practice, Pediatrics

Clinical Assistant Professors
Catherine Alguire, Services for Children and Adolescents with Developmental Delays, Impact of the Environment to Support Occupations
Liam Wakeford, Occupation-Centered Services for Infants and Preschoolers with Developmental Delay
Jenny Womack, Aging, Community-Based Practice, Assistive Technology, Universal Design and Environmental Accommodations

Professor Emerita
Marlys M. Mitchell
The Division of Occupational Science in the Department of Allied Health Sciences offers a graduate program leading to the master of science degree with a major in occupational therapy. This is a two-year program designed for individuals with a baccalaureate degree in a field other than occupational therapy.

Requirements for Admission
1. Bachelor’s degree from an accredited institution.
2. Submission of Graduate Record Examination scores from the Educational Testing Service.
3. Academic record that demonstrates potential to do work at the graduate level.
4. Completion of the OT supplemental application.

The MS program has the following prerequisites:
There are eight total prerequisite courses, four of which are fixed (core body of knowledge) and four of which come from a flexible and diverse menu of categories. All prerequisites must be taken for credit in an academic institution.

**Fixed Prerequisites:**
1. Human anatomy with a lab or applied computer experiences*
2. Human physiology*
3. Abnormal psychology
4. Introductory statistics
   *A two-semester sequence of combined anatomy and physiology, parts I and II may be substituted for separate courses.

**Flexible Prerequisites:**
1. Human/Indivdial behavior (For example: developmental psychology, child development, adulthood and aging, cognitive psychology, neuropsychology)
2. Modes of reasoning (For example: philosophy and ethics, statistics or data analysis [beyond the introductory course], religion, literature taught in a foreign language, research design or method of inquiry in a social science
3. Study of social relationships, institutions, and systems (For example: linguistics, cultural/social anthropology, sociology, public health, public policy, leisure studies, social work, political science, minority studies)
4. Occupation: Three credit course that incorporates some aspect of the origin of an activity and its history, but the emphasis is on doing creative activities, applied participation, and/or elements of performance. (For example: creative writing, poetry writing, studio art class, theatre, dance, music, sports)

The master of science program requires a minimum of sixty-three semester credit hours. The program is twenty-four months in length and includes substantial fieldwork experience.

Occupational science courses are available only to graduate students enrolled in the OT program at the University.

Courses for Graduates

**207 OCCUPATIONAL THERAPY PRACTICE ENVIRONMENTS (2).** Overview of OT practice settings, professional organizations, regulatory bodies. Factors influencing practice, including legislation, reimbursement, documentation and culture of communities. Ethics, confidentiality, self-awareness, teamwork, and professionalism in practical settings. Fall. Staff.

**211 MUSCULOSKELETAL DIMENSIONS OF OCCUPATIONAL PERFORMANCE (4).** An in-depth review of musculoskeletal anatomy and kinesiology. Application is stressed as related to anatomical, physiological, and biomechanical dimensions of movement and occupational performance. Fall. Womack.

**220 NEUROSCIENCE: PROCESSES SUPPORTING OCCUPATION (3).** Neuropsychological processes contributing to functional abilities. Study of CNS related to observed behaviors, affect, and higher cognitive components of function. Spring. Womack.

**222 BIOMEDICAL AND PHENOMENOLOGICAL PERSPECTIVES ON ILLNESS AND DISABILITY (4).** The biomedical and phenomenological aspects are presented and contrasted, using medical literature and personal narratives. Emphasis on humanistic values, biomedical information, and investigative reasoning for effective occupation-centered practice. Spring. Staff.

**226 OCCUPATIONAL AND ENVIRONMENTAL TRANSFORMATIONS I (3).** Investigation of continuity/discontinuity in pattern, function, and meaning of occupations from early adulthood through old age. Analysis of individual differences in occupational performance within family, SES, and cultural contexts. Fall. Dickie.

**228 OCCUPATIONAL AND ENVIRONMENTAL TRANSFORMATIONS II (3).** Prerequisite, OCCT 226. Age-related changes in occupational performance from infancy through adolescence. Developmental contextualism used to frame intrinsic changes and environmental influences. Fall. Humphry.

**248 FUNDAMENTALS OF OCCUPATION-CENTERED PRACTICE (4).** In-depth examination of core principles and methods involved in comprehensive occupational analysis, assessment of occupational performance, and therapeutic occupation across practice areas. Fall. Wakeford. Staff.

**250 OCCUPATIONS, ADAPTATION, AND TECHNOLOGY I (5).** Prerequisites, OCCT 226, 248. Problem-orientation approach to assessment, treatment planning, and use of clinical reasoning to develop intervention strategies. Remediative, compensatory, and adaptive approaches to physical and psychosocial dysfunction are explored through case studies. Spring. Dickie, Womack.


**304 RESEARCH IN OCCUPATIONAL SCIENCE AND THERAPY (3).** Examination of research approaches and issues within occupational science and occupational therapy. Development of skills in writing research proposals and applying research results to insure evidence-based practice. Fall. Wood.

**320A, 320B FIELDWORK II (6).** Direct experience with clients/patients in varied service treatment settings. Experience will include adults disabilities (A) and a second experience in an area of special focus (B). Summer. Coppola.

**330 APPLIED RESEARCH EXPERIENCE (2).** Collaborative research projects in occupational science or occupational therapy. Emphasis on data collection, analysis, and professional communications of research findings. Spring. Baranek, Humphry, Wood, Dickie.

**338 POLITICAL, ADMINISTRATIVE, AND FINANCIAL CONTEXTS OF SERVICE DELIVERY (3).** Exploration of public policies and regulations, administrative systems and skills, reimbursement and financial aspects of traditional service delivery system Fall. Nielsen.

**342 HISTORICAL EVOLUTION OF OCCUPATIONAL THERAPY AND SCIENCE (3).** This historical analysis of occupational therapy and occupational science centers upon questions of philosophical foundations, knowledge development, division of labor, and professionalism within health care. Spring. Wood.

**344 EVOLUTION OF COMMUNITY-BASED PRACTICE: DEVELOPMENT, IMPLEMENTATION, AND EVALUATION (2).** History and development of occupation-based services in community settings; evolution, structure, and operation of community programs; use of consulting and planning skills in a comprehensive and systematic planning model. Spring. Nielsen.
DEPARTMENT OF OPERATIONS RESEARCH
See Department of Statistics and Operations Research.

DEPARTMENT OF PATHOLOGY AND LABORATORY MEDICINE

J. CHARLES JENNETTE, Chair
James D. Folds, Vice Chair for Clinical Services
Thomas W. Boulton, Vice Chair for Faculty and Trainee Development
David G. Kaufman, Vice Chair for Research Development

Professors
Nadia Maloof Anderson (26) Muscle Diseases, Plasticity of Adult Derived Stem Cells
Dwight A. Bellingar (89) Laboratory Animal Medicine, Comparative Pathology
Thomas W. Boulton (72) Neuropathology, Ocular Pathology, Neurotology
Mark E. Brecher (128) Blood Component Processing and Storage, Transfusion Strategies, Transfusion Transmitted Diseases
John F. Chapman Jr. (79) Laboratory Practice, Clinical Chemistry
Frank C. Church (107) Molecular Pathology, Thrombosis and Hemosiderosis, Breast and Prostate Carcinogenesis, Macromolecular Structure-Function
Marila Cudreiro-Stone (96) DNA Replication, DNA Repair, Cell Cycle Checkpoints in Human Cells; Mechanisms of Mutagenesis and Carcinogenesis
Ronald J. Falk (172) Glomerular Disease, Lupus, Vasculitis, Dialysis
Rosa A. Farber (118) Genetic Instability in Cancer, Human Molecular Genetics, Microsatellite Instability, Fragile X Mental Retardation
Suzan A. Fiscus (173) Retinovirology
James D. Folds (155) Immunophenotyping of Human Lymphocytes, Flow Cytometry, Immune Response to Infectious Organisms and Pyrochrome Immunology
Peter H. Gilligan (174) Diagnostic Bacteriology, Pulmonary Disease in Cystic Fibrosis, Toxic Mediated Diarrheal Disease
Thomas R. Griggs (50) Blood Coagulation, Atherosclerosis
J. Charles Jennette (61) Renal Pathology, Immunopathology
David G. Kaufman (34) Human Origins of DNA Replication; Interactions between Human Endothelial Epithelial and Stromal Cells
Martin E. Kaufman (95) Human DNA Metabolism and Cancer
Suzan T. Lord (94) Macromolecular Structure/Function of Fibrogen, Molecular Genetics, Cardiovascular Disease
Nobuyo Maeda (110) Molecular Genetics of Atherosclerosis, Transgenic Laboratory Animals as Model Systems, Molecular Evolution
Timothy C. Nichols (156) General Cardiology, Cardiac Catheterization, Percutaneous Transluminal Coronary Angioplasty
Howard M. Reiner (38) Immunogenetics of Blood Coagulation, Immunohistochemistry
Gary J. Smith (85) Prostate Cancer, Cancer Cell-Tissue Microenvironmental Interaction, Angiogenesis
Oliver Smithies (115) Molecular Pathology, Genetically Engineered Animal Models of Human Disease, Targeted Mutagenesis
Darrel W. Stafford (127) Molecular Biology
Kinuko I. Suzuki (110) Neuropathology, Genetic Neurological Disorders
James A. Swenberg (66) Chemical Carcinogenesis, Toxicology
Richard R. Tidwell (42) Medicinal Chemistry, Antiviral and Antimicrobial Agents, Protease Inhibitors
Michael D. Topal (41) Genomic Instability and Disease
Bernard E. Weissman (119) Tumor Suppressor Genes

Associate Professors
Nicholas Bandarenko III (149) Transfusion Medicine, Apheresis, Thrombotic Thrombocytopenic Purpura, Idiopathic Thrombocytopenic Purpura
William B. Coleman (139) Biology of Liver Stem Cells, Hepatocarcinogenesis, Lung and Breast Carcinogenesis, Epigenetics and Cancer
Myra L. Collins (97) Transfusion Medicine, Medical Ethics
Georgette A. Dent (117) Hematopathology, Medical Education
Cherie H. Dunphy (189) Hematopathology
Coren-Jean S. Edgell (84) Tissue Progenitor Structure and Function, and Endothelium-Specific Gene Expression
William K. Funkhouser Jr. (52) Surgical Pathology, Molecular Pathology, Immunology
Margaret L. Guley (196) Molecular Diagnostics, Oncology, Epstein-Barr Virus
J. Ed Hall 177) Infectious Diseases, Pathogenic Protozoa, Drug Metabolism
Catherine A. Hammet-Stabler (171) Clinical Chemistry, Toxicology, Clinical Pharmacology
Jean Handy (178) Diagnostic Virology and Parasitology, Biology of Malaria Parasites and Antimalarial Drugs
Susan J. Maygarden (131) General Surgical Pathology, Cytopathology, Prostate Carcinogenesis
Volker Nickelei (190) Renal Pathology, Fibronectins
W. Eugene Sanders (176) Diaphragm, Pacing Platelets
Harsharan K. Singh (180) Cytopathology, Fine Needle Aspiration Biopsy
John T. Wooley (133) Dermatopathology, Hepatobiliary and Gastrointestinal Pathology, Histopathologic Assessment of Prognosis

Assistant Professors
David G. Gremache (206) Clinical Chemistry
Suzanne L. Kirby (181) General Hematology/Oncology and Bone Marrow Transplantation
Chad A. Lively (193) Surgical Pathology
Christopher P. Mack (188) Transcriptional Regulation in the Cardiovascular System, Smooth Muscle Cell Biology
Melissa B. Miller (211) Molecular Virology
Charles M. Peters (209) Breast Cancer, Genomics, Microarrays, Tumor Classification; Drug Resistance
John L. Schmitz (168) Flow Cytometry, HIV, Diagnostic Immunology, Sexually Transmitted Diseases
Joan M. Taylor (187) Adhesion Signaling, Cardiovascular Disease

Clinical Professors
John D. Butts (70) Forensic Pathology, Injury Prevention
Harold R. Roberts (15) Thrombosis and Hemorrhage Research and Therapy, Hematology

Clinical Associate Professors
Thomas B. Clark III (134) Forensic Pathology, Computer Applications in Forensic Medicine
Pamela A. Groben (157) Surgical Pathology, Hematopathology, Pediatric Pathology, Autopsy, Cardiovascular Pathology
Ruth A. Lasieng (166) Surgical Pathology, Breast Pathology
Scott V. Smith (164) Vascular Biology, Cardiovascular Pathology, Platelet and von Willebrand Factor Pathophysiology

Clinical Assistant Professors
Maureen S. Bauer (208) Surgical Pathology, Cytopathology
Diana Gariside (202) Forensic Toxicology
Aaron M. Gleichman (203) Forensic Pathology, Neuropathology
Jessica K. Booker (199) Genetics, Breast Cancer
Jer R. Miller (191) Forensic Toxicology
David B. Thomas (192) Nephropathology, Neuropathology, Gynecological Pathology
Leigh B. Thorne (207) Molecular Pathology, Autopsy Pathology
Ruth E. Winecker (165) Forensic Pathology

Research Professor
Virginia L. Godfrey (148) Veterinary Pathology, Animal Models of Genetic Disease, Autoimmunity

Research Associate Professors
C. Robert Bagnell Jr. (109) Application of Advanced Light and Electron Microscopy to Research in Basic Medical Sciences
Thomas H. Fischer (169) Gene Therapy, Blood Coagulation, Atherosclerosis
Hyung-Suk Kim (137) Gene Targeting and Animal Models for Human Diseases, Hypertension and Hereditary Cerebral Hemorrhage with Amyloidosis and Molecular Evolution

Research Assistant Professors
Jayne C. Bayer (200) Human Molecular Genetics, Molecular Mechanisms of Microsatellite Instability
Oleg V. Gorkun (155) Coagulation, Fibrinolyis, Fibrinogen Structure
Christopher W. Gregory (201) Prostate Cancer, Androgen Receptor
Tracey M. Heenan (163) Laboratory, Exotic, and Companion-Animal Medicine
Nobuyuki Takahashi (184) Animal Models of Hypertension, Preedampsia, Diabetic Nephropathy and Obesity
Alisa Sue Wolberg (198) Thrombotics Research, Coagulation
Maimoena A. Zavala (205) Genetic Analysis of Patients with Primary Ciliary Dyskinesia (PCD)

Research Instructor
Dennis A. Simpson (204) Cell Biology, Molecular Biology, Virology

Adjunct Professors
Byron Butterworth (67) Genetic Toxicology
Robert R. Maronpot (146) Mechanisms of Carcinogenesis
Stephen C. Nernow (39) Chemical Carcinogenesis, Environmental Toxicology

Adjunct Associate Professors
Gary A. Boorman (102) Toxicological Pathology, Myeloscopyology
Jeffrey L. Everitt (180) Experimental Pulmonary and Toxicology Pathology
Kevin T. Morgan (103) Nasal Toxicology
Richard S. Paules (144) Oncogenes Tumor Suppressor Genes and Cell Cycle Control in Neoplastic Transformation of Mammalian Cells
Roger W. Wiseman (141) Molecular Genetics and Carcinogenesis
Douglas C. Wolf (185) Mechanisms of Toxicity and Carcinogenesis

Adjunct Assistant Professors
Thomas L. Goldworthy (143) Mechanism of Chemical Carcinogenesis
Susan C. Hadler (194) Oral Diagnosis

Professors Emeriti
Robert E. Cross
Frederic G. Dalldorf
Donald T. Forman
J. Dieter Gerace
John B. Graham
Joe W. Gritham
John E. Hammond
William D. Hufines
William W. McLendon
Katherine B. Prywansky
Marjorie S. Read
Richard W. Sherm
Robert L. Thompson

Graduate work in the Department of Pathology is offered to those interested in acquiring more extensive knowledge of diseases and their effects at different levels of molecular and cellular organization. Major emphasis is given to investigation of molecular mechanisms responsible for disease processes. Students are given the opportunity to undertake candidacy for the doctor of philosophy degree. Participation in research activities leading to an original dissertation is required of all advanced degree candidates. Prospective candidates must hold a bachelor's degree from an accredited college.

The department is located in the Brinkhouse-Bullitt Building, and offers well-equipped laboratories for research and advanced work in pathology.

Courses for Graduates and Advanced Undergraduates

006E HISTORY OF DISEASE (3). First-year undergraduate seminar. Plagues and people. An introduction to the social history of plagues and the motif of plagues in a variety of contemporary and historical writing. An opportunity to read and respond to works presented as historical, fictional, and scientific writing. Spring. Reiner.

008 BIOLOGY OF HUMAN DISEASE (BIOL 008) (3). Open to all undergraduates and graduates. No prerequisites. Presents an overview of basic human molecular and cellular biology in the setting of common human diseases. The course emphasizes how an understanding of disease mechanisms provides the knowledge base for informed use of modern health care. Fall. Reiner, Smith. BA-level and General College-level Natural Science (no lab) Perspectives.

134 BIOLOGY OF BLOOD DISEASES (BIOL 134) (3). Prerequisite, BIOL 52 or permission of instructor. An introduction to the biology and pathophysiology of blood and the molecular mechanisms of some human diseases: anemias, leukemias, hemorrhagic, thrombotic, and vascular disorders; and HIV disease/AIDS. Fall. Church.

161F GENERAL PATHOLOGY (5). Prerequisites, CBIO 102 and permission of the instructor. Basic aspects of pathology, including cell injury, cell death, tissue inflammation, necrosis, repair, and carcinogenesis. Circulatory, respiratory, renal, reproductive, and immune systems are also studied. Two lecture, one seminar and seven laboratory hours a week. Fall. Staff.

161S SYSTEMIC PATHOLOGY (2). Prerequisites, CBIO 102, PATH 161F, and permission of the instructor. Pathology of the nervous, digestive, and endocrine systems. One lecture, one conference, and one laboratory hour a week. Spring. Staff.

162 EXPERIMENTAL PATHOLOGY. Hours, credits, and instructor to be arranged on an individual basis. This course involves hands-on research experience in a predetermined instructor's laboratory. Students have the opportunity to learn and apply specific techniques, and to participate in investigations of molecular mechanisms responsible for disease processes (pathobiology). Contact director of graduate studies in pathology for more information. May be repeated. Staff.

163 ELECTRON MICROSCOPY (4). Prerequisite, permission of the instructor. Theoretical and practical aspects of electron microscopy. Application of transmission and scanning electron microscopy to pathology, with emphasis on ultrastructure of cells and organelles. Two lecture and six laboratory hours a week. Fall. Bagnell.

164 LIGHT MICROSCOPY (3). Prerequisite, permission of the instructor. Course focuses on practical fundamentals of light microscopy, including optics, contrast mechanisms, fluorescence, laser scanning confocal microscopy, photography, and digital imaging. Three lecture hours a week. Spring. Bagnell.

174 GENETICS OF HUMAN DISEASE (GNET 174) (3). Prerequisites, graduate students: a previous course in genetics or permission of the instructor; undergraduates: a previous course in genetics and permission of the instructor. Topics in human genetics, including the molecular basis of genetic disease, special methods used in human genetics research, and molecular genetic principles learned from studies of humans. Three lecture hours a week. Fall, Farber.

178 HUMAN DNA METABOLISM (2). Prerequisite, a basic biochemistry course. This course examines the molecular biology of DNA replication, recombination, and repair as these processes occur in human cells. Two seminar hours per week. Fall, (Alternate years.) Kaufmann.
Courses for Graduates

**213 MECHANISMS OF DISEASE** (2, 3, or 5). Prerequisite, cell biology, histology, or permission of the course director. A graduate course on cell injury and pathogenesis of disease with emphasis on basic mechanisms at the molecular, cellular, and organismal levels. Three lecture hours (3 credits) and a 2 1/2 hour laboratory (2 credits) each week. Spring, Edgell.

**223 SPECIAL METHODS IN PATHOLOGY** (2). Prerequisite, permission of the instructor. Conducted on a tutorial basis, with the aim of providing experience with specialized techniques including histochemistry, electron microscopy, fluorescent and phase microscopy, chromatography, electrophoresis, and ultra centrifugation. Two seminar hours per week, including clinical experiences. Spring, Whinna.

**225 CANCER PATHOBIOLOGY** (3). Permission of the course director required. This course examines pathobiological features of cancer. An interdisciplinary approach draws from epidemiology, genetics, molecular biology, and clinical medicine to investigate cancer etiology, pathogenesis, prevention, and treatment. Three lecture hours a week. Spring, Kaufman.

**250 DATA ANALYSIS** (PHC0 250) (TOXG 250) (CJH0 250) (1). Data analysis for biomedical scientists. This largely self-study course deals with basic statistical and quantitative methods for the analysis and interpretation of biomedical data. This course is required for PHC0/TOXG/CJH0 graduate students. Permission of the instructor is required for other students. Fall, Nicholas.

**292 SEMINAR IN CARCINOGENESIS** (TOXG 292) (2). Prerequisite, permission of the instructor. Survey of classical and contemporary literature on selected critical issues in carcinogenesis. Students discuss experimental methods and observations as well as theories and generalizations. Two seminar hours a week. Spring, Coleman.

**301 SEMINAR IN PATHOLOGY** (2). This course emphasizes the development of written and oral scientific communication skills. It is designed specifically for first and second year graduate students within the department. Fall, Edgell.

**302 RESEARCH IN PATHOLOGY** (2-12). Prerequisite, permission of the department. This is a research course in which advanced students in pathology carry on investigations on mechanisms of disease. Six or more laboratory hours a week. May be repeated. Fall, spring, and summer. Staff.

**393 MASTER’S THESIS** (Var.). Fall, spring, and summer. May be repeated. (Total maximum of six credits.) Staff.

**394 DOCTORAL DISSERTATION** (Var.). May be repeated. Fall, spring, and summer. Staff.

**DEPARTMENT OF PHARMACOLOGY**  
GARY L. JOHNSON, Chair

**Professors**  
*George R. Breese (15) Drugs and Neural Plasticity; Molecular Neurobiology  
*Frank C. Church (107) Proteases and Their Inhibitors Involved in Regulating Thrombosis and Tumor Cell Invasion  
Fulton T. Crews (88) Excitotoxicity, Gene Delivery, Neuroprotectant Stem Cells and Addiction  
Channing Der (74) Ras Protein Superfamily, Signal Transduction and Oncogenesis  
Kenneth H. Dudley (28) Drug Biotransformation, Penicillin Hypersensitivity  
*Linda Dykstra (55) Opioid Analgesics; Drugs of Abuse  
*H. Shelton Earp (63) Growth Regulation, Growth Factor and Protein Kinases  
Barry Goz (29) Virus and Cancer Chemotherapy  
T. Kendall Harden (37) Receptor Biochemistry, Regulation of Second-Messenger Signaling  
Gary L. Johnson (124) Receptors/G-Proteins, Defining the “Signal Relay” Systems Initiated by Various Cellular Stimuli Including Cytokines, Growth Factors, Antigens, and Drugs Used to Treat Human Disease  
*Larry G. Johnson (113) Gene Therapy, Epithelial Ion and Macromolecular Transport  
Rudolph L. Juliano (62) Membrane Biochemistry of Cell Interactions, Drug Delivery Systems  
Rudolph L. Juliano (62) Cell Adhesion Molecules  
*J. Stephen Kizer (34) Molecular and Cellular Biology of Post-Translational Processing  
Rystad Kale (57) RNA Splicing, RNA-Protein Interactions, Antisense Oligonucleotides  
*Richard B. Mailman (52) Neuropharmacology, Structure and Function of Dopamine Receptors, Molecular Drug Design  
*William Maimon (64) Pain Research and Autonomic Nervous System Research  
Ken D. McCarthy (42) Neuronal Digital Applications Studied in Situ Using Electrophysiology, Confocal Imaging, and Conditional Knockouts  
*Beverly S. Mitchell (73) Molecular Mechanisms of Nucleoside Activation; Cancer Pharmacology  
*Leslie Morrow (105) Molecular Neuropharmacology of GABA Receptors and Alcohol  
*Robert A. Mueller (32) Neuronal Stimulation and Oncogene Expression  
Robert A. Nicholas (68) G-Protein-Coupled P2Y Receptors, Mechanisms of Antibiotic Resistance  
*David A. Oniyes (30) Endocrine Pharmacology, Clinical Endocrinology  
Leslie V. Parise (70) Adhesion Receptors and Signal Transduction in Platelets, Sickle Cell Disease and Cancer  
Robert L. Rosenberg (69) Regulation of Ion Channels  
R. Jade Samulski (77) Development of Efficient Viral Vectors for Gene Delivery into Eukaryotic Genes  
Gene A. Scarborough (36) Molecular Basis of Plasma Membrane Structure and Function  
*Dhiren Thakker (97) Drug Delivery and Metabolism  
*Gilbert White (78) Structure/Function Relations of Platelet Membrane Glycoproteins IIb and IIIa: Intracellular Messengers in Platelet Activation  

**Associate Professors**  
*Adrienne D. Cox (90) Ras Family Oncogenes, Lipid Modification and Protein Function  
*H. G. Dohlman (122) Receptors and Signal Transduction: Mechanisms of Drug Desensitization  
Lee M. Graves (89) Growth Factor-Mediated Signal Transduction  
Currie Harper (23) Acute Lung Injury  
*Cam Patterson (115) Vascular Biology, Angiogenesis, and Protein Folding and Degradation  
John Sondek (100) X-Ray Crystallography and Transmembrane Signaling  

**Assistant Professors**  
Franck Polleux (125) Signaling Pathways in the Mammalian Cerebral Cortex  
David Sidrovek (111) Structure and Function of “Regulator of G-Protein Signaling” (RGS) Proteins  
JoAnn Terio (112) Internalization and Subcellular Trafficking of G-Protein-Coupled Receptor Activated Receptors (PARs)  

**Research Associate Professors**  
Philip L.Carl (59) DNA Replication and Repair, Cancer and Viral Chemotherapy  
Joseph Szychla (81) Regulation of Adenosine, Nucleoside and Nucleoside Analogs, Metabolism  

**Research Assistant Professors**  
Suresh K. Alahari (109) Integrin Associated Proteins and Antisense Therapeutics  
Gavin E. Arstel (118) Alcohol-Induced Liver and Pancreatic Injury; Oxidative Stress  
Laurie Betta (116) Structural Biology of G-Protein Signaling, X-ray Crystallography  
Bonita Blake (121) G-Protein Signaling in the Central Nervous System  
James T. McLaughlin (117) Structure and Function of Ion Channels  
Zhi Zheng (119) Hepatotoxicology, Renal Toxicology, Organ Transplantation
Adjunct Professors
Emmanuel J. Díberno Jr. (61) Neuropharmacology
James W. Purney (84) Second Messenger Signaling

Adjunct Associate Professors
Jose Boyer (79) Regulation of Signal Transduction Mechanisms
Kenneth S. Korach (85) Biochemistry and Biology of Steroid Hormone Receptors
Howard A. Rockman (108) Molecular Modeling and Cardiovascular Disease

Adjunct Assistant Professor
John F. O'Bryan (114) Signal Transduction by Trypsine Kinases, Role of Adaptor Proteins, Oncogenesis

Professors Emeriti
Hugh J. Burford
John T. Gatzy
Philip P. Hirsch
Tom S. Miya
Paul L. Munson
William Henry Pearlman
Doris T. Poole
Roy F. Talmage
Svein U. Toverud
*Joint faculty members

The Department of Pharmacology offers a program of study that leads to the degree of doctor of philosophy. The curriculum is individualized in recognition of the diverse backgrounds and interests of students and the broad scope of the discipline of pharmacology. The basic course requirements for the PhD degree include introductory and advanced courses in pharmacology and related programs in accord with the principal interest of the student in molecular pharmacology, neuropharmacology, or in toxicology. In addition, in order to satisfy the requirements of the department and The Graduate School, the student must pass written and oral doctoral examinations, write a dissertation based on original research, and submit to a final oral examination. Under special circumstances, the department will offer a program leading to the MS degree. The requirements are appropriate course work, a written comprehensive examination, a thesis based on original research, and a final oral examination.

The department offers a variety of research areas including: 1) Receptors and signal transduction; 2) Ion channels; 3) Neuropharmacology; 4) Cancer pharmacology; 5) Genes and gene therapy; and 6) Pharmacology of alcohol and drugs of abuse. The student is expected to begin independent research early in his or her training and to participate in an intensive program of research seminars. Close personal contact between preceptor and trainee is encouraged.

Research Facilities
Laboratory facilities and a wide variety of research equipment are available in the department, which is located primarily in the Mary Ellen Jones Building where it occupies approximately 26,000 square feet exclusive of classrooms and animal facilities. In addition, several faculty members are located in the Lineberger Comprehensive Cancer Center, the Thurston Bowles Alcohol Center, and the Neurosciences Hospital.

Assistantships and Other Student Aid
Financial assistance is provided to all students. The stipend is currently $21,500 per year. In addition, tuition, fees, and health insurance coverage are provided.

Requirements for Admission
The Department of Pharmacology will consider applications from interested students who have or expect to receive a bachelor's degree in a scientific discipline. Applications may be made at any time during the year, but consideration for fall admission is given to those sent by January 1.

Courses for Graduates
117 CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (PBIO 117) (Var). Prerequisite, undergraduate cell biology or biochemistry or permission of instructor. Comprehensive introduction to cell structure, function, and transformation. Fall. Cox, Jacobson, Lee, Mclean.

118 CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (PBIO 118) (Var). Prerequisite, undergraduate cell biology or biochemistry or permission of instructor. Comprehensive introduction to cell structure, function and transformation. Spring. Cox, Jacobson, Lee, Mclean.

202 PRINCIPLES OF PHARMACOLOGY AND TOXICOLOGY (TOXC 202) (5). Prerequisites, BIOL 100 and PHY 140, or their equivalents and permission of the instructor. Introduces students to the major areas of pharmacology and toxicology and serves as a basis for more advanced courses. Five lecture hours a week. Spring. McCarthy.

205 THE MOLECULAR PHARMACOLOGY OF CANCER (2). Prerequisites, advanced graduate or advanced undergraduate courses in biochemistry and molecular biology. This course deals with the molecular and cellular basis of antitumor and antiviral chemotherapy, with emphasis on novel approaches including immunotherapy, antisense oligonucleotides, and gene therapy. The course includes faculty lectures and student presentations. Fall. Kole.

207 ADVANCED TOXICOLOGY (TOXC 207) (3). Prerequisite, PBIO 202 or permission of the course director. Cellular and physiological basis of toxicity of environmental chemicals, with emphasis on inhalation toxicity, developmental toxicity, immunotoxicology, radiation toxicology, renal toxicology, and neurotoxicology. Three lecture hours a week. Fall. Toxicology: Swenberg.

211, 212 INTRODUCTION TO PHARMACOLOGICAL RESEARCH (Var). A course for first-year graduate students majoring in pharmacology. A series of research projects of limited scope, under the supervision of a different faculty member. Twelve laboratory hours a week. Fall and spring. Kole.

213 INTRODUCTION TO PHARMACOLOGICAL RESEARCH (Var). Prerequisites, PBIO 211 and 212. This is a continuation of Pharmacology 211 and 212. Six laboratory hours a week, first summer session. Kole.

214 INTRODUCTION TO PHARMACOLOGICAL RESEARCH (Var). Prerequisites, PBIO 211, 212, and 213. This is a continuation of Pharmacology 211, 212, and 213. Six laboratory hours a week, second summer session. Kole.

221 SEMINAR COURSES IN PHARMACOLOGY (1-3). This is a series of seminar courses dealing with advanced topics in modern molecular pharmacology based mainly on discussion of current literature.

221A RAS SUPERFAMILY PROTEINS AND SIGNAL TRANSDUCTION (2). Seminar/discussion course covering recent advances in the role of these proteins in signaling and growth. Fall. (Alternate years.) Der, Cox.

221B SIGNAL TRANSDUCTION (2). Seminar/discussion course on molecular aspects of the receptors, G-proteins, effector proteins, kinases, and phosphotases that mediate hormone, neurotransmitter, growth factor, and sensory signaling. Spring. (Alternate years.) Harden.

221C ADHESION RECEPTORS AND SIGNALING IN CANCER AND CV DISEASE (2). Examines the growing number of families of cell adhesion receptors and their role in biological processes including signal transduction, control of gene expression, hemostasis, cancer, neural development, immunobiology, and embryologic development. Spring. (Alternate years.) Juliani/Parise.
221D STRUCTURE AND FUNCTION OF ION CHANNELS (2).
Seminars/discussion course on the physiology, pharmacology, biochemistry, and molecular biology of ion channel proteins. Spring. (Alternate years.) Rosenberg, Oxford.

221E NEUROPHARMACOLOGY OF ALCOHOL AND SUBSTANCE ABUSE (3).
A lecture/discussion course on the biological bases of alcohol and substance abuse. Spring. (Alternate years.) Monrow.

221F GENE THERAPY: MEDICINE FOR THE TWENTY-FIRST CENTURY (2).
A seminar/discussion course on recent advances in targeted gene delivery and gene therapy. Spring. (Alternate years.) Samulski.

221G DRUG DISCOVERY AND DEVELOPMENT (2).
A seminar/discussion course on the research, development, and regulatory processes involved in bringing new drugs to clinical use. Spring. (Alternate years.) Carl.

221H PAIN AND ANALGESIA (2).
A lecture/discussion course on pain transmission and pain measurement. The neuropharmacological basis of pain modulation will be discussed. Fall. (Alternate years.) Maixner, Dykstra, Hollins, Light.

221I DISCOVERY BIOLOGY AND PHARMACOGENOMICS (2).
Lecture/discussion course covering a variety of aspects of new biological and computational technologies. The course is predominately in a lecture format with computer-based and literature assignments. Spring. (Alternate years.) Siderovski, Sondek.

221J PROTEIN KINASES AS TARGETS FOR NOVEL PHARMACOLOGICAL INHIBITORS (2).
A seminar/discussion course to evaluate the use of small molecule inhibitors of protein kinases from a structural and signal transduction perspective. Spring. (Alternate years.) Graves, G. Johnson.

222 CELLULAR AND MOLECULAR NEUROBIOLOGY I (NBIO 222) (Vac).
Lecture/discussion course on the physiology, pharmacology, biochemistry, and molecular biology of the nervous system. Topics include: function and structure of ion channels, neurotransmitter biosynthesis and release mechanisms, neurotransmitter receptors, and intracellular signaling pathways. Fall. Rosenberg.

223 CELLULAR AND MOLECULAR NEUROBIOLOGY II (NBIO 223) (Vac).
Lecture/discussion course on the physiology, pharmacology, biochemistry, and molecular biology of the nervous system. Topics include: function and structure of ion channels, neurotransmitter biosynthesis and release mechanisms, neurotransmitter receptors, and intracellular signaling pathways. Spring. Rosenberg.

250 DATA ANALYSIS FOR BIOMEDICAL SCIENCES (PATH 250) (TOXC 250) (1).
This largely self-study course will deal with basic statistical and quantitative methods for the analysis and interpretation of biomedical data. This course is required for pharmacology, toxicology, and pathology graduate students. Permission of instructor is required for other students. Fall. Nicholas.

290 SEMINAR IN NEUROBIOLOGY (BIOC 290) (NBIO 290) (PATH 290) (PHYS 290) (3).
Prerequisites: one graduate course in the biological sciences and permission of the director of the neurobiology program. An intensive consideration of selected topics and problems. Spring. Members of the neurobiology program.

301 RESEARCH IN PHARMACOLOGY (5 or more).
Prerequisite: permission of the staff. Fall, spring, and summer. Nicholas.

310 RESEARCH IN NEUROBIOLOGY (BIOC 310) (NBIO 310) (PATH 310) (PHYS 310) (PSTC 310) (BIOL 310) (3-12).
Prerequisite: permission of a staff member of the neurobiology program. Research in various aspects of neurobiology. Six to twenty-four hours a week. Fall and spring. Members of the neurobiology program.

330 SEMINAR IN RECENT ADVANCES IN PHARMACOLOGY (1).
Students meet as a group with faculty members to develop skills in critical reading and to summarize and discuss selected aspects of current pharmacological literature. Two hours a week. Fall and spring. Cox, Sondek.

331 SEMINAR IN GENERAL PHARMACOLOGY (1).
A series of weekly lecture-seminars by graduate students, faculty members, and visiting scientists on current research in pharmacology. One hour a week. Fall. Carl.

332 GRANT WRITING (2).
Prerequisites: PHCO 201 and permission of course director. A discussion course covering the elements of successful grant proposals and scientific ethics. Spring. Juliano.

391 THESIS FOR MASTER'S DEGREE (3 or more).
Prerequisite: permission of the staff. Fall, spring, and summer.

394 DOCTORAL DISSERTATION (3 or more).
Prerequisite: permission of the staff. Fall, spring, and summer.

SCHOOL OF PHARMACY

ROBERT A. BLOUIN, Dean

Professors
Robert A. Blouin, Effects of Disease (Infectious Disease and Trauma) on Altered Physiologic States (i.e., Aging and Obesity), and the Expression and Regulation of Drug Metabolizing Enzymes (i.e., Cytochrome P450, Glucuronosyl Transferase, and Glutathione Transferase)
William H. Campbell (83) Pharmacoeconomics, Pharmacy and Health Care Policy, Pharmacy Manpower
Dale B. Christensen (105), Pharmacy and Drug-Related Outcomes Research, Drug Policy, Patient Compliance, Pharmacoeconomics
Frederick M. Eckel (9) Exploration and Role Development of Pharmacist as Health Team Members
B. W. Hadziyia (19) Analysis of Drugs and Their Metabolic Degradation Products
Irish Hall (15) Anticancer Drug Mechanisms
Anthony J. Hickey (86) Pulmonary Drug Delivery, Aerosol Formulations
Harold Kohn (106) Organic, Medicinal, and Bio-Organic Chemistry, Mechanisms of Biochemical and Medicinal Processes, Synthesis and Investigation of Heterocyclic Compounds of Medicinal Interest
Kuo-Hsiung Lee (13) Medicinal Chemistry of Bioactive Natural Products and Synthetic Analogues Including Antitumor, Anti-AIDS, Antimalarial, Antipathic, Anti-inflammatory, Anti-arthritis and Antiviral Agents; Antifungal Antibiotics; Insect Antifeedants; Chinese Herbal Medicine
Gary M. Pollack (53) Pharmacokinetics and Pharmacodynamics of CNS Active Agents, Pharmacokinetic Model Development, Toxicokinetics
Dhiran R. Thakker (87) Mechanisms of Drug Transport, Pro-drug Strategies for Enhanced and Targeted Drug Delivery, Disposition of Macromolecules (e.g., Gene)

Associate Professors
Kenneth E. Basow (88) Design and Testing of Antiviral/Anticancer Drugs
Susan Blazek, Health Outcomes Assessment, Evaluation of Pharmaceutical Care Interventions, Patient Decision Making and Compliance with Therapeutic Regimens, Psychosocial Aspects of Chronic Illness
Raymond G. Booth (72) Ligand-Based Characterization of Brain Receptor Systems in Schizophrenia, Parkinson’s Disease, and Alzheimer’s Disease
Stephen M. Cainola (14) Evaluation of Pharmacy Service Delivery Models and Therapeutic Regimens in Ambulatory Care Settings
Moo J. Cho (79) Targeted Drug Delivery
J. Ed Hall (109) Development of Anti-Parasitic and Anti-Viral Agents
Timothy J. Ives (90) Ambulatory Care, Pharmacy Practice
Richard J. Kowalsky (26) Radiopharmaceuticals
Geleese M. Liney (58) Pharmacogenetics, Pharmacokinetics, and Pharmacodynamics of Antineoplastic Agents and Coagulation Products; Drug Metabolism
Gordon G. Liu (107) Pharmaceutical Economics, Medicare Reform, Medication Errors in the Elderly
J. Herbert Patterson (47) Pharmacokinetic Evaluation of Cardiovascular Drugs
A. Wayne Pitman (30) Hypertension, Clinical Pharmacokinetics, Cardiology and Drug Administration
Ralph H. Raasch (32) Infectious Diseases, Parenteral Nutrition
Robert F. Shrewsberry (39) Biopharmaceutics
Betsy L. Sleath (91) Provider-Patient Communication, Drug Utilization Review, Patient Compliance, Pharmacoeconomics
Philip C. Smith (85) Pharmacokinetics, Drug Metabolism
Alexander Troppa (81) Molecular Modeling, Computer-Assisted Drug Design, Molecular Dynamics of Proteins, Protein Folding
Dennis M. Williams (92) Pharmacokinetics and Pharmacodynamics, Inhalation Therapy for Pulmonary Disease, Hypertension

Assistant Professors
Richard A. Hansen, Prescription Drug Insurance, Pharmacological Outcomes, Pharmacoeconomics, Direct-to-Consumer Advertising
Michael Jartsef (112) Telomerase and High-Throughput Drug Discovery
Angela Kashuba (114) Pharmacogenetics, Pharmacokinetics and Pharmacodynamics of Antiretroviral Agents, Influence of Cytokines on Drug-Metabolizing Enzymes
Jeffrey P. Krue (110) Intracellular Trafficking, Subcellular Drug Delivery, Podrug Strategies
Andrew Lee (111) Structural Biology, NMR Spectroscopy, Protein Dynamics, Biophysical Dissection of Proteins and Protein-Ligand Interactions
Jian Liu (108) Carbohydrate Biochemistry, Structural and Functional Relationships of Hepanen Sulfate
Rishi Liu (113) Proteomics and Functional Genomics
Jo Ellen Rodgers, Cardiovascular and Critical Care Drug Therapy
Scott R. Smith (101) Outcomes Research, Pharmacy Administration

Research Assistant Professor
Susan Morris-Natschke (102) Design, Synthesis, and Structural Optimization of Antiviral Phospholipids

Clinical Professors
Gary M. Armstrong, Public Policy, Deception in Advertising, Sales Force Management
Allen E. Caro, Clinical Drug Trials, Pediatric Diseases, and Pulmonary Medicine
Peter Gal, Pediatric Pharmacotherapy
J. Heyward Hall, Cardiovascular Pharmacology, Clinical Pharmacokinetics, Study Design and Analysis
Arnold D. Kaluzny, Organizational Behavior, Innovation Diffusion, Medical Care

Clinical Associate Professors
Robert D. Dupuis, Clinical Pharmacokinetics, Transplantation
Deborah Montague, Cardiovascular Drug Therapy
J. Robert Powell, Clinical Pharmacokinetics and Drug Metabolism
William N. Zelman, Health Finance

Clinical Assistant Professors
Kimberly H. Deloach, Educational Media and Instructional Design
Colleen Gresham, Drug Utilization Review
Jo Ellen Rodgers, Cardiovascular Therapy and Clinical Trials

Adjunct Professors
Arnold Brost, Synthesis and Study of Biologically Active Natural Products as well as Drugs Useful in Malaria Chemootherapy
Patricia Bush, Pediatric and Adolescent Health
Michael Cory, Design, Synthesis, and Binding Studies of DNA Intercalating Agents, Quantitative Structure-Activity Relationships, Computer Applications to Drug Design
Barry Goto, Drug Resistance in Cancer Cells

Arnold Kaluzny, Health Policy
Andrew T. McPhail, X-ray Crystal Structure Analysis of Naturally Occurring Compounds and Their Analogs, Synthesis and Structural Studies of Boron-Containing Amino Acids and Peptide Analogs
James Swerbrick, Physical Pharmacy, Biopharmaceutics
Hugh T. Tison, Pharmacoeconomics
Raymond J. Townsend, Pharmacoeconomics

Adjunct Associate Professors
Phillip Carl, Mechanisms of Drug Resistance in Cancer Chemotherapy and in Developing New Pharmacological Approaches to This Problem by Studying the Mechanisms of Genetic Recombination and Gene Amplification
Kun Chae, Receptor Binding Involving Estrogen and Other Synthetic Estrogenic Compounds
James Crow, Pulmonary and Hematologic Inflammation
Donald K. Knight, Pharmaceutical Industry
Thomas R. Konrad, Primary Care, Health Services Research
John E. Paul, Pharmacoeconomics, Health Policy, Pharmacoeconomics
Sue Tolleson-Rinehart, Health Policy

Adjunct Assistant Professors
Kenneth R. Brouwer, Drug Metabolism; Pharmacokinetics
Michael O. Calloway, Mental Health, Substance Abuse
Robert A. Casper, Evaluation and Development of Polymeric Materials for Use in Controlled Drug Delivery and Novel Primary Drug Packaging
Lawrence L. Gan, Drug Metabolism, Pharmacokinetics
William Gillespie, Theoretical and Computer Analysis of Pharmacokinetic Systems
Keith A. Johnson, Research and Development in Chemical Engineering, Biloid and Interface Science, Aerosol Science, and Pharmaceutical Science
Stanley Levy, Cosmetic Science and Technology
Alan Pur, Pharmacaceutics
Rukeni Rajagopalan, Pharmacoeconomics
Michael Van Oort, Inhalation Product Development
Chris Wheeler, Design and Implementation of Data Management Systems for Drug Discovery Efforts

Professors Emeriti
Khalid S. Ishaq
Tom S. Miya
G. Joseph Norwood
Claude Plantadosi
LeRoy D. Werley Jr.
Jack K. Wier

The School of Pharmacy offers graduate curricula leading to the master of science and doctor of philosophy degrees in pharmaceutical sciences. Graduate study may be concentrated in disciplinary areas represented by the divisions of drug delivery and disposition, medicinal chemistry and natural products, pharmaceutical policy and evaluative sciences, and pharmacoepidemiology. Instruction emphasizes contemporary research methods and results and is given by means of lectures, recitations, and seminars combined with intensive laboratory-based research. The excellent rapport that exists between schools, departments, institutes, and centers within the University facilitates interdisciplinary collaborative research by graduate students and faculty. The graduate degree programs also benefit from faculty affiliations with GlaxoSmithKline, Inc., the Research Triangle Institute, Duke University, Bowman Gray School of Medicine, and many other organizations in the Research Triangle Park area.

The School of Pharmacy occupies Beard Hall, which is located on the Health Sciences campus, together with the schools of dentistry, medicine, nursing, and public health. The Health Sciences Library has an outstanding
collection of books and journals as well as computer/support services. Appropriate use also is made of the library and laboratory facilities in other University departments.

**Drug Delivery and Disposition**

Drug delivery and disposition represents interdisciplinary specialties encompassing a range of scientific endeavors, including (1) the design, fabrication, evaluation, use of, and delivery strategies for dosage forms; (2) elucidation of the behavior of pharmacologic agents in biologic systems; (3) determination of the ability of pharmacologic agents to reach the relevant site of biologic effect; and (4) determination of the time course of biologic activity. These areas of specialization represent critical steps in the development of new therapeutic agents, the evaluation of new and existing drugs, and the optimal clinical use of pharmacologic agents.

Students in the Division of Drug Delivery and Disposition are required to participate in a common core of entry-level graduate courses. This core provides a broad perspective of the pharmaceutical sciences, as well as an appreciation for how different subdisciplines interact. Building upon this core, students then specialize, through advanced coursework and research, in one of two areas of concentration within the division: pharmacokinetics/pharmacodynamics or targeted drug delivery. Many dissertation projects are collaborative in nature and rely upon interactions with faculty in other divisions of the School of Pharmacy, as well as with colleagues in the School of Medicine, the Department of Chemistry, or at pharmaceutical companies or institutions located in Research Triangle Park, NC.

**Medicinal Chemistry and Natural Products**

Medicinal chemistry is an interdisciplinary science. It applies and extends the basic concepts of chemistry, biochemistry, and pharmacology to the investigation of biomedical problems. Areas of study include structure-activity relationships, drug-receptor interactions, and synthetic drug design. Studies also may include biochemical mechanisms of drug interaction and drug toxicity, isolation of compounds from natural sources, and development of analytical methods that apply to all of the above areas of research. Specific research programs within the division focus on isolation of bioactive natural products and synthesis of related analogs, computational chemistry and molecular modeling, neurobiological proteins as targets for drug design, NMR-based techniques to study proteins, proteomics, and nuclear protein enzymology.

Medicinal chemistry is a multidisciplinary field that requires understanding of organic chemistry and related biomedical disciplines such as biochemistry, molecular biology, structural biology, pharmacology, and physiology. It interfaces with each of these disciplines and with the use of current methodologies, focusing on learning disease pathways and how drugs function. Research techniques including synthesis, spectroscopy, biochemistry, molecular biology, and computational chemistry are linked to identify new therapeutic agents, targets, and the pathways by which drugs express their functions. Along with other important facilities, the division has specialized laboratories that conduct cutting-edge research. Focus groups include cancer chemotherapy, computer-aided drug design, enzymology, glycochemistry, molecular modeling, natural products, neurochemistry, parasitology, and structural biology.

MS and PhD programs are offered.

**Pharmaceutical Policy and Evaluative Sciences**

Research and education in pharmaceutical outcomes research in the Division of Pharmaceutical Policy and Evaluative Sciences emphasizes an interdisciplinary approach to solving problems of developing, evaluating, and distributing pharmaceutical products and services. Faculty research interests and course offerings reflect this interdisciplinary orientation.

Education and research in the division draws heavily upon expertise in numerous fields such as health policy, epidemiology, economics, and health behavior. PPES emphasizes research in evaluation of pharmaceutical care and/or pharmaceutical technologies. This includes assessment of processes and outcomes of care from economic, humanistic, and clinical perspectives. Assessing and valuing outcomes in the pharmaceutical area is a vital part of the broader mission to improve the performance of the health care system. This is often exemplified in the formation and evaluation of drug policies.

**Pharmacotherapy**

The Division of Pharmacotherapy, in conjunction with the Division of Drug Delivery and Disposition, offers a PhD program in the pharmaceutical sciences with a focus on experimental therapeutics. The goal of this program is to develop an individual who is capable of conducting translational research and integrating biomedical and pharmaceutical sciences while maintaining expertise as a clinician. The focus of the program is the development of basic research skills that facilitate evaluation of mechanisms of disease processes and drug therapy. In addition, ongoing clinical experience and advanced course work in pharmacotherapy are integral parts of this program. Students work closely with faculty members who play an active role in the In Vitro In Vivo Correlates of Drug Disposition Scholarly Program, which utilizes preclinical models of absorption, distribution, metabolism, and elimination to predict the in vivo disposition of therapeutic agents. Strong therapeutic areas include oncology, infectious diseases/HIV, cardiology, and neuropsychopharmacology. Core course work includes molecular biology, biostatistics, analytical methodology, and advanced pharmacokinetics/pharmacodynamics. Research projects must include an in vitro and an in vivo component. The student's dissertation committee will include faculty members from both divisions of pharmacotherapy and drug delivery and disposition.

**Requirements for Admission**

Applicants who have completed a standard collegiate curriculum in pharmacy, chemistry, biochemistry, biology, zoology, or in an allied field in the University, or in other universities or colleges having curricula acceptable to the UNC-Chapel Hill Graduate School are eligible for admission to the School of Pharmacy graduate program. Applications for admission must be supported by scores on the Graduate Record Examination, letters of recommendation, and a statement of personal goals as they relate to graduate study at UNC-Chapel Hill School of Pharmacy.

The UNC-Chapel Hill Graduate School online application (gradschool.unc.edu) is the preferred means of applying for admission. Inquiries concerning admission to programs in the pharmaceutical sciences may be directed to the Office of Graduate Education and Scholarship, CB# 7360, 102 Beazell Hall, Chapel Hill, NC 27599-7360.

**Graduate Assistantships and Fellowships in the School of Pharmacy**

Graduate teaching and research assistantships in the School of Pharmacy provide a stipend of $16,500 for twelve months' service. All awards are given on a competitive basis with consideration given to the applicant's academic record and Graduate Record Examination scores. Information concerning these assistantships, fellowships, and traineeships may be obtained by writing directly to the Office of Graduate Education and Scholarship, School of Pharmacy.
DRUG DELIVERY AND DISPOSITION

Courses for Graduates and Advanced Undergraduates

107 NUCLEAR PHARMACY 1 (3). Prerequisites, PHCY 61 and permission of the instructor. Basic principles of radiation physics, instrumentation, radiation safety, and radiation biology. Fall. Kowalski.

108 NUCLEAR PHARMACY 2 (3). Prerequisites, DDDD 107 and permission of the instructor. Chemical principles underlying the preparation, regulatory control, and use of radioactive drugs in nuclear medicine. Spring. Kowalski.

155 DRUG METABOLISM (3). Prerequisite, permission of the instructor. Introduction to the use of concepts, chemistry, enzymology, and techniques in drug metabolism for the design and development of safe and effective therapeutic agents. Spring. (Odd years.) Thakker.

156 PRINCIPLES OF PHARMACOKINETICS (3). Prerequisites, PHCY 72 or equivalent, permission of the instructor. Introduction to pharmacokinetic theory, mathematical model development, and data analysis techniques. Fall. (Odd years.) Pollack, Brouwer.

165 ADVANCES IN DRUG DELIVERY (4). Prerequisites, BIOC 100 or equivalent, PHCY 51, 61, or equivalents, CHEM 130 or equivalent, permission of the instructor. Elucidation of physicochemical and transport properties of the drug molecule as the determinant of method and route of drug delivery. Fall. (Even years.) Cho.

171 INTRODUCTION TO RESEARCH (1-3). Prerequisite, permission of the instructor. Students participate in research projects designed to introduce them to research opportunities in the pharmaceutical sciences. Fall, spring, and summer. Staff.

191 PHARMACEUTICAL ANALYSIS (1). Prerequisite, permission of the instructor. Introduction to quantitative instrumental analysis in pharmaceutics. One lecture hour a week. Fall. (Even years.) Smith.

Courses for Graduates

253 SPECIAL TOPICS IN DRUG DELIVERY AND DISPOSITION (Var.). Prerequisite, permission of the instructor. A lecture and/or laboratory course designed to present new concepts and innovations in the area of drug delivery and disposition. Fall and spring. Staff.

256 ADVANCED PHARMACOKINETICS/PHARMACODYNAMICS (4). Prerequisites, DDDD 156, permission of the instructor. Advanced treatment of contemporary pharmacokinetic theory and application, with emphasis on model development, analytical approaches to parameter estimation, and experimental design/data analysis. Spring. (Even years.) Pollack, Brouwer.

265 TRENDS IN DRUG DELIVERY RESEARCH (3). Prerequisite, DDDD 165. An interactive course in which students actively participate by critical evaluation and discussion of current literature in the field of drug delivery. Spring. (Odd years.) Staff.

361 SEMINAR (1). Fall and spring. Staff.

391 RESEARCH (Var.). Graduate course consisting of laboratory-based research, conferences with the major professor, and library investigations relating to research. One conference and nine laboratory hours a week per course. Fall and spring. Staff.

393 MASTER'S THESIS (3). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3). Fall and spring. Staff.

MEDICINAL CHEMISTRY

Courses for Graduates and Advanced Undergraduates

121 CHEMISTRY OF NATURAL PRODUCTS (3). Prerequisites, CHEM 166 or equivalent and permission of the instructor. An introduction to the isolation, structure determination, biosynthesis, and synthesis of bioactive natural products; emphasis on aspects relating to medicinal chemistry. Three hours a week. Spring or fall. Lee, staff.

141 INTRODUCTION TO RESEARCH IN MEDICINAL CHEMISTRY (1-3). Prerequisites, CHEM 61, 62, permission of the instructor. One conference and three or more laboratory hours a week. Fall and spring. Staff.

151 BIOMEDICAL CHEMISTRY (3). Prerequisites, MEDC 68, 69, or permission of the instructor. Principles of genetic regulation and disease that alter drug disposition. Adverse effects of drugs on the regulatory mechanisms of cell metabolism, immunodefense, reproduction, and disease states. Fall or spring. Staff.

153 BASIC CONCEPTS OF CANCER AND ITS THERAPY (3). Prerequisites, PHCY 52, 62 or BIOC 130, PHCO 55, 56, 216, PHPR 76, 77, PHTY 93, or equivalents. The etiology, pathogenesis, types, chemotherapy and immunotherapy, detection, prevention, management, therapy, and adverse effects of cancer in man are discussed. Three lecture hours a week. Fall or spring. Hall.

156 BIOINFORMATICS (1). This course covers applications of modern information theory and information technologies to biomolecular systems. The core of this course is an overview and practical applications of methods and techniques for the analysis of nucleic acid and protein sequences, sequence-structure, and sequence-function correlations.

Courses for Graduates

168 CONCEPTS OF DRUG DISCOVERY AND DESIGN (3). Prerequisites, CHEM 61, 62, 161, BIOC 130, PHTY 140. Introduction to the principles of design and discovery of effective therapeutic agents. Concepts of physical chemistry, pharmacokinetics and disposition, and analytical techniques in the context of drug design. Spring. Staff.

202 MEDICINAL CHEMISTRY TUTORIAL (TBA). Tutorial in Medicinal Chemistry based upon variable credit taken in other appropriate courses. Fall and spring. (On request.)

241 SPECIAL PROBLEMS IN MEDICINAL CHEMISTRY (1-3). Prerequisites, CHEM 61, 62, and permission of the instructor. Fall and spring. Staff.

243 SELECTED TOPICS IN SYNTHETIC ORGANIC MEDICINAL CHEMISTRY (2). Prerequisite, CHEM 160 or equivalent. Discussions from current literature on the strategy and techniques involved in the synthesis of drug molecules. Two lecture hours a week. Spring and fall. Lee, staff.

244 SELECTED TOPICS IN NATURAL PRODUCTS (2). Prerequisites, CHEM 166 and 168. Discussions of important recent developments in the chemistry of natural products of biomedical significance. Spring. Lee, staff.

270 ADVANCED MEDICINAL CHEMISTRY (2). Prerequisites, MEDC 168, 169; or equivalents and permission of the instructor. Student presentations and discussion of pertinent scientific literature. Fall. Staff.

275 MOLECULAR MODELING (3). Prerequisites, MATH 31-32, CHEM 181, permission of the instructor. Introduction to Computer-Assisted Molecular Design (CAMD) of small molecules. Emphasis on the practical use of molecular and quantum mechanics programs (MM2, MINDO, GAUSSIAN). Two lecture and three to four laboratory hours a week. Fall. Trobsha.

276 MACROMOLECULAR MODELING (3). Prerequisites, MATH 31-32, CHEM 130 or equivalent. Introduction to modeling and simulation techniques for biological macromolecules. Two lecture and three to four laboratory hours per week. Spring. Trobsha.
361 SEMINAR (1). Fall and spring.

391 RESEARCH IN MEDICINAL CHEMISTRY (1-5). One conference and nine laboratory hours a week per course. Fall or spring. Staff.

393 MASTER'S THESIS (3). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3). Fall and spring. Staff.

PHARMACEUTICAL POLICY AND EVALUATIVE SCIENCES

Courses for Graduates

180 PHARMACEUTICAL RESEARCH, DEVELOPMENT, AND MARKETING (3). This course acquaints students with the internal and external environments influencing decision making and management in the discovery, development, and marketing of new pharmaceutical products. The course focuses on the pharmaceutical industry with invited lectures by experienced scientists, regulators, policy analysts, and corporate managers from the industry. Three lecture hours a week. Spring. (Even years.) Smith.

190 SELECTED TOPICS IN PHARMACEUTICAL POLICY AND EVALUATIVE SCIENCES (1-3). A reading and/or special projects course for both undergraduate and graduate students interested in pursuing additional work in the administrative and social sciences as they pertain to pharmacy practice. One to three hours a week. Spring and fall. Staff.

203 METHODS IN PHARMACEUTICAL OUTCOMES RESEARCH (3). Includes formulating a research question, stating aims and hypotheses. Students are introduced to formulating a research strategy to write the background of the protocol, developing a research methodology, addressing measurement issues, selecting an appropriate design, and performing statistical analysis and power calculations. Three lecture hours a week. Fall. Staff.

251 PHARMACEUTICAL ECONOMICS (3). This course focuses on the empirical investigation of the economic and health impact of major pharmaceutical policies, regulations, and market conditions, prescription drug use, and pharmaceutical care. Spring. Liu.

252 ECONOMIC EVALUATION OF HEALTH CARE TECHNOLOGY (3). An investigation of the theory, methods, and applications of technology in health care. Covers basic methods used to identify policy issues, structure a technology assessment study, measure and summarize health outcomes, estimate value to patients or to the public, identify resources used, and estimate costs. Students learn to construct and test mathematical models predicting population-based outcomes and costs. Fall. Staff.

253 SOCIAL AND BEHAVIORAL ASPECTS OF PHARMACEUTICAL USE (2). This course will draw upon medical sociology and psychology to familiarize students with peer theories, research, measures, and design issues relevant to conducting social/behavioral research in pharmaceutical use. Fall. Sleath.

254 INFORMATICS: USE OF LARGE HEALTH CARE DATABASES (2). An interdisciplinary course providing practical training in the analysis of large, secondary databases containing physician, hospital, and pharmaceutical data. Course topics include data preparation, algorithm development, quality control, and data set limitations. Fall. (Odd years.) Smith.

255 PATIENT-REPORTED OUTCOMES: THEORY, METHODS, AND APPLICATIONS (3). Course examines theoretical and methodological issues related to the assessment of patient reported outcomes, including health-related quality of life, in pharmaceutical research. Current and potential applications are highlighted. Spring. (Even years.) Blumberg.

361 SEMINAR (1). Fall and spring. Staff.

391 RESEARCH IN PHARMACEUTICAL POLICY AND EVALUATIVE SCIENCES (1-6). Consists of laboratory work, conferences with the major professor, and library investigations relating to research. Fall and spring. Staff.

393 MASTER'S THESIS (3). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3). Fall and spring. Staff.

PHARMACOTHERAPY

Courses for Graduates and Advanced Undergraduates

185 CARDIOVASCULAR PHARMACY (3). Provides an in-depth discussion of the pharmacotherapy of major cardiovascular diseases such as hypolipidemia, hypertension, ischemic heart disease, heart failure, and arrhythmias. Fall. Paterson.

200 ADVANCED PHARMACOTHERAPY (3). A modular approach to advanced level pharmacotherapy. Course work using the Pharmacotherapy Self Assessment Program (PSAP) aimed at improving clinical skills and reviewing standards of practice. Fall and spring. Lindley.

201 ADVANCED CLINICAL PHARMACY (3). Discussions, workshops, and lectures to develop the student's skills and abilities to make therapeutic recommendations, utilize drug literature, educate patients and health professionals, and record observations, plans, and actions in a problem-oriented record. Fall and spring. Lindley.

210 THE DEVELOPMENT AND CLINICAL INVESTIGATION OF DRUGS (2). Includes preclinical drug safety evaluation, preclinical pharmacology, design of protocols for Phases I-IV, FDA guidelines for clinical study, preparation of study plan, statistics in clinical trials, data analyzing, and FDA interactions with industry. Fall. Cata.

211 DESIGN AND ANALYSIS OF CLINICAL DRUG TRIALS (2). Discussion of approaches to data analysis of clinical drug studies. Common study designs and their implementation are reviewed. Two lecture hours a week. Spring. Staff.

249 HOSPITAL PHARMACY AND THE HOSPITAL ORGANIZATION (3). This course covers the principles in health care delivery and their impact on the role of the hospital. Students discuss the hospital as an organized unit for the delivery of health care and review ways in which the pharmacist might contribute to the hospital's role. Fall. Eckel.

250 PRINCIPLES OF PHARMACY PRACTICE (3). Prerequisites, PHPR 249. Students discuss the modern role of the hospital pharmacist and how the role integrates progressive management with innovative services. The problems with implementing these programs are evaluated. Three lecture hours a week. Spring. Eckel, Sawyer.

251 CASE STUDIES IN INSTITUTIONAL PHARMACY PRACTICE I: PERSONAL DEVELOPMENT AND HUMAN RESOURCE MANAGEMENT (2). Prerequisites or corequisites, PHPR 249 and 250, permission of the instructor. Lecture, background readings, analysis of case studies and group discussions regarding contemporary issues in personal development and personnel management pertinent to pharmacy services in inpatient and ambulatory health care facilities. Two lecture hours a week. Fall. Cailoa.

252 CASE STUDIES IN INSTITUTIONAL PHARMACY PRACTICE II: FINANCIAL AND OPERATIONS MANAGEMENT (2). Prerequisites or corequisites, PHPR 249, permission of the instructor. Lecture, background readings, analyses of case studies, and group discussions regarding contemporary issues in financial and operations management pertinent to pharmacy services in inpatient and ambulatory health care facilities. Two lecture hours a week. Spring. Johnston.

361 SEMINAR (1). Fall and spring. Staff.
391 RESEARCH IN PHARMACY PRACTICE (1-5). Consists of conferences with major professor, library, laboratory, and/or field investigations relating to research. Professor in charge is responsible for the assignments and approval of the subject and character of the degree paper. Staff.

394 DOCTORAL DISSERTATION (3). Fall and spring. Staff.

PHARMACEUTICAL SCIENCES (INTERDISCIPLINARY)

192 APPLIED PHARMACEUTICAL STATISTICS (3) Application of statistical analysis concepts and tools including probability, statistical inference, and regression analysis. Experimental design and statistical modeling approaches appropriate to common pharmaceutical research scenarios.

195 RESEARCH METHODS (2). Overview of the research process, including hypothesis testing, scientific writing, construction of research proposals and research ethics. Fall. Staff.

DEPARTMENT OF PHILOSOPHY
GEOFFREY SAYRE-MCCORD, Chair

Professors
Donit Bar-On (29) Philosophy of Language, Philosophy of Mind, Epistemology
Bernard Bovill (26) Social and Political Philosophy, African American Philosophy
Don J. Garrett (36) History of Modern Philosophy, Metaphysics
Thomas E. Hill Jr. (24) Ethics, Political Philosophy
Marc Lange (44) Philosophy of Science, Metaphysics, Epistemology
Douglas C. Long (8) Philosophy of Mind, Ethics, Epistemology
William G. Lycan (22) Philosophy of Mind, Philosophy of Language, Epistemology
Douglas MacLean (38) Moral Theory, Social and Political Philosophy
Stanley Munsch (9) Philosophy of Mind, Epistemology, Cognitive Science
Gerald J. Postema (20) Legal Philosophy, Political Philosophy, Ethics
C. D. C. Reeve (39) Ancient Philosophy, Metaphysics, Moral Psychology, Ethics
Michael D. Resnik (11) Logic, Philosophy of Mathematics, Decision Theory
Jay F. Rosenberg (12) Epistemology, Metaphysics, Recent Analytic Philosophy
Keith Simmons (27) Logic, Philosophy of Language, Philosophy of Mind
Susan Wolf (40) Moral Theory and Moral Psychology

Associate Professor
Jesse Prinz (42) Philosophy of Mind, Cognitive Science

Assistant Professors
Thomas Hofweber (45) Metaphysics, Philosophy of Language, Epistemology, Philosophy of Mathematics
Ram Neta (43) Epistemology, Philosophy of Mind
John T. Roberts (37) Philosophy of Science, Philosophy of Physics, Metaphysics

Lecturers
Warren A. Nord (34) Philosophy of Religion, Philosophy of Education
Jeanette M. Bovill (33) Social and Political Philosophy, Feminism

Professors Emeriti
Edward Galligan
Stanley Munsch
George Schlesinger
Richard A. Smyth
Robert D. VanC
Richard Zaffron

The graduate courses in philosophy are designed to present and discuss classics, current literature, and basic problems; to stimulate critical and original philosophical thought; and to prepare students for college and university positions in philosophy.

The Department of Philosophy offers programs of study leading to the degrees of master of arts and doctor of philosophy. Prerequisite for admission to graduate work in the department is a BA degree or equivalent, normally with a major in philosophy, with courses in logic, ethics, and anc.

Candidates for the master's degree must satisfactorily complete thirty semester hours of graduate work. They are normally required to participate in a first-year program including PHIL 200 and, for students intending to proceed to the doctorate, PHIL 101; there may be adjustments with the consent of the department. Successfully passing a written comprehensive examination and completing an MA thesis are conditions for receiving the degree of master of arts.

Candidates for the doctoral degree must satisfactorily complete fifty-four semester hours of graduate work, including three hours of PhD dissertation credit.

The candidate for the degree of doctor of philosophy must pass three examinations. First, the student must pass the comprehensive examination for the degree of master of arts mentioned above. Second, there is the Admission to Candidacy examination, which consists of a written general portion and a special oral portion. The written portion, normally taken in the spring term of the third year, is in the student's field of specialization. The oral portion tests the feasibility of the dissertation proposal and is normally taken in the fall term of the fourth year. Finally, there is an oral defense of the completed dissertation. For further details on degree requirements, see the Graduate Degree Requirements section of this catalog.

The department offers several noncredit fellowships. These include a Graham Keran Fellowship and the Horace Williams, Mary Taylor Williams, and Bertha Colton Williams Fellowships. The department has available teaching assistantships with stipends of $12,500. Also, The Gradant Graduate School offers a variety of fellowships and assistantships with stipends up to $18,000 that are open to students in philosophy.

The department maintains close relations with the Department of Philosophy at Duke University. Graduate students in either institution may register for credit in graduate courses or seminars at the other institution for a nominal fee and without special matriculation. Combined library facilities are available to students at each institution.

Courses for Graduates and Advanced Undergraduates
(Prerequisite: one course below 100 or consent of the instructor.)

101 SYMBOLIC LOGIC (LING 194) (3). Fall. Resnik, Simmons.


103 PHILOSOPHY OF ART (3). Fall or spring.

104 HEGEL, MARX, AND THE PHILOSOPHICAL CRITIQUE OF SOCIETY (3). Fall or spring. Postema.

105 POLITICAL PHILOSOPHY FROM HOBBES TO ROUSSEAU (3). Fall or spring. Bovill.

106 PHILOSOPHY OF MATHEMATICS (3). Prerequisite, PHIL 101 or equivalent background in logic or mathematics. Fall or spring. Resnik, Simmons.

107 PHILOSOPHY, HISTORY, AND THE SOCIAL SCIENCES (3). Fall or spring.

108 PHILOSOPHY OF NATURAL SCIENCES (3). Fall or spring. Roberts.

109 PHILOSOPHICAL PROBLEMS IN PSYCHOLOGY (3). Fall or spring.

110 PHILOSOPHY OF LANGUAGE (LING 110) (3). Fall or spring. Lycan, Bar-On.
111 ADVANCED SYMBOLIC LOGIC (3). Fall or spring. Resnik, Simmons.

112 CONTEMPORARY MORAL PHILOSOPHY (3). Fall or spring. Hill, Sayre McCord, Wolf.

113 PHILOSOPHY OF LAW (3). Fall or spring. Posema.

114 THE BEGINNINGS OF ANALYTIC PHILOSOPHY (3). Fall or spring. Rosenberg, Lycan.

115 FOUNDATIONS OF MATHEMATICS (3). Fall or spring. Resnik.

116 CURRENT ISSUES IN ANALYTIC PHILOSOPHY (3). Fall or spring. Bar-On, Lycan, Reeve, Rosenberg.

117 PHILOSOPHY OF MIND (3). Fall or spring. Bar-On, Lycan.

120 CONTEMPORARY MORAL AND SOCIAL PROBLEMS (3). Fall or spring. B. Boxill, Hill, MacLean, Sayre McCord.

121 SPACE AND TIME (PHYS 113) (3). Spring. Roberts.

130 RECENT DEVELOPMENTS IN POLITICAL PHILOSOPHY (3). Spring. Postema, Boxill, MacLean.

142 PHILOSOPHY IN LITERATURE (CMPL 142) (3). Fall or spring. Reeve.

145 HISTORY OF AESTHETICS (CMPL 145) (3). Spring.

150 PLATO (3). Fall or spring. Reeve.

151 ARISTOTLE (3). Fall or spring. Reeve.

152 TOPICS IN MEDIEVAL PHILOSOPHY (RELI 132) (3). Spring.

153 CONTINENTAL RATIONALISM (3). Fall or spring. Garratt.

154 BRITISH EMPIRICISM (3). Fall or spring. Garratt, Sayre-McCord.

155 KANT (3). Fall or spring. Rosenberg, Hill.

156 HEGEL (3). Fall or spring. Postema.

158 EXISTENTIALISM AND PHENOMENOLOGY (3). Fall or spring.

159 TOPICS IN AMERICAN PHILOSOPHY (3). Fall or spring.

178 HEALTH CARE, SCIENCE, AND PHILOSOPHY (PHYT 178) (3). Fall. Mitchell.

190 SET THEORY AND LOGIC (3). Fall or spring. Resnik, Simmons.

**Courses for Graduates**

200 PROTO-SEMINAR IN PHILOSOPHY (3).

205 ADVANCED STUDIES IN SYSTEMATIC PHILOSOPHY (3).

210 ADVANCED STUDIES IN ANCIENT PHILOSOPHY (3).

215 ADVANCED STUDIES IN MEDIEVAL PHILOSOPHY (3).

220 ADVANCED STUDIES IN MODERN PHILOSOPHY (3).

225 ADVANCED STUDIES IN NINETEENTH-CENTURY PHILOSOPHY (3).

230 ADVANCED STUDIES IN METAPHYSICS (3).

235 ADVANCED STUDIES IN EPISTEMOLOGY (3).

240 ADVANCED STUDIES IN PHILOSOPHY OF MIND (3).

245 ADVANCED STUDIES IN PHILOSOPHY OF LANGUAGE (3).

250 ADVANCED STUDIES IN PHILOSOPHY OF SCIENCE (3).

255 ADVANCED STUDIES IN PHILOSOPHY OF LOGIC (3).

260 ADVANCED STUDIES IN MORAL THEORY (3).

265 ADVANCED STUDIES IN VALUE THEORY (3).

270 ADVANCED STUDIES IN POLITICAL PHILOSOPHY (3).

275 ADVANCED STUDIES IN PHILOSOPHY OF LAW (3).

280 ADVANCED STUDIES IN FEMINISM (3).

290 COLLOQUIUM SERIES SEMINAR (3).

300 PRE-DISSERTATION SEMINAR IN PHILOSOPHY (3).

305 RESEARCH SEMINAR IN SYSTEMATIC PHILOSOPHY (3).

310 RESEARCH SEMINAR IN ANCIENT PHILOSOPHY (3).

315 RESEARCH SEMINAR IN MEDIEVAL PHILOSOPHY (3).

320 RESEARCH SEMINAR IN MODERN PHILOSOPHY (3).

325 RESEARCH SEMINAR IN NINETEENTH-CENTURY PHILOSOPHY (3).

330 RESEARCH SEMINAR IN METAPHYSICS (3).

335 RESEARCH SEMINAR IN EPISTEMOLOGY (3).

340 RESEARCH SEMINAR IN PHILOSOPHY OF MIND (3).

345 RESEARCH SEMINAR IN PHILOSOPHY OF LANGUAGE (3).

350 RESEARCH SEMINAR IN PHILOSOPHY OF SCIENCE (3).

355 RESEARCH SEMINAR IN PHILOSOPHY OF LOGIC (3).

360 RESEARCH SEMINAR IN MORAL THEORY (3).

365 RESEARCH SEMINAR IN VALUE THEORY (3).

370 RESEARCH SEMINAR IN POLITICAL PHILOSOPHY (3).

375 RESEARCH SEMINAR IN PHILOSOPHY OF LAW (3).

380 RESEARCH SEMINAR IN FEMINISM (3).

390 CURRENT RESEARCH GROUP SEMINAR (3).

393 MASTER'S THESIS

394 DOCTORAL DISSERTATION

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**DIVISION OF PHYSICAL THERAPY**

DARLENE K. SEKERAK, Director

**Professors**

Carol A. Giuliani (28) Neural Basis of Motor Control, Developmental Motor Control, Movement Analysis

Michael T. Gross (29) Biomechanics, Sports Medicine and Orthopedics, Research Design

Darlene K. Sekerak (25) Pediatrics, Health Policy, Research Utilization

**Associate Professors**

Karen L. McCulloch (39) Adult Neurologic Dysfunction, Neuromuscular Rehabilitation, Balance and Postural Control

Marie A. Reilly (35) Early Human Behavior and Development, Behavioral Motor Control, Developmental Disabilities

Judy A. White (30) Musculoskeletal Rehabilitation, Clinical Practice/Administration

Philip L. Witt (22) Research Design, Orthopedics, Spinal Dysfunction

Bing Yu (43) Biomechanics, Rehabilitation, Movement Analysis
Assistant Professors

Jyotsna Gupta (50) Orthopaedics, Anatomy, Neuroanatomy
Jonathan D. Hake (42) Electrotherapy, Sports Medicine, Spinal Orthopedics, Manual Techniques
Lisa B. Johnston (49) Clinical Education
Thelma J. Mieda (44) Orthopedics, Epidemiology
Vicki S. Mercer (40) Motor Control, Motor Learning, Posture and Balance across the Life Span
Angela M. Rosenberg (47) Pediatrics, Developmental Disabilities, Recreation Outcomes
Debbie E. Thorpe (46) Pediatrics, Motor Learning, Developmental Disabilities, Aquatics

The Division of Physical Therapy of the Department of Allied Health Sciences offers a master of science program (MS) in human movement science. This program is designed for physical therapists and graduates in related fields who desire advanced knowledge in the scientific study of human movement.

Master of Science in Human Movement

Program Description

The master of science program in human movement (MS) is designed for physical therapists and graduates in related fields who desire advanced knowledge in the scientific study of human movement. Graduates may apply this knowledge to develop a clinical specialty, participate in research, teach in entry-level degree programs, or prepare for doctoral education. The goal is to offer a challenging learning experience that emphasizes the integration of contemporary scientific knowledge to improve clinical practice, and the generation of new knowledge about movement in people with or at risk for disability. The program is organized into two major tracks, neuromuscular and musculoskeletal. Specific areas of faculty expertise and research include aging, biomechanics, infant and child development, motor control/learning, and sports physical therapy.

Program Requirements

The master of science program requires satisfactory completion of thirty credit hours. The core requirements include fifteen credit hours of foundation courses: HMSC 200A and B- Scientific Basis of Human Motion (six credits); HMSC 393-Master’s Thesis (six credits); and in addition to the statistics course required for admission, either a research design course or a second-level statistics course (three credits). Students are also required to take nine credits in specialty area courses (neuromuscular or musculoskeletal) and six credits of electives. A written comprehensive examination and an oral defense of the thesis are required.

Musculoskeletal Track

The musculoskeletal track is designed for students who have a special interest in biomechanical and kinesiological aspects of human motion and the effects of trauma and disease on joint function. Students may choose to concentrate on the developmental aspects of musculoskeletal function in relation to congenital or early childhood disorders, adult orthopedic problems, or the aging process. Upon completion of the curriculum, students are expected to have advanced knowledge of the musculoskeletal system, to be able to apply mechanical principles to the function of the musculoskeletal system, and to be able to assess and measure normal and abnormal movement related to the musculoskeletal system.

Neuromuscular Track

The neuromuscular track is designed for students who have a special interest in neuroscience and motor control/learning. Students may choose to concentrate on the developmental aspects of normal and abnormal movement, the problems of trauma and disease affecting the adult's neuromuscular system, or the problems of aging. Upon completion of the curriculum, the students will be able to describe theories of normal and abnormal neuromuscular function, to describe normal and abnormal function, and to utilize methods of assessing and measuring human motion.

Course Descriptions

Courses listed in HMSC are available to graduate students enrolled in other areas of the University.

HMSC 170 ELECTRONICS FOR MOVEMENT ANALYSIS RESEARCH (1).
Prerequisite, permission of the instructor. Designed to provide students with basic concepts/experience with electronic laboratory equipment and basic skills for constructing simple circuits, using measurement instruments for kinesiology, kinetic, and EMG analysis of human movement. Two laboratory hours a week. Fall. Staff.

HMSC 200A SCIENTIFIC BASIS OF HUMAN MOTION PART I (3).
Prerequisites, basic kinesiology or equivalent, psychology or sociology or equivalent, and permission of instructor. Provides basic knowledge of biomechanics and exercise physiology necessary for understanding the basis of movement control and performance. Fall. Gross, Hackney.

HMSC 200B SCIENTIFIC BASIS OF HUMAN MOTION PART II (3).
Prerequisites, basic kinesiology or equivalent, psychology or sociology or equivalent, and permission of instructor. Provides basic knowledge of neural, behavioral (motor control and motor learning), and environmental factors for understanding the basis of human movement control and performance. Fall. Giuliani, Thorpe, McCulloch.

HMSC 210 MUSCLE MECHANICS AND ELECTROMYOGRAPHIC KINESIOLOGY (4).
Prerequisites, HMSC 200 or equivalent and permission of the instructor. Essential elements of instrumentation and analysis of EMG for the study of human movement. Emphasis is on the integrated study of electrical and dynamic properties of muscle action. Four lecture/discussion/laboratory hours a week. Fall. Staff.

HMSC 243 TOPICS IN MOTOR CONTROL AND MOTOR LEARNING: THERAPEUTIC IMPLICATIONS (3).
Prerequisites, HMSC 200B or equivalent recommended and permission of the instructor. A survey of current motor control/learning principles. Major focus is on the mechanisms underlying various movement disorders, methods used to quantify changes in movement behavior, and rationale for specific treatment interventions. Spring. Merck.

HMSC 282 INFANT AND FAMILY ASSESSMENT (2-3).
Prerequisites, HMSC 280 or equivalent and permission of the instructor. Theory and use of research and clinical methods for assessment of developmental processes in young infants and their families. Two lecture and two laboratory hours a week. Summer I. Reilly.

HMSC 282L LABORATORY IN INFANT AND FAMILY ASSESSMENT (1-3).
Prerequisites, HMSC 282 or equivalent, and permission of the instructor. Training in the use of neonatal and infant assessment tools, and methods of family assessment. Two to six laboratory hours a week. Fall, spring, and summer II. Reilly.

HMSC 290 ADVANCED KINESIOLOGY AND BIOMECHANICS (4).
Prerequisites, HMSC 200 or equivalent and permission of the instructor. A biomechanical, problem-solving approach to the study of movement, posture, joint structure, and exercise. Four lecture hours a week. Spring, Gross.

HMSC 291 ANALYSIS OF HUMAN MOVEMENT (3).
Prerequisites, HMSC 200 or equivalent and permission of the instructor. Lecture/laboratory course with a major emphasis on using videography and electromyography analyzing human movement for the purpose of clinical documentation and research. Two lecture and two laboratory hours a week. Spring. Yu.
HMSC 293 ADVANCED ORTHOPEDIC ASSESSMENT AND TREATMENT (4). Prerequisites: HMSC 200 required, HMSC 290 recommended, permission of the instructor. Discussion of mechanical properties and healing of musculoskeletal tissues throughout the life cycle, and laboratory/seminar units concerned with assessment and treatment of musculoskeletal pathology. Four lecture/laboratory hours a week. Fall. Gross.

HMSC 301 SEMINAR IN HUMAN MOVEMENT SCIENCE (1-3). Prerequisite, permission of the instructor. In-depth reading, presentation, and discussion of selected topics related to physical therapy. Time to be arranged. Fall, spring, and summer. Staff.

HMSC 303 PROBLEMS IN HUMAN MOVEMENT SCIENCE (2-3). Prerequisite, permission of the instructor. Advanced level of applied or practical study in human movement for individuals or groups. Time to be arranged. Fall, spring, and summer. Staff.

HMSC 311 BASIC ASPECTS OF AGING (MEDI 486) (DECO 486) (1-3). Prerequisite, permission of the instructor. Lecture series providing a comprehensive, multi-disciplinary perspective on many aspects of aging, e.g., diseases, syndromes, and their treatments; health maintenance, prevention; as well as social, economic, legal, and ethical concerns. One lecture hour a week, optional projects. Fall and spring. Staff.

HMSC 377 INDEPENDENT STUDY IN HUMAN MOVEMENT SCIENCE (1-3). Prerequisite, permission of the instructor. The student explores areas of special interest pertinent to eventual goals in human movement. Time to be arranged. Fall, spring, and summer. Staff.

HMSC 379 RESEARCH IN HUMAN MOVEMENT SCIENCE (2-4). Prerequisites, HMSC 200 and permission of the instructor. Independent investigation under the guidance of an instructor, who must approve the topic of research. Time to be arranged. Fall, spring, and summer. Staff.

HMSC 381 THE NEURAL BASIS OF MOTOR CONTROL (3). Prerequisites, Neuroanatomy, HMSC 202 or equivalent, and permission of the instructor. Advanced study of the neurophysiological basis of motor control, including development and aging, and methods of research. Fall. Giuliani.

HMSC 386 UNDERSTANDING RESEARCH (3). Prerequisites or corequisites, first-level statistics course and permission of the instructor. Explanation of the framework necessary to do and understand research with emphasis on hypothesis testing, measurement, design, interpretation, and research application. Fall. Yu.

HMSC 387 DEVELOPMENTAL MOTOR CONTROL (1-3). Prerequisite, permission of the instructor. Seminar in selected topics related to motor control in children and adults. Time to be arranged. Fall, spring, or summer. Therpe.

HMSC 393 MASTERS THESIS (3-5). Fall, spring, or summer. Staff.

HMSC 604 AGING AND HEALTH (3). Introduction to normal aging, diseases of aging, mental health issues, and use of health services by older persons. Fall. Slocane, Zimmerman, Calhoun.

HMSC 607 AGING AND PUBLIC POLICY (3). Interdisciplinary seminar providing a general background in the major economic, health, and social policy issues facing the nation and the state resulting from the aging of our society. Spring. Lamb, Alperter, Iklin-Zimmerman.

HMSC 611 MOVEMENT AND BALANCE IN AGING (3). Prerequisite, permission of the instructor. Interdisciplinary seminar on changes in aging associated with balance, movement abilities, and disabilities. Current theories, measurements, and evidences of change in skeletal, neuromuscular, cognitive, and physiological processes are explored using a systems approach. Spring. Giuliani.

DEPARTMENT OF PHYSICS AND ASTRONOMY
LAURIE E. McNEIL, Chair

Professors
Bruce W. Carney (32) Optical Observational Astrophysics
Gerald N. Cecil (47) Optical Observational Astrophysics
Anthur E. Champagne (51) Experimental Nuclear Physics and Astrophysics
Wayne A. Christiansen (4) Theoretical Astrophysics, Radio Astronomy
Thomas B. Clegg (5) Nuclear Physics, Polarized Ion Source Development
Louise A. Dolan (49) Theoretical Particle Physics, Quantum Gravity
Charles R. Evans (48) Gravitation, Relativity, Theoretical Astrophysics
Paul H. Frampton (33) Theoretical Particle Physics Including Gravity
John P. Hernandez (10) Condensed Matter Theory, Electron States
Hugon J. Karwowski (37) Experimental Nuclear Physics
Laurie E. McNeil (36) Solid State, Optical and Transport Properties of Disordered Solids
Y. Jack Ng (30) Theoretical Particle Physics, Gravitation
James A. Rose (41) Galactic and Extragalactic Astronomy
Lawrence G. Rowan (18) Electron Paramagnetic Resonance, Physics of Music, Electronics
Robert N. Shetton, Experimental Condensed Matter Physics, Superconductivity
Hendrik Van Dam (26) Theoretical Physics
Sean Washburn (50) Experimental Condensed Matter and Low Temperature Physics
Yue Wu (54) Nuclear Magnetic Resonance, Electron Spin Resonance in Solids

Associate Professors
J. Christopher Clements (64) Observational Astronomy, Astrophysics, Astronomical Instrumentation
Jonathan Engel (57) Theoretical Nuclear Physics
Christian G. Illaridi (61) Experimental Nuclear Astrophysics
Dmitriy V. Khvostchuk, Theoretical Physics
Jianping Lu (56) Condensed Matter Theory
Lu-Chang Qin, (27) Materials Science, Nanotechnology
Richard Supreme (55) Experimental Studies of Interfaces
Frank Tsui (59) Experimental Condensed Matter and Materials Physics
Oste E. Zhou (62) Materials Science, Nanotechnology

Assistant Professors
Laura Mersini, Theoretical Cosmology
Daniel E. Reichart (13) Gamma Ray Bursts, Early Universe, Intestellar Extinction, Galaxy Clusters
Paul H. E. Tiesinga (6) Computational and Theoretical Neuroscience, Biophysics
Research Professors
Daxing Han, Solid State Physics
Robert K. McMaham Jr. (53) Stellar Evolution and Cosmology

Research Associate Professors
Nalin R. Parikh (58) Solid State Physics, Materials Science
Russell M. Taylor II, Nanotechnology, Computer Imaging

Research Assistant Professors
Alfred Kleinhammes, Condensed Matter Physics, Materials Science
E. Timothy O'Brien, Physics Related to Biology, Light Microscopy, Biological Sample Preparation

Adjunct Professors
John M. Bux Jr. (29) Physical Oceanography
William W. Clark III, Electronics, Optics
Richard T. Hammond, General Relativity, Gravity, Optics
John E. Rowe, Materials Science, Nanotechnology

Adjunct Associate Professors
John D. Henn, Applied Condensed Matter Physics
Ryan M. Rohm, Quantum Field Theory, Theoretical Particle Physics
Jie Tang, Materials Physics, Nano-Materials
Russell M. Taylor II, User Interfaces for Scientific Visualization, Virtual Environments, Distributed Systems, Computer Graphics
M. Christopher Thompson, High Energy Astrophysics

Adjunct Assistant Professors
Jonathan W. Keohane, Astrophysics, Science Education
Brian R. Stoner, Applied Materials Science

Professors Emeriti
Wayne A. Bowers
C. Victor Briscoe
Sung-Hi Choi
Morris S. Davis
Kian S. Dy
William M. Hooke
Paul S. Hubbard
Horst Keeseeber
Edward J. Ludwig
J. Ross Macdonald
Eugen Merebacher
Earl N. Mitchell
Everett D. Palmatier
Dietrich Schoeder
Stephen M. Shafrath
Lawrence M. Slifkin
Joseph W. Straley
William J. Thompson
James W. York Jr.

The Department of Physics and Astronomy offers graduate study leading to the degrees of master of science and doctor of philosophy.

The active fields of research are condensed-matter physics, microelectronics, atomic, molecular, and nuclear physics, quantum field theory, theoretical particle physics, general relativity and gravitation, stellar astronomy, and astrophysics. The chemical physics program combines courses from chemistry and physics with research in either department. Students can also work in the UNC-Chapel Hill biophysics program. The graduate courses are designed to give students a broad foundation and to introduce them to the special fields in which the research interests of the department lie.

The general regulations of the Graduate School govern the work for the degrees of master of science and doctor of philosophy. To begin a graduate program in physics or astrophysics, the student should have completed the requirements for the degree of bachelor of science with a major in physics at the University, or their equivalent elsewhere. The minimum prerequisite for graduate study consists of the basic undergraduate courses PHYS 26, 27, 28, 28L, 103, 104, 105, 106, 107, 108; together with MATH 32, 33, and 124. At the end of the spring semester a student who does not already have a master's degree in physics or astronomy and has not passed a similar examination elsewhere must take the MS written examination. The examination, which also serves as part I of the PhD written examination, is based upon the graduate student's first year course work and will cover dynamics, quantum mechanics I, statistical mechanics and electromagnetic theory I. A PhD candidate must also take part II of the PhD written examination and a preliminary doctoral oral examination within the first three years of graduate study in physics at UNC-Chapel Hill. The written examination is based upon the graduate student's course work, and the oral examination is concerned mainly with the student’s dissertation research project.

The MS degree in physics may be taken with or without thesis. However, even if a thesis is not submitted, a student must work with a research group for at least one semester, in order to learn the research techniques in a field of physics or astronomy. If the research is theoretical, the student must also gain experimental experience. A minor is not required for the MS degree, but one may be chosen in accord with the regular graduate requirements for this option. The equivalent of one semester teaching experience is required of all MS degree candidates. The MS astrophysics track must include ASTR 244 and a minimum of six hours from ASTR 137, 242, 243, or 245.

The requirements for a PhD in physics for students entering in 2003 are:
(a) A student must pass the following courses in the department, or have passed their equivalents elsewhere as an undergraduate or graduate student: 203, 204-205, 221, and 260-261; (b) in order to acquire some familiarity with experimental physics, a student must earn an MS degree which involves experimental research, whether or not a thesis is written; or perform other experimental research judged adequate by the director of graduate studies; (c) a student must take a course outside his or her field of specialization from a list approved by the director of graduate studies; and (d) a student must pass at least three other graduate-level courses appropriate to his or her field of specialization. A minor is not required, but may be elected, in which case requirement (c) above is replaced by the requirement that the student pass at least five graduate-level courses selected from no more than two departments, with no fewer than two courses in either department. The minor program must be approved in advance by the minor department. Teaching experience, as part of professional training, is required of all doctoral candidates. This experience can be gained through laboratory or lecture instruction as a teaching assistant either for two semesters or until teaching competence is acquired.

The astrophysics PhD track requirements are similar, except that the course requirements include, in addition to a course outside the specialty, PHYS 203, 204-205, 221, 260, and ASTR 242, 243, 244, 245, and an additional 200 level course. To gain familiarity with experimental astrophysics or observational astronomy, a student must either pass ASTR 137/237; or earn an MS degree which involves experimental or observational research in astrophysics; or perform other experimental/observational research deemed suitable by the director of graduate studies.

Research Interests

Astronomy and Astrophysics. Research includes structure and evolution of stars, our Milky Way Galaxy, other galaxies, gamma ray bursters, and cosmology. Theory involves numerical relativity, stellar seismology, and quasars. UNC-Chapel Hill has guaranteed observing time on the 4.1-meter SOAR Telescope in Chile, which begins regular operations in 2004, and on the 11-meter SALT Telescope in South Africa, which begins operations in 2005. UNC-Chapel Hill operates a number of smaller robotic telescopes as well.

Biological Physics, Nanobiotechnology, Computational Neurophysics. Theoretical and computational studies of the dynamics of the nervous system. Information-theoretical analysis of multi-neuronal data. Experimental studies include manipulation and force measurement techniques with applications to DNA, molecular motors, and cilia.

Condensed-Matter Physics. Experimental and theoretical studies of nanomaterials. Atomic scale studies of devices and nanoelectromechanical systems, including quantum computation and transport; actuating nanomotors and sensors; amorphous materials, semiconductors, superconductors; the optical properties of solids; properties of metal-atom fluids; charge transport in solids and fluids; epitaxial growth; magnetic materials and heterostructures; and ion beam modification and analysis of solids.
Field Theory, Particle Physics, Cosmology, Gravitation, and Relativity. Research includes gauge field theories, quantum chromodynamics, electroweak theory, grand unified theories, string theory, supersymmetry, supergravity, quantum gravity, theoretical cosmology, numerical relativity, gravitational radiation, and relativistic astrophysics.

Materials Science and Materials Physics. Experimental and theoretical research in design, synthesis, integration, and characterization of novel solid state materials including nanostructured materials such as quantum dots, carbon nanotubes and nanorods; quasi-crystals; metallic glass. Applications of novel materials for energy storage, electron field emission, probes and sensors, and data storage. Applications for flat-panel displays, an X-ray system for biomedical imaging, and rechargeable batteries.

Nuclear Physics. Experimental and theoretical work in neutrino oscillations and mass, fundamental symmetries, and weak interactions in supernovae. The structure and evolution of stars and nucleosynthesis investigations using nuclear probes. The nature of the nuclear force and properties of few-body systems. Polarized beams of light ions and gamma-rays and polarized 3He target.

Facilities and Equipment
Research in physics and astronomy is carried out in laboratories on and off the Chapel Hill campus. Within Phillips Hall, and soon in the addition now under construction, there are several major research laboratories including the "Nano-manipulator" (a combination of a scanning electron microscope, an atomic force microscope, and sophisticated visualization graphics); the new Keck Laboratory for Atomic Imaging and Manipulation, which includes two transmission electron microscopes; and the Goodman Laboratory for Astronomical Instrumentation. Other facilities include apparatus for nuclear magnetic resonance studies, scanning probe microscopes, and Raman and optical spectrometers. For synthesis and fabrication, major facilities include molecular beam epitaxy, microwave plasma enhanced chemical vapor deposition, laser ablation, photolithography and reactive ion etching, and ion implantation.

A 2.8-MeV Van de Graaff accelerator and a 200-keV ion implantation machine are located within the building, as are nanomaterial production and experimental facilities. The department is partners in the Triangle Universities Nuclear Laboratory and plays a major role in experiments using the Laboratory for Nuclear Astrophysics (LENA), Tandem accelerator, and the High-intensity Gamma-ray Source at the Free Electron Laser facility. UNC-Chapel Hill has a 0.6-meter on-campus telescope, and is a major partner in the 4.1-meter SOAR Telescope in Chile and the 11-meter Southern African Large Telescope in South Africa. Numerous national laboratories including Oak Ridge, Brookhaven, Los Alamos and Argonne, as well as KAMLAND, NRAO, NOAO, the Hubble Space Telescope, and the Chandra X-ray Observatory are also vital parts of our research efforts.

Fellowships and Assistantships
Many teaching assistantships (with stipends of $15,390 for nine months) are available to qualified graduate students. The duties of assistant include supervising laboratory classes in elementary physics or astronomy, assisting in the supervision of advanced laboratories, teaching section courses, and grading papers. Graduate School fellowships, including a microelectronics fellowship for first-year students, are available for well-qualified applicants to the department's graduate program. Teaching assistants can usually be supported in the summer by teaching or research.

Research assistantships are also offered, especially to those who have completed a year or two of graduate work. The stipend is $20,520 for the calendar year. Summer employment is usually available.

Application forms for admission, including graduate appointments, may be obtained from the Web at http://www.physics.unc.edu or from the Graduate Admissions Committee, Department of Physics and Astronomy, CB# 3255, Phillips Hall, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3255. Application for fall admission should be made by January 1.

Courses for Graduates and Advanced Undergraduates
ASTR 171* COSMIC EVOLUTION (3). Prerequisites, MATH 32 and ASTR 31 (or permission of the instructor). A course in stellar and planetary astrophysics with emphasis on astronomical conditions for the development and sustenance of life. Fall or spring. Christiansen, staff.

137 OBSERVATIONAL ASTRONOMY (4). Prerequisite ASTR 31 or permission of the instructor. A course designed to familiarize the student with observational techniques in optical and radio astronomy, including application of photographic, spectroscopy, photometry, and radio methods. Three lecture and three laboratory hours a week. Fall or spring. (Alternate years.) Rose, staff. (Laboratory fee required.)

142 ASTROPHYSICS I (Stellar Astrophysics) (3). Prerequisites, PHYS 28, MATH 83, or permission of the instructor. An introduction to the study of stellar structure and evolution. Topics covered include observational techniques, stellar structure and energy transport, nuclear energy sources, evolution of the main-sequence, and supernovae. Fall. Carney, Christiansen, Rose.

143 ASTROPHYSICS II (Interstellar Matter and Galaxies) (3). Prerequisites, PHYS 28, MATH 83, or permission of the instructor. An introduction to the study of the structure and contents of galaxies. Topics covered include the interstellar medium, interstellar hydrodynamics, supernova shock, star formation, galactic evolution, the expanding universe, and cosmology. Spring. Carney, Christiansen, Rose.


243 GALACTIC DYNAMICS AND PHYSICAL PROCESSES IN THE INTERSTELLAR MEDIUM (3). Prerequisites, PHYS 260, PHYS 203. Collisionless and collisional stellar dynamics; disk dynamics and spiral structure; encounters between stellar systems. Physical processes in diffuse gases, HH regions, and supernova remnants; ionization and energy balance of the interstellar medium; star formation. Fall. Rose.

244 PHYSICAL PROCESSES IN STELLAR ATMOSPHERES AND INTERIORS (3). Prerequisites, PHYS 260, PHYS 204. Equation of transfer; continuous and line opacities; model atmospheres; spectral line formation. Equations of stellar structure; energy transport; nuclear reaction rates; modeling stellar evolution. Spring. Carney.

245 EXTRAGALACTIC ASTROPHYSICS (3). Corequisite, PHYS 203. Hubble law; morphology of galaxies (mass distributions, ages, dynamics); clusters of galaxies; isotropy and voids; microwave background; large-scale structure; Robertson-Walker metric; standard cosmology; Big Bang nucleosynthesis; thermodynamics of expanding universe; inflation; formation of structure. Fall or spring. Cecil.

350 SEMINAR IN ASTROPHYSICS (1 or more). Recent observational and theoretical developments in stellar, galactic, and extragalactic astrophysics. Fall and spring. Staff.
PHYSICS

101 ELECTRONICS I (3). Prerequisites, introductory physics and MATH 31, or permission of the instructor. DC and AC circuit analysis, PN junctions and diodes, single-transistor circuits, transducers. Analog devices. Extensive circuit building with testing, trouble shooting, and debugging. Three lecture and three laboratory hours a week. Fall. Karwowski.

102 ELECTRONICS II (4). Prerequisite, PHYS 101 or permission of the instructor. Introduction to digital circuit design, logic gate, flip-flops, and counters. Computers and device interconnections, converters and data acquisition. Graphical (LabVIEW) programming and computer interfacing. Individual projects and practical applications. Spring. Karwowski.

103† MECHANICS I (3). Prerequisites, PHYS 27 (or permission of the instructor) and MATH 33. Particle kinematics, central forces, planetary motions. Systems of particles, conservation laws, nonlinearity. Statics, motion of rigid bodies. Langrange's and Hamilton's equations, Euler's equations. Vibrations and waves. Spring. Washburn, staff.

104† MECHANICS II (3). Prerequisite, PHYS 103. Advanced topics in mechanics. Fall. Staff.

105 HEAT AND THERMODYNAMICS (3). Prerequisites, PHYS 27 (or 25 or 25c by permission of the instructor) and MATH 33. Equilibrium statistical mechanics; the thermodynamics laws, internal energy, entropy, thermostatodynamic potentials. Maxwell equations. Fall. Wu.


107, 108† ELECTRICITY AND MAGNETISM (3 each). Prerequisites, PHYS 27 and MATH 34 (or permission of the instructor). Brief treatment of DC and AC circuit theory. Electrostatics; dielectrics; the magnetic field; magnetic materials. Maxwell’s equations and their application to electromagnetic waves. Fall and spring. Hernandez.

113† SPACE AND TIME IN PHYSICS AND PHILOSOPHY (PHIL 121) (3). Continuum and necessary properties of space and time. The direction and flow of time. Fatalism. Effects preceding their causes. Spring. Van Dam, staff.

115† THE EVOLUTION OF PHYSICAL IDEAS IN THE TWENTIETH CENTURY (3). Prerequisites, PHYS 25 and MATH 30 (or permission of the instructor). The most important physical ideas and phenomena, discovered in the twentieth century, are studied by reading original papers or excerpts (in translation). These works are put in historical perspective. Spring. Staff.

134 VISUALIZATION IN THE SCIENCES (MTSC 134) (COMP 134) (3). For both computer science and natural science students. Available techniques and their characteristics, based on human perception, using software visualization toolkits. Project course.

140 PHYSICS OF SOLID STATE ELECTRONIC DEVICES (3). Prerequisite, PHYS 25c or 27. Corequisites or prerequisite or PHYS 58 or 107. Properties of crystal lattices, electrons in energy bands, behavior of majority and minority charge carriers, p-n junctions related to the structure and function of semiconductor diodes, transistors, display devices. Fall. McNeil.

141 ELECTRONICS (4). Prerequisites, PHYS 27 (or 58), MATH 34. Basic electronics with emphasis on circuitry. DC and AC circuits, diodes and application, transistors, amplifiers, wave form generators, operational amplifiers, digital electronics, transmission lines. PHYS 101 and 141 may not both be taken for credit. Three lecture and three laboratory hours a week. Spring. Tsen.

142L, 143L ADVANCED LABORATORY I AND II (2 each). Prerequisite, PHYS 101 or 102 or permission of the instructor. Selected experiments illustrating modern techniques such as the use of laser technology to study the interaction of electromagnetic fields and matter. Six laboratory hours a week. Fall and spring. McNeil.

144 CHEMISTRY AND PHYSICS OF ELECTRONIC MATERIALS PROCESSING (CHEM 192) (3). Prerequisites, CHEM 182 or PHYS 25c or 27 and permission of the instructor. A survey of materials processing and characterization used in fabricating microelectronic devices. Crystal growth, thin film deposition and etching, and microelectronics. Spring. Zhou.

148L MATERIALS LABORATORY I (APPL 144L) (2). Prerequisite, PHYS 102. Pre- or corequisite, Applied Science 141. Structure determination and measurement of the optical, electrical, and magnetic properties of solids. Fall. McNeil.

149L MATERIALS LABORATORY II (APPL 145L) (2). Prerequisite, PHYS 148L or APPL 144L. Continuation of Physics 148L with emphasis on low- and high-temperature behavior, the physical and chemical behavior of lattice imperfections and amorphous materials, and the nature of radiation damage. Spring. Parish.

151 FLUID DYNAMICS (MASC 151) (GEOL 181) (3). Prerequisite, PHYS 103 or permission of the instructor. The physical properties of fluids, kinematics, governing equations, viscous incompressible flow, vorticity dynamics, boundary layers, irrotational incompressible flow. Fall. Bane.


161 NUCLEAR PHYSICS (3). Prerequisite, PHYS 160 or equivalent. Structure of the nucleus, symmetries, nuclear forces, nuclear structure and reactions, weak interactions, and physics beyond the standard model. Spring. Champagne.

163 APPLICATION OF QUANTUM MECHANICS (3). Prerequisite, PHYS 160. Emphasizes atomic physics but includes topics from nuclear, solid state and particle physics, such as energy levels, the periodic system, selection rules, and fundamentals of spectroscopy. Fall. Hubbard.

165 INTRODUCTION TO ELEMENTARY PARTICLE PHYSICS (3). Prerequisites, PHYS 108 and 160. Relativistic kinematics, symmetries and conservation laws, elementary particles and bound states, gauge theories, quantum electrodynamics, chromodynamics, electroweak uniﬁcation, standard model, and beyond. Spring. Staff.

169 INTRODUCTORY SOLID STATE PHYSICS (3). Prerequisite, PHYS 160 or equivalent. Crystal symmetry, atomic structure of crystalline and noncrystalline solids, and imperfections in crystals; atomic bonding and types of atomic bonds in solids; electron and mechanical waves in solids; thermal, electrical, optical, and magnetic properties of solids; electronic structure and superconductivity of solids. Fall. Hernandez.

181, 182 ADVANCED LABORATORY (3 each). Prerequisite, PHYS 103, 108, or permission of the instructor. Six laboratory hours a week. Fall and spring. McNeil.

191 MATHEMATICAL METHODS OF THEORETICAL PHYSICS I (3). Prerequisites, PHYS 28 or equivalent; MATH 83. Vector fields, curvilinear coordinates, functions of complex variables, linear differential equations of second order, Fourier series, integral transforms. Fall. Dolan.

192 MATHEMATICAL METHODS OF THEORETICAL PHYSICS II (3). Prerequisite, PHYS 191 or permission of the instructor. Partial differential equations, special functions, Green functions, variational methods. Spring. Dolan.

193 SCIENTIFIC PROGRAMMING (3). Prerequisites, MATH 128 or 129, or PHYS 191 or 192; elementary FORTRAN, C, or Pascal programming. Structured programming in FORTRAN or Pascal; use of secondary storage and program packages; numerical methods for advanced problems, error propagation and computational efficiency; symbolic mathematics by computer. Spring. Thompson.
Courses for Graduates

*The PHYS 262 and PHYS 380 sequence alternates with PHYS 263-264.

201, 202 ADVANCED SPECTROSCOPIC TECHNIQUES (3 each). Prerequisite, PHYS 103, 108, or permission of the instructor. Advanced spectroscopic techniques, including Rutherford backscattering-channeling, perturbed angular correlation, Raman scattering, electron paramagnetic resonance, nuclear magnetic resonance, optical absorption and Hall effect. 201 (fall) has two hours of lecture and three hours of laboratory a week, and 202 (spring) has one hour of lecture and five hours of laboratory a week. McNeil.


204 ELECTROMAGNETIC THEORY I (3). Prerequisites, PHYS 191-192 or equivalent, Electrostatics, magnetostatics, time-varying fields, Maxwell's equations. Spring. Evans.

205 ELECTROMAGNETIC THEORY II (3). Prerequisite, PHYS 204 or equivalent. Plane electromagnetic waves and wave propagation, wave guides and resonant cavities, simple radiating systems, scattering and diffraction, special theory of relativity, radiation by moving charges. Fall. Evans.

221 STATISTICAL MECHANICS (3). Prerequisites, PHYS 203 and 260. Classical and quantum statistical mechanics, ensembles, partition functions, ideal Fermi and Bose gases. Spring. Ng.


262* ADVANCED QUANTUM MECHANICS (3). Prerequisite, PHYS 261. Advanced angular momentum, atomic and molecular theory, many-body theory, quantum field theory. Fall. (Alternate years.) Dolan.

263, 264* FIELD THEORY (3 each). Prerequisite, PHYS 261. Quantum field theory, path integrals, gauge invariance, renormalization group, Higgs mechanism, electroweak theory, quantum chromodynamics, Standard Model, unified field theories. Fall and spring. (Alternate years.) Dolan, Frampton.

267 CURRENT ADVANCES IN PHYSICS (3). Prerequisite, permission of the instructor. In recent years, elementary particle physics, amorphous solids, and high temperature superconductors have been among the topics discussed. Either semester, as announced. Staff.

270, 271 SOLID STATE PHYSICS (3 each). Prerequisite, PHYS 160 or equivalent. Topics considered include those of Physics 169, but at a more advanced level, and in addition a detailed discussion of the interaction of waves (electromagnetic, elastic, and electron waves) with periodic structures; e.g., X-ray diffraction, phonons, band theory of metals and semiconductors. Fall and spring. Hernandez.


274 DIFFERENTIAL GEOMETRY IN MODERN PHYSICS (3). Prerequisites, PHYS 203, 204, 205. Applications to electrodynamics, general relativity, and non-abelian gauge theories of methods of differential geometry, including tensors, spinors, differential forms, connections and curvature, covariant exterior derivatives, and Lie derivatives. Either semester as announced. York.


288, 289 PRINCIPLES OF CHEMICAL PHYSICS (CHEM 288) (CHEM 289) (3 each). Prerequisite, PHYS 160 or CHEM 281 or permission of the instructor. The quantum mechanics of molecules and their aggregates. Atomic orbitals, Hartree-Fock methods for atoms and molecules. Special topics of interest to the instructor and research students. As announced.

290 PRINCIPLES OF MAGNETIC RESONANCE (3). Prerequisite, PHYS 260, or CHEM 281, or permission of the instructor. Either semester, as announced. Wu.


Research Courses

301 RESEARCH (3 or more). Ten or more laboratory or computation hours a week. Fall and spring. Staff.

310 SEMINAR IN THEORETICAL PHYSICS (1 or more). Topics from current theoretical research including, but not restricted to, field theory, particle physics, gravitation, and relativity. Fall and spring. York.

322 SEMINAR IN PROFESSIONAL PRACTICE (Var). Prerequisite, PhD written exam passed. The role and responsibilities of a physicist in the industrial or corporate environment and as a consultant. Fall, spring, and summer. Graduate faculty.

360 SEMINAR IN NUCLEAR PHYSICS (1 or more). Current research topics in low-energy nuclear physics, especially as related to the interests of Triangle Universities Nuclear Laboratory. Fall and spring. Karwowski.

364 SEMINAR IN ATOMIC AND MOLECULAR PHYSICS (1 or more). Experimental and theoretical topics in atomic collision physics, chemical physics, molecular states, and surface properties. Fall and spring. Staff.

370 SEMINAR IN SOLID STATE PHYSICS (1 or more). Research topics in condensed-matter physics, with emphasis on current experimental and theoretical studies. Fall and spring. Washburn.

380* SEMINAR IN PARTICLE PHYSICS (1 or more). Symmetries, gauge theories, asymptotic freedom, unified theories of weak and electromagnetic interactions, and recent developments in field theory. Fall and spring. Dolan.

392 MASTER'S RESEARCH PROJECT (3 or more). Either semester. Staff.

393 MASTER'S THESIS (3 or more). Either semester. Staff.

394 DOCTORAL DISSERTATION (3 or more). Either semester. Staff.

DEPARTMENT OF POLITICAL SCIENCE

JONATHAN HARTLYN, Chair

Professors

Thad Beyle (3) State and Local, Policy Studies
Pamela Conover (10) Political Psychology, Mass Political Behavior, Gender Politics
Virginia Gray (40) State Politics, Public Policy, Interest Groups
Jonathan Hardyn (40) Comparative Politics, Latin American Politics
Evelyn Huber (54) Comparative Politics, Political Economy, Latin American Politics
Michael Leiter (38) History of Political Thought, American Political Theory
David Lowery (45) Urban Politics, State Politics, Bureaucratic Politics
Stuart Elaine Macdonald (59) Political Behavior, Public Opinion, Research Methods
Michael MacKuen (66) American Politics, Political Methodology
Gary Marks (18) Comparative Politics, Western Europe
Timothy McKeown (22) International Relations, International Political Economy
George Rabinowicz (25) Elections, Political Parties, Statistical Methods
Lan Schoultz (20) U.S.-Latin American Relations
Donald Searing (30) Comparative Politics, Political Psychology
Jürg Steiner (31) Comparative Politics, Ethics in Politics
John Stephens (55) Political Economy, Western Europe, Caribbean Nations
James Stimson (65) American Politics, Political Methodology
James White (34) Comparative Politics, Urban Politics, East Asia-Japanese Politics

Associate Professors
Susan Bickford (58) History of Political Thought, Feminist Theory, Democratic Theory
Liesbet Hooghe (64) Comparative Politics, European Union, West European Politics
Michele Hoyman (66) American Politics, Public Administration, Labor Relations and Labor Law, Rural Economic Development
Stephen Leonard (15) History of Political Thought, Philosophy of Social and Political Inquiry, Republicanism, History of the Academic Disciplines
Kevin McGuire (60) Judicial Politics, American Politics
Thomas Oatesley (57) International Relations, International Political Economy, European Countries
Jeffrey Ohler (23) Political Theory and Public Policy
Andrew Reynolds (13) Comparative Politics, Political Institutions, African Politics
Marco Steenbergen (61) Political Psychology, Public Opinion, Voting Behavior, Quantitative Methods
Terry Sullivan (47) Congressional and Executive Politics
Isaac Unah (62) Judicial Politics, Regulatory Policy, Bureaucratic Implementation

Assistant Professors
Stephen Biddle (64) International Relations, Security Studies, Defense Policy
Mark Crescenzi (98) International Politics, Conflict Processes, Political Economy
Erik Engstrom (14) American Politics, Legislative Politics
Norman Hare (63) American Politics, Mass Political Behavior, Political Psychology, Public Opinion, Race and Politics
Milada Vachusova (12) Comparative Politics, International Institutions, Western and Eastern European Politics
Georg Vanberg (17) American Politics, Comparative Politics, Formal Modeling

Professors Emeriti
Raymond Dawson
Lewis Lipsitz
Duncan MacRae
Richard Richardson
Robert Rupen
Joel Schwartz
Andrew Scott
Glenn Snyder
Deil Wright

The Department of Political Science offers courses of study leading to the master of arts in political science, master of arts in political science with a certificate in Latin American studies, and the doctor of philosophy in political science.

Admission
The general prerequisite for admission to graduate study is a bachelor of arts degree or equivalent. A student is not required to have an undergraduate major in political science but will normally be expected to have had at least nine semester hours of course work in political science.

All applicants for admission to graduate study must take the Graduate Record Examination. Prospective applicants should take the test early enough to enable them to submit official reports of scores with their application for admission. In considering applications for fellowship awards, these test scores receive heavy emphasis. Applicants are encouraged to have their applications complete by December 1. Applicants are also required to submit a writing sample and a personal statement.

Graduate Study in Political Science
Departmental programs of graduate study are intended to train professional political scientists. Thus graduate work is expected to be qualitatively different from undergraduate work. Its emphasis is upon the acquisition of tools, skills, and knowledge at a level to qualify the student to carry on research, to teach, to fill active political and administrative duties, and other roles to carry on the profession of practicing political scientists.

All candidates for graduate degrees will be expected to achieve broad mastery at the professional level of the literature, problems, and skills of the academic fields and subfields offered for the degree, and will have gained experience in teaching and research. Much more is required of the candidate than mere compilation of credits in relevant courses.

At the MA level, the student is required, in addition to passing the course programs successfully, to write a thesis and to be examined orally on the major field of interest and in defense of the thesis.

At the doctoral level, preliminary examinations are both written and oral, in that order. Written examinations are given twice each year, in September and in the spring semester. The final part of the examination is an oral defense of the dissertation proposal. Successful completion of these examinations permits a student to become a doctoral candidate. Following completion of the dissertation, a final oral examination will be held, which is primarily a defense of the dissertation but may include such excursions into underlying theory and related fields as are germane to the dissertation.

Field and Course Requirements
The political science curriculum is designed to ensure that graduate students develop a professional competence in the discipline as a whole as well as expertise in one major and one minor field. The courses in the department are grouped under the following broad categories: international relations, comparative politics, political theory, American politics, methodology, and public policy/public administration (minor field only).

PhD students are required to demonstrate competence in two fields of study and, by participating in the instructional program, to undergo training as teachers. A minimum of four courses and a comprehensive examination is required in the major field. A comprehensive examination and three courses are required in the minor field.

The Institute of Latin American Studies and the Graduate Certificate
The Institute of Latin American Studies and the Consortium in Latin American Studies at UNC-Chapel Hill and Duke University serve as a medium for interdisciplinary communication on Latin America, encouraging and stimulating instruction and research on the region. They provide funding for interdisciplinary working groups, visiting scholars, research workshops, and guest lectures, as well as support for graduate students through academic year and summer fellowships, and research and conference travel grants. The program has been funded as a National Resource (Title VI) Center since 1991 by the U.S. Department of Education.

Although the University of North Carolina at Chapel Hill does not grant an interdisciplinary postgraduate degree in Latin American studies, gradu-
ate students seeking to document their area expertise are encouraged to earn a certificate in Latin American studies in conjunction with any advanced degree in any University graduate program. The requirements for the certificate are 1) a minimum of two semesters of residence, 2) language competence in Spanish or Portuguese, 3) four graduate courses on Latin American topics, 4) a thesis on a topic related to Latin America, and 5) an oral defense of the thesis. For students in professional schools or departments that do not require defense of a thesis, a letter from the student's adviser indicating that a major research project on a Latin American topic was successfully completed will be sufficient to waive the requirement. Graduate students interested in obtaining a certificate in Latin American studies should contact the director of the Institute of Latin American Studies.

The Center for European Studies

The Center for European Studies provides a focus for interdisciplinary and political research by funding research seminars, guest lectures, conferences, and graduate student summer and academic year fellowships. In recent years the center has hosted international conferences on the European Union, regional regimes, and the political economy of capitalist democracies. Graduate students have been closely involved in these conferences. The center has established a transatlantic master's degree program in cooperation with eight European and American universities. CES is funded as a National Resource Center by the United States Department of Education and as a European Union Center by the EU.

Center for Slavic, Eurasian, and East European Studies

The Center for Slavic, Eurasian, and East European Studies (CSEEES) is an interdisciplinary center run jointly with a sister center at Duke University. In addition to offering an undergraduate major in Russian and East European studies, the center actively promotes graduate education and research in this area of the world.

As a United States Department of Education Title VI Center, CSEEES awards Foreign Language and Area Studies (FLAS) fellowships to a few graduate students each academic year and summer to help them acquire the language skills and area expertise necessary for advanced study and field research in this part of the world.

The Louis Harris Data Center

National pollsters Harris Interactive (formerly Louis Harris & Associates) has been surveying Americans' opinions on issues of national importance since the late 1950s. Harris surveys cover many topics, including national morale, the arts, energy policy, women's roles, political candidates, violence, health, and housing. The breadth and scope of the Harris surveys make them a rich source for secondary analysis by social scientists.

In 1965, Louis Harris agreed to make his data available for secondary analysis by researchers. Harris and The University of North Carolina jointly agreed to establish at Chapel Hill the Louis Harris Data Center as the national archive for all Harris data. Since 1965, over two hundred national, state, and community studies conducted by Harris Interactive have been deposited at the Harris Data Center for use by researchers at the University and elsewhere.

Publications

The James Sprunt Studies in History and Political Science, established by the late Dr. James Sprunt, of Wilmington, North Carolina, is published under the direction of the departments involved.

Courses for Graduates and Advanced Undergraduates

102 RESEARCH IN URBAN POLITICS (3). Prerequisites, POLI 41 and either POLI 42 or 43. Examines contemporary research programs in urban politics conducted by political scientists. These topics will be examined both in terms of substantive findings and research methodology. Fall and spring. Lower.

113 TOLERANCE IN LIBERAL STATES (3). Prerequisites, POLI 41, POLI 52. This course will examine the theory and practice of tolerance in the United States and Europe, with particular attention to Great Britain and France. Spring. Searing.

114 COMPARATIVE EUROPEAN SOCIETIES (SOCl 118) (3). Examination of commonalities and differences of European societies and of the tensions and difficulties attending the European integration process. Fall. Nielsen, Marks.

115 POLITICS OF THE EUROPEAN UNION (INTS 115) (3). Prerequisites, two prior political science courses or international studies. Examines the politics and political economy of institutional change and policy making in the European Community. Fall, spring, and summer. Hooghe.

116 POLITICS OF MEXICO, CENTRAL AMERICA, AND THE CARIBBEAN (3). Prerequisite, POLI 56 or permission of the instructor. The analysis of politics in Mexico, Central America, and the Caribbean. Fall or spring. Hardy, Huber.


119 CENTRAL AFRICA: THE POLITICS OF DEVELOPMENT (AFRI 123) (3). Prerequisite, AFRI 40 or equivalent. Study of the postcolonial political economies of central African states, with emphasis on the state's role in development, the changing character of state/society relationships (including recent pressures for decentralization), and the local impact of regional and global external linkages. Spring.

120 POLITICS OF SOUTH AMERICA (3). Prerequisite, POLI 56 or permission of the instructor. The analysis of politics in South America. Fall or spring. Hardy, Huber.

121 DEMOCRACY AND INTERNATIONAL INSTITUTIONS IN AN UNDIVIDED EUROPE (INTS 116) (3). Explores the collapse of communist rule in 1989, and the reaction of international institutions to the challenges of democratization, economic transition, ethnic conflict, and European integration in an undivided Europe. Fall and spring. Vachudova.

122 THE UNITED STATES AND RUSSIA (3). A comparative inquiry into contrasting cultures, values, attitudes, and behavior patterns: Why can't and why don't the Russians want to be like Americans? Fall. Staff.

123 GOVERNMENT AND POLITICS IN JAPAN (ASIA 123) (3). Examines the Japanese political process in the period since World War II with emphasis on popular culture and behavior, and on governmental policy making in both domestic and foreign affairs. Previous course work on East Asia recommended but not required. Spring. White.

123M RESEARCH IN JAPANESE POLITICS (3). An introduction to quantitative data analysis based on the study of Japanese public opinion, political participation, and voting behavior. Spring. White.

125 CONTEMPORARY CHINA: GOVERNMENT AND POLITICS (3). Examines the development of the political system of China with particular emphasis on its historical, social, and cultural dimensions. Fall. Staff.

126 POLITICS AND SOCIETY IN AFRICA (3). Prerequisite, POLI 59 or 60 or AFRI 40. Comparative analysis of state-society relations in selected postcolonial African countries. Spring.
127 DEMOCRACY AND DEVELOPMENT IN LATIN AMERICA (3). Prerequisite, POLI 56 or permission of the instructor. The analysis of central issues of democracy and development in Latin America. Fall or spring. Hartlyn, Huber.

127S DEMOCRACY AND DEVELOPMENT IN LATIN AMERICA (3). Prerequisites, POLI 56 and SPAN 1-4 or equivalent intermediate-level language knowledge, or permission of the instructor. The analysis of central issues of democracy and development in Latin America. Spring. Hartlyn.

128 EUROPEAN POLITICS (3). Prerequisite, POLI 52. Active participation of students in a research project on career motives and ethical principles in European countries. Fall and spring. Staff.

129 GERMANY IN EUROPEAN POLITICS (3). Prerequisite, POLI 52 or permission of the instructor. An examination of the role of postwar Germany in Europe; the German question and the special relationship between the two German states; comparison of the Federal Republic and the German Democratic Republic. Fall and spring. Staff.

130 SOUTHERN AFRICA IN CONFLICT (3). Prerequisite, POLI 86 or 59 or permission of the instructor. The problems of race, class, and ideology are explored in the countries south of the Zambezi River along with the political and economic ties that bind these countries. Spring. Staff.


133 POLITICS OF MACROECONOMIC POLICY (3). Prerequisite, ECON 10. The effects of political considerations on macroeconomic policy making and the effects of economic variables on voting and popular support for incumbents. Fall or spring. Beyle.

134 NORTH CAROLINA POLITICS AND PUBLIC POLICY (3). An intensive study of politics, government, and public policy in the state of North Carolina. Emphasis is placed on student research projects, with a major paper being the main requirement. Fall. Staff.

135 STATE POLITICS AND PUBLIC POLICY (3). The comparison of development and implementation of public policy in the states. Special emphasis is placed on the impact of the political process and intergovernmental relations. Spring. Staff.

136 SOUTH IN NATIONAL POLITICS (3). This course analyzes the important roles played by the South in national politics. Topics include the South in presidential elections and the roles played by southerners in the U.S. House and U.S. Senate. Fall. Staff.

138 POWER, MORALITY, AND FOREIGN POLICY (PWAD 138) (3). Prerequisite, POLI 86 or permission of the instructor. To what extent can, and should, moral concerns be integrated into national foreign policy? An examination of theoretical alternatives as well as selected substantive issues (e.g., human rights, just war, food policy, development assistance). Fall. Staff.

139 ALTERNATIVE APPROACHES TO PEACE AND SECURITY (PWAD 139) (3). Prerequisites, POLI 86, HIST 18, or permission of the instructor. Introduces students to alternative conceptions of security, including mutual security, cooperative security, and collective security. Course presumes students have background in history, security, or international relations. Spring. Staff.

140 INTERNATIONAL POLITICAL ECONOMY (3). Prerequisites, POLI 86 and ECON 10. Theories of international political economy; major trends in international economic relations; selected contemporary issues. Fall. McKeown, Oates.

142 INTERNATIONAL CONFLICT PROCESSES (3). Prerequisite, POLI 86 or permission of the instructor. Analysis of international conflict and the causal mechanisms that drive or prevent conflict. Emphasis is on the conditions and processes of conflict and cooperation between nations. Fall. Cresczenzi. BA-level Social Science Perspective.

143 POLITICS OF THE VIETNAM WAR (3). The war on the battlefield and in the villages, as well as high level political and military decision making. Emphasis on theories applicable to other conflicts. Fall. McKeown, Cresczenzi.

144 AMERICAN FOREIGN POLICY: FORMULATION AND CONDUCT (PWAD 144) (3). Prerequisite, POLI 86 or permission of the instructor. This course focuses on the making of American foreign policy. It deals with the role of Congress, the press, public opinion, the President, the Secretary and the Department of State, the military, and the intelligence community. Emphasis is placed on the impact of the bureaucratic process on the content of foreign policy. Spring. Staff.

145 CONTEMPORARY INTERNATIONAL RELATIONS OF THE UNITED STATES (3). Prerequisite, POLI 86 or permission of the instructor. A study of selected United States foreign policy problems since World War II; analysis of the process of policy formulation from Truman to Reagan; and of the impact of the external environment and domestic politics on the White House and Department of State. Staff.

146 INTERNATIONAL COMMUNICATIONS AND COMPARATIVE JOURNALISM (JOUR 146) (3). Fall and spring.

147 CONTEMPORARY INTER-AMERICAN RELATIONS (PWAD 147) (3). Prerequisite, POLI 56 and/or 87 or PWAD 87. A comprehensive analysis of hemispheric international relations and foreign policies of individual Latin American nations. Spring. Schultz.

148 THE UNITED STATES AND MEXICO (3). A comprehensive analysis of United States relations with Mexico, focusing upon the origin and evolution of contemporary issues such as legal and illegal immigration, the North American Free Trade Agreement, border ecology, and drug trafficking. Fall and spring. Scholtz.

149 DEFENSE POLICY AND NATIONAL SECURITY (AERO 149) (PWAD 149) (3). Prerequisite, POLI 86 or permission of the instructor. A study of national defense policy as affected by the constitutional and political setting, as well as its relation to foreign policy. Some attention to strategic doctrine. Cresczenzi.

150 THEORY OF WAR (PWAD 150) (3). Examines the nature, purposes, and conduct of war. Emphasizes interaction between political and military phenomena; introduces the study of strategy and its relationship to domestic and international politics. Spring. BA-level Social Science Perspective. Staff.

151 THE ADVERSARY SYSTEM OF CRIMINAL JUSTICE (3). Focuses upon the political, legal, and administrative problems encountered in the actual operation of the American System of Criminal Justice as affected by the adversarial nature of its processes. Fall. LeFebvre.

152 LAW ENFORCEMENT IN A DEMOCRATIC SOCIETY (3). Deals with the development and current functioning of law enforcement agencies in the United States, legal and practical issues involved in the exercise of police discretion, judicial supervision of law enforcement activities, policy community relations, the impact of technological change and research on law enforcement, contemporary practices and future possibilities respecting functional improvements in law enforcement. Fall. Staff.

153 CONSTITUTIONAL POLITICS AND THE JUDICIAL PROCESS (PWAD 153) (3). Analysis of the structure and functions of judicial systems emphasizing the organization, administration and politics of judicial bureaucracies and roles of judges, juries, counsel, litigants, and interest groups in adjudication process. Fall. Unah.

154 MOCK CONSTITUTIONAL CONVENTION (3). Students employ their understanding of political philosophy and practical politics to write a new constitution for the United States. Emphasis on creative blending theory and practice. Fall. MacKuen.
155 THE CONSTITUTION OF THE UNITED STATES (HIST 175) (3). A study of the fundamental principles of constitutional interpretation and practice in the United States utilizing lectures, textbooks, and cases. Emphasis is on the political context surrounding and the impact following Supreme Court decisions. Fall. McGuire.

156 SECOND SPRING JUNIOR/SENIOR SEMINAR IN POLITICS AND LAW (3). Advanced topics of varying focus, taught in seminar format for students who have completed appropriate background coursework. Permission of the instructor is required. Spring. McGuire.


158 THE PROBLEMS OF CHANGE IN CORRECTIONAL ADMINISTRATION (3). An analysis of the political, legal, and administrative problems involved in effecting changes in correctional administration. Spring. Staff.

159 CRIMINAL LAW - DEVELOPMENT AND ADMINISTRATION (3). Analysis of problems in defining, invoking, and administering criminal law as a governmental process. Spring. LeFebvre.

161 SOCIAL AND POLITICAL PHILOSOPHY (3). A study of selected topics and concepts in contemporary social and political philosophy, such as rights, liberty, obligation, the state, welfare, authority, and power. Fall or spring. Obler. Hurley.

162 AMERICAN POLITICAL THOUGHT (3). A historical and analytical examination of the ideas underlying the political culture and institutions of the United States. Spring. Lienesch.

163 MARXISM AND SOCIALISM (3). Consideration of the political thought of major Marxist and socialist schools, including Marxism, Leninism, contemporary Democratic and Revolutionary Socialism-with reference to Utopian socialism, and recent controversies on the left. Fall. Staff.

164 ADVANCED FEMINIST POLITICAL THEORY (WMST 164) (3). Prerequisites, POLI/WMST 67. Examines in greater depth and complexity current issues in feminist political theory. Topics: theories of subjectivity and solidarity; feminist post-structuralist and post-Marxist thinking; gender in the public sphere. Fall and spring. Bickford.

165 PROBLEMS OF MODERN DEMOCRATIC THEORY (3). Major problem areas: definitions, presuppositions, and justifications of democracy, liberty, equality, minority rights, public interest, participation, dissent, and civil disobedience. Fall. Bickford, Lienesch.

166 RECENT AND CONTEMPORARY POLITICAL THOUGHT (3). Survey of the historical foundations, central tenets, and political consequences of prominent twentieth-century political theories. Topics include: contemporary liberalism and Marxism, fascism, theories of development, populism, feminism. Fall or spring. Leonard.

167 ADVANCED POLITICAL PSYCHOLOGY (3). Prerequisite, POLI 66.9. Examines in greater depth a variety of issues in the field of political psychology, including: conflict and conflict resolution, socialization, attitude formation, mass movements, leader-follower relationships, and psychobiography. Spring. Hurley.

168 RECENT DEVELOPMENTS IN POLITICAL PHILOSOPHY (3). A study of selected recent works of Continental or Anglo-American political theory by authors such as Rawls, Nozick, Walzer, Habermas, and Gadamer. Fall or spring. Leonard.

169 BUSINESS GOVERNMENT RELATIONS (3). Explores the nonprofit environment of firms and policy makers. Topics include the media, lobbying, antitrust, regulation, product safety, international trade, globalization, and corporate ethics. Emphasis on class discussion and presentation. Spring. Staff.


171 RACE, POVERTY, AND POLITICS (HSAD 171) (3). Definitions of poverty and their policy implications; the composition and causation of poverty; an examination of public policies directed at the alleviation, reduction, and elimination of poverty. Spring. Staff.

172 EXECUTIVE POLITICS (3). This course explores how presidents select policy options, how they decide timing, what shapes their congressional support, and how they build successful coalitions. Spring. Sullivan.

173 GOVERNMENT AND THE ENVIRONMENT (3). Examines political implications of environmental problems: environmental policy making and implementation processes in the United States, and management problems in selected policy areas such as population, energy, pollution, the ocean, land, hazardous waste, wilderness areas. Fall. Staff.

174 MASS MEDIA AND AMERICAN POLITICS (3). Prerequisites, junior/senior standing and POLI 41. Examination of the role, behavior, and influence of the mass media in American politics. MacKuen.

175 QUANTITATIVE ANALYSIS FOR PUBLIC POLICY (PLCY 175) (3). Prerequisites, MATH 22 or 31, STAT 11. Application of statistical techniques, including regression analysis, in public policy program evaluation; research design and data collection and management. Spring. Heinrich.

178 LEGISLATIVE POLITICS (3). Examines the politics of the U.S. Congress. Emphasis on representation, the legislative process, and policymaking. Fall. Engstrom.

180 FORMAL MODELS OF POLITICAL SYSTEM (3). An introduction to the use of mathematical models for analyzing political behavior. Fall and spring. McKeown.

190 SEMINAR IN DOMESTIC POLICY (PLCY 190) (3). Taught as part of the UNC-Chapel Hill Washington Policy Semester, the course introduces students to domestic policymaking from the federal perspective, using readings and lectures from the Washington policymaking community. Fall. Segman.

191 INTRODUCTION TO PUBLIC FINANCE (ECON 140) (3). Principles and practices of the budgetary activities of American governments-federal, state, and local. Students may not receive credit for both Economics 140 and 141. Fall or spring. Akin, Wältte, Wertz.

Courses for Graduates

200 SCOPE AND METHODS OF POLITICAL RESEARCH (3). Permission of the instructor required. A discussion of the theory and process of political analysis, including philosophy of science, research design, the methods of drawing causal inferences, and of generating data. Stephens, Searing.

201 COMPARATIVE POLITICAL RESEARCH AND ANALYSIS (3). The seminar introduces the beginning graduate student to the central issues and major developments in the field of comparative government and politics. Fall and spring. Steinert, Searing.

202 COMPARATIVE WELFARE STATES (SOCI 221) (3). This course examines the development, achievements, present crisis, and future of welfare states in advanced industrial democracies. Fall and spring. Stephens.
203 AMERICAN POLITICAL BEHAVIOR (3). Theoretical study of mass behavior (i.e., participation, voting, protest) in the American context. Spring. Staff.

204 AMERICAN POLITICAL INSTITUTIONS (PLCY 204) (3). Theory and practice of political institutions in the American context. Fall. Staff.

205 PUBLIC POLICY ANALYSIS (PADM 205) (3). The roles of expertise in policy discourse; the place of values in policy analysis; summarizing preferences; benefits and costs; policy models; policy expertise and democratic political systems. Fall. Staff.

206 INTERVIEWING IN SOCIAL SCIENCE RESEARCH (3). This seminar deals with the theoretical underpinnings and practical execution of interview techniques ranging from the short survey instrument to the adaptation of prolonged clinical interviews. Most of the work emphasizes different varieties of in-depth interviewing. Fall. Staff.

208 MODELING FOR ENVIRONMENTAL RISK ANALYSIS (ENVR 279) (PLCY 208) (3). Prerequisite, ENVR 180. Quantitative techniques for the analysis of environmental decisions, including application of modeling and sensitivity analysis, probability, value of information. The course explores risk attitudes and conflicting objectives. Fall. Staff.


210 CORE SEMINAR ON AMERICAN POLITICS (3). An overview of research on American politics that introduces students to a wide range of substantive understandings and theoretical perspectives. Fall. MacKuen.

212 INTRODUCTORY POLICY EVALUATION METHODS (PLCY 212) (PLCY 211) (3). The application of statistical methods to problems of evaluation of public programs and programs facing public managers. Theory and basic techniques up to an introduction of linear regression analysis. Fall. Lowery.

213 MANAGING PUBLIC POLICY (PLCY 213) (3). Prerequisites, POLI 210, 211, 212, 214, 226. The role(s), function(s), and strategy of public administrators in the formulation, adoption, and implementation of public policies. Policy from the perspective of the policy maker; cases exploring the relationship of theories to actual policy processes. Spring. Wright.

214 GOVERNMENT BUDGETING AND FINANCE (PLCY 214) (PLCY 214) (3). An introduction to the revenue and expenditure structure of the public sector including revenue policy, expenditure policy, and budget structure and administration. Topics are examined from an applied perspective using analytic criteria from public sector economics, public administration, and political science. Spring. Lowery.

219 POLITICS OF THE ADMINISTRATIVE PROCESS (PLCY 219) (3). The motivations of public agency officials, interactions between bureaucracies and other political actors, and alternative strategies to control bureaucratic power and discretion in making, implementing, and evaluating public policies. Fall. Lowery.

220 THE POLITICS OF DEVELOPMENT AND CHANGE (3). The theories, concepts, and mechanisms of political change, with particular attention to processes of development and modernization in new nations of Africa, Asia, and Latin America. Huber, Huber.

221 PUBLIC POLICY AND ADMINISTRATION (PLCY 221) (3). Alternative explanation of public policies and policy-making processes; introduction to policy analysis as a way to inform choices among policy options; policy implementation through administrative practices and procedures. Fall or spring. Staff.

223 POLITICAL ECONOMY OF THE NATION STATE IN THE WORLD SYSTEM (3). Prerequisite, ECON 161 or 163 or permission of the instructor. Analysis of the interaction between the external sector of the economy and domestic politics in weak capitalist states. Staff.

224 COMMUNIST POLITICAL SYSTEMS (3). An examination of the political evolution and process in societies governed by communist parties. Fall. Staff.

227 ISSUES IN LATIN AMERICAN POLITICS (3). Explores the central issues of Latin American politics and analyzes major theoretical debates. Fall or spring. Huber, Huber.

228 LATIN AMERICAN POLITICS: RESEARCH AND ANALYSIS (3). Reviews major works and theoretical perspectives in the literature, assesses contemporary political science research on Latin America, and examines problems of field research. Fall or spring. Huber, Huber.

229 POLITICAL ECONOMY OF LATIN AMERICAN DEVELOPMENT (3). Examines effects of state, regime type, and political processes on agricultural and industrial policy in Latin America. Also considers the informal economy, international debt, and relationship between policy and politicization. Fall and spring. Huber, Huber.

230 ORGANIZATION DESIGN (3). Prerequisite, POLI 210, or permission of the instructor. Field theory, motivation, communication, and systems perspectives as theoretical bases for organization design. Spring. Staff.

231 COMPARATIVE BUREAUCRACY (3). A cross-national examination of functions, career patterns, role behavior, and relationships of bureaucratic elites within the context of national political systems. Research on particular countries is emphasized. Fall. Staff.

232 GOVERNMENT AND POLITICS IN METROPOLITAN AREAS (3). Changing patterns of political cooperation and conflict in metropolitan areas; political behavior in central and suburban areas; the large metropolis as a political system; and national policies toward metropolitan problems. Spring. Staff.

236 RESEARCH TOPICS IN CONTEMPORARY SOUTHERN POLITICS (3). Topics vary; may include minority politics in the region, the counter-mobilization of whites during the 1960s, party realignment, and the decline of one-party politics, and the impact of the region on national politics. Fall or spring.

237 METHODS FOR POLICY ANALYSIS AND EVALUATION (PLCY 237) (PADM 237) (3). Prerequisite, POLI 212, PLAN 130, or equivalent. Introduction to selected techniques such as the following: multiple regression, decision theory, research design, social experiments, and quasi-experiments, program evaluation, and policy-related models. Spring. Lowery.

238 INTERGOVERNMENTAL RELATIONS (PADM 238) (3). Conflicts and cooperation among governmental officials representing national, state, and local governments in the United States; changing roles of governments and new mechanisms for intergovernmental collaboration. Spring. Weight.

239 POLICY WORKSHOP (3). Application of theories and techniques of policy analysis and planning to current public problems for actual clients. Focus on design and execution of policy research, and interpretation and presentation of results. Spring. Staff.

240 THEORIES OF INTERNATIONAL RELATIONS I (3). Introduction to the central issues and major theoretical developments in the field of international relations, focusing on system structure, political and security issues, and decision making. Fall. McKeown.

241 THEORIES OF INTERNATIONAL RELATIONS II (3). Introduction to the central issues and major theoretical developments in the field of international relations, focusing on the politics of international economic relations, law and organization, and fundamental system change. Spring. McKeown.

242 POWER, MORALITY, AND INTERNATIONAL SOCIETY (3). Thucydides, Machiavelli, Hobbes, Kant, twentieth-century Realists (Niebuhr, Morgenthau), Idealists, Neo-Realists, the British School (Wight, Bull), and selected topics (e.g., just war, human rights, food policy). Staff.
243 INTERNATIONAL ORGANIZATION (3). Theories and approaches to the study of international organizations and regimes, plus selected noneconomic case studies. Staff.

244 TOPICS IN NATIONAL SECURITY AND FOREIGN POLICY (3). This research seminar examines contemporary substantive issues in national security and foreign policy in light of research organizational and administrative topics. Staff.


246 SEMINAR ON UNITED STATES-LATIN AMERICAN RELATIONS (3). Analysis of the central conceptual concerns and major theoretical approaches to the study of inter-American relations, with a focus on United States foreign policy toward the region. Spring. Schultze.

247 INTERNATIONAL CONFLICT AND COOPERATION (3). An examination of international conflict and cooperative processes in the context of the evolution of the international system. Spring. Staff.

248 INTRODUCTION TO MATHEMATICAL INTERNATIONAL RELATIONS (3). Surveys research in mathematical models of international decision making, bargaining, systemic change, arms races, coalitions, and perception. Philosophical and historical considerations about this field are also discussed.

249 SEMINAR IN PROBLEMS OF U.S. MILITARY POLICY AND CIVIL-MILITARY POLITICS (3). Research seminar in problems of United States military policy and civil-military problems, focused chiefly on deterrence, arms control, and disarmament. Staff.

250 U.S. FOREIGN POLICY (3). This course provides an overview of United States foreign policy and exposes students to the major themes and controversies in the field. Fall and spring. Staff.

252 POWER AND MORALITY IN POLITICS (3). Motives of power and morality in rational choice theories and theories of power sharing. Empirical findings and normative evaluations. Spring. Steiner.

253 JUDICIAL POLITICS (3). Survey of recent literature on the politics of judicial institutions and the behavior of judges, lawyers, litigants, and other actors in the judicial process, emphasizing relationships between judicial and other policy-making processes. Spring. McGuire, Utah.

255 PROBLEMS IN CONSTITUTIONAL LAW (3). A survey of issues in American constitutional law, with a special emphasis on the politics of constitutional interpretation. Fall and spring. Staff.

256 SECURITY STUDIES (3). This course introduces students to the major theoretical approaches to the study of national security. Fall and spring. Staff.

257 THEORIES OF FOREIGN POLICY (3). This course is an introduction to the field of foreign policy analysis. Its primary goal is to expose students to the theories and methods of foreign policy research and analysis. Fall and spring. Staff.

260 LOGIC OF POLITICAL INQUIRY (3). A critical examination of models of political inquiry. Empirical (naturalist), interpretive, and critical metatheories are considered in terms of each model's ontological, epistemological, and practical/political consequences and presuppositions. Fall or spring. Leonard.

261 MAJOR ISSUES IN POLITICAL THEORY (3). An introduction to the major issues of political theory, with emphasis on the major thinkers in the history of Western political thought. Fall or spring. Leonard, Lienesch, Obler.

262 AMERICAN POLITICAL THEORY (3). Survey of issues and problems in American political thought, with analysis of major thinkers and selected topics, and emphasis on the role of family, society, and economy in political theory. Spring. Lienesch.

263 CLASSICAL POLITICAL THEORY (3). An introduction to ancient and medieval political thought, its major thinkers and issues. Leonard, Lienesch, Bickford.

264 MODERN POLITICAL THEORY (3). An introduction to modern political thought, its major thinkers and issues. Fall or spring. Leonard, Lienesch, Bickford.

265 RECENT AND CONTEMPORARY POLITICAL THOUGHT (3). An introduction to recent and contemporary political thought, its major thinkers and issues. Emphasis on Continental thought. Topics include: post-Marx Marxism, critical theory, existentialism, structuralism, post-structuralism. Leonard.


267 MAJOR FIGURES IN POLITICAL THEORY (3). An in-depth study of the primary and secondary literature on one or two major figures in the history of political thought (e.g., Plato, Machiavelli, Hobbes, Marx). Leonard, Lienesch, Bickford.

268 INFLUENTIAL WORKS IN DEMOCRACY (SOCI 220) (3). This course covers the major traditions of democratic theory from ancient Greece to the present, ethnographies on political organization, and nineteenth- and twentieth-century observations on democracy. Fall. Bellen, staff.

270 PUBLIC OPINION (3). A study of public opinion, its formation, expression, and impact on political systems and public policy.

271 DYNAMICS OF ELECTORAL POLITICS (3). Change within mass electorates. Topics include issue and attitude change, political realignments, and models of electoral competition. Rabinowitz.

272 POLITICAL SOCIALIZATION (3). The learning process by which individuals acquire values, attitudes, and norms affecting their behavior in the political community, with emphasis on major agencies of socialization: family, schools, peer groups, and media. Staff.

273 COMPARATIVE POLITICAL ECONOMY (3). Examines topics in the comparative political economy of Western Europe such as neocorporatism, postindustrialism, the politics of industrial relations, and the European community. Fall. Marks.

275 POLITICAL PARTIES (3). Selected problems and issues in the study of American and comparative parties and party systems. Staff.

276 SEMINAR IN SUBNATIONAL POLITICS AND POLICY (3). This course surveys the major topics and research programs in subnational American politics and policy with special attention to the vertical and horizontal intergovernmental interactions inherent within federal political systems. Fall and spring. Lowery.

280 LEGISLATIVE SYSTEMS (3). Institutions and processes in the United States Congress and some cross-national comparisons. Staff.

281 STATISTICS (3). Elementary descriptive statistics and basic principles of statistical inference including estimation and tests of hypotheses. Fall. Steenbergen.

282 INTERMEDIATE STATISTICS (3). This course extends the coverage of Political Science 281. Topics to be covered include analysis of variance, multiple and partials correlation, and multiple regression. Spring. Steenbergen.

283 INTRODUCTION TO STRUCTURAL EQUATION MODELS (3). Prerequisite, POLI 282 or equivalent. Introduces structural equation models with observed variables and econometric estimation methods. Some attention to models with unobserved variables and LISREL-type analyses. Macdonald.

284 TIME SERIES ANALYSIS OF POLITICAL DATA (3). Prerequisite, POLI 282 or permission of the instructor. Discusses the problems that arise when regression methodologies are applied to time series and pooled time series data. Fall. Staff.

285 AMERICAN PRESIDENCY (3). Survey of the substantial literature and research on the American Presidency. Staff.
286 CONGRESS AND THEORY BUILDING (3). This course examines diverse theoretical perspectives on national institutional change, stability, using as our institutional focus the United States Congress between 1789 and 1989. Spring. Staff.

287 MAXIMUM LIKELIHOOD METHODS (3). Prerequisites, POLI 281 and 282. Introduction to maximum likelihood estimation with applications to political science. Topics include discrete choice analysis, censored and truncated variables, event history analysis, sample selection models, and multilevel inference. Spring. Steenbergen.

290 AFRICAN POLITICS: CHALLENGES OF DEMOCRATIZATION AND DEVELOPMENT (3). Study of the politics of development in contemporary Africa, with emphasis on changing state-society relations, the roles of peasants and women in politics, and prospects for democratization. Fall.

291 POLITICAL TRANSITIONS AND DEMOCRATIZATION IN COMPARATIVE PERSPECTIVE (3). Examination of contrasting theoretical approaches to understanding democracy. Comparative study of Africa, Eastern Europe, and Latin America elucidates challenges and opportunities that affect possibilities for democratization and consolidation. Fall and spring. Hartlyn.

292 COMPARATIVE POLITICAL BEHAVIOR (3). Political behavior of the public in cross-national or non-American settings. Political culture, belief systems, participation, protest, revolution, voting behavior, civic behavior, socialization, and media. Fall and spring. Searing.

293 PSYCHOLOGY OF ELITE DECISION MAKING (3). Political thinking of politicians and civil servants in domestic and foreign policy. Perception, cognition, learning, attitude change and persuasion, aging, motivation, emotions, and personality. Fall and spring. Searing.

294 SEMINAR ON POLITICAL PSYCHOLOGY (3). Prerequisite, POLI 203. This course surveys and evaluates current and past research in political psychology. Topics may include: personality, attitudes and values, socialization, political reasoning, information processing, decision making, political identity, and political affect. Spring. Steenbergen, Hurley.

295 THE PSYCHOLOGY OF COLLECTIVE POLITICS (3). Explores the psychological underpinnings of collective politics from the perspective of both individual and group-level processes. Political behaviors examined include: deliberation, protest, nationalism, and intergroup conflict. Fall. Conover.

300 DESIGN AND ANALYSIS OF EXPERIMENTS AND SURVEYS (3). Prerequisites, POLI 200 and 281. Introduction to the use of experimental and survey research methods in political science. Topics include: factorial designs, repeated measures design, ANOVA, sampling theory, survey errors and costs, and questionnaire design. Spring. Stephens, Searing.

302 SEMINAR IN INTERNATIONAL RELATIONS (3). Special topics in international relations, such as alliances, bargaining, decision-making, economic interdependence, and international human rights. Fall or spring. McKeown.

303 THEORIES OF INTERNATIONAL POLITICS (3). Topics relating to the development of theory in the realm of international politics.

305 SEMINAR ON APPLICATION OF POLITICAL BEHAVIOR RESEARCH TO PUBLIC PROBLEMS (3). Exploration and examination of the ways in which political behavior research can be applied to understanding and ameliorating public problems. Boyle.

311 SEMINAR IN POLITICAL SOCIOLGY (SOCI 311) (3). The relationships between social structure and political decisions. Regimes and social structure, bureaucracies, political associations, and professions; science and politics; closed and open politics; political movements and change. Spring. Stephens.

321 SEMINAR IN AMERICAN GOVERNMENT AND POLITICS (3). Fall. Boyle.

341 DIRECTED READINGS IN POLITICAL SCIENCE (Variable). Directed readings in a special field under the direction of a member of the graduate faculty. By permission only. Fall, spring, and summer. Graduate faculty.

342 SPECIAL TOPICS IN POLITICAL SCIENCE (1-3). Prerequisite, permission of the instructor. Seminar in selected areas of Political Science. Topics vary from year to year. May be repeated for credit. Fall, spring, and summer. Graduate faculty.

346 SEMINAR IN INTERNATIONAL COMMUNICATION (JOUR 346) (3). Prerequisite, JOMC 146 or permission of the instructor. Spring.

353 JUDICIAL BEHAVIOR RESEARCH (3).

361 SEMINAR IN POLITICAL THEORY (3). Special topics in political theory such as Marxism and Socialism, Democratic theory, contemporary political thought, or related topics. Fall or spring. Leonard, Lienesch.

380 TEACHING POLITICAL SCIENCE (3). The director of graduate studies assigns each student to a faculty supervisor, who provides advice on course design, teaching, and related matters. Fall and spring.

393 MASTER'S THESIS (3 or more). Fall and spring. Members of the graduate faculty.

394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Graduate faculty.

395 RESEARCH IN PUBLIC ADMINISTRATION (PADM 395) (Var.). Fall, spring, and summer. Staff.

DEPARTMENT OF PSYCHOLOGY

KAREN M. GIL, Chair

Professors
Donald H. Baucom (104) Sex Roles, Marital Therapy, Depression Assessment
Martha Cox (206) Family Processes and Child Social and Emotional Development; Transition to Parenthood And Marital and Parenting Adaptation; Social and Emotional Development of Children in Rural Poverty; Fathers in Families; Child Care Experiences and Child Development
Linda A. Dykstra (9) Behavioral Pharmacology, Opioid Analgesia, Drugs of Abuse
Karen M. Gil (181) Chronic Illness, Stress and Coping, Pain Management
Peter C. Gordon (170) Psychological Processes Underlying Our Use of Language
Bernadette Gray-Little (16) Sociocultural Influences on Personality, Marital Interaction, Psychopathology
Mark Hollins (17) Sensory Information Processing, Tactile Perception
Chester A. Insko (18) Attitude Change, Balance Theory, Individual-Group Discontinuity
Donald T. Lytle (155) Psychoneuroimmunology, Learning Theory, Comparative Animal Behavior
Vonnie C. Mcloyd (208) Impact of Economic Hardship on Family Processes, Children's Mental Health, and Beliefs about Personal Efficacy
Peter A. Ornessin (28) Cognitive Development, Development of Learning and Memory
Mitchell J. Picket (131) Discriminative Stimulus Properties of Drugs, Tolerance and Cross-Tolerance, and Behavioral Effects of Opioid and Neuroleptic Drugs
J. Steven Reznick (192) Infant Memory and Cognition, Early Language Development, Parenting, Developmental Disorders
Caryl E. Rushult (129) Interdependence, Commitment Processes, Adult Close Relationships
Paul G. Shinkman (33) Effects of Early Experience on Vision and Visual Neurophysiology, Neural Plasticity, Cerebellar Mechanisms in Learning
David M. Thissen (157) Psychometrics, Item Response Theory, Statistical Models for Developmental Data, Graphical Data Analysis

**Associate Professors**

Ute J. Bayen (185) Human Memory, Memory and Aging, Cognitive Aging
Hart Blanton (212) Social Influence, Group Process, Motivated Cognition, Research Methodology
Regina M. Cartelli (187) Neurobiology of Reward, Drug Abuse, Behavioral Neurophysiology
Patrick J. Curran (195) Longitudinal Data Analysis, Structural Equation Modeling, Developmental Psychopathology
Jean-Louis Gatiery (153) Development and Evolution of Social Behavior, Early Social Development in Children, Quantification of Social Networks
Marilyn D. Hartman (132) Cognitive and Clinical Neuropsychology, Cognition and Aging, with an Emphasis on Memory and Frontal Lobe Function
Andrea M. Hussong (188) Adolescent Substance Use, Models of Peer, Family, and Affective Risk
Beth E. Kurth-Costes (142) Development of Cognitive Competence and Self Concept, Family and Cultural Influences on Development
Abigail T. Pantel (144) Evaluation, Measurement, Advanced Quantitative Methods, Survey Methodology, Personality, Evaluation of HIV/AIDS Service and Educational Programs
David L. Penn (196) Social Cognition and Social Impairment in Schizophrenia, Stigma, Cognitive-Behavior Therapy for Severe Mental Illness
Lawrence Sanna (199) Social Cognition, Mental Simulations, Affect and Social Judgments

**Assistant Professors**

Joseph B. Hopfinger (198) Neural Mechanisms of Visual Selective Attention in Humans, Electrophysiological and Neuroimaging Studies of Executive Attention Control and Perception
Lorraine Taylor (204) Parenting and Parent-Child Relationships, Emotional Development, Cultural and Socioeconomic Influences on Child Development
Todd Theile (203) The Neurobiology and Genetics of Alcoholism; Conditioned Taste Aversion Learning, Food Intake and Body Weight Regulation

**Research Professors**

Elliott L. Hirshman (140) Human Memory, Connectionist Modeling
Kathleen C. Light (147) Behavioral Medicine
Robert W. Peters (163) Psychoacoustics, Speech Perception, Stuttering
Rune J. Simonsen (164) Social/Cognitive Development, Child Development Research, Psychological Assessment
Thomas S. Wallsten (38) Individual Decision Behavior, Measurement and Communication of Uncertainty, Judgment Under Uncertainty

**Research Assistant Professors**

Susan Girdler (191) Behavioral Medicine, Women's Health
Stephanie J. Rowley (189) Social Personality Development and Academic Achievement Especially with African American Children

**Clinical Professors**

Ann Louise Barrick (135) Geropsychology, Behavioral Interventions in Personal Care in Dementia
Paul M. Brinch (152) Child, Adolescent, and Adult Psychotherapy and Psychoanalysis, Psychological Adjustment of Adoptees
William V. Bartlingame, Ethics, Regulatory Psychology, Treatment of Juvenile Sex Offenders
Gary B. Mesibov (96) Normalization and Community Programs for Handicapped People, Normal Social and Personality Development

**Clinical Associate Professors**

Lauretta Clark (179) Psychiatric and Behavioral Symptoms in Alzheimer's Disease, including MRI Correlates of Symptoms
Stephen G. Flanagan (130) Behavior Analysis and Therapy, Schizophrenia and Other Serious Mental Disorders

Patricia K. Kerg (197) Developmental Psychopathology, Risk and Resiliency in Children Exposed to Intergenerational Conflict and Violence, Development of Gender Differences, Interventions with Children and Families
Arline Margolis (134) Psychopathy and Treatment of Adolescents and Cognitive Assessment
Marcela Stetske (178) Neurocognitive Functioning and Treatment, HIV, Adult Onset Brain Tumor, Memory and Depression

**Clinical Assistant Professors**

Scott Schwartz (209) Applied Clinical Research with Adolescents, Diversity Issues in Assessment and Treatment
Jennifer A. Snyder (193) Schizophrenia, Psychiatric Hospitalization, Forensic Psychology, Non-Linear Dynamic Systems Analysis

**Adjunct Associate Professor**

Mark E. Stanton (137) Developmental Psychology, Developmental Neurotoxicology, Ontogeny of Learning and Memory Processes

**Adjunct Assistant Professor**

Josephine Johns (190) Comparative Animal Behavior, Substance Abuse and Aggression, Neuroendocrinology

**Professors Emeriti**

Elliott M. Cramer
W. Grant Dahlstrom
David A. Eckerman
Samuel Fillenbaum
M. David Galinsky
Bert N. Gordon
Edward S. Johnson
Lyle V. Jones
Richard A. King
Eugene R. Long
Barclay Martin
Vaida D. Thompson
Forrest W. Young

The Department of Psychology offers training for the doctor of philosophy degree in the recognized areas of psychology: clinical, cognitive, developmental, experimental and biological, quantitative, and social. Each program is designed to acquaint the students thoroughly with the theoretical and research content of a particular specialty and to train them in the research skills needed to become competent and creative investigators in their specialty area. In addition, certain programs, e.g., the clinical program, focus on the development of competence in appropriate professional skills.

While many of the requirements for a PhD degree vary with the specialty program, certain requirements apply to all psychology graduate students. Each student must: (1) pass a PhD written examination, (2) pass a PhD oral examination, (3) complete a special competency requirement (research competency, foreign language competency, teaching competency, or professional competency), (4) submit an acceptable dissertation and pass an oral examination, (5) engage in research during each year of enrollment, and (6) in most cases, serve as a teaching assistant or teach a course for at least one academic year.

Brochures describing graduate training in these areas may be obtained by writing the Department of Psychology. New students are accepted for admission in the fall semester only. Individuals seeking the MA degree only are not accepted.

**Courses for Graduates and Advanced Undergraduates**

The prerequisites for each course are provided for the general guidance of the student in consultation with an adviser. Any deviation from the
required prerequisite sequence must be approved by the instructor teaching the course. Such clearance must be obtained before registering for the course.

**NOTE:** PSYC 10 or the equivalent is prerequisite to all courses numbered above 100.

**100 TOPICS IN COGNITION** (3). Prerequisite, PSYC 20, 21, 22, or 23. Examines selected topics in cognitive psychology, examining issues related to thinking, memory, consciousness, language, or higher-level perception. The selected topics can vary from semester to semester. As announced. Johnson, P. Gordon.

**101 CONDITIONING AND LEARNING** (NBIO 101C) (3). Prerequisite, PSYC 22. A comprehensive survey of the methods, findings, and theories of classical and operant conditioning. Students develop skills necessary to evaluate, integrate, and summarize significant original literature. Fall. Staff.

**102 BIOLOGICAL FOUNDATIONS OF BEHAVIOR** (NBIO 102b) (3). Prerequisite, PSYC 22 or BIOL 11. Ethological, genetic, and physiological variables are studied in relation to their behavioral effects. Fall, Gariepy, Spring, Lysle.

**103 INTRODUCTION TO MATHEMATICAL PSYCHOLOGY** (3). Prerequisite, PSYC 30, MATH 32, or permission of the instructor. The use of mathematical models in psychology, with topics selected from measurement, scaling, psychophysics, learning, decision, and choice theory. As announced. Staff.

**104 CURRENT TOPICS IN PSYCHOLOGY** (3). Prerequisites, PSYC 10 and permission of the instructor. Various special areas of psychological study as needed. Course may be taken more than once. Fall and spring. Staff.

**NOTE:** PSYC 104 will fulfill a 100-level course requirement for a BA or BS degree in psychology.

**106 PHYSIOLOGICAL PSYCHOLOGY** (NBIO 106) (3). Prerequisite, PSYC 10, 23, or permission of the instructor. Elements of neuropsychology, neuroanatomy, and neurochemistry as they apply to the understanding of brain-behavior relationships. As announced. Carelli.

**107 PHYSIOLOGICAL PSYCHOLOGY LABORATORY** (3). Prerequisite, PSYC 23 or 106. Hands-on laboratory course designed to introduce students to experimental protocols emphasizing brain-behavior relationships. Topics include: gross neuroanatomy, stereotaxic surgery, and the effects of drugs on behavior. Spring, Carelli or staff.

**109 APPLIED BEHAVIORAL ANALYSIS** (3). Prerequisites, PSYC 22 and 80 or permission of the instructor. A survey of applications of learning theory in solving clinical, educational, and societal problems. Practicum experience included. Spring. Staff.

**112 HISTORICAL TRENDS IN PSYCHOLOGY** (3). Prerequisite, PSYC 10. Limited to senior majors or to graduate students in psychology; others by permission of the instructor. Overview of the origins of psychological concepts, movements, and fields of study. As announced. Staff.

**120 SENSORY PROCESSES** (3). Prerequisites, PSYC 20, 21, or 23. Each year the course deals with a specific sensory topic, such as color vision or the chemical senses. As announced. Hollins.

**121 ADVANCED PERCEPTUAL PROCESSES** (3). Prerequisites, PSYC 20, 21, or 23. The perception of shape, space, and motion; the role of cognitive factors in perception. As announced. Hollins.

**122 HUMAN MEMORY** (3). Prerequisite, PSYC 20 or 22. Theoretical and applied issues in human memory. Fall and spring. Bayern.

**123 INTRODUCTION TO COGNITIVE SCIENCE** (3). Prerequisite, PSYC 30 or equivalent. An introduction to the interdisciplinary study of the mind, intelligent behavior, information processing, and communication in living organisms and the computer. As announced. Hartman.

**124 PSYCHOLOGICAL APPLICATIONS OF DRUGS** (3). Prerequisites, PSYC 22 and 80. This course investigates the pharmacological effects and the clinical efficacy of drugs used to treat behavior disorders. Fall. Picker.

**125 PSYCHOLOGY OF LANGUAGE** (3). Prerequisite, PSYC 20 or LING 30 or LING 100. After an examination of the possible relations between psychology and linguistics, this course considers problems in the acquisition of language and particularly recent work in experimental psycholinguistics. Fall. P. Gordon.

**126 HUMAN INFANCY** (3). Prerequisite, PSYC 24. The primary focus of this course is the psychological development of human infants but other perspectives are considered: philosophy, parenting, health and public policy, the law. Fall. Rennick.


**129 DEVELOPMENT OF SOCIAL BEHAVIOR AND PERSONALITY** (3). Prerequisites, PSYC 24, 28, and 30. Developmental processes during early childhood as they relate to social behavior and personality. Fall and spring. Gariepy or staff.


**131 PERSPECTIVES ON NON-PARENTAL CHILD CARE** (3). Prerequisite, PSYC 24. This course explores the history, politics, and practice of non-parental child care through readings, lectures, and a semester-long internship in a child care center. Fall. Rennick. Staff.

**132 THE BRAIN AND COGNITION** (3). Prerequisites, PSYC 30, PSYC 20, 21, 22, or 23 or BIOL 121 or 154. Introduction to cognitive neuroscience. Higher mental processes including attention, memory, language and consciousness will be covered, with an emphasis on the neural mechanisms which form the substrates of human cognition. Fall, Gordon, Hartman, Hopfinger.

**135 BEHAVIORAL DECISION THEORY** (3). Prerequisite, PSYC 10 or permission of the instructor. Simple mathematical and psychological models of judgment and choice, and related experiments, are treated, as are applications to real-world problems in medical, environmental, policy, business, and related domains. Spring. Staff.

**140 ADVANCED PERSONALITY** (3). Prerequisite, PSYC 28 or graduate standing. An in-depth analysis of major theoretical issues in personality study. Fall and spring. Gray-Little. Lowman.

**141 PSYCHOLOGY OF ADULTHOOD AND AGING** (3). Prerequisite, PSYC 24. A developmental approach to the study of adulthood, from young adulthood through death. Topic includes adult issues in personality, family dynamics, work, leisure and retirement, biological and intellectual aspects of aging, dying and bereavement. As announced. Barrick or staff.

**142 PSYCHOLOGY OF BLACK AMERICANS** (3). Prerequisite, PSYC 28. This course focuses on the personal characteristics of black Americans as these have been studied by psychologists and other behavioral scientists. Various methodological approaches are considered. As announced. Gray-Little.

**144 PSYCHOLOGICAL DISORDERS OF CHILDHOOD AND ADOLESCENCE** (3). Prerequisites, PSYC 10, 24, and 80, or graduate standing. A survey of theories bearing on atypical development and disordered behavior, and an examination of major child and adolescent behavior problems and clinical syndromes. Fall and spring. Hustong, Kupersmidt, Margolis.
145 HEALTH PSYCHOLOGY (3). Prerequisites, PSYC 80 or graduate standing. An in-depth coverage of theoretical issues and clinical manifestations of psychological responses characteristic of individuals with chronic physical disorders. Fall and spring. Gil.

146 BEHAVIOR AND THE BRAIN: INTRODUCTION TO NEUROPSYCHOLOGY (3). Prerequisites, PSYC 20 or 23. Introduction to brain-behavior relationships through the study of the effects of brain damage. Focus on cognitive and emotional processes in humans as they are affected by disease and trauma to the brain. Fall. Hartman.

147 INTRODUCTION TO CLINICAL PSYCHOLOGY (3). Prerequisites, PSYC 30 and 80. Overview of clinical psychology—history, scientific basis, and major activities and concerns including assessment, psychodiagnosis, and various psychological interventions. Community psychology, ethics, and professional practice. Spring. Staff.

148 TESTS AND MEASUREMENT (3). Prerequisites, PSYC 10 and 30. Basic psychometric theory underlying test construction and administration. Detailed study of issues and instruments used in assessing intellectual functioning, educational progress, personality, and personnel selection. Fall. Staff.


150 STRESS AND COPING IN CHILDREN AND ADOLESCENTS (3). Prerequisite, PSYC 24. Examines issues related to the role of risk and protective factors in the development of psychopathology in children and adolescents. The course includes in-class experiences with youth. Fall. Spring. Staff.

152 ATYPICAL PERSONALITIES AND GROUPS I (3). Prerequisite, PSYC 80. Addresses methods to assess, treat, and rehabilitate adults or elderly with serious mental disorders. Includes volunteering in a mental health agency serving people with schizophrenia, psychoses, or dementia. Barrick, Flanagan, Spring. Barrick.

153 ATYPICAL PERSONALITIES AND GROUPS II (3). Prerequisite, PSYC 152. This course studies persons and groups labeled as deviant, outsiders, deviants, stigmatized, or occupying devalued social roles. Focus is placed on how these individuals present themselves in person and in writing. Spring. Staff.

156 POVERTY AND DEVELOPMENT (3). Prerequisite, PSYC 10. This course focuses on the scientific study of how poverty affects development across the human life span. As announced. Taylor.

157 RESEARCH IN DEVELOPMENTAL PSYCHOLOGY (3). Prerequisites, PSYC 24 and 30. Introduction to the issues, methods, and outcomes of research in developmental psychology. Demonstrational projects designed and completed. One lecture and four laboratory hours, as announced. Staff.

158 PSYCHOLOGY AND LAW (3). Prerequisites, PSYC 10, PSYC 50. Examines legal system from the perspective of psychology methods and research, with a focus on criminal law. Discusses dilemmas within the law and between the legal system and psychology. Fall, spring. Mulligan, Shaff, Snyder.

158 CONTEMPORARY SEX ROLES (WMST 183) (3). Prerequisite, PSYC 10. Covers theories and research in the areas of constitutional and social learning influences on sex differences; sex-role identification and the assessment of masculinity and femininity; sex differences in such areas as intellectual accomplishment, achievement, dependency, and aggression; and sex differences in relation to behavior disorders. As announced. Margolis or staff.

158 THE SELF AND SOCIETY (3). Prerequisites, PSYC 30 and 33. Content, structure, and functions of the self-concept. How the self-concept is shaped by society and developmental processes, ways in which the self-concept affects perception of others, and self-esteem. Class participation and presentations required. Psychology 50 desirable, but not required. As announced. Staff.

158 SOCIAL COGNITION (3). Prerequisites, PSYC 30 and 33. Theory and research in social psychology which explores the cognitive processes underlying social phenomena. Specific topics covered include: attributions, emotions, automaticity, heuristics, self, goals, stereotyping, expectations, social norms, and others. Fall, spring. Staff.

158 NONVIOLENT CONFLICT RESOLUTION (PWAD 186) (3). Prerequisite, PSYC 10 or permission of instructor. Theories of conflict and conflict resolution are systematically applied in the contexts of personal, interpersonal, intergroup, and intraethnic conflict, with a focus on empirical knowledge and acquisition of skills for nonviolent dispute resolution. Fall. Staff.

158 APPLIED SOCIAL PSYCHOLOGY (3). Prerequisites, PSYC 30 and 33. Applications of social psychological theory to research to practical social problems and issues, e.g., organizational behavior, job satisfaction, effects of advertising and media on behavior, and discrimination-affirmative action. As announced. Staff.

158 SMALL GROUPS (3). Prerequisites, PSYC 30 and 33 or permission of instructor. Intensive survey of research and theory on behavior in small groups combined with appropriate experience in studying various structured groups. As announced. Thompson or staff.

158 INTERPERSONAL PROCESSES (3). Prerequisites, PSYC 30 and 33, or permission of the instructor. Intensive coverage of normal interpersonal processes, focusing on the dyad. As announced. Rusblatt or staff.

159 STEREOTYPING, PREJUDICE, AND DISCRIMINATION (3). Prerequisites, PSYC 30 and 33. Examines the determinants, functions, processes, and consequences of stereotyping, prejudice, and discrimination. Prospects for change are considered. Class presentations and participation required. Psychology 50 desirable, but not required. As announced. Staff.

159 ATTITUDE CHANGE (3). Prerequisites, PSYC 30 and 33, or permission of the instructor. A detailed consideration of the theoretical issues in attitude and belief change. As announced. Thompson or staff.

Courses for Graduates

200 EXPERIMENTAL METHODS: COGNITIVE PROCESSES (3). Principal topics include: psychophysics, information processing, memory, cognition. Spring. Staff.

201 BEHAVIOR AND ITS BIOLOGICAL BASES I (NBIO 201a) (3). A survey of psychological and biological approaches to the study of sensory and perceptual information processing: perceptual development. Fall. Staff.

202 BEHAVIOR AND ITS BIOLOGICAL BASES II (NBIO 202) (3). A survey of psychological and biological approaches to the study of basic learning and higher integrative processing. Spring. Staff.
203 PERSONALITY RESEARCH METHODS (3). Prerequisites, PSYC 220, 221, and 248 are advisable. Covers empirical research on personality structure and processes, person-situation interactions, and other current issues in the area. Spring. Staff.

204 ADVANCED BIOLOGICAL PSYCHOLOGY: CENTRAL NERVOUS SYSTEM (NBIO 204) (3). Prerequisite, PSYC 106 or equivalent. Each fall one special topic will be covered in depth; e.g., neural bases of memory storage, homeostasis, and perception. Format includes lectures and seminar meetings with student presentations. Fall. Shineman.

205 ADVANCED BIOLOGICAL PSYCHOLOGY: AUTONOMIC NERVOUS SYSTEM (NBIO 205) (3). Prerequisites, PSYC 106 and/or 202, or permission of the instructor. Autonomic nervous system bases of emotion, motivation, and learning. Two lecture and two laboratory hours a week, as announced. Staff.

207 APPLICATIONS OF EXPERIMENTAL PSYCHOLOGY TO HEALTH RESEARCH (NBIO 207) (3). This course provides a critical analysis of interdisciplinary research within experimental psychology, including such topics as psychopharmacology, psychoneuroimmunology, psychophysiology, and animal models of brain/behavior disorders. Fall. Carelli, Dykstra, Gridler, Light, Lyle, Pickel.

208ABCDEF PROSEMINAR IN QUANTITATIVE PSYCHOLOGY (1). An introduction to (A) data analysis and visualization, (B) research synthesis (meta-analysis), (C) analysis of covariance structures, (D) practicum in quantitative psychology research, (E) computer simulation methods, (F) test theory. Fall. Staff.

209ABCDEFGH PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to (A) history of cognitive psychology, (B) learning and memory, (C) sensation and perception, (D) speech and language, (E) judgment and thinking, (F) methods and models, (G) cognitive aging, and (H) cognitive neuropsychology. (I) cognitive neuroscience. Fall and spring, as announced. Staff.

210 HISTORY OF PSYCHOLOGY (3). Review of the history of major areas of psychology with special emphasis on the conceptual and methodological underpinnings of the discipline. Spring. Garety.

212 CONTEMPORARY PSYCHOLOGICAL TRENDS (3). Prerequisite, graduate standing. Different perspectives on the task of psychology with a discussion of selected contemporary problems. Fall. Staff.

216 DEVELOPMENTAL PSYCHOLOGY: METHODOLOGY I (3). Philosophical and sociological perspectives on research in developmental psychology, with specific applications to ongoing projects. As announced. Staff.

217 DEVELOPMENTAL PSYCHOLOGY: METHODOLOGY II (3). Techniques and research designs appropriate for the study of the development of behavior. Supervised experience in the planning of experiments and data analysis. As announced. Staff.

220 PERSONALITY: THEORY AND RESEARCH (3). Prerequisite, permission of the instructor. Review and critical analysis of major theoretical and empirical approaches to the study of personality. Fall. Staff.

221A FUNDAMENTAL ISSUES IN PSYCHOTHERAPY: ADULT (1). Prerequisite, graduate status in clinical psychology. Brief survey of theoretical and practical issues in psychotherapy with adults. Factors common to many approaches and development of rapport will be discussed. Fall. Staff.

221B FUNDAMENTAL ISSUES IN PSYCHOTHERAPY: CHILD (1). Prerequisite, graduate status in clinical psychology. Brief survey of theoretical and practical issues in psychotherapy with children. Factors common to many approaches and development of rapport will be discussed. Spring. Staff.

222 EXPERIMENTAL ANALYSIS OF BEHAVIOR (3). Prerequisite, PSYC 201 or permission of the instructor. Applications of operant conditioning procedures to the analysis of complex behavior in man and animals. Students perform original experiments. One lecture and six laboratory hours a week. Fall. Staff.

223, 224 DIRECTED RESEARCH SEMINAR IN SOCIAL PSYCHOLOGY (3). Prerequisite, first-year social psychology graduate student or permission of the instructor. Directed research problems and seminar discussion of related issues. Fall and spring. Staff.

225 INTERPERSONAL PROCESSES AND CLOSE RELATIONSHIPS (3). Prerequisite, PSYC 238 or permission of the instructor. Intensive study of the processes by which adult close relationships are initiated and developed. Fall or spring. Rusbult or staff.

226 INDIVIDUAL CHOICE BEHAVIOR (3). Prerequisite, permission of the instructor. Descriptive and normative algebraic and stochastic models for individual decision making with applications to behavioral science. Fall. Staff.

227 INTRODUCTION TO CLINICAL PSYCHOLOGY (3). Prerequisite, graduate standing. Survey of methods and findings in psychodiagnosics, psychotherapy, and mental health practices. As announced. Staff.

228 ADVANCED SOCIAL PSYCHOLOGY (3). Prerequisite, PSYC 238 or permission of the instructor. Intensive study of interdependence theory and research of interpersonal relationships. Spring. Staff.

230 MULTIDIMENSIONAL SCALING (3). Prerequisites, PSYC 282 and 284, or equivalent. Survey, with application to dissimilarity data. Of the algebraic, geometric, and computational bases of multidimensional scaling methods, with emphasis on individual differences models and nonlinear transformation. Alternate years. Staff.

231 STRUCTURAL EQUATION MODELS WITH LATENT VARIABLES (3). Prerequisite, PSYC 282 or permission of the instructor. Examination of a wide range of topics in covariance structure models, including their history, underlying theory, controversies, and practical use with major computer packages. As announced. Panter.

232 TEST THEORY AND ANALYSIS (3). Prerequisite, PSYC 282. Survey of classical test theory and more recent developments in item analysis and test construction. As announced. Staff.

233 METHODS OF SOCIAL PSYCHOLOGY (3). Prerequisite, PSYC 228 or permission of the instructor. Methods of investigation in social psychology with primary emphasis upon experimental design and the nature of the experimental situation. Fall. Inoko or staff.

234 MATHEMATICAL PSYCHOLOGY (3). Prerequisite, permission of the instructor. Development and applications of mathematical models in theoretical and experimental psychology. Topics selected from learning, memory, perception, thinking, attention, decision making. As announced. Staff.

235 TOPICS IN ATTITUDE RESEARCH (3). Prerequisite, PSYC 238 or permission of the instructor. A critical examination of selected topics in attitude theory and change. Spring. Inoko or staff.

236 FACTOR ANALYSIS (3). Prerequisite, PSYC 282 or permission of the instructor. Advanced topics in factor analytic models, multivariate correlation models, and analysis of covariance structures as applied in behavioral research. As announced. Panter.

237 ANALYSIS OF FREQUENCY TABLES IN BEHAVIORAL RESEARCH (3). Prerequisite, PSYC 282 or permission of the instructor. An introduction to the analysis of frequency data, including measures of association, and the use of log-linear models and logit models in the behavioral sciences. Alternate years. Staff.

238 ADVANCED SURVEY OF SOCIAL PSYCHOLOGY (3). Prerequisite, graduate standing or permission of the instructor. Survey of research and theories of attitude change, interpersonal relations, and small groups. Fall. Staff.
239 DATA ANALYSIS AND VISUALIZATION (3). Prerequisite, PSYC 282 or permission of the instructor. Survey, with application to behavioral data, of such data analysis and visualization methods as principal components analysis, factor analysis, multidimensional scaling, correspondence analysis, cluster analysis, regression analysis, and redundancy analysis. Alternate years. Staff.

240, 241 INTRODUCTION TO CLINICAL ASSESSMENT (3). Prerequisite, first-year graduate status in clinical psychology. Lecture and discussion on the nature and theory of psychological assessment. Training in administration, scoring, and interpretation of such basic techniques as: WAIS-WISC, Rorschach, TAT, and MMPI. Two lecture and two laboratory hours a week. Fall and spring. Lowman.

242 EMPIRICALLY VALIDATED APPROACHES TO CHILD AND FAMILY PSYCHOTHERAPY (3). Prerequisite, graduate status in clinical psychology. This course covers the research bases and clinical application of psychotherapeutic interventions that have demonstrated empirical validity for assisting children and families. Fall. Staff.

243 EMPIRICALLY VALIDATED APPROACHES TO ADULT PSYCHOTHERAPY (3). Prerequisite, graduate status in clinical psychology. This course covers the research bases and clinical application of psychotherapeutic interventions that have demonstrated empirical validity for assisting adult clients. Fall. Staff.

244, 245 ADVANCED PSYCHOPTHALOGY (3). Prerequisite, first-year graduate status in clinical psychology. The major forms of psychopathology are examined within a development framework. Fall and spring. Gray-Little, Hussong.

246 INTRODUCTION TO NEUROPSYCHOMY (3). For graduate students only. Introduction to brain-behavior relationships through the study of the effects of brain dysfunction on cognitive and emotional processes. Spring. Hartmann.

247 ETHICS AND LEGAL ISSUES IN CLINICAL PSYCHOLOGY (1). Prerequisite, graduate standing in clinical psychology. A survey and discussion of the ethical and legal issues that clinical psychologists confront in a variety of professional settings. Fall. Staff.

248 OBJECTIVE PERSONALITY MEASUREMENT (3). Intensive study of theory and research on objective techniques useful for personality assessment. Standard and special inventories, checklists, and other devices are investigated at item, scale, and profile levels. Fall. Staff.

250 ADVANCED ADULT ASSESSMENT (3). Prerequisite, PSYC 241. Consideration of how various forms of assessment data can be utilized in understanding the structure and dynamics of adult personalities; problems of differential diagnosis, brain damage, etc., are considered. Two lecture and two laboratory hours a week. Fall. Buecom.

251 ADVANCED CHILD ASSESSMENT (3). Prerequisite, PSYC 240. Theory, research, and application of objective and projective techniques for behavioral, emotional, psychiatric, interpersonal, and social cognitive assessment of children and adolescents. Two lecture and two laboratory hours a week. Spring. Staff.

252 ADVANCED SOCIAL COGNITION (3). Prerequisite, PSYC 238 or permission of instructor. Advanced theory and research in social psychology that explores the cognitive processes underlying social phenomena. Specific topics include: attributions, emotions, heuristics, self, goals, motives, and others. Spring. Saada and staff.

253 INTRODUCTION TO COMMUNITY PSYCHOLOGICAL APPROACHES (3). Survey of such topics as social contributions to psychopathology, comprehensive and integrated service delivery systems, consultation, primary prevention, manpower innovations, program evaluation, and epidemiological approaches. Fall. Lowman.

254, 255 CLINICAL PRACTICUM (3). Prerequisite, second-year graduate status in clinical psychology. Supervised experience in psychological assessment and psychotherapy. Six to eight laboratory hours a week. Fall and spring. Staff.

256, 257 CLINICAL RESEARCH METHODS (3). Prerequisite, graduate status in clinical psychology. Analysis of clinical and personality research in terms of their contribution to knowledge, their limitations, possibilities for their improvement, further research they suggest, etc. Preparation of individual research proposals for class presentation and critical evaluation. Three hours a week. Fall. Staff.

258 METHODS OF APPLIED SOCIAL PSYCHOLOGY (3). Prerequisite, graduate standing. Supervised research experience in applied setting and accompanying methods of nonlaboratory research, including nonquantitative methods of social psychology and evaluation of quasi-experimental and nonexperimental designs. Spring. Staff.

259 CLINICAL RESEARCH SEMINAR (2). Prerequisite, graduate status in clinical psychology. PSYC 256. Designing and presenting research proposals in individual student's research areas in oral and written form. Critiquing research proposals. Research ethics and preparing and evaluating protocols for ethical review. Spring. Staff.

260 HUMAN COGNITIVE ABILITIES (3). Prerequisite, PSYC 239 recommended. Applications of psychometric and experimental methods to the study of human intellectual abilities and processes, with special attention to factor-analytic studies. As announced. Staff.

264, 265 ADVANCED CLINICAL PRACTICUM AND PROFESSIONAL ETHICS (3). Prerequisites, PSYC 254 and 255. Supervised clinical work in an area of particular interest to the student. Clinical activity is coordinated with reading and discussion of literature in professional ethics. Fall and spring. Staff.

266 SELECTED CLINICAL PRACTICUM (1, 2, or 3, can be repeated). Prerequisite, PSYC 265. Individualized clinical practicum for advanced doctoral students in clinical psychology. Supervised experience in psychotherapy, psychological assessment, and consultation. Fall, spring. Buecom.

270 MEASUREMENTS OF LANGUAGE BEHAVIOR (3). Prerequisite, permission of the instructor. Procedures for the quantitative treatment of language elements (words, text content, etc.) and performance (e.g., speech rate, language acquisition, vocabulary, comprehention, verbal aptitudes). As announced. Staff.

271 CHOICE BEHAVIOR IN THE DIADE (3). Psychological and mathematical models of two-person interaction with applications to the social and behavioral sciences. Fall. Staff.

272 GROUP CHOICE BEHAVIOR (3). Psychological and mathematical models of n-person interaction in cooperative and noncooperative decision situations with applications. Spring. Staff.

273 ADVANCED SOCIAL DEVELOPMENT (3). Current thinking and research relevant to social, emotional, and personality development across the life span. Topics include parent-child interaction, peer relations, aggression, competence, sex roles, and gender differences. Fall. Garey.

274 ADVANCED COGNITIVE DEVELOPMENT (3). This course covers the development of attention, perception, learning, memory, thinking, and language, beginning in infancy and covering the life span from both information processing and Baldwin-Flak research approaches. Spring. Ornstein, Kurtz-Costes.

275 DEVELOPMENTAL ASSESSMENT (3). Introduction to instruments used for assessment of development and cognitive in infants, preschoolers, and school-aged children with primary focus on research issues. Practice administration of instruments in field settings. Spring. Staff.

278 DEVELOPMENTAL PSYCHOLOGY: HISTORY AND THEORY (3). Drawing upon materials presented in the previous content and method courses, this class examines in-depth various types of developmental theories. As announced. Staff.

279 ADVANCED FAMILY THEORY AND RESEARCH (3). Research related to family processes, especially regarding the developmental consequences of varying family environments on children. Topics include divorce, cognitive development, single parents, parental employment, discipline, cultural context. As announced. Kurtz-Costes.
280 QUANTITATIVE PSYCHOLOGY FORUM (1). Presentations of research by faculty, students, and visitors, discussion of professional topics such as ethics, the publication process, research funding, and reviewing of articles. Fall, spring. MacCallum, Thissen, Gurran, Panter (rotating).

281 STATISTICAL METHODS IN PSYCHOLOGY I (4). Prerequisite, a course in introductory statistics. Data analysis, sampling, applied probability, elemental distribution theory, principles of statistical inference. Fall. Staff.

282 STATISTICAL METHODS IN PSYCHOLOGY II (4). Prerequisite, PSYC 281. Statistical estimation and hypothesis testing for linear models (ANOVA, ANCOVA, regression analysis); statistical models in the design and analysis of experiments. Spring. Staff.

283 INTRODUCTION TO MULTIVARIATE TECHNIQUES FOR THE BEHAVIORAL SCIENCES (3). Prerequisite, PSYC 282 or permission of the instructor. An introduction to linear regression and multivariate statistical techniques as employed in the behavioral sciences with particular emphasis on analytic techniques and interpretation of results. As announced. Staff.

284 QUANTITATIVE RESEARCH SYNTHESIS (META-ANALYSIS) (3). Prerequisite, PSYC 282 or permission of the instructor. Survey of research synthesis including history; problem formulation; statistical concerns; describing and combining studies; combining p-values; testing for heterogeneity; accounting for moderator variables; fixed, mixed, and random effects models; publication bias. Alternate years. Staff.

285 COMPUTATIONAL STATISTICS (3). Prerequisite, PSYC 282 or permission of the instructor. Current computational environments for data analysis and visualization are taught and used as a basis for understanding current (and creating new) methods of computational statistics and dynamic graphical statistics. Fall. Staff.

286 DEVELOPMENTAL PSYCHOLOGY (3). An introduction to developmental psychology, focusing on early development in humans. Topics include child development, developmental psychology, the development of sensory and communication systems, and neurobehaviors. As announced. Garvey.

289 VISUAL PERCEPTION (COMP 277) (3). Prerequisite, COMP 235 (vision segment). PSYC 209A, or equivalent. Surveys form, motion, depth, scale, color, brightness, texture, and shape perception problems. Includes computational modeling of vision, experimental methods in visual psychophysics, and neurophysiology. Recent research and open questions. As announced. Staff.

290 ADVANCED TOPICS IN MEMORY (3). Prerequisite, permission of the instructor. Course reviews recent theoretical and empirical advances in memory research. Topics include large-scale models of memory encoding and retrieval and modularity models of memory. Fall and spring. Staff.


299 APPRENTICESHIP IN DEVELOPMENTAL PSYCHOLOGY (1, 2, or 3). Supervised research and practice experience in developmental psychology. As announced. Staff.

300 SPECIAL READINGS IN PSYCHOLOGY (3). Prerequisite, permission of the instructor. Intended for advanced graduate students. Fall and spring. Staff.

301 SEMINAR IN THE EXPERIMENTAL ANALYSIS OF BEHAVIOR (3). Limited to graduate students in psychology. Selected advanced topics depending on the interests of the instructor and the students. Three to six hours a week. Fall and spring. Eckerman.

302 SEMINAR IN THE BIOLOGICAL FOUNDATIONS OF PSYCHOLOGY (NBIO 302) (3). Prerequisite, permission of the instructor. Limited to graduate students in psychology and neurobiology. Lectures and seminar presentations on a wide range of topics in the area of physiological psychology. Fall and spring. Catelli.

304 SEMINAR IN GENERAL PSYCHOLOGY (3). Limited to graduate students in psychology. Selected advanced topics depending on the interests of the instructor and students. Three to six hours a week. Fall and spring. Staff.

306 SEMINAR IN DEVELOPMENTAL PSYCHOLOGY (3). Prerequisite, permission of the instructor. Intensive study of selected topics in developmental psychology. As announced. Staff.

307 SEMINAR IN APPLIED DEVELOPMENTAL PSYCHOLOGY (3). Prerequisite, permission of the instructor. Intensive study of the application of developmental principles. As announced. Staff.

308 PROSEMINAR IN DEVELOPMENTAL SCIENCE (3). Permission of the instructor. Intensive study of selected topics in human development that are being explored by members of the Carolina Consortium on Human Development staff. Fall and spring. Staff.

320 SEMINAR IN PERSONALITY (3). Prerequisite, permission of the instructor. Selected advanced topics depending on the interests of the instructor and students. As announced. Staff.

321 SEMINAR IN EXPERIMENTAL HEALTH PSYCHOLOGY (3). An in-depth treatment of research topics in health psychology. Fall and spring. Lysle, Light.

322 SEMINAR IN CLINICAL PSYCHOLOGY (3). An in-depth analysis of biopsychosocial variables in health and illness with an emphasis on the clinical and developmental aspects of health psychology. Spring. Gil.

323 BEHAVIORAL PHARMACOLOGY (NBIO 323) (PHCO 323) (3). Prerequisite, PSYC 124 or permission of the instructor. Basic principles of pharmacology and behavior analysis are considered in relation to drugs that affect the central nervous system. Spring. Duker.

324 CLINICAL PSYCHOPHARMACOLOGY (3). Examinations of the clinical efficacy of drugs, use of drugs used in the treatment of behavioral disorders. Additional topics include the behavioral and pharmacological actions of drugs of abuse. Spring. Pickler.

325 SEMINAR IN THEORETICAL-EXPERIMENTAL PSYCHOLOGY (1, 2, or 3). As announced. Staff.

326 SEMINAR IN CLINICAL PSYCHOLOGY (1, 2, or 3). As announced. Staff.

327 SEMINAR IN ABNORMAL PSYCHOLOGY (1, 2, or 3). As announced. Staff.

328 SEMINAR IN SOCIAL PSYCHOLOGY (3). Prerequisite, PSYC 236 or permission of the instructor. Fall or spring. Staff.

330 SEMINAR IN QUANTITATIVE PSYCHOLOGY (1, 2, or 3). As announced. Staff.

331 PROFESSIONAL PROBLEMS IN PSYCHOLOGY (1). Prerequisite, permission of the instructor. Consideration of problems facing academic psychologists. Fall. Staff.

332 LABORATORY IN COLLEGE TEACHING (3). Specific training in presentation and interpersonal skills needed by college teachers, such as planning, lecturing, discussing, motivating, and evaluating. Fall. Lowman.

333, 334 RESEARCH SEMINAR IN EXPERIMENTAL PSYCHOLOGY (3). Prerequisite, standing in psychology. Students design and conduct a supervised research project and engage in critical discussion of research performed by other students and faculty. Fall and spring. Lysle.

336 SEMINAR IN COGNITIVE PSYCHOLOGY (1, 2, or 3). Prerequisite, permission of the instructor. Discussion and critical evaluation of various theories of thinking, theories of concept formation, problem solving, and reasoning. As announced. Staff.
337, 338 RESEARCH SEMINAR IN COGNITIVE PSYCHOLOGY (3). Prerequisite: standing in psychology. Students conduct a supervised research project in cognitive psychology and participate in discussion of current research and related ethical and methodological issues. Fall, spring. Staff.

341 ADVANCED RESEARCH (3). Six laboratory hours a week. Fall and spring. Staff.

393 MASTER'S THESIS (3 or more). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

604 AGING AND HEALTH (SOWO 604) (DENT 604) (PHPR 604) (NURS 604) (HMSC 604) (EMME 480) (MED 480) (3). Prerequisite: PSYC 10 or PSYC 604 only. Introduction to normal aging, diseases of aging, mental health issues, and use of health services by older adults. This course will not fulfill a 100-level course requirement for a BA or BS degree in psychology. Fall, Iskin-Zimmerman, Callahan, Sloan.

607 AGING AND PUBLIC POLICY (SOWO 607) (DENT 607) (3). Prerequisite: PSYC 10. Provides students (all disciplines) with a general background in the major economic, health, and social policy issues facing the nation and the state resulting from the aging of our society. This course will not fulfill a 100-level course requirement for a BA or BS degree in psychology. Spring, Iskin-Zimmerman, Alpers, Lamb.

SCHOOL OF PUBLIC HEALTH

MARGARET DARDESS, Interim Dean
Kerry Kilpatrick, Associate Dean for Academic Programs

The School of Public Health was organized in 1936 as a division within the School of Medicine at the University of North Carolina. Separate status as a school of public health was granted in 1939, and the first graduate degrees were awarded in 1940. Carolina's School of Public Health was the first school of public health established within a state university. It recently was ranked the top school of public health at a public university (U.S. News & World Report, 2003). Today, along with the schools of Medicine, Dentistry, Nursing, and Pharmacy, the School of Public Health is a unit of the Division of Health Affairs. The School of Public Health is one of thirty-two such schools in the United States accredited by the Council on Education for Public Health.

The mission of the School of Public Health is to advance the public's health through:

- **Learning**: educating students to excel in professional and scholarly roles in public health practice, policy, research, and teaching.
- **Discovery**: advancing knowledge and understanding of the biological, socioeconomic, behavioral, environmental, and health care factors affecting the health of the population.
- **Service**: encouraging and rewarding faculty service to the School, the University, institutions, governments, and organizations at local, state, and national levels.
- **Practice**: providing broad-based technical assistance and consultation in the public and private sectors, and developing partnerships with local, state, regional, national, and international agencies, organizations, and groups.

Departments and curricula at the school are:

- Biostatistics
- Environmental Sciences and Engineering
- Epidemiology
- Health Behavior and Health Education
- Health Policy and Administration
- Maternal and Child Health

Nutrition

Public Health Leadership Program

All have graduate degree programs, four of which are open to undergraduates.

Interdisciplinary programs that provide opportunities for students in education, service, and research include: Center for Health Promotion and Disease Prevention, Institute for Environmental Studies, Occupational Safety and Health Education Resource Center, Occupational Health Studies Program, Carolina Population Center, Injury Prevention Research Center, and the Cecil G. Sheps Center for Health Services Research.

Graduate academic degrees offered by the School of Public Health are the master of science (MS) and the doctor of philosophy (PhD), and the graduate professional degrees are the master of science in public health (MSPH), the master of science in environmental engineering (MSEE), the master of public health (MPH), the master of health care administration (MHA), and the doctor of public health (DrPH). All requirements for these degrees are administered by the faculty of the School of Public Health with the approval of the administrative board of The Graduate School.

MPH Program

The program is designed to prepare students for positions that require a considerable breadth of knowledge of the whole field of public health but a lesser degree of specialization in one area. Students in this program may take nearly half of their courses outside of the major department or curriculum and undergo extensive field training if previous experience is not deemed sufficient by criteria set by the student's department or curriculum. Typically, master of public health students already have acquired education in a health or health-related profession or have at least three years of experience in a field related to public health. The master of public health degree is considered a terminal degree, but qualified students may proceed in the School of Public Health to a DrPH or PhD program for advanced study.

MSPH Program

The master of science in public health program is designed to prepare students for professional careers in specialized areas of public health. Thus, students in this program will take courses mainly in one major department or curriculum of the School of Public Health. Additionally, there are core requirements that provide for orientation to a broader view of public health. The master of science in public health degree is usually a terminal degree, but it and the master of science degree, more so than the master of public health, tend to be the precursor to a doctoral program. Programs of study leading to the MSPH degree are offered by the following departments: environmental sciences and engineering, epidemiology, health behavior and health education, health policy and administration, and maternal and child health.

MHA Program

The master of health care administration program in the Department of Health Policy and Administration is designed to prepare students for management careers in health care organizations. Graduates will be prepared to take positions in staff or line management or as consultants in hospitals, health maintenance organizations, clinics, public health departments, and other health care settings.

MS Degree

Programs of study leading to this degree are offered in the departments of biostatistics and environmental sciences and engineering, and in the Public Health Leadership Program.
MSEE Degree
The curriculum leading to the MSEE degree is designed to prepare graduates for careers in the environmental engineering profession with special emphasis on water resources and air and industrial hygiene. Specifically, those awarded this degree are prepared for professional work with private firms of consulting engineers, with public agencies at the national, state, regional, and local levels of government, and with a variety of industrial organizations.

Executive Master’s Program
The Department of Health Policy and Administration provides graduate-level education to employed health professionals and health administrators through its Executive Master’s programs:

- The North Carolina program provides graduate education in health administration for North Carolina health professionals holding full-time jobs. This program offers classes one full day per week at several off-campus sites. Students complete the MPAH within three years and the MHA requirements within four years.
- The national program provides master’s degree study to full-time health professionals throughout the United States and beyond. This program is comprised of intensive summer institutes on the Chapel Hill campus, faculty-guided distance learning, and credit transfer from approved programs at other universities. Students usually complete the MPH degree requirements within two years, and the MHA in three.

DrPH Program
The doctor of public health program provides professional training to prepare persons to effectively conduct or supervise research, usually of an applied nature, and the integration of new knowledge and techniques into community and/or public health practice. Graduates are typically employed by operating community or public health programs at the local, state, national, or international levels.

PhD Degree
The doctor of philosophy degree prepares students for leadership in academic and related settings involving teaching and research with emphasis on basic or theoretical issues. Graduates are typically employed by universities or other organizations conducting research. This degree is offered in the departments of biostatistics, environmental sciences and engineering, health behavior and health education, health policy and administration, maternal and child health, and nutrition. The precursor to the PhD degree is typically the MSPH degree if the research is oriented to public health, or the MS degree if the research is not so oriented.

Joint Degree Programs
A number of joint degree programs are offered in select departments of the School of Public Health. Under the joint degree arrangement, a student may earn two professional degrees in a period of time less than the total required by the two degrees separately. Medical students may pursue a joint degree through the departments of epidemiology, health policy and administration, maternal and child health, or public health leadership. Dentistry, business, and law students may enroll in joint degree programs through the Department of Health Policy and Administration. A joint degree is also offered through the Department of Maternal and Child Health in conjunction with the School of Social Work.

DEPARTMENT OF BIOSTATISTICS (BIOS)
C. ED DAVIS, Chair
Lawrence L. Kupper, Associate Chair

Professors
Clarence E. Davis (27) Clinical Trials, Nonparametric Statistics, Cardiovascular Epidemiology
Joseph G. Ibrahim (11) Bayesian Model Selection, Prior Elitiation, Bayesian Computational Methods, Missing Data Problems, Survival Analysis, Longitudinal Data, Generalized Linear Models
William D. Kalibek (55) Sample Design, Survey Analysis, Nonsampling Errors
Alan F. Karr, Inference for Stochastic Processes, Image Analysis (Joint with Statistics)
Gary G. Koch (14) Categorical Data Analysis, Nonparametric Methods
Lawrence L. Kupper (15) Regression Analysis, Statistical Applications in Epidemiology and in Environmental Health
Daow Lin (89) Survival Analysis, Semiparametric Statistical Methods, Clinical Trials
Pranab K. Sen (10) Statistical Inference, Clinical Trials, Multivariate Analysis (Joint with Statistics)
Chirayuth Suchindran (29) Statistical Demography
Michael J. Symons (17) Consulting, Bayesian Applications, Statistical Education
Kinh N. Truong (90) Time Series Analysis, Nonparametric Regression, Bootstrap Methods, Hazard Regression, Splines

Associate Professors
Jianwen Cai (93) Survival Analysis and Regression Models, Clinical Trials, Analysis of Correlated Responses
Lloyd J. Edwards (95) Longitudinal Data Analysis, Measurement Error Models, Clinical Trials
Keith E. Muller (76) Linear and Nonlinear Repeated Measures Models, Study Design
Bahajr Qaqish (96) Generalized Linear Models, Survival Analysis, Computing
Françoise Selitker-Mooselitz (91) Predictive Inference, Analysis of Molecular Genetic Data, Empirical Bayes Methodology
Craig D. Turnbull (26) Public Health Statistics, Research on Perinatal Outcomes and Behavioral Sciences
Fred A. Wright (7) Statistical Genetics

Assistant Professors
Amy H. Herring (87) Survival Analysis, Missing Data Methods, Environmental Statistics
Anastasia Ivanova (83) Clinical Trials Design, Sequential Design of Binary Response Experiments, Statistical Methodology in Biostatistics
Donglin Zeng (5) High Dimensional Data, Survival Analysis
Haibo Zhou (40) Missing/Auxiliary Data, Survival Analysis, Human Fertility
Fei Zou (4) Statistical Genetics

Research Professors
Lloyd E. Cranblett (82) Epidemiological Applications, Analysis of Survey Data, Measurement Error
Robert M. Hamer (28) Linear Models, Mixed Models, Clinical Trials

Research Associate Professors
Shrikant I. Bangdiwala (80) Nonparametric Methods, Clinical Trials Methodology, International Health, Injury Prevention
James D. Hosking (79) Data Management, Multivariate Techniques, Clinical Trials
Michael J. Schell (97) Monotonic Regression Analysis, Order Restricted Inference, Clinical Trials, Low-Dose Extrapolation
Paul W. Stewart (84) Linear Models, Distribution Theory, Statistical Inference, Longitudinal Data
Research Assistant Professors
Hee Jung Bang (8) Survival Data Analysis, Medical Cost Data Analysis
Diane Catellier (78) Linear Models, Missing Data, Clinical Trials
Yen-Feng Chiu (88) Statistical Genetics, Longitudinal Data Analysis, Regression Modeling and Epidemiological Methods
David J. Couper (77) Epidemiological Methods, Longitudinal Data, Data Quality
John S. Preisser, Jr. (89) Categorical Data, Longitudinal Data Analysis
Douglas L. Taylor (12) Child Development, Environmental Health Statistics, Sexually Transmitted Diseases, Repeated Measures Analysis

Clinical Assistant Professor
Gail E. Tudor (86) Categorical Data, Survival Analysis

Research Instructors
Katherine J. Roggenkamp (3) Statistical Computing
Todd A. Schwore (13) Categorical Data, Clinical Trials

Adjunct Professors
John P. Creason, Statistical Applications in Environmental Health, Dose-Response Methodology
Stephen D. Durham, Stochastic Processes, Dose-Response Methodology
Edward L. Frome, Statistical Computing and Biomedical Data Analysis
Harry A. Guess, Applications of Statistics to Medicine, Epidemiology, and Health Services Research
Joseph K. Haseman, Statistical Methods in Environmental Health, Toxicology, and Cancer
Daniel G. Horvitz, Sample Survey Design, Non-sampling Errors in Surveys
Norman L. Kaplan, Stochastic Processes, Statistical Genetics
Lisa M. LaVange, Sampling Design, Longitudinal Data Analysis
Judith T. Lesker, Sampling
Anders S. Lunde, Demography, Vital Statistics, Health Statistics, Social Statistics
Herman E. Mitchell, Clinical Trials, Health Care Research, Clinical Epidemiology
Walter W. Pieczorski, Genetics, Toxicity Assays, and Environmental Statistics
W. Kenneth Poole, Clinical Trials, Statistical Research Administration
Christopher J. Portier, Design and Analysis of Environmental Health Research Studies
Donald W. Reinfurt, Design, Applications in Highway Safety and Injury Prevention
Ibrahim A. Salama (38) Nonparametric Statistics, Order Statistics, Ergodic Theory
Babubhai V. Shah (49) Survey Data Analysis Software, Multivariate Data Analysis, and Quality Assurance
Clarice R. Weinberg, Statistical Methods in Epidemiology and in Environmental Health, Reproductive Epidemiology

Adjunct Associate Professors
Kerrie E. Boyle, Demographic Models, Survey Statistics
Margaret R. Burchinal, Longitudinal Data Analysis, Mixed Models, Child Development Research
Sandra B. Greene, Health Services Applications
Grace E. Knorr, Statistical Consulting, Empirical Bayes Estimation, Logistic Regression
Kerry L. Lee (52) Multivariate Analysis, Clinical Trials, Regression Modeling Strategies for Survival and Risk Analysis
Katherine L. Monti, Clinical Trials, Mixed Models
Timothy M. Morgan, Clinical Trials, Survival Analysis, Cancer Statistical Methods
R. Woodrow Setzer, Environmental Statistics, Risk Assessment, Toxicology
Steven M. Snippin, Statistics in the Pharmaceutical Industry
Maura E. Stokes, Categorical Data Analysis
Donald C. Trott, Statistics in the Pharmaceutical Industry, Statistical Genomics, Multivariate Analysis

Adjunct Assistant Professors
Ingrid A. Amara, Categorical Data Methods in Psychiatry
Delm M. Atkinson, Public Health Statistics
J. Michael Bowling, Survey Methodology, Evaluation, Injury Prevention
Sonia M. Davis, Bioequivalence, Statistics in the Pharmaceutical Industry
Ralph B. D’Agostino, Measurement Error, Clinical Trials, Missing Data, Statistical Genetics
Elizabeth R. DeLong, Clinical Trials, Case Control Studies and Evaluation of Diagnostic Tests
Ralph A. DeMasi, Statistical Methodology
Priscilla A. Guild, Health Services, Planning and Evaluation Research
Kerry B. Hafner, Statistics in the Pharmaceutical Industry, Design and Analyses of Crossover Trials, Repeated Measures Designs
Cindy P. Lawler, Experimental Design and Statistical Methods for Basic Biomedical Sciences
Robert H. Lyles, Environmental Statistics, Measurement Error Models, Statistical Methods in Epidemiology
Henry S. Lynn, Statistical Methods in Clinical Epidemiology, Clinical Trials
Manjolein V. Smith, Biometrics
Dalene K. Stangl, Bayesian Statistics, Survival Analysis
Sandra S. Stringer, Statistical Consulting and Education, Epidemiologic Methods
Lisa Tomasko, Longitudinal Data, Clinical Trials, Experimental Design, Missing Data
Russell D. Wollinger, Statistical Computation

Professors Emeriti
James R. Abernathy
Elizabeth J. Coulter
Regina C. Elandt-Johnson
James E. Grizzle
Ronald W. Helms
Barry H. Margolin
Dana E. Quade
Richard H. Shachtman
H. Bradley Wells

Courses
101 FUNDAMENTALS OF BIOSTATISTICS (3). Introduction to procedures in collection, summarization, analysis, and presentation of data. Topics include sampling, experimentation, measurement, descriptive statistics, probability, confidence intervals, and tests of hypotheses. Fall. Quade and Symons.

106 MATHEMATICAL METHODS IN BIOSTATISTICS (1). Prerequisite. MATH 32. Calculus and special mathematical techniques necessary for biostatistics. Summer. On demand. Staff.


110 PRINCIPLES OF STATISTICAL INFERENCE (3). Prerequisite, knowledge of basic descriptive statistics. Major topics include elementary probability theory, probability distributions, estimation, tests of hypotheses, chi-squared procedures, regression, and correlation. Fall and spring. Hamer, Tudor, Turnbull.

111 INTRODUCTION TO STATISTICAL COMPUTING AND DATA MANAGEMENT (3). Prerequisite, BIOS 101 or equivalent. Introduction to use of computers to process and analyze data, components of digital computers, characteristics of magnetic storage devices, use of JCL and utility programs, concepts and techniques of research data management, use of statistical program packages and interpretation. Fall. Staff.

120 SPECIAL TECHNIQUES IN BIOMETRY (1-3). Special topics of current interest in biometry. Fall, spring, and summer. On demand. Staff.

124 SOME QUANTITATIVE METHODS IN PLANNING AND EVALUATION (3). Prerequisite, BIOS 101 or equivalent or permission of the instructor. Planning cycle, methods overview, data sources, PERT, budgeting, health indices, measurement of goal fulfillment, achievement, effectiveness, efficiency, research designs, benefit cost analysis, decision analysis, probability, utility, and decision trees. On demand. Staff.
130 RESEARCH ISSUES IN MENTAL HEALTH STATISTICS (3). Prerequisites, BIOS 110 and EPID 160, or permission of the instructor. Concepts of measurement, history, and current status of classification schemas for mental disorders, methods of data analysis, and research designs. On demand. Turnbull.

140 PROBLEMS IN BIOSTATISTICS (1 or more). Prerequisites to be arranged with the faculty in each case. A course for students of public health who wish to make a study of some special problem in the statistics of the life sciences and public health. Fall, spring, and summer. Staff.

141 QUANTITATIVE METHODS FOR HEALTH CARE PROFESSIONALS I (3). Prerequisite, permission of instructor. Course is designed to meet the needs of health care professionals who need to be able to critically appraise the design and analysis of medical and health care studies and intend to pursue academic research careers. Basics of statistical inference, analysis of variance, multiple regression, categorical data analysis, and an introduction to logistic regression and survival analysis. Emphasis is on applied data analysis of major health care studies. Fall. Garrett.

142 QUANTITATIVE METHODS FOR HEALTH CARE PROFESSIONALS II (3). Prerequisites, BIOS 141 and permission of instructor. Continuation of BIOS 141; main emphasis is on logistic regression; other topics include exploratory data analysis and survival analysis. Spring. Garrett.

145 PRINCIPLES OF EXPERIMENTAL ANALYSIS (3). Prerequisites, BIOS 110 or equivalent; a basic familiarity with a statistical software package (preferably SAS) that has the capacity to do multiple linear regression analysis; permission of the instructor except for majors in School of Public Health. Continuation of Biostatistics 110; the analysis of experimental and observational data, including multiple regression, and analysis of variance and covariance. Fall and spring. Staff.

150 BASIC ELEMENTS OF PROBABILITY AND STATISTICAL INFERENCE I (GNET 150) (3). Prerequisite, MATH 32 or equivalent. Fundamentals of probability, discrete and continuous distributions; functions of random variables; descriptive statistics; fundamentals of statistical inference, including estimation and hypothesis testing. Fall. Staff.

151 BASIC ELEMENTS OF PROBABILITY AND STATISTICAL INFERENCE II (3) Prerequisites, BIOS 150 or equivalent, a basic familiarity with a statistical software package (preferably SAS) that has the capacity to do multiple linear regression analysis, or permission of the instructor. The theory and application of multiple linear regression and related analysis of variance (ANOVA) methods. The theory and application of maximum likelihood-based modeling methods, including logistic regression and Poisson regression. Spring. Staff.

160 PROBABILITY AND STATISTICAL INFERENCE I (3). Prerequisite, MATH 33 or equivalent. Introduction to probability; discrete and continuous random variables; expectation theory; bivariate and multivariate distribution theory; regression and correlation; linear functions of random variables; theory of sampling; introduction to estimation and hypothesis testing. Fall. Ivanova.

161 PROBABILITY AND STATISTICAL INFERENCE II (3). Prerequisite, BIOS 160. Distribution of functions of random variables; Halmert transformation theory; central limit theorem and other asymptotic theory; estimation theory; maximum likelihood methods; hypothesis testing; power; Neyman-Pearson Theorem, likelihood ratio, score, and Wald tests; noncentral distributions. Spring. Kupper.

162 INTERMEDIATE STATISTICAL METHODS (4). Corequisites, BIOS 111, 150, or equivalents. Principles of study design, descriptive statistics, and sampling from finite and infinite populations, with particular attention to inferences about location and scale for one, two, or k sample situations. Both distribution-free and parametric approaches are considered. Gaussian, binomial, and Poisson models, one-way and two-way contingency tables, as well as related measures of association, are treated. Fall. Staff.

163 INTERMEDIATE LINEAR MODELS (4). Prerequisite, BIOS 162 or equivalent. Matrix-based treatment of regression, one-way and two-way ANOVA, and ANCOVA, emphasizing the general linear model and hypothesis, as well as diagnostics and model building. The course begins with a review of matrix algebra, and it concludes with some treatment of statistical power for the linear model and with binary response regression methods. Spring. Staff.

164 SAMPLE SURVEY METHODOLOGY (STAT 104) (3). Prerequisite, BIOS 150 or equivalent or permission of the instructor. Fundamental principles and methods of sampling populations, with primary attention given to simple random sampling, stratified sampling, and cluster sampling. Also, the calculation of sample weights, dealing with sources of nonsampling error, and analysis of data from complex sample designs are covered. Practical experience in sampling is provided by student participation in the design, execution, and analysis of a sampling project. Spring. Kalbeek.

165 ANALYSIS OF CATEGORICAL DATA (3). Prerequisites, BIOS 145, 150, and 162, or permission of the instructor. Introduction to the analysis of categorized data: rates, ratios, and proportions; relative risk and odds ratio; Cochran-Mantel-Haenszel procedure; survivorship and life table methodology; multivariate models for categorical data. Applications in demography, epidemiology, and medicine. Fall. Koch.

166 APPLIED MULTIVARIATE ANALYSIS (STAT 160) (3). Prerequisite, BIOS 163 or equivalent. Application of multivariate techniques, with emphasis on the use of computer programs. Multivariate analysis of variance, multiple regression, weighted least squares, principal component analysis, canonical correlation and related techniques. On demand. Muller.

167 APPLIED STOCHASTIC PROCESSES (3). Prerequisite, BIOS 161 or equivalent. Markov chains, Poisson processes and extensions, epidemic models, branching processes and other stochastic models of empirical processes. Disease, population, and other biostatistical applications. Spring. Zhou.

168 DESIGN OF PUBLIC HEALTH STUDIES (3). Prerequisites, BIOS 145, 150, or equivalents. Statistical concepts in basic public health study designs: cross-sectional, case-control, prospective, and experimental (including clinical trials). Validity, measurement of response, sample size determination, matching and random allocation methods. Spring. Staff.

170 DEMOGRAPHIC TECHNIQUES I (3). Prerequisite, BIOS 101 or equivalent. Source and interpretation of demographic data; rates and ratios, standardization, complete and abridged life tables; estimation and projection of fertility, mortality, migration, and population composition. Fall. Suchindran, Bibbiorow.

180 INTRODUCTORY SURVIVORSHIP ANALYSIS (3). Prerequisite, BIOS 161 or permission of the instructor. Introduction to concepts and techniques used in the analysis of time to event data, including censoring, hazard rates, estimation of survival curves, regression techniques, applications to clinical trials. Spring. Cai.

191 FIELD OBSERVATIONS IN BIOSTATISTICS (1). Field visits to, and evaluation of, major nonacademic biostatistical programs in the Research Triangle area. (Field fee $25.) Fall. Turnbull.

213 DATA MANAGEMENT IN BIOSTATISTICS (3). Prerequisite, BIOS 111 or equivalent. Techniques for designing, implementing, and operating computerized data management systems for large studies with particular emphasis on collaborative medical studies. Experience in programming in a procedural language (PL-1, FORTRAN, C, BASIC, etc.) is assumed. On demand. Hocking.

215 HEALTH DATA PROCESSING LABORATORY (1-3). Prerequisite, BIOS 213. A laboratory course for students who wish to gain experience in the data processing aspects of current projects and collaborative medical studies of the department. (On demand.) Hocking.
231 Bayesian Statistics (3). Prerequisite: BIOS 262 or equivalent. Basic aspects of the Bayesian paradigm including Bayes' theorem, the likelihood principle, prior distributions, posterior distributions, and predictive distributions. Bayesian analysis of linear models, generalized linear models, random effects models, spatial models, and survival models. Informative prior elicitation, model comparisons, Bayesian diagnostic methods, and variable subset selection. Markov Chain Monte Carlo methods for computations. Bayesian methods for the design and analysis of clinical trials. Fall. Ibraham.

235 Statistical Computing - Basic Principles and Applications (3). Prerequisites, BIOS 161: familiarity with at least one computer system and with either a computer language (C, FORTRAN, etc.) or a computer package (SAS, SPSS, etc.). Basic theory and application of computing as a tool in statistical research and practice. Topics include: algorithms and data structures, linear and nonlinear systems, function approximation, numerical integration, the EM algorithm, simulation, and document preparation. Spring. Qaisi.

240 Specialized Methods in Health Statistics (1 or more). Prerequisite, permission of the instructor. Statistical theory applied to special problem areas of timely importance in the life sciences and public health. Lectures, seminars, and/or laboratory work, according to the nature of the special area under study. Fall, spring, and summer. Staff.

250 Advanced Techniques in Biometry (1-4). Prerequisites, BIOS 161, 163 or equivalent, permission of the instructor. Up to three or four separate one-semester-hour modules presenting advanced techniques in biometry (topics covered usually vary at each offering). A knowledge of elementary computer programming is assumed. Fall, spring, and summer. Staff.

256 Introduction to Nonparametric Statistics (STAT 171) (3). Prerequisite, Biostatistics 161 or equivalent. Theory and application of nonparametric methods for various problems in statistical analysis. Includes procedures based on randomization, ranks, and U-statistics. A knowledge of elementary computer programming is assumed. On demand. Staff.

257 Nonparametric Procedures in Biometric Research (3). Prerequisite, BIOS 256 or equivalent. Nonparametric point and interval estimation in linear models useful in biometric research. Robust procedures, including those based on ranks, for analyzing designed experiments, bioassays, and clinical trials. On demand. Sen.

259 Applied Time Series Analysis (3). Prerequisites, BIOS 161 and 163 or equivalents, and permission of the instructor. Topics include correlograms, periodograms, fast Fourier transforms, power spectra, cross-spectra, coherences, ARMA and transfer-function models, spectral-domain regression. Real and simulated data sets are discussed and analyzed using popular computer software packages. Spring. Truong.

260 Advanced Probability and Statistical Inference I (3). Prerequisite, BIOS 161 or permission of the instructor. Generating and characteristic functions; discrete and continuous distributions; basic estimation theory; basic hypothesis testing theory; sampling distributions; probability inequalities; laws of large numbers; martingales and reversed martingales; stochastic convergence; central limit theorems; large sample theory for least squares estimation and maximum likelihood estimation; large sample theory for likelihood ratio tests; and introduction to methods for categorical data and generalized linear models. Fall. Sen.


262 Advanced Linear Models I (4). Prerequisites, BIOS 161 and 163, MATH 147, MATH 116 or 137. Theory and methods for continuous responses. Topics include matrix theory, the multivariate normal distribution, multivariate quadratic forms, estimability, reparameterization, linear restrictions and splines, estimation theory, weighted least squares, multivariate tests of linear hypotheses, multiple comparisons, confidence regions, prediction intervals, statistical power, mixed models, transformations and diagnostics, growth curve models, dose-response models, missing data. Fall. Muller and Stewart.


264 Advanced Survey Sampling Methods (3). Prerequisite, BIOS 164 or equivalent. Continuation of BIOS 164 for advanced students: stratification, special designs, multistage sampling, cost studies, nonsampling errors, complex survey designs, employing auxiliary information, and other miscellaneous topics. On demand. Kalbbeck.


266 Advanced Linear Models II (4). Prerequisite, BIOS 262. Theory and methods of linear structural models for continuous response data, including definitions of parameters, hypotheses, isomorphism models, orthogonal polynomials, incomplete/informatively censored data; general linear univariate, multivariate, and mixed (random effects) models and parameterizations for various classes of designed experiments and longitudinal studies; modeling covariance structures. Spring. Staff.

268 Specialized Advanced Topics in Statistical Modeling (3). Prerequisites, BIOS 252 and 263. Missing data; errors-in-variables; linear and non-linear mixed and random effects models; advanced methods for categorical data; advanced applications of estimating function theory; detailed treatment of GEE-I and GEE-II methods; Bartlett and other corrections in GLMs; nonparametric regression methods; data smoothing; generalized additive models. On demand. Staff.

271 Demographic Techniques II (3). Prerequisites, BIOS 170 and integral calculus. Life table techniques; methods of analysis when data are deficient; population projection methods; interrelations among demographic variables; migration analysis; uses of population models. Spring. Suchindran.

277 Mathematical Models in Demography (3). Prerequisite, permission of the instructor. A detailed presentation of mortality models, including necessary mathematical methods, and applications; deterministic and stochastic models for population growth, migration. Fall. (2000 and alternate years). Suchindran.

281 STATISTICAL METHODS IN HUMAN GENETICS (GNET 281) (3).
Prerequisites, B/OS 161 and 163 or permission of the instructor. An introduction to statistical procedures in human genetics. Hardy-Weinberg equilibrium, linkage analysis (including use of genetic software packages), linkage disequilibrium and allelic association. Fall. Wright.

283 STATISTICAL METHODS IN QUANTITATIVE GENETICS (3).
Prerequisites, B/OS 161 and 163 or permission of the instructor. An introduction to the statistical basis of variation in quantitative traits, with focus on experimental crosses and decomposition of trait variation, linkage map construction, statistical methodologies and computer software for mapping quantitative trait loci. Issues involving whole-genome analysis will be highlighted. Spring. Zou.

341 PRINCIPLES OF STATISTICAL CONSULTING (1). Prerequisites, B/OS 145 or equivalent and permission of the instructor except for majors in the department. An introduction to the statistical consulting process, emphasizing its non-technical aspects. Spring. Staff.

342 PRACTICE IN STATISTICAL CONSULTING (1-3). Prerequisites, B/OS 111, 145, 150, 154, or equivalents, and permission of the instructor. Under supervision of a faculty member, the student interacts with research workers in the health sciences, learning to abstract the statistical aspects of substantive problems, to provide appropriate technical assistance, and to communicate statistical results. Fall, spring, and summer. Staff.

350 TRAINING IN STATISTICAL TEACHING IN THE HEALTH SCIENCES (2 or more). Prerequisite, a minimum of one year of graduate work in statistics. Principles of statistical pedagogy. Students assist with teaching elementary statistics to students in the health sciences. Students work under the supervision of the faculty, with whom they have regular discussions of methods, content, and evaluation of performance. Fall, spring, and summer. Staff.

389 RESEARCH SEMINAR IN BIOSTATISTICS (1-3). Prerequisite, permission of the instructor. Seminar on research developments in selected biostatistical topics. Fall and spring. Staff.

390 RESEARCH IN BIOSTATISTICS (2 or more). Individual arrangements may be made by the advanced student to spend part or all of his or her time in supervised investigation of selected problems in biostatistics. Fall, spring, and summer. Staff.

392 MASTER’S PAPER (3 or more). Fall, spring, and summer. Staff.

393 MASTER’S THESIS (3 or more). Fall, spring, and summer. Staff.

394 DOCTORAL DISSERTATION (Minimum of 3). Fall, spring, and summer. Staff.

Michael R. Flynn (61) Relationship between Exposure and the Capture Efficiency of Local Exhaust Hoods, Computer-Aided Optimization of Ventilation Systems
Donald L. Fox (8) Atmospheric Chemistry, Aerosols
Avram Gold (43) Environmental Toxicology
William G. Gray (104) Environmental Modeling
Milton S. Heath, Jr. (39) Natural Resource Law
Harvey E. Jeffries (14) Atmospheric Chemistry, Modeling, and Computerized Data Acquisition
Richard M. Kanens (55) Atmospheric Gas-Particle Partitioning of Semivolatile Toxic Organics; Reactions of Atmospheric PAH and Other Organic Toxicants; Modeling Biogenic Aerosol Formation from Gas Phase Reactions
Donald T. Lauria (18) Water and Wastewater Systems Analysis, Mathematical Modeling
David H. Leith (56) Air Pollution Control Engineering, Aerosol Technology
Dana Loomis (106) Epidemiology
Richard A. Luechtefeh, Marine Sciences, Physics of Shallow Water Bodies
Christopher S. Martens (52) Marine Sciences
David H. Moreau (48) Water Resources Planning
Hans W. Paerl (65) Environmental Microbial Ecology
Frederic K. Pfander (25) Environmental Microbiology
Stephen M. Rappaport (76) Exposure Assessment; Industrial Hygiene
Parker C. Reis (26) Aerosol Technology, Industrial Hygiene Engineering
Philip C. Singer (31) Water and Wastewater Treatment Processes, Aquatic Chemistry
Mark D. Sobsey (38) Environmental Microbiology, Virology, Toxicology
James A. Swenberg (77) Environmental Toxicology, Chemical Carcinogenesis
Robert S. Tewel (99) Limnology
Dale Whittington (70) Water Resources Economics, International Development

Associate Professors
Lenna Nylander-French (95) Environmental Health Sciences
Lori A. Todd (75) Application of Computer Tomography and Optical Remote Sensing for Sampling and Evaluating Gases in Workplace Air
Steven C. Whalen (39) Limnology

Assistant Professors
Gregory W. Characklis (98) Water Resources
Ivan L. Fox (103) Environmental Geochemistry
Marc L. Smet (100) Environmental Modeling
Howard S. Weinberg (96) Aquatic Chemistry

Clinical Professors
Donald E. Francisco (96) Limnology and Aquatic Microbial Ecology
Frances M. Lynn (67) Environmental Risk Assessment, Communication of Scientific and Technological Information, Sociology of Science

Research Assistant Professors
Myon Heung (107) Atmospheric Chemistry
Jun Nakamura (108) Environmental Toxicology
Ramiah Sangai (90) Chemical Synthesis
Gyu-Ahn Shin (109) Water and Wastewater Disinfection

Adjunct Professors
Francis S. Binkowski, Air Quality, Meteorology
Linda S. Birnbaum (86) Xenobiotic Metabolism, Biochemical Toxicology
Daniel L. Costa (97) Pulmonary Toxicology
David M. DeMarini (81) Genetic Toxicology
Alfred Eisser
David S. Enser (90) Aerosol Science
J. Ronald Hass (64) Environmental Chemistry
Chang Kim
Joel Levis, Genetic Bioassays
Paul W. Prendville, Water and Wastewater Treatment Plant Design
Barbara T. Walton, Ecotoxicology, Bioremediation, Biomonitoring
William E. Wilson, Aerosols, Photochemistry, Smog Chambers
Adjunct Associate Professors
Philip W. Albro (58) Environmental Chemistry
Michael A. Berry, Program and Research Management, Environmental Legislation.
Health Assessments, Indoor Air Pollution
Gaylen R. Brubaker, Bioremediation Larry D. Claxton, Mutagenes in Testing.
Biochemical Chemistry
Nelson W. Couch, Radiological Hygiene
John M. Dement (60) Industrial Hygiene
R. Timothy Hitchcock, Physical Agents
Linda W. Little, Bioassay Procedures
Joseph Pinto (82) Atmospheric Modeling
Jane Ellen Simmons (91) Hepatic and Racial Toxicology
Thomas B. Starr, Risk Assessment

Adjunct Assistant Professors
Deborah A. L. Amaral, Risk Analysis
Jane E. Gallagher, Environmental Toxicology
Nick Hutson, Environmental Engineering
M. Ian Gilmour, Immunotoxicology
Michael C. Madden, Oxone Reactions with Biomolecules
Rachel T. Noble, Marine Sciences
Andrew V. Peckash, Water and Wastewater Treatment Plant Design
Terrence K. Pierson, Environmental Risk Assessment
Woodall Stopford, Occupational Medicine Physics
Douglas Taylor
Russell W. Witmer (83) Indoor Air Quality, Aerosol Monitoring

Adjunct Lecturer
Raymond W. Hackney, Industrial Hygiene

Professors Emeriti
William H. Glaze
Robert L. Harris
J. Donald Johnson
Daniel A. Okun
Morriss A. Shiffman
Mark S. Shuman
Charles M. Weiss
James E. Watson Jr.

Courses
100 READING IN ENVIRONMENTAL SCIENCES AND ENGINEERING (1-6). Prerequisite, permission required for students outside the department. Extensive library study of a specific subject in environmental sciences and engineering. The subject and requirements of the project are arranged with the faculty in each instance. Fall, spring, and summer. Stuf.


103 SEMINAR SERIES (1). Presents the results of ongoing research projects in the Department of Environmental Sciences and Engineering. Topics and presenters are selected from among the departmental graduate students and faculty. Fall and spring. Weinberg.

104 UNIFYING CONCEPTS (3). Unifying concepts of environmental systems, including conservation principles, modeling, economics, and policy with applications from throughout natural, engineered, human systems. Interfaces among scientific, engineering, and policy aspects of the field. Fall, Stuf.

105 PROBLEM BASED LEARNING (2). Prerequisite, permission of instructor. A problem common to the field of environmental science will be studied in detail through the use of small groups of students from the various disciplinary areas in the department. Stuf.

110 ENVIRONMENTAL CHEMISTRY PROCESSES (Carolina Environmental Programs 110) (3). Prerequisite, a background in chemistry and mathematics, including ordinary differential equations, is essential. Chemical processes occurring in natural and engineered systems: chemical cycles; transport and transformation processes of chemicals in air, water and multimedia environments; chemical dynamics; thermodynamics; structure/activity relationships. Fall. (Alternate years.) Weinberg.

111 LABORATORY TECHNIQUES AND FIELD MEASUREMENTS (3). Learn laboratory, field, and analytical skills. Provides a solid introduction to experimental research in environmental sciences and engineering. Students are provided with applications in limnology, aquatic chemistry, and industrial hygiene. Fall. Nylander-French, Weinberg, Whalen.

112 ECOLOGICAL MICROBIOLOGY (3). Prerequisite, one course in general microbiology. A description of microbial populations and communities, the environmental processes they influence, and how they can be controlled to the benefit of humankind. Spring, Pfendert.

113 LIMNOLOGY (3). Prerequisites, introductory biology, chemistry, and physics. Basic aspects of freshwater ecosystem function. Emphasis on trophic level interactions and integration of physical, chemical, and biological principles for a holistic view of lake ecosystem dynamics. Three lecture hours per week. Fall. Wenzel and Whalen.

114 ECOLOGY OF WETLANDS (MSC 137) (4). Prerequisites, one year of biology, one year of chemistry, one semester of ecology, and permission of instructor. An introduction to the functioning of freshwater and estuarine marsh and swamp ecosystems, with emphasis on systems of the southeastern U.S. Fall. Stuf.

115 BIOGEOCHEMICAL PROCESSES (GEOL 115) (MSC 119) (4). Prerequisites, one year biology plus organic and/or physical chemistry or one of MSC 101, GEOL 164, ENVIR 119, or permission of the instructor is required. (Note: Advanced graduate students should consider MSC 140). Integrated application of biological and chemical concepts to understand the processes controlling the cycling of carbon, nutrients, and biotic trace elements in seawater and marine sediments. Fall. (Alternate years.) Arnosti.

116 INTRODUCTION TO AEROSOL SCIENCE (4). Prerequisite, permission to the Department of Environmental Sciences and Engineering or permission of the instructor. Physical and chemical principles underlying behavior of particles suspended in air. Topics include rectilinear and curvilinear motion of the particles in a force field, diffusion, evaporation, and condensation, electrical and optical properties and particle coagulation, as well as the behavior of the cloud in toto. Three lecture hours and two lab hours a week. Fall. (Even-numbered years.) Leith.

116L AEROSOL SCIENCE LABORATORY (2). Prerequisite or corequisite, ENVIR 145. Basic laboratory exercises in aerosol sciences. Fall. (Alternate years.) Reist.

117 OCEANOGRAPHY (BIOL 126) (MSC 101) (GEOL 101) (3). Prerequisites, major in a natural science or at least two college-level courses in natural sciences. The origin of ocean basins, chemistry and dynamics of seawater, biogeological communities and processes, the sedimentary record, and the history of oceanography. Term paper. Intended for students with college science backgrounds; other students should see Geology 12. Three lecture hours a week. Fall and spring. Stuf.

118 CHEMICAL OCEANOGRAPHY (MSC 105) (4). Prerequisite, one semester of physical chemistry or ENVIR 119 or CHEM 180, or permission of instructor. Variation and abundance of seawater constituents, the chemical, physical, and biological processes contributing to their distribution, as well as problems of dispersion of conservative and nonconservative substances. Three lecture and two recitation hours a week. Spring. Marts, Arnosti, Alperin.

119 CHEMICAL EQUILIBRIA IN NATURAL WATERS (3). Principles and applications of chemical equilibria to natural waters. Acid-base, solubility, complex formation, and redox reactions are discussed. This course uses a problem-solving approach to illustrate chemical speciation and environmental implications. Three lecture hours per week. Fall. Singer.
120 BIOLOGICAL OCEANOGRAPHY (BIOL 140) (MASC 104) (4).
Prerequisites, BIOL 54 or 105 or permission of instructor. Physical, chemical, and biological factors characterizing estuarine and marine environments. Emphasis on factors controlling animal and plant populations, including methods of analysis, sampling, and identification. Spring. Lindquist.

130 HEALTH EFFECTS OF ENVIRONMENTAL AGENTS (3). Prerequisites, basic biology, chemistry through organic, math through calculus; permission of the instructor if prerequisites not met. Interactions of environmental agents (chemicals, infectious organisms, radiation) with biological systems including humans, with particular attention to routes of entry, distribution, metabolism, elimination, and mechanisms of adverse effects. Three lecture hours per week. Fall. Ball.

131 TECHNIQUES IN ENVIRONMENTAL HEALTH SCIENCES (1). Prerequisites, basic biology, chemistry through organic, math through calculus; permission of the instructor if prerequisites not met. A practical introduction to the measurement of biological end-points, emphasizing adverse effects of environmental agents, using laboratory and field techniques. Two laboratory hours per week. Fall. Ball, Sobsey.

132 BIOCHEMICAL AND MOLECULAR TOXICOLOGY (BIOC 142) (TOXC 142) (3). Prerequisites, any combination of two courses in biochemistry, molecular biology, cell biology, or cell physiology or permission of the instructor. This course focuses on development of a comprehensive understanding of biochemical and actions of environmental chemicals and toxicants, and proper application of novel laboratory techniques for hypothesis-driven mechanistic research. Three lecture hours per week. Spring. Rusyn.

133 ENVIRONMENTAL HEALTH MICROBIOLOGY (3). Prerequisite, introductory course in microbiology or permission of the instructor. Presentation of the microbes of public health importance in water, food, and air, including their detection, occurrence, transport, and survival in the environment; epidemiology and risks from environmental exposure. Two lecture and two laboratory hours per week. Spring. (Odd-numbered years). Sobsey.

134 AIR AND INDUSTRIAL HYGIENE (3). Problem definition, sources of information, health effects, legislative framework, and control methods for chemical, physical, and biological hazards. Recognition, evaluation, and remediation of hazards associated with community and industrial environments. Three lecture hours per week. Fall. Fox, Todd.

135 INDUSTRIAL TOXICOLOGY (2). Toxicological assessment of and a case presentation of related exposure is given. A conceptual approach is utilized to design appropriate programs to prevent worker ill health due to industrial toxicant exposure. Two lecture hours per week. Spring. Staff.

136 RADIATION HAZARDS EVALUATION I (3). Prerequisite, calculus. The physics of ionizing radiations and the principles of radiation dosimetry, hazards evaluation, and protection are presented. Three lecture hours per week. Spring. Staff.

137 OCCUPATIONAL SAFETY AND ERGONOMICS (PHNU 280) (3).
Fundamentals of occupational safety and ergonomics with emphasis on legislation and organization of industrial safety and ergonomics programs, including hazard recognition, analysis, control, and motivational factors pertaining to industrial accident and cumulative trauma disorder prevention. Fall. Staff.

138 HEALTH HAZARDS OF INDUSTRIAL OPERATION (3). Prerequisite, ENV 134. An introduction to the health hazards associated with the various unit operations of industry. Field trips to local industries planned. Spring. Flynn.

139 THEORY AND PRACTICE OF EXPOSURE EVALUATION (3).
Prerequisites, ENV 143 and 145. Methodology and philosophy of evaluating exposures to air contaminants in the workplace. Course is divided into lectures, case-study analyses, and hands-on term project. Three lecture hours per week. Spring. Todd.

150 PRINCIPLES AND APPLICATIONS OF ENVIRONMENTAL ENGINEERING (3). Principles that govern the behavior of contaminants in air and water. Application of these principles to engineered processes that control air and water quality. Three lecture hours per week. Spring. Singer, Leib.

151 PROCESS DYNAMICS IN ENVIRONMENTAL SYSTEMS (3).
Prerequisites, MATH 124 or equivalent, permission of the instructor. Application of fluid transport, mass transfer, and chemical reactor principles to describe important processes in water/wastewater treatment, air pollution control, and natural systems. Three lecture hours per week. Fall. DiCiano.

152 FLUID DYNAMICS (GEOL 181) (MASC 151) (PHYS 151) (3).
Prerequisite, PHYS 103 or permission. The physical properties of fluids, kinematics, governing equations, viscous incompressible flow, vorticity dynamics, boundary layers, irrotational incompressible flow. Three lecture hours per week. Spring. Scotti.

153 GROUNDWATER HYDROLOGY (3). Prerequisites, math through differential equations and some familiarity with fluid mechanics. Conservation principles for mass, momentum, and energy developed and applied to groundwater systems. Scope includes the movement of water, gas, and organic liquid phases, the transport and reaction of contaminants. Three lecture hours per week. Fall. Miller.

154 MARINE SYSTEMS MODELING (GEOL 141) (MASC 152) (3).
Prerequisite, MATH 32 or permission of instructor. Mathematical modeling of the dynamic system, linear and nonlinear. The fundamental budget equation. Case studies in modeling convective transport, biogeochemical process, population dynamics. Analytical and numerical techniques, chaos theory, fractal geometry. Three lecture hours per week. Spring. Werner, Rial.

160 ENVIRONMENTAL SYSTEMS MODELING (ENST 106) (GEOL 116) (MASC 116) (3). Prerequisites, Math 83, Physics 25, or Physics 27 (may be taken concurrently) or permission of instructor. Methods for developing explanatory and predictive models of environmental processes are explored. Includes discussion of the relevant scientific modes of analysis, mathematical methods, computational issues, and visualization techniques. Two lecture and one computer laboratory hour per week. Spring. Staff, Rial, Werner.

161 GEOSTATISTICS FOR SPATIAL/TEMPORAL ENVIRONMENTAL PHENOMENA (3).

162 RANDOM FIELD MODELING OF PHYSICAL PROCESSES (3).

163 SCIENTIFIC COMPUTATION I (MATH 191) (3).


165 METHODS OF APPLIED MATHEMATICS I (MATH 198) (3).
Topics: Contour integration in the complex plane, asymptotic expansions and steepest descent/stationary phase methods, special functions often arising in physical applications, elliptic functions and theta functions, Sturm-Liouville spectral theory. Three lecture hours per week. Fall. McLaughlin.
166 METHODS OF APPLIED MATHEMATICS II (MATH 199) (3). Topics: Perturbation methods for ODE and PDE, WKB method, averaging, modulation theory for linear dispersive PDEs and nonlinear wave equations; long time asymptotics of Fourier integral representations of PDEs; Green's functions; physical applications. Three lecture hours per week. Spring. Carassa.

167 ADVANCED FUNCTION OF TEMPORAL GIS (3). Advanced function of Temporal Geographical Information Systems (TGIS). These fields describe natural, epidemiological, economic, and social phenomena distributed across space and time. Three lecture hours per week. Fall. Christiakos, Serre.

175 ENVIRONMENTAL RISK ASSESSMENT (3). Prerequisites, ENVR 110, ENVR 130. Methods of environmental risk assessment, including hazard identification, exposure assessment, exposure-response assessment, and risk characterization, are developed and applied. Three lecture hours per week. Spring. Crawford-Brown.

176 QUANTITATIVE RISK ASSESSMENT IN ENVIRONMENTAL HEALTH MICROBIOLOGY (3). Prerequisites, microbiology, epidemiology, and infectious diseases recommended. Survey of alternative approaches, frameworks, and decision-making tools for quantitative risk assessment of microbial pathogens that infect humans and cause disease by the exposure routes of water, food, air and other vehicles. Spring. (Even-numbered years.) Soltesy.

185 AMERICAN ENVIRONMENTAL POLICY (PLAN 185) (PLCY 185) (3). Intensive introduction to environmental management and policy, including environmental and health risks, policy institutions, processes, and instruments, policy analysis, and major elements of American environmental policy. Lectures and case studies. Three lecture hours per week. Fall. Andrews.

200 PROBLEMS IN ENVIRONMENTAL SCIENCES AND ENGINEERING (1 or more). Departmental permission required. For students outside the department who wish to undertake individual study of a specific problem in environmental sciences and engineering. The subject and requirements of the project are arranged with the faculty in each individual instance. One or more hours a week. Fall, spring, and summer. Staff.

201 CURRENT TOPICS IN ENVIRONMENTAL ANALYTICAL CHEMISTRY (1). Students will select, critically review, and discuss current research papers for content, relevancy, innovation, and clarity. Papers can be from any aspect of the environmental sciences. Three lecture hours per week, every other week. Fall. (Even-numbered years.) Weinberg.

210 ENVIRONMENTAL PHYSICAL-ORGANIC CHEMISTRY (3). The physical chemistry of the partitioning, exchange, and chemical transformation of organic contaminants in the water, air, and soil environments. Spring. Kamens.

211 INSTRUMENTAL METHODS FOR THE CHEMICAL ANALYSIS OF ENVIRONMENTAL SAMPLES (3). Prerequisites, basic or general chemistry. Emphasis on acquiring laboratory skills and hands-on experience with instrumentation; sample handling and preparation; modern analytical techniques to include chromatography and spectroscopy; quality assurance and control. One lecture hour and four laboratory hours per week. Spring. Weinberg.

212 REDOX PROCESSES (3). Prerequisite, physical chemistry. Redox processes in the aquatic environment. Includes thermodynamics and kinetics; photochemical process in aquatic systems; oxidation processes for treatment of natural and anthropogenic organics, using ozone, peroxides, and UV radiation. Three lecture hours per week. Spring. (Alternate years.) Weinberg.

213 CHEMISTRY OF HUMIC SUBSTANCES (1). Prerequisites, organic or physical chemistry and permission of instructor. Critical analysis for PhD students of chemistry, role, and function of refractory organic matter in aquatic environments. Two lecture hours per week. Fall. Wetzal and Christman.

214 ANALYSIS OF TRACE ORGANICS (3). Prerequisites, CHEM 61-62, CHEM 181-182, and PHYS 24-25; permission of the instructor required if prerequisites not met. Basic principles of isolation, separation, and identification of trace organic chemicals in environmental and/or biological samples including solvent extraction, liquid and gas chromatography, and mass spectrometry. Three lecture hours per week. Spring. Hass, Albro.

216 ECOLOGY OF AQUATIC PLANTS AND WETLAND ECOSYSTEMS (3). Prerequisites, BIOL 11, CHEM 11, 21, or permission. Adaptations of aquatic plants and microorganisms of land-water interface regions of lakes and rivers, their nutrition, growth, population dynamics, competition, herbivory, productivity, physiological control measures. Wetlands functions, values to humans. Three lecture hours per week. Spring. (Even-numbered years.) Wetzal.

230 PRINCIPLES OF CHEMICAL CARCINOGENESIS (2). Prerequisite, organic chemistry. Bioactivation of carcinogens, interaction of activated metabolites with DNA, and their effects on DNA structure, replication, repair, and the control of these processes during development of chemically induced carcinogenesis. Two lecture hours per week. Spring. Gold.

231 ADVANCED TOXICOLOGY (TOXC 207) (3). Prerequisite, PHICO 202 or permission of the instructor. Cellular and physiological basis of toxicology of environmental chemicals, with emphasis on organ-specific toxicology, developmental toxicology, and radiation toxicology. Three lecture hours per week. Fall. Swenberg.

232 HEALTH EFFECTS OF OUTDOOR AND INDOOR AIR POLLUTION (3). Prerequisite, knowledge of basic human physiology and biochemistry helpful. Assessing health effects of air pollutants on normal and diseased human populations, including children. Physiology, cellular and molecular biology, immunology, genetics, dosimetry will be integrated. Three lecture hours per week. Fall. Huzandes.

233 BIOLOGICAL MONITORING (2). Prerequisite, ENVR 130 or equivalent. This course provides both practical and theoretical information on biological monitoring of chemical exposures and how to evaluate and interpret exposure data. Two lecture hours per week and a term paper (2 credit hours). Spring. Nylander-French.

234 SEMINARS IN TOXICOLOGY (TOXC 222) (1). This course will consist of presentation by the outside invited speakers, local faculty, advanced graduate students, and postdoctoral trainees. Topics will cover all areas of research in toxicology. One seminar hour per week. Fall and spring. Rysyn.

250 PRINCIPLES OF INDUSTRIAL VENTILATION (3). Prerequisites, calculus and physics; permission of the instructor. Principles of industrial ventilation for contaminant control and design of such systems. Basic laboratory exercises. Two lecture and one laboratory hour per week. Fall. Flynn.

250D VENTILATION DESIGN PROBLEM (1). Corequisite, ENVR 250; permission of the instructor. Design problem for industrial operation. One seminar hour per week. Fall. Flynn.

251 AIR POLLUTION CONTROL (3). Prerequisite, ENVR 134. Engineering control of air pollution control systems and discussion of air pollution control and standards. Spring. (Odd-numbered years.) Leith.

252 ANALYSIS OF WATER RESOURCE SYSTEMS (3). Prerequisite for non-engineering students, permission of the instructor. Use of mathematical models to design and evaluate regional water supply and treatment systems. Engineering and economic methods are incorporated into quantitative analyses of regional scenarios. Social and political aspects also discussed. Three lecture hours per week. Fall. Charnelis.

253 PHYSICAL/CHEMICAL TREATMENT PROCESSES (3). Prerequisites, ENVR 119 or equivalent, and 151 or equivalent. Fundamental descriptions of disinfection, oxidation, coagulation, precipitation, sedimentation, filtration, adsorption, ion exchange, and membrane processes; applications to water and wastewater treatment. Two lecture hours per week. Spring. DiGiano, Singer.
254 ENVIRONMENTAL PROCESS BIOTECHNOLOGY (3). Prerequisite, a previous or concurrent course in microbiology. Theory and practice of biological processes used to remove contaminants from environmental media, including water, wastewater, soil, and air. Spring. Ankeny.

255 WATER AND WASTEWATER TREATMENT PLANT DESIGN (3). Prerequisites, ENVR 253 and 254. The application of the theory of water and wastewater treatment to the design of municipal facilities. The course includes the principles of design and modern design practices. Design and analysis of design of specific works for water and wastewater treatment. Summer. Staff.

256 ENVIRONMENTAL ENGINEERING PROJECT (3). Prerequisite, permission of instructor. Ad hoc project designed for students to work as a team in addressing a current problem in environmental engineering. Projects may include laboratory or pilot-scale studies, collection and analysis of data from full-scale systems, or comprehensive analysis of relevant problems in environmental engineering practice. Three lecture hours per week. Fall. Staff.

260 MICROENVIRONMENTAL AIR FLOW MODELING (3). Prerequisites, fluid mechanics and permission of instructor. Applications of finite elements and vortex methods for modeling air flows of significance in industrial hygiene applications. Three lecture hours per week. Fall. Flynn.

261 NUMERICAL ODE/PDE I (MATH 221) (MASC 221) (3). Prerequisites, MATH 191, 192. Single, multistep methods for ODEs: stability regions, the root condition, stiff systems, backward difference formulas; two-point BVPs; stability theory, finite difference methods for linear advection diffusion equations. Three lecture hours per week. Fall. Minion, Miller, Werner.

262 NUMERICAL ODE/PDE II (MATH 222) (MASC 222) (3). Prerequisite, MATH 220. Elliptic equation methods (finite differences, elements, integral equations); Hyperbolic conservation law methods (Lax-Friedrichs, characteristics, entropy condition, shock tracking/capturing), spectral, pseudo-spectral methods; particle methods, fast summation, fast multiply/vortex methods. Three lecture hours per week. Spring. Minion, Miller, Werner.

263 MATHEMATICAL MODELING I (MATH 228) (MASC 228) (3). Prerequisites, MATH 198, 199, 191, 192. Nondimensionalization and identification of leading order physical effects with respect to relevant scales and phenomena; deviation of classical models of fluid mechanics (lubrication, slender filaments, thin film, Stokes flow); deviation of weakly nonlinear envelope equations. Three lecture hours per week. Fall. Camassa, Forest, Miller, Werner.

264 MATHEMATICAL MODELING II (MATH 229) (MASC 229) (3). Prerequisites, MATH 198, 199, 191, 192. Current models in science and technology: topics ranging from material science applications (e.g., flow of polymers and LCPs); geophysical applications (e.g., ocean circulation, quasi-geostrophic models, atmospheric vortices). Three lecture hours per week. Spring. Camassa, Forest, Miller, Werner.

265 MULTIPHASE TRANSPORT PHENOMENA (3). Prerequisite, ENVR 162 or 163 or equivalent. Continuum mechanical approach to formulating mass, momentum, energy, and entropy equations to describe multiphase transport phenomena. Three lecture hours per week. Fall. Miller.

275 MODEL-BASED EXPOSURE MAPPING AND RISK ASSESSMENT (3). Introduction to modern models and techniques for studying environmental and health systems which vary in space and time. Applications in environmental engineering, ecology, epidemiology, geography, and health risk assessment. Spring. Christakos and Serre.

276 ADVANCED METHODS OF EXPOSURE ASSESSMENT (3). Prerequisites, BIOS 135, 145 (145 may be taken concurrently), ENVR 130 or equivalent, and permission of the instructor required for nonmajors. Covers the statistical and biological considerations in assessing environmental exposures to chemicals with particular attention to airborne chemicals in occupational settings. Spring. (Even-numbered years) Rappaport.


279 MODELING FOR ENVIRONMENTAL RISK ANALYSIS (PLCY 208) (POLI 208) (3). Prerequisite, ENVR 180. Mathematical methods for development of advanced models in environmental risk assessment, including exposure assessment and exposure-response assessment, are developed and applied. Three lecture hours per week. Fall. Crawford-Brown.

285 SYSTEMS ANALYSIS IN ENVIRONMENTAL PLANNING (3). Prerequisite, calculus. Applications of system analysis techniques to the management of environmental quality. Spring. Lauria.

286 WATER AND SANITATION PLANNING AND POLICY IN DEVELOPING COUNTRIES (PLAN 219) (3). Prerequisite, permission of the instructor. Seminar on policy and planning approaches for providing improved community water and sanitation services in developing countries. Topics covered include the choice of appropriate technology and level of service; pricing, metering, and connection charges; cost recovery and targeting subsidies to the poor; water vending; community participation in the management and operation of water systems; and rent-seeking behavior in the provision of water supplies. Three seminar hours per week. Spring. Whitington.


288 CURRENT APPLICATIONS IN ENVIRONMENTAL MANAGEMENT (4). Interdisciplinary group project. Analysis of a current environmental management problem. Topic changes each year. Three lecture hours and one laboratory hour per week. Spring. Staff.

289 PUBLIC INVESTMENT THEORY (PLAN 232) (PLCY 232) (3). Prerequisite, PLAN 210 or equivalent. Basic theory, process, and techniques of public investment planning and decision making, involving synthesis of economic, political, and technologic aspects. Theory underlying benefit-cost analysis, adoption to a descriptive and normative model for planning public projects and programs. Three lecture hours per week. Spring. Whitington.

290 ENVIRONMENTAL LAW (PLAN 233) (3). Prerequisite, permission of the instructor. An examination of the law of resource use and development, its administration, and underlying policies. Particular attention to water resources law, regulatory law, and natural resource administration. Regulatory aspects of pollution control programs are covered. Three lecture hours a week. Fall. Heath.

291 WATER RESOURCES PLANNING AND POLICY ANALYSIS (PLAN 234) (3). Prerequisite, permission of the instructor. Water resources planning and management. Federal and state water resources policies. Analytical skills to identify environmental problems associated with urban water resources development. Three lecture hours per week. Fall. Moreau.

292 ENVIRONMENTAL QUALITY PLANNING (PLAN 236) (3). Planning and analysis of regional environmental systems with a focus on management of mass flows that affect the quality of the regional environment. Three lecture hours per week. Spring. Moreau.

300 SEMINAR IN ENVIRONMENTAL SCIENCES AND ENGINEERING (1 or more). Prerequisite, permission of instructor for nonmajors. Readings and discussions to provide opportunity to develop concepts and topics in various aspects of environmental sciences and engineering. Fall, spring, and summer. Staff.

353 PHD SEMINAR IN ENVIRONMENTAL MANAGEMENT AND POLICY (PLAN 353) (PLCY 353) (1). Prerequisites, doctoral standing and permission of the instructor. PhD seminar on theory, methods, and current research and literature in environmental management and policy. One to two seminar hours per week. Fall or spring, on demand. Andrews.
DEPARTMENT OF EPIDEMIOLOGY (EPID)

DAVID A. SAVITZ, Chair

Professors
Lenore Arab (165) Nutritional Epidemiology
Ralph S. Baric (142) Public Health Virology, Molecular Virology
Marilée D. Gammon (195) Cancer Epidemiology
Harry A. Guess (121) Pharmacoeconomics
Gerardo Heus (41) Cardiovascular Epidemiology
Dana E. Loomis (130) Occupational Epidemiology, Environmental Epidemiology
Steven R. Meshnick (200) Infectious Disease Epidemiology
Andrew F. Olshan (147) Reproductive Epidemiology
Robert W. Ryder (197) Infectious Disease Epidemiology
Robert S. Sandler (73) Cancer Epidemiology
David A. Savitz (101) Reproductive Epidemiology
John R. Seed (144) Biochemistry of the Host-Parasite Relationship
Carl M. Shy (14) Environmental Epidemiology, Occupational Epidemiology, Cancer Epidemiology
H. June Stevens (172) Nutritional Epidemiology
David J. Weber (96) Infectious Disease Epidemiology

Associate Professors
James E. Hall (143) Host-Parasite Metabolism, Biological Chemistry
Robert C. Milikan (160) Cancer Epidemiology
Charles L. Poole (193) Methodology
Wayne D. Rosenn (162) Cardiovascular Epidemiology
Victor J. Schoenbach (64) Behavioral Epidemiology, Infectious Diseases Epidemiology (Primarily STDs), Cancer Control (Primarily Smoking Cessation)
Lola V. Stamm (145) Public Health Bacteriology, Molecular Cloning, Pathogenesis of Infectious Disease
James C. Thomas (127) Infectious Disease Epidemiology
Steven B. Wing (99) Cardiovascular Epidemiology, Occupational/Environmental Epidemiology

Assistant Professors
Julie Daniels (206) Environmental Epidemiology, Reproductive Epidemiology
Mark Daniel (198) Social Epidemiology, Chronic Disease Epidemiology
Katherine E. Hamman (196) Reproductive Epidemiology, Women's Health
Jay S. Kaufman (194) Social Epidemiology, Chronic Disease Epidemiology
Stephen W. Marshall (199) Injury Epidemiology, Methodology
William C. Miller (191) Infectious Disease and Clinical Epidemiology
Kari North (205) Cardiovascular Epidemiology, Genetic Epidemiology
Beverly J. Rockhill (204) Cancer Epidemiology, Methodology, Women's Health
Jane C. Schroeder (203) Cancer Epidemiology, Environmental Epidemiology, Genetic Epidemiology
Annelies Van Rie (202) Infectious Disease
Suma Vuppuru (208) Cardiovascular Epidemiology, Chronic Disease Epidemiology

Research Associate Professor
Suzanne West (207) Health Care Epidemiology

Research Assistant Professors
Wilfrieda Behrs (210) Infectious Disease Epidemiology
Moya Carpender, Cardiovascular Epidemiology
Kathleen C. Dorsey, Cancer Epidemiology
Kelly R. Eveson (209) Cardiovascular Epidemiology
Sara Harton, Cardiovascular Epidemiology
Debra E. Irwin (176) Cancer Epidemiology, Reproductive Epidemiology
Teminoa Keku, Cancer Epidemiology, Genetic Epidemiology
Pia MacDonald, Infectious Disease Epidemiology
David B. Richardson, Environmental Epidemiology
Kathryn M. Rose, Cardiovascular Epidemiology, Women's Health
Anissa Vines, Social Epidemiology, Health Care Epidemiology
Sharon S. Weir, Infectious Disease Epidemiology
Karin Yeatts, Environmental Epidemiology

Clinical Professors
Timothy S. Carey (138) Clinical Epidemiology
Gordon H. Frissie (54) Health Services Research
Jo-David Fine (179) Epidemiology of Skin Diseases
David F. Ramsdell (160) Health Care Epidemiology
Deborah K. Runyan (88) Clinical Epidemiology/Pediatrics
Ross J. Simpson Jr., Cardiovascular Epidemiology, Health Care Epidemiology
Ronald P. Srauss (182) Oral Epidemiology
Edward H. Wagner (15) Clinical Epidemiology, Health Services Research

Clinical Associate Professors
Peter A. Margolis (155) Health Care Epidemiology
Bonnie Rosen (187) Occupational Epidemiology

Clinical Professors
Lorraine Alexander
Debbie Gipson, Health Care Epidemiology
Gary Slade, Oral Epidemiology
Sheryl Zimmerman, Aging

Adjunct Professors
Naomir Almeida-Filho, Psychosocial Epidemiology
James D. Beck (167) Dental Epidemiology
Douglas Bell, Cancer Epidemiology
Dana German Blazer (108) Psychosocial and Aging Epidemiology
Gregory L. Burke, Cardiovascular Epidemiology
Willard Cates (188) Reproductive and Infectious Disease Epidemiology
Dennis A. Clements (152) Infectious Disease Epidemiology
Joan Cournis-Huntley (94) Aging, Physical, Cognitive, and Social Functioning
John R. Grouse (103) Cardiovascular Epidemiology
Robert Desowitz, Infectious Disease Epidemiology
Jeffrey Engel, Infectious Disease Epidemiology
Robert Fletcher, Health Care Epidemiology
Suzanne Fletcher, Health Care Epidemiology
Judith A. Fortney (116) Reproductive Epidemiology
Jean G. French (129) Environmental Epidemiology, Occupational Epidemiology
Joanne M. Garrett (156) Health Services Research
Lowell Goldsmith, Genetic Epidemiology, Chronic Disease Epidemiology
Raymond S. Greenberg (86) Cancer Epidemiology
Sherman A. James (07) Psychosocial Epidemiology, Cardiovascular Epidemiology
C. David Jenkins, Social Epidemiology
Ulrich Keil (169) Cardiovascular Epidemiology, Occupational Epidemiology
Stephen Krichevsky, Aging Epidemiology
Ruth E. Little (173) Reproductive Epidemiology
Stephanie London, Cancer Epidemiology
Matthew Longnecker, Environmental and Occupational Epidemiology
Neville MacCormack, Infectious Disease Epidemiology
Melinda S. Meade (58) Medical Geography
Beth Newman (139) Genetic Epidemiology, Cancer Epidemiology
George Parkinson Jr., Health Care Epidemiology
David Peden, Environmental and Occupational Epidemiology
Walter J. Rogan (39) Environmental Epidemiology
Michael Rosenberg, Reproductive Epidemiology
Carol W. Runyan (154) Injury Control
Dale Sandler (90) Environmental Epidemiology
Ilene C. Siegler (148) Aging
Philip D. Sloane (131) Aging
John W. Stamm (92) Dental Epidemiology
Steven Teutsch, Chronic and Infectious Disease Epidemiology
Hugh H. Tilson (87) Pharmacoepidemiology
Clarice Weinberg, Environmental and Reproductive Epidemiology
Allen J. Wilcox (61) Reproductive Epidemiology
Redford Williams (141) Cardiovascular Epidemiology
Bonnie C. Yankaskas (82) Diagnostic Radiology/Cancer Epidemiology

Adjunct Associate Professors
Adora Adimora, Infectious Disease Epidemiology
Timothy Earl Aldrich (124) Cancer Epidemiology
Elizabeth B. Andrews (140) Pharmacoepidemiology
Donna D. Baird (104) Reproductive Epidemiology
John Barefoot (151) Cardiovascular Epidemiology, Psychosocial Epidemiology
J. Ties Boerma (201) Infectious Disease Epidemiology
Leigh Callahan, Chronic Disease Epidemiology, Health Care Epidemiology
Thomas B. Cole (123) Injury Epidemiology
Glinda S. Cooper (195) Chronic Disease Epidemiology, Reproductive Epidemiology

John Dement, Environmental Epidemiology, Occupational Epidemiology
Bruce Duncan, Cardiovascular Epidemiology
Sara Ephross, Chronic Disease Epidemiology
Paul J. Feldblum (186) Infectious Disease Epidemiology
Bradley N. Gaynes, Psychiatric Epidemiology
Paul A. Godley (181) Cancer Epidemiology
Russell P. Harris (125) Cancer Epidemiology, Clinical Epidemiology
Joanne Jordan, Chronic Disease Epidemiology
James Kirkpatrick, Infectious Disease Epidemiology
Suzanne Landis, Infectious Disease Epidemiology
Peter Leone, Infectious Disease Epidemiology
Heiser Lipscomb, Environmental and Occupational Epidemiology
Margaret F. McCann (100) Reproductive Epidemiology
William F. McDonnell III (170) Environmental Epidemiology
Pauline Mendola, Occupation, Environmental, and Reproductive Epidemiology
Christine L. More (174) Infectious Disease Epidemiology
Dexter L. Morris (113) Cancer Epidemiology
Kenneth A. Mundy, Occupational Epidemiology
Evan Myers, Health Care Epidemiology
Lucas Neas, Environmental Epidemiology
Warren P. Newton, Health Care Epidemiology
Miquel Porta, Cancer Epidemiology, Clinical Epidemiology, Pharmacoepidemiology
Joellen M. Schilskraut (126) Cancer Epidemiology
Maria Schmidt, Chronic Disease Epidemiology
Betty Sleeth, Health Care Epidemiology
C. Gregory Smith (83) Environmental and Occupational Epidemiology
Jack Taylor, Environmental and Occupational Epidemiology
John Thorpe Jr., Reproductive Epidemiology
Alice D. White (117) Cardiovascular Epidemiology
Timothy C. Wilcosky (98) Cancer Epidemiology

Adjunct Assistant Professors
Mary Anthony, Nutritional Epidemiology
Rakmini B. Bala, Infectious Diseases, Reproductive Epidemiology
Jane H. Brice, Clinical Epidemiology, Cardiovascular Epidemiology

Daniel J. Caplan, Oral Epidemiology
Lori Carver Edwards (192) Cardiovascular Epidemiology
Patricia Chang, Cardiovascular Epidemiology
Giselle Corbie-Smith, Women’s Health
Koutsoustar Davis, Pharmacoepidemiology
Nancy Dole, Reproductive Epidemiology
Jane Hoppin, Environmental Epidemiology
Esther C. Janowsky, Cancer Epidemiology
Dionne G. Law, Reproductive Epidemiology
Duanping Liao (189) Cardiovascular Epidemiology
William C. Maier, Pharmacoepidemiology
Mark Masting, Cardiovascular Epidemiology
Patricia Moorman, Cancer Epidemiology
Miriaram Morey, Health Care Epidemiology, Aging Epidemiology
Edward L. Murrel, Environmental Epidemiology, Genetic Epidemiology
Vilma Sanata, Occupational Epidemiology
Williams Saunders, Psychosocial Epidemiology
Pamela Schmied, Chronic Disease Epidemiology, Reproductive Epidemiology
Nicholas Shaheen, Health Care Epidemiology
Scott R. Smith, Pharmacoepidemiology
David C. Sokol (178) Reproductive Epidemiology
Paul E. Stanton (163) Chronic Disease Epidemiology
Martha E. Stebbins, Infectious Disease Epidemiology, Veterinary Epidemiology
Markus Steiner, Methodology
Emmanuel Walter, Infectious Disease Epidemiology
Christianna Williams, Aging Epidemiology
Christopher Wood, Infectious Disease Epidemiology

Professors Emeriti
Barbara S. Hulka
Michel A. Ibrahim
Berton H. Kaplan
Herman A. Tyroler

Courses
101R RESOURCES FOR INTERNATIONAL STUDENTS (1). Structured opportunities for international students to become informed about U.S. academic and cultural issues as they pertain to their training in epidemiology. Not for degree credit. Fall.

105 SEMINAR FOR MSPH STUDENTS (1). A workshop for addressing special topics related to MSPH program including, but not limited to, research topic development, career planning, and public health ethics. Fall and spring. Wing, Daniels.

120 INFECTION DISEASE EPIDEMIOLOGY AND THE HEALTH OF THE PUBLIC (3). An overview of current issues in infectious diseases with an emphasis on factors such as human behavior, economics, and political activities which do, and will, influence public health control programs. Three lecture hours per week. (On request.) Seed.

125 INJURY AND VIOLENCE AS A PUBLIC HEALTH PROBLEM (MCHC 125) (HBHE 125) (3). Prerequisite, EPID 160 or equivalent. Course considers causes and consequences of traumatic injury within developmental, socio-economic contexts and dilemmas in injury prevention. Injuries associated with transportation, violence, and the home/occupational environments are included. Three lecture hours per week. Fall. Rusy and Koch.

140, 141 PROBLEMS IN EPIDEMIOLOGY (1 or more). A course for students who wish to make an intensive study of some special problems in epidemiology. Two or more hours a week. Fall, spring, and summer. Staff.

150 SAS AND DATA MANAGEMENT (2). An introduction to data management and statistical computing using the SAS programming language. Two lecture hours per week. Fall.
158 INTRODUCTION TO LOGIC AND PROBABILITY LOGIC IN EPIDEMIOLOGY (2). Corequisite, EPID 168 or approved equivalent. Permission required for nonmajors. Covers valid and fallacious arguments, the probability calculus, interpretations of probability, probabilistic fallacies, applications of Bayes' theorem, and interpretation of P-values and confidence intervals in epidemiologic research. Fall. Poole, Millikan.

160 PRINCIPLES OF EPIDEMIOLOGY (3). An introductory course that considers the meaning, scope, and applications of epidemiology to public health practice and the use of vital statistics data in the scientific appraisal of community health. One lecture and two lab hours per week. Fall and spring. Schoenbach, Alexander.

168 FUNDAMENTALS OF EPIDEMIOLOGY (4). Corequisite, BIOS 110. Permission required for nonmajors. An intensive introduction to epidemiological concepts and methods for students intending to engage in, collaborate in, or interpret the results of epidemiologic studies. Some familiarity with biomedical concepts may be needed. An alternate to EPID 160 for satisfying the SPH core requirements. Three lecture and two seminar hours a week. Fall. Rosamond, Rockhill.

170 CLINICAL MEASUREMENT/EVALUATION (PUBH 260) (3). Prerequisite, epidemiology or health care and prevention major. An introduction to the fundamental concepts of epidemiology, including clinical epidemiology, for clinicians. Emphasis is on applications in clinical research and practice. Fall. Miller.

201 EPIDEMIOLOGIC RESEARCH METHODS (3). Prerequisites, EPID 268, majors only; permission of the instructor if not in at least second year of doctoral program. A second-level course in the design and conduct of epidemiologic research. Each student will comprehensively address the conceptual and practical aspects of developing a high-quality, detailed research proposal. Spring. Savitz, Heiss, Ryder.

203 DATA ANALYSIS IN ORAL EPIDEMIOLOGY (2-3). Prerequisite, basic knowledge of SAS. Permission required. Data analysis project in oral epidemiology; data cleanup, file construction, analysis. For three credit hours, student also completes multivariate analysis with linear, logistic regression. Project to result in publishable paper. Two to three seminar hours a week. Fall.

205 CLINICAL EPIDEMIOLOGY AND CLINICAL RESEARCH METHODS (6). Permission required. Introduction to clinical research, including for physicians committed to clinical investigation. Epidemiologic, social science, and decision-analytic methods; medical ethics, health policy, health economics, medical care epidemiology. Five lecture and two seminar hours a week. Fall. Garrett.

206 CLINICAL RESEARCH SKILLS (4). Permission required. Practical research skills for clinical investigators, including grant application, instrument development, project management, data management, data analysis, and the communication of research results. Four lecture hours a week. Spring. Garrett.

210 FOUNDATIONS OF PUBLIC HEALTH ETHICS (3). Basic ethical rationales underlying concerns central to public health. These include: ethical reasoning; concepts of justice; the influences of religion; principles of interacting with communities; professional conduct; and research ethics. (On request.) Thomas.

212 EPIDEMIOLOGY OF MEDICAL CARE (2). Prerequisite, EPID 160 or equivalent. Epidemiology applied to issues in health care; variations in disease and medical care, quality of care measures, role of health care in determination of trends, epidemiological approaches in planning/policy. Three lecture hours a week. (On request.) Hartmann, Carey, Sandler, Harris.

213 ACUTE DISEASE SURVEILLANCE AND OUTBREAK RESPONSE (3). Prerequisite, EPID 160 or equivalent. Provides conceptual foundations and practical skills for designing and implementing surveillance systems, and for using surveillance data for the conduct and evaluation of public health programs and research. (On request.) Ryder.


216 HISTORY OF EPIDEMIOLOGY (3). Prerequisites, EPID 160 or 168 and introductory biostatistics. The changing form and content of epidemiology considered in historical context, focusing on Western countries 1700-present. Discussion includes goals, concepts, methods, and relationships with statistics, medicine, and public health. Three lecture hours a week. (On request.) Loomis.

217 PHILOSOPHY OF EPIDEMIOLOGY (3). Prerequisites, EPID 268 and BIOS 145. A forum for evaluating the place of epidemiology in science, public health, and society, focusing on the nature of objectivity and the social construction of epidemiological knowledge. Three lecture hours per week. (On request.) Wing.

218 INTRODUCTION TO METHODS IN INFECTIOUS DISEASE EPIDEMIOLOGY (3). Prerequisites, introductory epidemiology and biostatistics. Introduction to infectious disease epidemiology. Course focuses on methodology, public health concerns, patterns of transmission, and "newly" discovered infections; and diseases in developing countries, especially the United States. Three lecture hours a week. Fall. Weber.

219 REPRODUCTIVE AND PERINATAL EPIDEMIOLOGY (MHCH 219) (3). Corequisites, EPID 160 and BIOS 110, or equivalent. Epidemiology of reproductive and perinatal health outcomes, including infertility, fetal loss, prematurity, birthweight, congenital malformations, infant mortality. Includes current knowledge regarding epidemiology of these outcomes, discussion of methodologic issues. Three lecture hours per week. Fall. Ohlan, Daniels.

220 PREVENTION AND CONTROL OF INFECTIOUS DISEASES AT THE LEVEL OF THE COMMUNITY (3). Primary focus at county/state level; surveillance/control of acute infectious diseases; public health vs. individual rights. Bridging epidemiological concepts with community activities and real world health department issues. Three lecture hours per week. (On request.) Leone.

221 MATHEMATICAL MODELING OF INFECTIOUS DISEASES (3). Prerequisites, EPID 160 or equivalent. Introduction to basic methods for analysis and interpretation of epidemiological data on infectious diseases and for predicting the impact of control programs such as HIV prevention programs and vaccination strategies. Two lecture hours and two lab hours per week. (On request.) Van Rie.

222 EPIDEMIOLOGY OF IMMUNIZATIONS (3). Prerequisite, EPID 160 or equivalent. This course explores the application of epidemiological methods to immunization practices. Topics include vaccine development, vaccine efficacy, post-marketing evaluation, vaccine coverage, and cost-benefit analysis. Three lecture hours a week. (On request.)


226 CONTROL OF INFECTIOUS DISEASES IN DEVELOPING COUNTRIES (3). Prerequisite, EPID 160. Epidemiology of the major infectious diseases in developing countries. Understanding surveillance, prevention, and control strategies appropriate for poor countries. Special attention paid to water-borne diseases, tuberculosis, malaria, and helminthiasis. Three lecture hours per week. (On request.) Mshimviki.

227 EPIDEMIOLOGY OF HIV/AIDS IN DEVELOPING COUNTRIES (3). Prerequisite, EPID 160. This course examines the epidemiology of AIDS from an international perspective. It considers the AIDS pandemic in a broad epidemiology perspective, including the complexities of disease transmission, public health, and social science. Three lecture hours per week. (On request.) Behets, Witt.
228 INFECTION AND INEQUALITY (3). Prerequisite, EPID 160. Types of inequalities; how nature of infection accentuates inequalities; social causes of unequal infection rates; measuring infection rates and social contributors; inequality as an ethical issue; interventions to lessen inequalities. Three lecture hours per week. (On request.) Thomas.

229 GENETIC EPIDEMIOLOGY: METHODS AND APPLICATIONS (3). Prerequisites, EPID 268 and BIOS 145 or permission of the instructor. Concepts and methods of genetic epidemiology relevant to study of complex human diseases, including segregation analysis, linkage analysis, and gene-environment interaction. Includes whole genome approaches, as well as non-human systems. Three lecture hours a week. (On request.) North.

230 MOLECULAR EPIDEMIOLOGY TECHNIQUES (3-4). Prerequisites, undergraduate level biology and genetic course(s). Permission of instructor required. Using infectious, cancer, and cardiovascular diseases as models, molecular and genetic techniques are discussed and applied toward understanding environmental and genetic factors in the development of complex diseases in populations. Three lecture hours per week; one hour lab optional. (On request.) Baric, Millikan.

232 METHODS AND ISSUES IN PHARMAEPIEMIOLOGY (3). Prerequisites, introductory-level epidemiology and biostatistics. Application of the epidemiologic knowledge, methodology, and reasoning to the study of the effects (beneficial and adverse) and uses of drugs in human populations. (On request.) Guess.

233 CANCER EPIDEMIOLOGY AND PATHOGENESIS (3). Prerequisite, EPID 168 or equivalent. BIOS 110, undergraduate major or strong preparation in the biological sciences. Permission of the instructor required for nonmajors. Emphasis on integration of epidemiologic data with laboratory and clinical research findings. Issues in epidemiologic research design, analysis, and interpretation are presented within the context of substantive epidemiology. Three lecture hours a week. (On request.) Schroeder.

234 CANCER EPIDEMIOLOGY METHODS (3). Prerequisite, EPID 268. Interpreting cancer statistics, lead time/length time bias, screening, causation, multistage models, study designs. Applications include: cancer in developing countries, psychosocial and public policy issues. Three lecture hours per week. (On request.) Millikan.

240 EPIDEMIOLOGY AND PREVENTION OF WOMEN'S HEALTH ISSUES (MHCH 240) (2). Course focuses on the epidemiology and prevention of diseases that affect women disproportionately or manifest differently, or are unique to women. Segar-Ruiz.

254 PHYSICAL ACTIVITY EPIDEMIOLOGY AND PUBLIC HEALTH (NUTR 254) (3). Prerequisite, EPID 160 or equivalent. This course provides an overview of major issues in physical activity measurements, population distribution, correlates, impacts (physically and economically), and public health recommendations. Interventions, including relevant theories, will be reviewed. Three lecture hours per week. (On request.) Evenson, Ward.

256 CARDIOVASCULAR DISEASE EPIDEMIOLOGY (3). Corequisites, introductory epidemiology and biostatistics. Review of the major causes of cardiovascular disease morbidity and mortality, and their population determinants. Topics include epidemiologic methods, risk factors, strategies for prevention, and a student research project. Three lecture hours a week. Fall. Heiss, Davis.

257 TEACHING EXPERIENCE IN EPIDEMIOLOGY (1-4). Prerequisite, EPID major, second year or above. Provides epidemiology majors with supervised experience in teaching and course preparation. Students act as assistants in departments courses. Two to eight seminar hours a week. Fall and spring. Staff.

258 ADVANCED CARDIOVASCULAR DISEASE EPIDEMIOLOGY (3). Prerequisites, EPID 168 and 256, or permission of instructor. Contemporary findings, methodologic issues, and research recommendations in cardiovascular epidemiology. Topics include risk factors, trends, interventions, and health care. Students critique research and participate in field experience. (On request.) Rosamond.

259 NUTRITIONAL EPIDEMIOLOGY (NUTR 259) (3). Prerequisites, EPID 160 or 168 and BIOS 101 or 110. This course builds the foundation for critical evaluation of the nutritional epidemiologic literature. Three lecture hours a week. Spring. Stevens.

261 OBESITY EPIDEMIOLOGY (NUTR 361) (3). Prerequisites, EPID 160 or 168 and BIOS 110. Examines epidemiologic research on the causes, consequences, and prevention of obesity. Emphasis on methodologic issues pertinent to obesity research. Spring. Stevens.

262 DIET AND CANCER (NUTR 362) (3). Prerequisites, EPID 160 or 168 and BIOS 110. Examines epidemiologic research on food-related exposures and prevention of cancer of various sites. Emphasis on skills for conducting and analyzing epidemiologic studies on gene-nutrient interactions in carcinogenesis. Spring.

266 EPIDEMIOLOGIC INVESTIGATION (3). Prerequisites, EPID 160, EPID 256, and BIOS 110, or their equivalents. Permission required. Second-level course in epidemiologic research/investigation of current issues in cardiovascular disease. Epidemiologic study design, analysis, and interpretation are applied in implementing a research project. Current data files available. Three lecture hours a week. (On request.) Heiss.

268 THEORY AND QUANTITATIVE METHODS IN EPIDEMIOLOGY (5). Prerequisites, EPID 158 and EPID 168, BIOS 145, and competence in SAS or STATA. Permission required for nonmajors. An in-depth treatment of key methodological topics in epidemiology, including concepts of cause confirming and its control subject selection, data quality, sampling variability, and effect modification. Three lecture and two laboratory hours per week. Spring. Poole, Schroeder.

269 EPIDEMIOLOGIC ANALYSIS OF BINARY DATA (3). Prerequisite, EPID 268. Permission of instructor required for nonmajors. Concepts and applications, including logistic regression, binomial regression, model building strategy, additive and multiplicative interaction, and graphical exploration. Includes computer-based experience with real data. Two lecture and one lab hours per week. Fall. Kaufman.

270 READINGS IN EPIDEMIOLOGIC MODELING (1). Corequisite, EPID 269. Permission of instructor required for nonmajors. Students currently enrolled in EPID 269 may optionally register for this companion seminar. Additional readings in the philosophy and technique of epidemiologic modeling will be explored in greater depth. Fall. Kaufman.


276 OCCUPATIONAL EPIDEMIOLOGY (3). Prerequisites, introductory epidemiology and biostatistics. This course provides a background in the epidemiology of work-related illness and injury and the application of epidemiologic concepts and methods in protecting workers’ health and safety. (On request.) Loomis.

277 ENVIRONMENTAL EPIDEMIOLOGY (3). Prerequisites, EPID 168 and BIOS 110. Epidemiologic ideas and methods applied to evaluation and control of human health consequences of environmental hazards. Pollution of environmental media and global change are considered from a human-ecological perspective, with local and international examples. Three lecture hours per week. (On request.) Loomis.

278 COMMUNITY-DRIVEN EPIDEMIOLOGY AND ENVIRONMENTAL JUSTICE (2). Principles for conducting research within communities unduly burdened by environmental health threats are presented. Topics include research ethics, community presentations, study design and implementation, and student research projects. (On request.) Wing.
280 SOCIAL DETERMINANTS OF HEALTH: THEORY, METHOD, AND INTERVENTION (HBHE 302) (3). Prerequisites, EPID 160 and public health major. Discussion and readings will focus on populational vs. individual perspectives on health, risk condition vs. risk factors, concepts of causation, and knowledge development as an adistric and social process and examine macro-level determinants.

290 CANCER PREVENTION AND CONTROL SEMINAR (HPAA 290) (HBHE 290) (3). Permission required for non-graduate students. An interdisciplinary overview of cancer prevention and control. Emphasis on projects and activities from perspectives of epidemiology, health behavior and education, and health policy and administration. Appropriate research design and methodologies will be covered. Fall, O'Malley.

301 PHARMAECOEPIDEMIOLOGY SEMINAR (1). Prerequisites, basic knowledge of epidemiology and biostatistics. This is a weekly seminar to explore current problems in pharmacoepidemiology. It supplements the introductory course Epidemiology 232. May be repeated. Two seminar hours a week. (On request.) Guess, West.

302 INFECTIOUS DISEASE SEMINAR (1). Prerequisites, introductory epidemiology and biostatistics. Detailed review of selected topics in infectious disease epidemiology. May be repeated for credit.

303 SEMINAR IN ORAL EPIDEMIOLOGY (1). Prerequisite, EPID 168. Explores conceptual and methods issues in conducting epidemiologic investigations of oral conditions, specifically caries, periodontal disease and oral cancer (topics rotate semesters). Spring, Beck.

305 SEMINAR IN CLINICAL RESEARCH (1). Prerequisite, CRC Fellow or permission of instructor. Practical topics pertinent to clinical research will be presented by faculty on campus and from local industry. Fellows in the Clinical Research Curriculum will also present their work. (On request.) Miller.

315 FIELD TRAINING IN EPIDEMIOLOGY (3-6). Prerequisite, advanced standing. Designed to give epidemiology majors a supervised field experience in population health research. Fall, spring, and summer. Faculty.

335 ADVANCED CANCER EPIDEMIOLOGY: CLASSIC AND CONTEMPORARY CONTROVERSIES IN CANCER CAUSATION (2). Prerequisites, EPID 268 and 269 and EPID 233 or 234. Permission of instructor required. Readings and discussions on classic and contemporary controversies in cancer causation. Two seminar hours per week. (On request.) Gammon.

350 ADVANCED TOPICS IN PERINATAL AND PEDIATRIC EPIDEMIOLOGY (MHCH 350) (2). Prerequisites, EPID 168 and EPID/MHCH 219. Permission of instructor required for master's level students. Critical review of current topics in, and methods for, perinatal and pediatric epidemiology. Spring, Daniels.

351 ADVANCED SEMINAR IN CARDIOVASCULAR RESEARCH (1-3). Permission required. Review of substantive and methodologic research in cardiovascular and cerebrovascular diseases. May be repeated for credit. Two to six seminar hours a week. (On request.) Heist.

358 ADVANCED NUTRITIONAL EPIDEMIOLOGY (NUTR 360) (3). Prerequisites, BIOS 145, EPID 160 or 168, and NUTR 259 or permission of instructor. Teaches skills and techniques required to study dietary exposures, anthropometric status and disease outcomes. Students will gain skills in analysis and interpretation of anthropometric data. Concepts and applications include quantification and measurement of dietary intake, use and management of nutrition monitoring data sets, application and interpretation of epidemiologic and statistical methods for the analysis of these data (such as linear and logistic regression), and appropriate use and interpretation of anthropometric indices. Three lecture hours per week. (On request.) Stege-Ruz, Adair.

359. EPIDEMIOLOGY LABORATORY PRACTICUM (1-9). Permission required. Students work individually with a faculty member on supervised laboratory research and skills development. May be repeated for credit. Two to eighteen laboratory hours a week. Fall and spring. Basic, Hall, Seed, Stamm.

360, 361 RESEARCH IN EPIDEMIOLOGY (Var). Prerequisite, permission of the instructor. Independent investigation in consultation with an instructor who must assign or approve the subject of research. Credits vary according to the effort and rigor of the research. Fall, spring, and summer. Faculty.

368 EPIDEMIOLOGY IN HEALTH POLICY AND CLINICAL DECISIONS (2). Prerequisite, knowledge of introductory level epidemiology recommended. Evidence-based decisions about public policy, clinical practice, and government regulations—perspectives of science, government, industry, media, and courts. Toxic shock, environmental hazards, alternative medicine, tobacco, diet pills, breast implants. (On request.) Kaufman, Poole, Marshall, Guess.

369 ADVANCED METHODS FOR EPIDEMIOLOGY (1). Prerequisites, EPID 268 and 269, and BIOS 145. A seminar for advanced students exploring methodological issues in epidemiology, including measurement error, missing data, intermediate variables, complex study designs, meta-analysis, splines, and other topics. (On request.) Kaufman, Poole, Marshall, Guess.

380 HOSPITAL EPIDEMIOLOGY (1-2). Prerequisites, EPID 168 and EPID 218. Permission of the instructor required. Comprehensive seminar in hospital infection control. Topics include issues in employee health, surveillance, outbreak investigation, environmental sampling, and policy formation. May be repeated for credit. Two to four seminar hours. Spring, summer. Weber.

390 EPIDEMIOLOGY DOCTORAL SEMINAR (2). Open to first-year epidemiology doctoral students only. Exposes students to issues and debates in the philosophy of science, the object of knowledge in epidemiology, and the place of epidemiology in public health. Fall, Wing.

392 MASTER'S PAPER (Var). Fall, spring, and summer. Graduate faculty.

394 DOCTORAL DISSERTATION (Var). Fall, spring, and summer. Graduate faculty.


DEPARTMENT OF HEALTH BEHAVIOR
AND HEALTH EDUCATION (HBHE)

JO ANNE L. EARP, Chair

Professors
Karl Baumr (33) Adolescent Alcohol and Drug Use Prevention, Research Methods
Brenda M. DeVellis (13) Health Education Theory, Patient Education
Jo Anne L. Earp (10) Health Education Evaluation, Women's Health, Cancer Control
Eugenia Eng (17) International Health, Community Health Education, Lay Health Adviser Interventions
Barbara Rimer (82) Cancer Control and Prevention, Tailored Print Communications
Carol Runyan (31) Injury Control, Violence Prevention, Worksite Injury Prevention
James R. Sorensen (30) Human Genetics, Public Health Ethics, Theory in Practice
Allan Stackler (12) Qualitative Methods, Organizational Change, Native Americans

Associate Professors
Susan T. Ennett (45) Social Networks, Adolescent Health Risk Behaviors, Research Methods
Vangie Foshee (43) Dating Violence, Adolescent Health, Program Evaluation
Christine Jackson (42) Substance Abuse Prevention, Social Norms, Children's Health
Assistant Professors
Gualadupe X. Ayala (70) Community-Based Health Promotion Interventions for Diverse Populations; Prevention of Obesity in Latino Children, Asthma Management among Ethnically Diverse Adolescents
Megan Lewis (63) Social Relationships and Health, Cardiovascular Disease, Social Ecology
Laura Linnan (66) Applied Research in Worksite and Other Community-Based Settings, Multiple Risk Factor Behaviors, Organizational Change
Kurt Ribial (64) Mass Media and Policy-Based Health Promotion Interventions, Tobacco Control

Research Professor
Robert DeVellis (23) Research Methods, Health Behavior, Health Psychology

Research Associate Professors
Richard Kilginnworth (79) Health Promotion, Wellness Programs, Design for Health Living
H. Douglas Robertson (71) Highway, Traffic, Pedestrian, and Bicycle Safety; Transportation Policy Development

Research Assistant Professors
James Michael Bowling (48) Injury Prevention, Statistics and Methods, Program Evaluation
Caroline Crump (49) Worksite Health Promotion and Evaluation, Program Planning, Management
Carol Golin (88) Adherence to Chronic Medical Therapy, Patient-Provider Communication, Medical Decision Making for HIV Therapy and Prevention

Clinical Associate Professor
Lynn H. Blanchard (51) Interdisciplinary Training, Community Health Education

Lecturers
Mary Alperter (80) Health of the Elderly, Breast Cancer Research
Sallie Benedict (56) Worksite Health Promotion for Underserved Populations
Linda Carl (60) Community-Based and Interdisciplinary Education
Janet Del Santo (86) Child Labor, Childhood Injuries, International Health and Development
Mary Davis (78) Prevention Education, Program Evaluation, Program Planning
Robert Foss, Alcohol and Transportation/Related Injury, Adolescent Injury, Social Policy Approaches to Injury Prevention
Susan Gayford (57) Alternative Therapies, Aging, Women's Health
Shelley Golden (87) Training and Facilitation, Health Communications, Population-level Public Health Determinants and Health Policy
Alexis Moore, Cancer Control Research, Focus on Behavioral Aspects of Mammography Screening and Issues Involving Cancer Genetics Risk Assessment
Carol Patterson, Tobacco Control, Mass Media and Policy-Based Health Promotion Interventions
Julie Sweedler, Media, Marketing and Promotion Advocacy, Coalition Building
Anna Waller (54) Injury Control and Prevention, Violence Against Women

Adjunct Professors
Thomas Arctury (59) Rural Health Disparities Among Immigrant Communities, Rural and Minority Aging and Health
Walter C. Farrell Jr. (77) Urban Poverty, Minority Populations, Social Change
Victor W. Marshall (81) Aging and Work/Retirement, Aging and Health/Health Care, Health Public Policy
Kenneth McFeroy (73) Program Evaluation, Health Behavior
Michael Schullman (83) Occupational Injury and Mortality, Teen Workers, Work, Organization and Industry

Adjunct Associate Professors
Forrest Council (55) Motor Vehicle Injury Research, Research Methods
Colleen McBride (79) Health Services Research, Women's Health, Smoking Cessation
Christopher Ringwall (40) Adolescent Drug and Alcohol Use Prevention
Jason Smith (68) Reproductive Health, International Health, Behavioral Theory

Adjunct Assistant Professors
William Dow (37) Primary Health Care, Economic Development and Technology
Robert Flewelling (73) Substance Abuse Prevention Community-Based Intervention, Adolescent Health Risk Behaviors
Anita Page Holmes, Lay Health Advisors, Minority Health, Access to Health Care, Church-Based Health Promotion
David Jolly (74) STDs/HIV/AIDS Training and Research, Program Planning and Evaluation, Gay and Lesbian Health Issues and Aging
Linda Kinser (53) Behavioral Change for Weight Management, Behavioral Counseling Interventions in Primary Care Practice
Kathleen Macqueen, Qualitative Research Methods, Ethics in Public Health and Research, Social and Behavioral Dimensions of Clinical Trials Research, Especially HIV
David McCoy, Native Americans Health, Health Care of Rural and Minority Populations, Budgetary and Policy Aspects of the Delivery of Health Care
Elizabeth Moracco (67) Women's Health and Violence Prevention
Charles Morrison, HIV/STDs, Reproductive Health, Sexual and Drug Behavior
Kathryn Pollak, Patient-Physician Communication, Smoking Cessation, Health Disparities
Elizabeth Randall-David (70) Women's Health, Empowerment Education, Program Planning and Evaluation
Anna Schenck, Epidemiology, Cancer Prevention and Control, Evaluation
Sudha Shreemay, Aging and Health of Minorities in the U.S., Gender Violence in Asia and among Asian Immigrants in the U.S.
Pais Hall Smith (76) Domestic Violence, Women's Health, Qualitative Research Methods
Eugenia Upchurch, Health of the Elderly, Access to Health Care, Public Policy Regarding Health Care for the Elderly
Jane Vella (41) Adult Education, Cross-Cultural Program Planning
Claire Viadro (85) Qualitative Research, Hispanic/Latino Health, Women's Health
Yvonne Wasilewski, Community-Based Asthma Management Education Research, Tobacco Prevention Research

Adjunct Instructors
Paulo Alfonso, Adult Health, Community Health Education, Program Planning
Mary Bobbitt-Cooke, Community Organization/Mobilization, Community Assessment, Policy Development and Advocacy
Tekola Fiseha, International Health and Program Planning, Community Health Education, Communicable Diseases
Deborah Hilgenberg, Clinical Trials Research, Protection of Human Research Participants
Vanessa Jeffries, Community-Based Public Health Education, Minority Health Issues, Evaluation
Dennis Joyner, Population-Based Community Health Planning, Community Health Assessment, Health Promotion Program Planning and Development
Karen Monaco, Tobacco Control - Adult and Teen Smoking Cessation, Program Development, Training
Regina Pertwee, Community Health Education
LaHoma Romochi, Global Health, Health Communication, HIV/AIDS
Elizabeth Stern, Domestic Violence, Hispanic/Latino Health
Katherine Turner, International Women's Sexual Reproductive Health, Lesbian/Gay/Bisexual/Transgender Health
Emily Tyler, Community Health Practice, Credentialing Issues
Karen Webb, Mental Health, Substance Abuse Prevention, Support Group Development

Professors Emeriti
Harriet H. Barr
Leonard H. Dawson
John Hatch
Esther J. Jackson
Elizabeth Munson
Eunice N. Tyler
Courses

109 RURAL HEALTH AND COMMUNITY ACTION (3). Prerequisite, permission of the instructor. Community education and action as modes of intervention in rural communities. Cross-cultural perspectives of rural development. Three seminar hours per week. Fall. Staff.

125 INJURY AS A PUBLIC HEALTH PROBLEM (MHCH 125) (EPID 125) (3). Prerequisite, EPID 160 or equivalent. This course considers the causes and consequences of traumatic injury within developmental, social, and economic contexts, and dilemmas in injury prevention. Injuries associated with transportation, violence, and the home and occupational environments are included. Three lecture hours per week. Fall. Runyan and Korch.

130 SOCIAL AND BEHAVIORAL SCIENCE FOUNDATIONS OF HEALTH EDUCATION (Var.). Selected social and behavioral science theories and concepts that apply to the analysis of health-related behavior and to the generation of intervention strategies. Three lecture hours per week, one seminar hour. Fall. Lewis.

131 SOCIAL AND BEHAVIORAL SCIENCES IN PUBLIC HEALTH (2). This course focuses on social and behavioral science theories, research, and interventions aimed at promoting health of individuals, groups, communities, and populations. Two lecture hours per week. Spring and summer. Golden.

140, 141, 142 PROBLEMS IN HEALTH EDUCATION (1 or more). Prerequisites to be arranged with the faculty in each individual case, depending upon the problem that is to be studied. A course for students of public health who wish to make an intensive study of some special problem in public health education. Fall, spring, and summer. Staff.

160 INTRODUCTION TO WOMEN'S HEALTH AND HEALTH EDUCATION (WMST 161) (3). Using a lecture-discussion format, this course provides an overview of women's health-specific issues as family and community members, as patients, and as health professionals. Implications for health education practice as well as opportunities for future research are emphasized. Two lecture and two seminar hours per week. Offered every other fall. Moracco.

164 HEALTH POLICY AND AGING (HPAA 164) (3). Critical examination of aging policy in light of empirical findings on the elderly's economic power. Utilization patterns, prevalence of dependency, and the cost effectiveness of policy options, including long-term care. Three seminar hours per week. Staff.

172 PLANNING HEALTH PROMOTION IN COMMUNITY, WORKSITE, SCHOOL, AND MEDICAL SETTINGS (4). Prerequisite, permission required for nonmajors. This course builds skills in developing components of health promotion programming in a variety of settings. It emphasizes use of needs and capacity assessments to identify focus of intervention; strategies for evaluating programs; application of health promotion models and program planning. Fall. Linnan.

189 ADOLESCENT HEALTH RISK BEHAVIORS (3). This course covers the epidemiology, etiology, and prevention of adolescent health risk behaviors including: substance use, violence, and sexual behavior. Theories of adolescent behavior and methodological issues related to research on adolescents are also emphasized. Three lecture hours per week. Fall. Emmet.

190 PSYCHOSOCIAL ASPECTS OF AGING (PHNU 190) (HPAA 190) (3). Psychosocial aspects of the aging process and of old age. Needs of the elderly and their reactions to agencies and programs for the aged. Two lecture and two seminar hours per week. Spring. Staff.

191 OVERVIEW OF AGING AND CHRONIC ILLNESS (PHNU 216) (3). Provides an understanding of the theories and issues related to the biological, physical, emotional, demographic, and social aspects of aging, including population-based risk factors, with emphasis on health promotion. Spring. Staff.

195 MEDICAL JOURNALISM (JOMC 195) (HPAA 195). Prerequisite, JOMC 53 or permission of instructor. Prepares students to work as medical journalists for a variety of media, including print, broadcast, and the Internet. The course emphasizes writing skills and interpreting medical information for consumers. Fall. Linden.

196 MEDICAL REPORTING FOR THE ELECTRONIC MEDIA (JOMC 196) (HPAA 196). Prerequisite, HBHE 155 or permission of instructor. Teaches students how to conceive, script, report, and produce medical stories for electronic media, especially television. Students work in teams to produce projects for professional media outlets. Fall. Linden.

197 SCIENCE DOCUMENTARY TELEVISION (JOMC 197) (HPAA 197). Students learn skills needed to produce a science documentary for broadcast on television, including research and script writing. Spring. Linden.

200, 201, 202, 203, 204 SPECIAL STUDIES IN BEHAVIOR CHANGE (1 or more). Prerequisite, permission of the instructor. HBHE 200 - natural change process in health-related behavior; HBHE 201 - planned change: personal and nonpersonal methods; HBHE 202 - program design and evaluation; HBHE 203 - personal development and community action; HBHE 204 - social class and culture variations in planned change. Fall, spring, and summer. Staff.

208 U.S. LATINO HEALTH PROMOTION RESEARCH (3). An examination of social, political, geographic, and psychological forces affecting the health of Latinos in the U.S. Discussion of theoretical and methodological issues relevant to U.S. Latino health promotion research to help prepare students to do research or work in the Latino community. Fall. Aylala.

210 COMMUNITY CAPACITY, COMPETENCE, AND POWER (3). The nature and delineation of participatory action research and its relevance to concepts, principles, and practices of community empowerment. Students learn methods, such as photo-voice, through learning projects. Spring. Eng.

211 POLICY ADVOCACY FOR HEALTH EDUCATION (1-3). Health education policy roles as a unit of health education practice; includes following a bill through the NC State Legislature or other policy-making body. One to three lecture hours per week; one to three lab hours per week. Staff.

225 HEALTH COMMUNICATION THEORY AND RESEARCH (3). Prerequisite, HBHE 130. Permission for nonmajors. Overview of communication theory and research and critical analysis of applications of communication theory to health education and health behavior intervention. Lecture-discussion format three hours per week. Fall. Jackson.

231 ANTHROPOLOGY AND PUBLIC HEALTH: CRITICAL PERSPECTIVES ON RESEARCH AND PRACTICE (2). The course is for students who want to gain critical tools designed to improve analytical policy and cultural skills. Public health topics include AIDS, global health, reproductive health, cancer, violence prevention, and federal public health goals. Fall. Staff.

232 HEALTH, DEVELOPMENT AND TECHNOLOGY (3). Critical analysis of the theories and approaches to adult learning, economic development, technology transfer, and primary health care. Nonformal education and community organization techniques for integrating health and development in the rural United States and in developing countries. Spring. Eng.

233 INTRODUCTION TO PROGRAM MANAGEMENT (3). An introductory overview of health education program management. A practical study of personnel and financial management issues including: staff development, recruitment, performance appraisal, budget preparation, and monitoring. Three lecture hours per week. Fall. Crump.
240 FOUNDATIONS OF HEALTH EDUCATION PRACTICE (2). Historical and critical examination of public health and health education professions and major paradigms that inform our research and planning approaches. Emphasis on research design, methodology, and evaluation. Three lecture hours per week. Fall. Staff.

241 ACTION ORIENTED COMMUNITY DIAGNOSIS (4). Preerequisite, HBHE 240. Students work under field preceptors to acquire analytic and intervention skills in real world contexts for engaging communities and service providers in examining social determinants of health. Two lecture hours per week. Spring. Eng.


243 PROGRAM INTERVENTION, IMPLEMENTATION, AND MONITORING II (2). Application of methods for analyzing and interpreting data regarding the effectiveness of health education interventions. Three lecture hours per week. Summer. Staff.

244 RESEARCH PRACTICUM I (2). Research option: Students must complete a mentored research practicum. The mentor and student will develop a contract to achieve their research objectives and the means of evaluating the intervention and testing a hypothesis. Three lecture hours per week. Fall. Staff.

245 RESEARCH PRACTICUM II (2). Research option: After completing the data collection and analysis component of the practicum, students write up their findings into a publishable manuscript. Spring. Staff.

250 APPLIED RESEARCH METHODS IN HEALTH BEHAVIOR AND HEALTH EDUCATION (4). Prequisite for nonmajors, permission of the instructor. Research methods of relevance to planned change in health-related behavior and program planning. Three lecture hours per week. Fall. Staff.

251 THE ROLE OF EVALUATION IN HEALTH EDUCATION (2). Prerequisite, HBHE 250. Emphasis on methods to show the importance of evaluating health education program planning and developing skills in formative evaluation design. Three lecture hours per week. Spring. Staff.

252 INTERVENTION METHODS IN HEALTH EDUCATION (4). Critical examination of major intervention methods used in health promotion and disease prevention programs, and ways to tailor these methods to different settings and populations in which health educators work. Three lecture hours per week. Spring. Staff.

253 QUALITATIVE EVALUATION AND RESEARCH METHODS (NURS 354) (3). Prerequisite, HBHE 250 or equivalent. Theoretical and methodological approaches of applied medical anthropology for health program development and evaluation. Field methods for collecting and analyzing data through observation, interviewing, group methods and case studies. Fall. Steckler and Bentley.

255 INTRODUCTION TO NONFORMAL EDUCATION FOR HEALTH PROFESSIONALS (3). Development of students' comprehension of current research on adult education principles, and the development of practical training skills that can be used to teach and supervise community health workers. Three lecture hours per week. Staff.

260 RESEARCH METHODS (3). Permission for master's students and nonmajors. An intermediate-level course providing comprehensive coverage of behavioral science research methods as applied to health behavior and health education problems. Three lecture hours per week. Spring. Jackson.


295 THE INTERNET AND PUBLIC HEALTH: PROMISES AND PERILS (3). An overview of the positive and negative impacts of the Internet on public health. Covers research, evaluating sites, ethics and use of theory that addresses key public health problems. Fall. Ribisi.

300 SOCIAL PSYCHOLOGICAL THEORIES OF INDIVIDUAL HEALTH BEHAVIOR (3). Prerequisite, HBHE 130 or permission. Selected social psychological theories and their relationship to health promotion, disease prevention, and patient education. Three lecture hours per week. Spring. DeVellis.

301 TOPICS IN SOCIOLOGY OF HEALTH (3). Prerequisite, HBHE 130 or 131. Permission required for nonmajors. Health issues will be analyzed using sociological approaches in order to determine the research needs to develop more informed social policy. Implementation for practice will be discussed. Fall. (Alternate years.) Staff.

302 SOCIAL DETERMINANTS OF HEALTH: THEORY, METHOD, AND INTERVENTION (EPID 280) (3). Prerequisite, EPID 160. Discussion of research and readings will be based on population vs. individual perspectives on health, risk conditions vs. risk factors, concepts of causation, and knowledge development as an historic and social process, and will examine macro-level determinants of public health. Fall. Staff.

303 SOCIAL RELATIONSHIPS AND HEALTH (3). Prerequisite, EPID 160 or equivalent. Introduces students to epidemiological evidence that links social relationships with health outcomes, theoretical and empirical work that attempts to link the association between social relationships and physical health. Spring. Lewis.

310 DOCTORAL SEMINAR: HISTORICAL AND CONCEPTUAL BASES OF PUBLIC HEALTH (3). This seminar examines the historical and conceptual bases of public health and health education and considers ideological and ethical implications for public health research, policy, and programs. Fall. Three lecture hours per week. Runyan.

311 DOCTORAL SEMINAR: DEVELOPMENT OF HEALTH PROMOTION AND DISEASE PREVENTION INTERVENTION (3). The goals of this seminar are to explore the problems and issues in using behavioral and social science theories, concepts, and data to inform HBHE research and interventions. Fall. Three lecture hours per week. Sorensen.

312 DOCTORAL SEMINAR: PROFESSIONAL ISSUES (3). Topics related to ethical functioning as a doctorally prepared professional, including writing and reviewing grants, manuscripts, abstracts; consulting; credentialing; teaching; job search; ethics, collaboration, fraud, and politics in research. Three lecture hours per week. Fall and spring. DeVellis.

313 DOCTORAL SEMINAR: MODELS OF HEALTH EDUCATION PRACTICE (3). The purpose of this seminar is to describe, critically analyze, and compare a variety of health education practice models, e.g., social change model, PRECEDE/PROCEED stage model of diffusion, and others. Fall and spring. Three lecture hours per week. Eng and Steckler.
317 ADVANCED TOPICS IN HEALTH BEHAVIOR AND HEALTH EDUCATION (1-3). For doctoral students who pursue independent study or research in a selected field. Students work with faculty to design the study. Staff.

340, 341, 342, 343 ADVANCED FIELD TRAINING IN HEALTH EDUCATION (3). Open to doctoral students in the department. Under guidance by faculty and field counselors, students assume major responsibility for planning, executing, and evaluating community health education projects. Field fee $125. Fall and spring. Staff.

350 SECONDARY DATA ANALYSIS (3). Prerequisites, BIOS 145 or equivalent, and permission of the instructor. This seminar is designed to refine a wide range of research skills in health behavior and health education by using data collected by others. Three seminar hours per week. Spring. (Alternate years.) Foshee.

351 CAUSAL MODELING AND STRUCTURAL EQUATIONS (3). Prerequisites, BIOS 145 or equivalent, and permission of the instructor. Focus on causal modeling and strategies for analyzing such models including LISREL analysis. Secondary data is available for course assignments. Three lecture hours per week. Spring. (Alternate years.) Staff.

352 SCALE DEVELOPMENT METHODS (3). Prerequisites, HBHE 250 or equivalent, and permission of the instructor. Covers theory and application of scale development techniques for measuring latent constructs in health research; classical measurement theory and factor analytic methods are emphasized. Three seminar hours per week. Spring. R. DeVellis.

353 ADVANCED EVALUATION OF HEALTH INTERVENTION PROGRAMS (3). Prerequisites, BIOS 145, HBHE 250, or equivalent, and permission of the instructor. Emphasis is on methods required to complete various types of analysis related to program implementation (e.g., efficacy of program in terms of objectives, cost-benefit analysis, utility analysis). Both quantitative and qualitative methods are covered. Three seminar hours per week. Fall. (Alternate years.) Ernert.

392 MASTER'S PAPER (Var.). Fall, spring, and summer. Staff.

393 MASTER'S THESIS (3-6). Fall, spring, and summer. Staff.

394 DOCTORAL DISSERTATION (3-9). Fall, spring, and summer. Staff.

DEPARTMENT OF HEALTH POLICY AND ADMINISTRATION (HPAA)

Peggy Leatt, Chair

Professors
Peggy Dillworth-Anderson (318)
Richard N. L. Andrews (117) Environmental Policy
Jeffrey L. Houpt (284) Health Policy, Mental Health
Sagar C. Jain (1) International Health, Population and Family Planning, Human Resources Management and Development, Culture and Managerial Behavior
Arnold D. Kaluzny (15) Organizational Design and Behavior, Program Implementation and Evaluation
Peggy Leatt (310) Organizational Strategy and Design, Health System Reform, Patient Safety
Joseph Lipscomb Jr. (288) Health Outcomes Research, Health Economics, Health Care Workforce
Donald L. Madison (16) Medical Care Organization, History of Medical Care
Curtis P. McLaughlin (61) Financial Management, Cost-Effectiveness, Health Administration Research
Nancy Milio (51) Public Policy and Health Promotion, International Health
Thomas C. Ricketts (139) Rural Health Care, Primary Care, Regionalization of Services, Political Philosophy, Policy Implementation and Policy Development
William L. Roper (239) Outcomes Research, Health Policy, Managed Care

Richard G. Rosier (29) Dental Public Health
Morris Weinberger (300) Quality Management, Health Outcomes Research, Health Services Research

Associate Professors
Andrea K. Biddle (175) Health Care Access and Reform, Childhood Vaccination, Pharmaceutical Economics
Laurel A. Files (28) Organization Design and Change, Strategic Planning
Bruce J. Fried (172) Human Resources Management in Health Care, Mental Health Services Research, Health Services Management and Education, Canadian Health Systems
Edward C. Norton (211) Health Care Economics, Long Term Care and Aging, Managed Care, Econometrics and Statistics
Sally C. Stearns (150) Health Economics, Health Policy

Assistant Professors
Marisa E. Domino (279) Health Economics
William H. Dow (260) Health Economics and Policy
Shou-Yih Daniel Lee (301) Medical Care Organization
Felicia Mebane (302) Media Communications of Health Policy, Health Policymaking, and Public Opinion
Bryan J. Weiner (277) Organization and Management of Community Health Partnerships

Clinical Professors
Thomas J. Bacon (24) Population Studies, Rural Health
Deborah E. Bender (163) International Health, Maternal and Child Health Services, Community-Based Health Program Planning
Robert Berenson (106) Medicare, Managed Care, International Health
Carmen Hooker Buell (219) Urban Studies, Health Care Legislation, Health Care Data
Gordon H. DeFrise (137) Health Services Research

Clinical Associate Professors
Edward F. Brooks (128) Research Management, Rural Health Care Delivery, Health Manpower
Dean M. Harris (195) Health Law and Ethics for Health Administration
Janet E. Portter (252) Health Administration Practice
Pamela Silberman (249) Public Health Legal Issues

Clinical Assistants Professors
Oscar R. Aylor (268) Health Care Administration Programs
Benjamin Gilbert (93) Health Policy, Health Law, Legislative Process
Brian Goldstein (278)
James V. Portto (134) Management and Information Systems, Public Budgeting and Finance
Vaughn M. Upham (261) Public Health Administration Leadership

Clinical Instructor
Gary S. Palmer (217) Health Services Administration, Managed Care

Research Professors
Thomas R. Konrad (69) Research Methodology
William A. Sollecito (262) Health Research Methodology
Sheila Leatherman (286) Quality of Care, Health Systems Performance, International Health Policy
Kathleen Lohr (246) Evidence-Based Practice, Quality of Care, and Clinical Practice Guidelines, Health Status and Quality of Life Assessment, Health Policy
Research Assistant Professors
Kathleen Dalton (297) Health Care Financing, Health Services Research, Academic Medical Centers
Jessica Lee (312) Access to Care for Children, Evidence-Based Practice of Dentistry
Michelle Mayer (313) Access to Health Care for Children, Quality of Pediatric Care for CSHCNs, Underserved Pediatric Populations
Sue Tolleson Rinehart (293) Health Outcomes Research, Political Science, Women's Issues
Lucy A. Savia (212) Strategic Planning, Marketing, Health Systems Management

Adjunct Professors
Leslie Alexandre (315)
Joseph Antos (253)
William K. Atkinson II (255) Health Care Administration
James D. Bader (119) Dentistry
Marc L. Berger (289) Clinical Research and Development
Fred T. Brown Jr. (282) Managed Care Networks
Charles Robert Buck Jr. (296) Health Care Quality
William H. Campbell (206) Pharmacy Administration
Dale B. Christensen (267) Pharmacy Health Services
Jan P. Clement (189) Health Care Financial Management
Harvey J. Cohen (274) Geriatric Medicine
Margaret Dardess (314) Federal Government Affairs, Health Policy, Health Care Coalitions
John R. Feussner (161) Health Policy and Administration
Patrick M. Flynn (225) Drug Abuse Programs
Deborah A. Freund (75) Health Economics, Health Policy
Abraham G. Hartzema (109) Pharmacy Administration
H. Garland Hershby Jr. (256) Dental Public Health
R. Edward Howell (316)
William F. Jesse (76) Medical Group Management, Health Care Quality and Outcomes
Mary G. Kovar (147) Aging, Health Policy
Michael Lawlor (317)
Barbara Mark (318)
Daniel Mendelson (319)
Joseph A. Morrissey (138) Health Services Research, Administrative Medicine, Community Mental Health
Eric B. Munson (92) Hospital Administration
Harry A. Nurkin (208) Health Services and Hospital Administration
John Paul (320) Health Policy, Health Economics, Outcomes Related to Pharmaceutical Products
Kenneth Reinhart (393) Community Needs Assessment
Dennis A. Revicki (209) Quality of Life Measures in Pharmaceutical Economics Research
Lillian Ridky (322)
Hugh H. Tilton (81) Health and Human Services, Preventive Medicine
Judith Tintinalli (323)

Adjunct Associate Professors
Deborah A. Amaral (210) Environment
Mary A. Beck (164) Health Care Administration
Stephen M. Downs (283) Pediatric Research
Steven A. Garfinkel (292) Health Services Research and Managed Health Care Plans
James W. Luckey (77) Alcohol, End User Computing
Paul Halverson (191) Managed Care, Executive Leadership, Public Health Practice
Patricia MacTague (324)
Michael S. O'Malley (235) Health Services/Oncology Research
Patricia Pittman (325)
Arjun Rajan (326)
Bonnie Rogers (327) Occupational Health and Safety, Public Health Nursing
Robert C. Simon (273) Health Care Management
Betsey L. Sleath (254) Pharmacy Administration
Steven G. Sloane (228) Health Policy and Administration
Wendee M. Wechsberg (291) Clinical Addiction and Drug Treatment, HIV Projects

Adjunct Assistant Professors
Samuel Arbes (301) Dental Epidemiology
Carolyn Carpenter (329)
Jim P. Doherty (287) Health Outcomes and Treatment of HIV/AIDS
Brian Goldstein (278) Health Care Financial Management
Suzanne Havala-Hobbs (330) Public Health Policy, Food and Nutrition Policy
Susan L. Hogue (290) Health Outcomes Research
Frederick K. Homan (236) Health Policy and Administration
Melissa Kaluzny (331)
Celeste O'Keefe (305)
Stephen N. Orton (259) Distance Learning
Barrington Ottman (304)
David D. Potenziani (298) Management Information Systems in Health Care
Donna J. Rabiner (231) Health Policy and Administration
Richard P. Scoville (272) Management Information Systems in Health Care
Eui Chul Shin (328)
John Siegel (332)
Kathleen C. Thomas (295) Health Economics
Courtney H. Van Houven (306) Informal Care and Elderly Health Care Use
Thomas A. Walke (280) Health Economics
James W. Yarbrough (275) Management Information Systems in Health Care

Adjunct Instructors
Down Carter Buckner (281) Strategic Planning and Marketing
Nelson Couch (299)
Michael L. Freeman (265) Strategic Planning and Marketing
William B. Gentry (321)
Noah D. Glick (238) Health Policy and Administration
James P. Hatzon (302)
Trina Hembree (294)
Nancy Henley (270) Quality Assurance and Managed Care
Sarah F. Jaggar (249) Health Policy and Administration
Douglas A. Johnston (174) Health Law
Lawrence K. Mandelkern (244) Database Design for Health Care
Daniel B. Reimer (152) Health Policy and Administration
William R. Service (247)
Robert Stevens (333)
Deborah Tindley (334)
J. Bennett Waters (334)
Michael Womble (336)

Adjunct Lecturers
David S. Abernethy (215) Health Reform Proposals, Policy Development
Kathryn B. Ahlport (216) Organisational Design and Behavior
Majorie A. Satinsky (250) Health Policy and Administration

Professors Emeriti
James P. Dixon
Patricia Z. Fischer
William S. Flash
William T. Herzog
Jacob C. Koome
Robert A. Lohndal
Curtis P. McLaughlin
Harry T. Phillips
Morris Schaefer
Executive Master's Program (EMP)

www.sph.unc.edu/hpaa/academic/execmaster.htm

The Executive Master's Program (EMP) has been offering master of health care administration (MHA) and master of public health (MPH) degrees since 1969. The program is accredited by both the CEPH (Commission on Education in Public Health) and the ACEHSA (Accrediting Commission on Education for Health Services Administration), the noted "gold" standards for public health and health services administration programs. The latest U.S. News and World Report graduate school rankings placed the UNC-Chapel Hill health services administration programs second in the nation.

The national distance-learning format, designed for working health care professionals, minimizes students' time away from both professional and personal obligations. The majority of course work is completed via the Internet using our specialized client-server software. This software enables the instructor and students to keep individual assignments secure while allowing the entire class to view class notes, course slides, and discussions.

Students generally take two courses in each of the fall, spring, and summer sessions. Each course requires two full days of on-campus class meetings at the beginning of the session and two days at the end. Students make three short visits to Chapel Hill each year for these class meetings. After the first on-campus visit, which includes an orientation to the program and the beginning of the first two courses, students complete two courses and begin two new courses during each visit, a total of eight days per visit. These on-campus meetings help create a collegial environment that encourages long-term relationships.

The North Carolina Program is a joint effort of the Department of Health Policy and Administration and the North Carolina Area Health Education Centers (AHEC). The program services working professionals in public health and health services fields that are within commuting distance to program sites located in the western and eastern parts of the state. Students attend class one day (afternoon and evening) per week during the fall and spring sessions, completing eight courses over two years. To fulfill the remaining requirements, students take distance-learning courses during the summer semesters.

The MPH is a forty-hour program and can be completed in approximately two years. The MHA is a fifty-two-hour program and can be completed in as little as three years. In-state tuition rates are $198 per credit hour, and out-of-state rates are $410 per credit hour (subject to change).

To expedite the process, you may apply directly online:
www.sph.unc.edu/hpaa/apply/execmasterapp.htm

The online application system provides access to a secure site and email feedback, which allows students to monitor the progress of their application.

Detailed information about the program can be found on the Web site.

Courses for Graduates and Advanced Undergraduates

101 INFORMATION MANAGEMENT IN HEALTH POLICY AND ADMINISTRATION (1). Introduces students to methods for critically evaluating public health literature and using computers to identify, file, and retrieve information. Fall. Staff.

102 CONCEPTS OF HEALTH ADMINISTRATION (3). Survey of health and human services organization and management, including concepts of administrative systems, government, legal and public interest aspects, organizational behavior and relations. Spring. Staff.

104 ISSUES IN MANAGING HEALTH CARE ORGANIZATIONS (Var.). Through presentations of leaders in the health care field and class discussion, problems, issues, and changes in health care policy and administration are explored. Spring. Porto.

105 ISSUES IN HEALTH POLICY (1-3). Lectures on current topics in the area of health policy. Spring. Staff.

106 ISSUES IN HEALTH CARE (1-2). Lectures on current topics in the area of health care. Fall. Fried, Aylor.

107 THEORY AND PRACTICE OF PUBLIC HEALTH POLICY AND ADMINISTRATION (3). Policy and management issues and ideals, including their historical derivations and international implications, in relation to current state and local practice. Fall and spring. Staff.

109 CONCURRENT PRACTICE (1-3). Supervised activities in an approved health organization to include one or more specific projects, approved by an HPAA faculty member, and directed by an approved preceptor/mentor in the organization. Fall, spring, and summer. Staff.

110 INTERNATIONAL AND COMPARATIVE HEALTH SYSTEMS (3). Methods of comparing health systems, examinations of related national health systems, and analysis of related high prevalence health issues. Fall. Jain.

119 INTRODUCTION TO HEALTH POLICY AND ADMINISTRATION (2). Provides an overview of the United States health system, emphasizing role of policy development and administrative decision making through case examples. Fall and spring. Upshaw, Hobbs.

120 ACCESS AND QUALITY OF CARE FOR LATINO POPULATIONS (1-3). Prerequisites, intermediate level Spanish and permission of the instructor. Through presentations of issues related to access and quality, the course, which is presented in Spanish, introduces Spanish public health terminology. Fall. Bender.

121 HOSPITAL ORGANIZATION AND ADMINISTRATION (3). Comprehensive overview of general hospitals, including organizational structure, governance, medical staff, external relationships, departmental organization, strategic planning, financing, regulation, accreditation, quality assessment. Addressed from perspective of chief executive officer. Fall. Staff.

122 LONG-TERM CARE ADMINISTRATION I (3). Introduction to administration of long-term care facilities. Evolution of long-term care, survey of the current field. Examination of state and national requirements. Fall. Staff.

123 LONG-TERM CARE ADMINISTRATION II (3). Prerequisite, HPAA 122 or permission of the instructor. Nursing home care, organization monitoring, costs, and financing. Exploration of trends and issues such as cost controls, productivity, quality assurance, medical staffing, and organization. Spring. Staff.

124 LONG-TERM CARE AND AGING POLICY ISSUES (3). Long-term care and aging policy in the United States from the early 1960's through the late 1990's will be reviewed along with Medicare, Medicaid, and public/private long-term policies. Spring. Staff.

125 MANAGED CARE, MARKET REFORM, AND THE IMPACT ON VULNERABLE POPULATIONS (3). Students will gain an understanding of how the changes in the health care market affect care for underserved populations, and will develop strategies to ensure that the needs of these populations are met. Fall and spring. Silberman.

126 PHYSICIAN PRACTICE MANAGEMENT (3). Course targets students interested in a health career. Topics include: structure of group practices, governance/ownership, risk management, malpractice, physician compensation, operational and financial management. Spring. Staff.

127 INTRODUCTION TO DENTAL PUBLIC HEALTH (3). Prerequisite, permission of the instructor. Survey of the theory and practice of dental public health with an emphasis on basic knowledge and skills necessary for planning and evaluating dental public health programs. Fall. Razier.
128 PHARMACEUTICAL RESEARCH, DEVELOPMENT, AND MARKET-
ING (PHAD 180) (3). This course acquaints future regulators, policy analysts, and
health care managers with the internal and external environments influencing deci-
sion-making and management in the discovery, development, and marketing of
pharmaceuticals. Fall, Staff.

130 ORGANIZATIONAL DESIGN AND BEHAVIOR OF HEALTH INSTI-
TUTIONS (3). Overview of organizational theory and empirical findings appropri-
ate to the design and behavior of health care organizations. Topics include the
design of the organization, its performance, and relationships to the environment.
Spring, Kaluzny.

135 COMMUNITY AND PUBLIC HEALTH SECURITY — DISASTERS,
TERRORISM, AND EMERGENCY MANAGEMENT (3). Permission of instruc-
tor required. This course examines systems for emergency management at federal,
state, and local levels. The roles of emergency management, health services, and
public health in disaster management are examined. Spring, Staff.

136 COMMUNITY AND PUBLIC HEALTH DISASTERS — AGENTS OF
ACTION AND PUBLIC HEALTH HAZARDS (3). Permission of instructor
required. This course covers biological, chemical, nuclear, and environmental agents
that threaten public health. Spring, Staff.

137 EMERGENCY MANAGEMENT I (3). Permission of instructor required.
Introduction of analytical tools to assess, evaluate, map, and investigate disasters
including biological outbreaks. These tools will be used to improve planning for dis-
aster management. Fall, Staff.

138 EMERGENCY MANAGEMENT II (3). Permission of instructor required.
Explore issues of preparedness, response, recovery, mitigation, and research in disas-
ter management. Students will participate in the development of a plan and a simu-
lation to evaluate the plan. Fall, Staff.

139 PUBLIC AFFAIRS DISPUTE RESOLUTION AND CONSENSUS
BUILDING (3). Permission of instructor required for undergraduates only. Theory
and practice of dispute resolution and consensus building processes for public policy
and program implementation: conflict analysis, negotiation, interventions. Fall,
Stephens.

140 READINGS IN HEALTH POLICY AND ADMINISTRATION (1-6). Staff.

141 MARKETING FOR NOT-FOR-PROFIT ORGANIZATIONS (3).
Prerequisite, permission of the instructor. Application of basic principles of market-
ing and marketing decision models to problems in health care and other not-for-
profit organizations. Spring, Crawford.

142 OPERATIONS RESEARCH FOR HEALTH CARE SYSTEMS (3).
Prerequisites, BIOS 110 and permission of instructor. Review of the systems anal-
ysis process in health care systems. Deterministic and random models, mathematical
programming, queuing, simulation, forecasting, and measurement. Emphasis on
model formulation and computer solution of decision models. Fall, Kilpatrick.

144 STATISTICAL METHODS FOR HEALTH POLICY AND ADMINIS-
TRATION (3). Introduction of linear model approach to the analysis of data in
health care settings. Topics include probability distributions, estimation tests of
hypotheses, methods in multiple regression, and analysis of variance and covariance.
Fall, spring, and summer, Veney.

145 INTRODUCTION TO STRATEGIC PLANNING AND MARKETING
(3). Prerequisite, permission of the instructor. An introduction to the philosophy
methods and models of strategic planning in health care systems. Related disciplines
include marketing, management, organizations, systems, and decision analyses.
Spring, Thomas.

146 HEALTH CARE CONSULTING (3). This course will provide students with
a working knowledge of the various forms of health care consulting, including inter-
nal consulting. Students will enhance their analytical, presentation, teamwork, and
project management skills. Fall, Thomas.

155 INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS IN
HEALTH CARE (3). Conceptual and practical aspects in the analysis, develop-
ment, and utilization of computer-based information and control systems with
emphasis on application to the health care environment. Spring, Staff.

157 DATABASE DESIGN FOR HEALTH CARE APPLICATIONS (3).
Prerequisites, HPAA master's and permission of instructor. Hands-on introduc-
tion to the design and implementation of relational databases to manage and
analyze health care data using Microsoft Access. Includes design of fully automated
databases as well as the use of Access as an analysis tool in conjunction with
Microsoft Excel. Fall, Mandelker.

161 STRATEGIES FOR PREVENTION (3). This course discusses the effects of
public policies for prevention on rates of illness, injury, and premature death. Fall,
Staff.

162 ADVANCED POLICY ANALYSIS (3). Prerequisites, HPAA 220 and HPAA
260 (may be taken concurrently). Permission of instructor required. This course
provides an in-depth experience in health policy analysis with a focus on health
workforce.

163 GERIATRIC HEALTH AND MEDICAL CARE (3). Presents a comprehen-
sive survey of geriatric health and medical care from both a clinical and policy per-
spective. Spring, Staff.

164 HEALTH POLICY AND AGING (HBHE 164) (3). Prerequisite, permission
of the instructor. Critical evaluation of aging policy in light of empirical findings
on the elderly's economic power. Utilization patterns, prevalence of dependency, and
the cost-effectiveness of policy options, including long-term care. Spring, Staff.

165 PUBLIC POLICY PRACTICUM (3). This course focuses on the health policy-
devlopment process, covering the legislative, executive, and judicial policy pro-
cess. Students will gain practical experience designing and implementing a camp-
aign to change state health policy. Spring, Silberman.

170 ECONOMIC PERSPECTIVES IN HEALTH POLICY AND ADMINIS-
TRATION (3). Prerequisite, ECON 10 or permission of the instructor. An intro-
duction to health economics principles as applied to major sectors of the United
States health care delivery system. Spring and summer, Kilpatrick.

176 INTRODUCTION TO HEALTH SERVICES RESEARCH (3). Prerequisite,
MPH student. Provides an introduction to selected methods for health services
research, health services research literature, and research writing. Fall and
spring, Staff.

185 ETHICAL ISSUES IN HEALTH POLICY AND ADMINISTRATION
(3). Introduction to ethical issues in HPAA including rationing, managed care, clinical
research, organizational ethics and compliance programs, administrative ethics, and
bioethical issues such as assisted suicide. Spring, Harris.

190 PSYCHOSOCIAL ASPECTS OF AGING (HBHE 190) (PHNU 190) (3).
Prerequisite, permission of the instructor. Psychosocial aspects of the aging process
of old age. Needs of the elderly and their reactions to agencies and programs for
the aged. Spring, Staff.

195 MEDICAL JOURNALISM (EPID 195) (HBHE 195) (JOMC 195) (3).
Prepares students to work as medical journalists for a variety of media, including
print, broadcast, and the Internet. The course emphasizes writing skills and inter-
preting medical information for consumers. Fall, Linden.

196 MEDICAL REPORTING FOR THE ELECTRONIC MEDIA (EPID 196)
(HBHE 196) (JOMC 196) (3). Conceiving, scripting, reporting, producing, and
editing medical stories for the electronic media, especially television. Students work
in teams to produce projects for professional media outlets. Fall, Linden.

197 SCIENCE DOCUMENTARY TELEVISION (HBHE 197) (JOMC 197)
(3). Students learn skills needed to produce a science documentary for broadcast on
television, including research and script writing. Spring, Linden.
198 SEMINAR IN HEALTH OUTCOMES RESEARCH I (1). The only requirement for this class is attendance at the six UNC-Chapel Hill Program on Health Outcomes seminars in the fall semester. Fall. Tolleson-Rinehart.

199 SEMINAR IN HEALTH OUTCOMES RESEARCH II (1). The only requirement for this class is attendance at the six UNC-Chapel Hill Program on Health Outcomes seminars in the spring semester. Spring. Tolleson-Rinehart.

Courses for Graduates Only

201 PROFESSIONAL TRAINING I (1). Prerequisite, HPAA major. Supervised professional training. Fee is $550.00. Fall. Fried.

202 PROFESSIONAL TRAINING II (1). Prerequisite, HPAA major. Supervised professional training. Fee is $500.00. Fall. Fried.

203 PROFESSIONAL TRAINING III (Var.). Prerequisite, HPAA major. Supervised professional training. Fee is $500.00. Spring. Fried.

204 MANAGEMENT PRINCIPLES AND PRACTICES (3). Provides an overview of knowledge and skills required for effective health services management. Aimed primarily at individuals who plan on assuming management roles in health services and related fields. Fall. Sollecito.

209 FIELD WORK IN HEALTH POLICY AND ADMINISTRATION (Var.). Prerequisite, HPAA major. Supervised field experience in approved health agencies. (Field fee $450). Summer. Staff.

210 MANAGEMENT OF FOREIGN AID IN HEALTH AND POPULATION (3). Prerequisites, HPAA 240 and 110, or permission of the instructor. The course examines selected policy and management issues in foreign assistance from the point of view of both the donors and the recipients. Spring. Jain.

211 HEALTH AND POPULATION POLICY AND PROGRAM DEVELOPMENT (3). Selected methods for studying policy development process and converting a policy into an action plan. Fall. Jain.

212 INTERNATIONAL COOPERATION IN HEALTH AND POPULATION (2). Prerequisite, HPAA 110 or equivalent, or permission of the instructor. Roles, problems, and opportunities for different kinds of international organizations in health and population fields. Reference to general development context; organizational relationships; various subject areas; and methods of cooperation and assistance. Spring. Staff.

213 FIELD WORK IN HEALTH POLICY AND ADMINISTRATION II (Var.). Supervised field experience in approved health agencies. Summer. Fried.

216 OVERVIEW OF AGING AND CHRONIC ILLNESS (HBHE 191) (PHNU 216) (NUTR 216) (3). Prerequisite, permission of the instructor for advanced undergraduates only. Provides a sound understanding of the theories and issues related to the biological, physical, emotional, demographic, and social aspects of aging, including population-based risk factors, with emphasis on health promotion. Fall. Norburn, Kincade.

220 HEALTH CARE IN THE UNITED STATES: ADMINISTRATIVE AND POLICY ISSUES (3). Permission of instructor required for non-HPAA majors. An overview of key health services issues including quality, access, financing, insurance, ethics, and delivery systems, plus an introduction to health care policy and politics. Fall. Brooks.

221 ORGANIZATION AND ADMINISTRATION OF MULTIHOSPITAL SYSTEMS (3). Prerequisite, HPAA 121 or permission of the instructor. Legal, financial, and organizational issues of multihospital systems development and management, including issues of corporate reorganizations, strategic planning, and marketing. Prototypes and operating examples are considered. Spring. Staff.


223 MANAGEMENT OF NONPROFIT ORGANIZATIONS (3). Principles and advanced topics in the management of nonprofit organizations. Spring. McLaughlin.

227 DENTAL PUBLIC HEALTH PRACTICE (3). Prerequisite, permission of the instructor. Emphasis on knowledge of community measures for prevention and control of oral diseases, understanding the scientific basis for their use, and designing and evaluating prevention programs for a specific population. Spring and summer. Rosier.

228 ORAL EPIDEMIOLOGY FOR HEALTH POLICY AND ADMINISTRATION (3). Prerequisite, HPAA 127, EPID 160, or permission of the instructor. Focuses on the epidemiology of oral diseases and the implications and uses of this knowledge for dental health policy making and administration of dental programs. Spring. Rosier, Arbogast.

230 MANAGEMENT OF HUMAN RESOURCES IN HEALTH ORGANIZATIONS (3). Prerequisite, HPAA 130 or permission of the instructor. Emphasis is on clarifying concepts of human resources management and identifying the importance of human resources in health organizations. Fall. Fried.

231 ORGANIZATION ASSESSMENT AND DIAGNOSIS (3). Prerequisite, HPAA 130. This course explores alternative models and approaches for assessing structural and process characteristics of health service organizations. Fall. Kaluzny.


233 MANAGEMENT OF ORGANIZATIONAL CHANGE (3). The objective of this course is to improve competence in analyzing health organizations and managing planned change. Fall and spring. Files, Thomas.

240 HEALTH ADMINISTRATION AND PLANNING I (3). This course introduces students to strategic planning and marketing as they apply to health services organizations. During the course, students will develop practical skills in strategic management, such as internal and external environmental assessment, competitor analysis, and methods for evaluating strategic alternatives that can be used in different types of health care settings. The class will explore the leadership roles of governing boards, health care managers, and clinicians in strategic management. Fall and summer. Leatt.

241 OPERATIONS RESEARCH FOR HEALTH CARE SYSTEMS (3). Prerequisites, BIOS 110 and permission of the instructor. Review of the systems analysis process in health care systems. Deterministic and random models, mathematical programming, queueing, simulation, forecasting, and measurement. Emphasis on model formulation and computer solution of decision models. Spring and summer. Kilpatrick.

242 ADVANCED OPTIMIZATION METHODS IN HEALTH POLICY AND ADMINISTRATION (3). Prerequisite, HPAA 241 or permission of the instructor. Analysis of complex deterministic models and their applicability to health services research. Formulation of models for solving health care decision problems, including mathematical programming, and heuristics. Spring. (Alternate years.) Staff.

243 STOCHASTIC PROCESSES IN HEALTH POLICY AND ADMINISTRATION (3). Prerequisite, HPAA 241 or permission of the instructor. Modeling and analysis of random processes in health care systems. Markov and queueing models, simulation of complex stochastic systems, experimental design, and output analysis. Spring. Kilpatrick.

244 SYSTEMS SIMULATION FOR HEALTH SERVICES (3). Prerequisite, HPAA 241 or permission of the instructor. Course will prepare students to simulate health services using the MedModel simulation software. Fall. Kilpatrick.

245 PROGRAM EVALUATION (3). Prerequisite, HPAA 241 or permission of the instructor. Concepts and methods of the program evaluation paradigm as applied in health administration; experiential learning of evaluation planning, design, and implementation. Spring. Bender, Veney, Konrad.
246 PUBLIC HEALTH PROGRAM PLANNING AND MONITORING (PUBH 246) (MHCH 246) (HHHE 246) (2-4). Prerequisite for nonmajors, permission of the instructor. Fundamentals of public health program planning and monitoring with emphasis on 1) applications in community settings and 2) proposal development for program funding. Spring. Bender, Fushee, Eng.

250 INTRODUCTION TO HEALTH CARE FINANCIAL MANAGEMENT (3). Prerequisite for nonmajors, permission of the instructor. A broad introduction to financial concepts, issues, tools, and vocabulary. Topics include: financial statement analysis, working capital management, budgeting, cost finding, and rate setting. Minimal accounting proficiency expected. Fall, spring, and summer. Zelman, Thomas.

251 MANAGEMENT ACCOUNTING FOR HEALTH ADMINISTRATORS (3). Prerequisite, HPAA 250 or permission of the instructor. Covers selected topics in managerial accounting applied to health care. It is intended to provide in-depth coverage of managerial topics introduced in HPAA 250. Spring. Zelman.

252 HEALTH CARE FINANCE I (3). Prerequisite, HPAA 250. Topics include basic financial management concepts, capital acquisition, cost of capital and capital structure, and capital allocation. Fall. Zelman, Pink.

253 HEALTH CARE FINANCE II (3). Prerequisite, HPAA 252. Topics include financial analysis and forecasting, working capital distributions to owners, mergers, capitalization and financial risk. Spring. Pink.

256 INFORMATICS: USE OF LARGE HEALTH CARE DATABASES (2). Prerequisites, HPAA 140 (27)-SAS and STATA and EPID 160, and permission of instructor. Practical training in the analysis of large secondary databases containing physician, hospital, and pharmaceutical data. Course topics include data preparation, algorithm development, quality control, and data set limitations. Fall. Greene.

260 INTRODUCTION TO HEALTH POLICY AND POLITICS (3). Prerequisite, HPAA 220 or permission of the instructor. This course addresses the major political institutions and policy processes that shape health policy, principally at the federal level. Spring. Mebane.

261 MEDIA AND HEALTH POLICY (3). Prerequisite, HPAA 220 or equivalent. Permission of instructor is required for graduate students who have not taken HPAA 220. Introduces students to news media organizations and their role in health policy development. Students will learn how to evaluate media content and strategies to effectively communicate via mass media. Spring. Mebane.

262 ADVANCED POLICY ANALYSIS (NURS 262) (3). This course explores the fundamental political values and systems of thought behind current controversies in health policy. Readings center on theories of justice, ethics, and how values are translated into politics. Fall and spring. Ricketts.


264 QUALITY OF CARE (3). Prerequisite, HPAA 220. Methods and practices for quality control and assurance in health care organizations. Spring. Weinberger.

265 POLICY ISSUES IN HEALTH OUTCOMES AND QUALITY OF CARE (3). Systematic overview of the scope, history, evolution, measurement, and policy considerations of quality of care and health outcomes. This course requires the development of rigorous analytical essays on aspects of outcomes and quality. Fall. Staff.

266 POLICY AND ECONOMICS OF PHARMACEUTICAL DISTRIBUTION (PHAD 261) (3). Prerequisites, HPAA 220 or equivalent and permission of instructor. Regulatory policy and the U.S. drug distribution system including prescribers, payers, and the retail pharmacy industry are examined with regard to structure and performance of the distribution system. Spring. Staff.

267 ECONOMICS AND BEHAVIOR OF THE INTERNATIONAL PHARMACEUTICAL INDUSTRY (PHAD 261) (3). Provides an economic perspective on such issues as industry structure, regulation, pricing, research and development, product innovation, patient policies, and profitability. Spring. Shih.

268 ECONOMIC EVALUATION OF HEALTH CARE TECHNOLOGY (PHAD 261) (3). Focus is on determination of costs and benefits associated with alternative resource allocation schemes. Crucial economic concepts (e.g., utility valuation of health states and marginal analysis) are presented. Fall. Ritenhouse.

269 CLINICAL INFORMATICS FOR OUTCOMES MANAGEMENT (3). Prerequisite, HPAA 220. Explores the practical role of clinical informatics skills and tools for health care organizational performance improvement as this role is currently evolving in hospitals, group practices, and provider organizations. Spring. Staff.

270 HEALTH ECONOMICS FOR POLICY AND ADMINISTRATION (3). Prerequisites, BIOS 210, and permission of the instructor for non-HPAA students. Provides training in the theory of health economics and applies this theory to important issues in health policy and administration. Spring. Searns, Dominio.

270L MICROECONOMICS LAB (1). Corequisite, HPAA 270, and permission of the instructor for non-HPAA students. Applications of health economics theory to current health care policy. Spring. Dominio.

271 STUDY DESIGN AND REGRESSION ANALYSIS (3). Prerequisites, BIOS 210 or equivalent, and permission of the instructor. The purpose of this course is to familiarize the student with the tools of policy analysis, and to provide hands-on experience in using quantitative policy tools. Spring. Searns, Biddle, Dominio, Norton.

272 METHODS FOR HEALTH POLICY ANALYSIS AND TECHNOLOGY ASSESSMENT (3). Prerequisite, permission of the instructor for nonmajors. Course covers basic methods used to identify policy issues; measure and value health outcomes; identify and estimate health resources; and develop mathematical models to predict outcomes/costs using limited data. Fall. Biddle.

273 LINEAR REGRESSION MODELS (SOCI 209) (3). Prerequisites, HPAA 140 (16) and HPAA 140 (28) or equivalent. This course is an introduction to linear regression models. Topics include: linear algebra, least squares regression, multi collinearity, heteroscedasticity, autocorrelation, and hypothesis testing. Fall. Norton, Dominio.

274 ANALYSIS OF CATEGORICAL DATA (SOCI 211) (3). Prerequisite, HPAA 273 or equivalent. This course is an introduction to the analysis of categorical data using maximum likelihood. Topics covered: econometric models in which the dependent variable is not continuous, including Logit, Probit, Tobit, two-part, and duration models. Fall. Norton.

275 ANALYTIC TECHNIQUES IN HEALTH POLICY AND ADMINISTRATION (3). Prerequisites, BIOS 210 and permission of the instructor. Covers a variety of analytic techniques and methodologies basic to more advanced analysis of decision problems in health administration. Fall. Staff.

276 RESEARCH MANAGEMENT AND ETHICS IN HEALTH POLICY (1). This course is aimed at doctoral and MSFH students with interests in research management and ethics. Using cases and examples, the first part of the course focuses on major management and leadership issues and the second part deals with ethically relevant matters such as whistle blowing, various publishing and authorship issues, conflict of interest and commitment, human subjects, plagiarism, and fraud. Spring. Brooks.

277 HEALTH ORGANIZATIONS AND POLICY MAKING (NURS 352) (3). The course offers analytic and practice-focused discussion on how organizations are responding and contributing to policy changes in the current environment; an exercise in real-world strategic decision making is provided. Fall. Staff.
278 GRADUATE HEALTH ECONOMICS SEMINAR (1). Permission of instructor required. Discussion of recent papers in health economics. Students must have solid knowledge of graduate microeconomics theory and econometrics. Fall and spring. Norton.

279 COMPETITION, REGULATION, AND INSURANCE (3). Prerequisites, HPAA 270, HPAA 271, and permission of the instructor for nonmajors. Examines alternative approaches to containing health care costs adopted by public and private payors. Specific topics include: rate regulation of hospitals, competitive bidding, and selective contracting, managed care, and physician payment. Spring. Biddle.

280 LEGAL PROBLEMS IN HEALTH FACILITY ADMINISTRATION (3). Prerequisite, HPAA 281. Readings, cases, and discussion of the legal and ethical aspects of delivery of health care services in the hospital setting. Spring. Staff.

281 HEALTH LAW (3). An introduction to law and the legal system as it relates to the delivery and financing of health care. Fall. Harris.

285 ETHICAL ISSUES IN HEALTH POLICY AND POLITICS (3). Prerequisite, HPAA 260, or permission of the instructor. The course considers ethical issues arising in current health policy. Some of the topics considered include abortion, sex education, and the rights and treatment of seriously defective newborns. Fall. Staff.

290 CANCER PREVENTION AND CONTROL SEMINAR (EPID 290) (HBEHE 290) (3). An interdisciplinary overview of cancer prevention and control. Emphasis on projects and activities from perspectives of epidemiology, health behavior and education, and health policy and administration. Appropriate research design and methodologies are covered. Fall. Kaluzny, O'Malley.

300 DOCTORAL SEMINAR IN HEALTH POLICY AND ADMINISTRATION I (3). Prerequisite, doctoral standing. Readings and discussion of various aspects of health services. Special emphasis is given to the interrelationships of administrative and organizational theory and selected health service topics. Fall. Dow, Lee.

301 DOCTORAL SEMINAR IN HEALTH POLICY AND ADMINISTRATION II (3). Prerequisite, HPAA 300. Explores the nature and process of scientific inquiry in the field of health services by examining the methodological principles and practices of social science as they are applied to health services research. Spring. Dow, Weiner.

304 SEMINAR IN TEACHING HEALTH POLICY AND ADMINISTRATION (1). Problems and processes of teaching health policy and administration, including supervised practicum experience. Fall and spring. Files.

305 SELECTED TOPICS IN HEALTH POLICY AND ADMINISTRATION: ADVANCED SEMINAR (3). Prerequisite, permission of the instructor. Integrated study of selected theory and research as it relates to the organization and delivery of health services. Separate seminars are developed to correspond to the doctoral student's specific interests and needs. Spring. Morrissey.

306 SPECIAL PROBLEMS IN HPAA (3). Prerequisites, doctoral standing and permission of the instructor and director of doctoral program. Examination of special problems in health policy and health administration studies. Spring. Staff.

307 SELECTED READINGS IN HPAA (3). Prerequisites, doctoral standing and permission of the instructor and director of doctoral program. Examination of selected readings in health policy and health administration. (On request.) Staff.

308 DIRECTED RESEARCH IN HPAA (3). Prerequisites, doctoral standing and permission of the instructor and director of doctoral program. Examination of directed research topics in health policy and health administration. (On request.) Staff.

311 ADVANCED STUDIES IN POPULATION POLICY AND PROGRAMS (3). Prerequisite, HPAA 211 or equivalent or permission of the instructor. Individualized studies on special problems in population policy analysis and family planning program development. Spring. Staff.

330 DOCTORAL SEMINAR IN ORGANIZATION THEORY AND HEALTH SERVICE ORGANIZATIONS (3). Prerequisites, doctoral standing and HPAA 130 or equivalent, or permission of the instructor. Review and application of selected developments in organization theory to health services research. Fall. Kaluzny.

350 MANAGERIAL TOPICS IN HEALTH CARE FINANCIAL MANAGEMENT (3). Prerequisite, HPAA 250 or permission of the instructor. Course brings together organizational, financial, and marketing concepts. Master's students are required to apply concepts to an actual organization by developing a business/financing plan. Fall. Zelman.

351 TOPICS IN HEALTH CARE FINANCE (3). Prerequisite, HPAA 250, or permission of the instructor. Analysis of topics of current interest in financial management of health care organizations. May include project selection, endowment stewardship, access to capital. Spring. Staff.

360 POLICY SEMINAR IN HEALTH POLICY AND ADMINISTRATION (1-6). Seminar on policy issues in health policy and administration. Fall and spring. Pink.

370 STRUCTURAL EQUATION MODELS WITH UNOBSERVED VARIABLES (SOCI 317) (3). Prerequisites, HPAA 273 or SOCI 209, and permission of the instructor. This course is an introduction to general structural equations. "LISREL" models, classical econometric/regression models, and confirmatory factor analysis models are shown to be special cases of the general model. The specification identification, estimation, and assessment of fit of these models are discussed. Spring. Staff.

371 ADVANCED METHODOLOGY IN HEALTH POLICY AND ADMINISTRATION RESEARCH (3). Prerequisites, HPAA 273 and 274, or permission of the instructor. Research methodology as applied to understanding problems in health care delivery. Topics include simultaneous equation models, factor analysis, limited dependent variables, and an introduction to event history analysis. Fall and spring. Stearns, Veney.

372 ADVANCED TOPICS IN HEALTH ECONOMICS I (3). Prerequisite, HPAA 270. This course provides a detailed assessment of current health policy issues from an economics perspective. Potential topics include cost-effectiveness analysis, health insurance, etc. Fall and spring. Stearns.

373 ADVANCED TOPICS IN HEALTH ECONOMICS II (3). Prerequisites, HPAA 270 and 372. This course is a continuation of Advanced Topics in Health Economics I in providing a detailed assessment of current health policy issues from an economics perspective. Fall and spring. Stearns.

390 ADVANCED CONCEPTS AND APPLICATIONS IN HEALTH POLICY AND ADMINISTRATION (3). Corequisite, graduate standing in HPAA and completion of master's core. Integrating and building upon the HPAA master's core, this comprehensive course focuses on organization policy-making and administration from the perspective of the CEO and top management. Spring and summer. Porter, Leatt.

391 MASTER'S PAPER DEVELOPMENT (2). Prerequisite, second year MPH or first year MPH students only. Broad topics related to the development and management of a research project are covered. The major goal is the development and completion of a proposal to be submitted for independent master's paper.

392 MASTER'S PAPER (0-3). Fall, spring, and summer. Staff.

393 MASTER'S THESIS (Var.). Staff.

394 DOCTORAL DISSERTATION (Var.). Staff.
DEPARTMENT OF MATERNAL AND CHILD HEALTH (MHCH)

HERBERT PETERSON, Chair

Professors
Jonathan Kotch (17) Injury Prevention, Child Abuse and Neglect, Health and Safety in Child Care
Sandra L. Martin (40) Violence, Behavioral and Emotional Health of Children and Families, Substance Use, Prison Health
Herbert Peterson, International Health, Reproductive Health

Associate Professors
Trude A. Bennett (48) Women's Health and Maternal Morbidity; Intersection of Race, Class, and Gender in MCH; Reproductive Health and Social Welfare Policy
Janice M. Doddi (36) Leadership Development in Public Health Nutrition, Childhood Hunger, Community-Based Public Health
Lewis Margolis (43) Child Health Policy, Injury Epidemiology, Community-Based Public Health
Anna Maria Siega-Riz (41) Maternal and Child Nutrition, Reproductive Epidemiology, Dietary Trends among Minorities in the United States

Clinical Professors
Alan Gross (42) Pediatrics, Adolescent Health, School Health and Infant Mortality Prevention
Anita M. Farel (33) Program and Policy Development for Children with Special Health Care Needs, High Risk Infants, Public Health Practice

Research Associate Professors
Sian Curris (49) Contraceptive Use Dynamics, International Reproductive and Maternal Health, Monitoring and Evaluation Methods for Population and Health Programs, Multilevel Models, Statistical Demography
Cathy L. Melvin (18) Reproductive Health, Smoking During Pregnancy, Program and Policy Development

Assistant Professors
Gustavo Angelis (75) Research Methods, Program Evaluation Health Economics, International Health
Carolyn Halpern (35) Adolescent Health and Development, Sexual Health and Research, Methodology
Andrea Weathers (77) Health Care Utilization/Access, Children in Poverty, Ethnical/Cultural Minorities, Immigrant Children

Clinical Associate Professor
Vijaya Hogan (76) Perinatal Epidemiology, Preterm Delivery, Infant Mortality, Health Disparities

Research Assistant Professors
Shelby Bloom (73) HIV/AIDS, Reproductive Health, Maternal Morbidity and Mortality, Gender Context of Reproductive Health
Joe M. Hussey (13) Child Abuse and Neglect, Child and Adolescent Health, Injury Prevention, Population

Adjunct Professors
Jose Belizán, International Maternal and Child Health, Maternal Mortality and Morbidity
Pouhu Bhawandwala (28) Obstetrics and Gynecology, International Women's Health, Maternal and Child Health
Kerin L. Brent (63) Perinatal Epidemiology, Epidemiology of Osteoporosis, Evaluation of Preventive Interventions, Clinical Epidemiology
Judith Forney (64) Maternal Morbidity and Mortality in Developing Countries
Marcia Herman-Giddens (59) Child Abuse, Child Fatalities, Alternative Healing\nMichael Kaufman, Clinical Reproductive Health
Lynn Krauss (38) International Family Planning and Maternal Health, Training of FP/MCH Personnel, MCHFP Program Development and Evaluation
Robert Meyer (62) Reproductive and Perinatal Epidemiology, Birth Defects Surveillance, Program Evaluations
Amy O. Tsui, International Family Planning, Reproductive Health, Research Methods
Thomas Visagione (39) Early Childhood Programming, Health Care Financing

Adjunct Associate Professors
Paul A. Buescher (47) MCH Infant Health, Poverty and Health, MCH Program Evaluation
Abigail English, Adolescent Health Law
Priscilla Guild (46) MCH and Primary Care Health Services Planning and Evaluation
Roland E. Mbanda (70) Obstetrics and Gynecology, Merck-K. Moos (54) Perinatal Care, Women's Preventive Health, Fertility Decision Making
Kevin J. Ryan (57) Statewide Delivery of Women's Health Services, Preital Health, Health Care Ethics
Susan Spalt (52) School Health, Adolescent Substance Abuse, HIV
Jane Sein (56) Women's Health in Developing Countries, Social Determinants of Health, Evaluation

Adjunct Assistant Professors
Peggy Bailey, International Maternal and Child Health
Deborah Billings, International Family Health
Joseph DeGraaf-Johnson, International Reproductive Health
Caroline Whitehead Doherty (60) Primary Farmworkers' Health, Hispanic Health, Reproductive Health
Alfredo Fort, International Reproductive Health in Latin America, Program Research and Evaluation
Heidi Barr Johnson, Reproductive Health
Eileen Kugler, Community Health Programs
Jack Leiss, MCH Research
Kathryn E. (Beth) Morocco, Women's Health, Violence against Women, Program Planning and Evaluation
Denise Nadeau, Family Planning, Reproductive Health
Susan Rogers, Demography, STD
Jo Shackelford, Children with Special Needs, Special Education Legislation
Lucy Siegel, Pregnant Women and Infants
John Stanback, International Family Health
Mary Rose Tully, Lactation

Lecturers
Kathryn Clark, Biostatistics
Ruth Peterson (55) Violence in Pregnancy, Unintended pregnancies, Adolescent Health
Jacqueline Restick, Research Training, Proposal Development

Professors Emeriti
Jaroslav Fabian Hulka
Howard Jacobson
C. Arden Miller
Earl Schaefer
Elizabeth Watkins

Associate Professors Emeriti
Dorothy C. Browne
Geraldine Gouley
Barbara Stocking
Courses

103 REPRODUCTIVE PHYSIOLOGY AND CONCEPTION CONTROL (1).
An interactive Web-based course on reproductive physiology, contraception, and sexually transmitted diseases for students without prior health professions training. Fall. Staff.

111 NUTRITION OF CHILDREN AND MOTHERS (NUTR 111) (3).
Prerequisite, NUTR 100 or equivalent. Biological bases for nutrient requirements and dietary recommendations as they vary throughout the life cycle. Covers the nutritional needs of women during childbearing years, infants, children, and adolescents. Fall. Adair.

125 INJURY AS A PUBLIC HEALTH PROBLEM (EPID 125) (HBE 125) (3).
Prerequisite or corequisite, EPID 160. This course considers the causes and consequences of traumatic injury within developmental, social, and economic contexts, including dilemmas in injury prevention. Injuries associated with transportation, violence, and the home and occupational environments are included. Three lectures per week. Fall. Kunyan, Kothch.

140 PROBLEMS IN MATERNAL AND CHILD HEALTH (1-3). Prerequisites to be arranged with the faculty in each individual case. Two to six hours a week. Fall, spring, and summer. Staff.

200 ISSUES IN MATERNAL AND CHILD HEALTH (3). Prerequisite, permission of instructor. For students outside the department of MCH who desire a survey of current issues and programs in maternal and child health. Three lecture hours per week. Spring. Margolis.

205 INTERNATIONAL FAMILY PLANNING (3). Permission required. Prerequisite, graduate study in MCH. Analysis of the family planning movement, its policies, operations, and research, with emphasis on developing countries. Three lecture hours a week. Fall. Curtis.

206 PERINATAL HEALTH SERVICES (3). Evaluation of local, state, and national interventions to improve perinatal health. Topics include effectiveness of prenatal care, regionalization, risk assessment, racial disparities, linkages with Medicaid, etc. Three seminar hours. Fall. Staff.

208 CONCURRENT FIELD TRAINING IN MATERNAL AND CHILD HEALTH (1-4). Prerequisite, MHCH major. An elective, faculty-supervised field experience in maternal and child health research, community practice, program planning, and evaluation. Students are supervised on-site by department-approved field instructor. Students choosing this elective are not exempt from MHCH 214. Variable number of hours. Fall, spring, and summer. Staff.

209 MATERNAL AND CHILD HEALTH POLICY AND PROGRAM DEVELOPMENT (3). Prerequisite, MCH major. This course reviews the historical development of MCH policy and programs and examines principal governmental and nongovernmental actors in the MCH policy and program development process, exploring how they influence policy. Three lecture hours per week. Fall. Margolis.

210 MATERNAL AND INFANT HEALTH (3). Permission required for non-MCH major. Knowledge base, social strategies, and health policies that relate to the health and well-being of women of childbearing years, neonates, and families. Three lecture hours per week. Fall. Bennet.

211 CHILD AND FAMILY HEALTH (3). Permission required for non-MCH major. This course addresses major issues in child and adolescent health including interactions among children, their families, and environment. Consideration is given to models of intervention with emphasis on the preventive health approach. Three lecture hours per week. Spring. Kotch.

211L CHILD AND FAMILY HEALTH LAB (1). Corequisite, MHCH 211. Permission required for non-MCH majors. Required small-group presentations and in-depth discussion of topics covered in lecture. Students choose two consecutive groups depending upon availability of leaders. Two lab hours per week. Spring. Staff.

213 RESEARCH METHODS IN MATERNAL AND CHILD HEALTH (3).
Permission required for non-MCH majors. The art and science of MCH research, with an emphasis on applied survey research. Students will design and carry out a small survey, and present their findings in a poster presentation. Focuses on assessment of MCH population characteristics, secondary data analysis, and the evaluation of MCH programs. A practicum-based course. Three lecture hours per week. Fall. Hussey.

213L RESEARCH AND EVALUATION METHODS IN MATERNAL AND CHILD HEALTH LAB (1). Corequisite, MHCH 213. Permission required for nonmajors. The MHCH 213 Lab, which is a companion course to MHCH 213, introduces students to statistical analysis using SPSS-PC and microcomputers. Two lab hours per week. Fall. Staff.

214 FIELD TRAINING IN MATERNAL AND CHILD HEALTH (2-8). A faculty-supervised field experience in maternal and child health research, community practice, program planning, and evaluation. Students are supervised on-site by department-approved field instructor. Additional field fee of $350 is assessed. Fall, spring, and summer. Minimum of six weeks. Staff.

215 MATERNAL AND CHILD HEALTH MANAGEMENT (3). Permission of instructor required for nonmajors. Students become familiar with organizational processes, management principles, and tools required for effective management of health programs and facilities. A variety of learning techniques will be used. Three lecture hours a week. Fall. Melvin.

216 REPRODUCTIVE HEALTH IN DEVELOPING COUNTRIES: A POPULATION PERSPECTIVE (3).
Permission required for nonmajors. Course helps gain knowledge and understanding of health, social, and community-related dynamics that contribute to the reproductive health status of adolescents and adults in less developed countries. Three lecture hours per week. Spring. Bloom.

219 PERINATAL EPIDEMIOLOGY (EPID 219) (3).
Prerequisite, EPID 160, BIOS 110, or equivalents. Epidemiology of major reproductive health outcomes, including infertility, fetal loss, birthweight, congenital malformations, infant mortality. Current knowledge regarding epidemiology of these outcomes: discussion of methodologic issues specific to reproduction. Fall. Okshan, McMahon.

220 SERVICES FOR CHILDREN WITH CHRONIC CONDITIONS (3).
Permission of the instructor. This course focuses on the design, organization, and delivery of services for children with special health care needs and their families, and examines current program development and public policies. Participants analyze the range of services needed by these children. Fall. Farel.

221 MATERNAL AND CHILD HEALTH ISSUES FOR IMMIGRANT POPULATIONS (3).
Prerequisites, BIOS 110, EPID 160, MHCH 206, and MHCH 210. Course covers the new pattern of immigration in United States not only in social, economical, and political landscapes, but the health services arena as well. Spring. Weathers.

222 ISSUES IN INTERNATIONAL MATERNAL AND CHILD HEALTH (3).
Permission required for nonmajors. The course focuses on key issues concerning the health status and needs of mothers and children, primarily but not exclusively in the developing world. Topics include primary health care, measurement and indicators of health status, levels and patterns of maternal and child morbidity and mortality, major programmatic intervention, oral rehydration therapy, and national policy orientations towards the health needs of these two groups. Three lecture hours per week. Fall. Staff.

226 ADOLESCENT HEALTH (3).
Topics covered include the epidemiology of health problems, developmental issues, health services, and psychosocial influences on adolescent problem behaviors. Course materials are used for research generation and practical application. Three seminar hours per week. Spring. Halpern.

230 REPRODUCTIVE HEALTH POLICY (3).
Permission of the instructor required. Participants examine forces that shape social policy relating to reproduction and differential impact of policy based on age and other factors. Focus on global controversies in reproduction/reproductive health services in context of human/women's rights. Three lecture hours a week. Spring. Bennett.
246 MATERNAL AND CHILD HEALTH PROGRAM PLANNING AND EVALUATION (3). Permission required for nonmajors in SPH. Students will develop research skills related to: needs assessment, conceptualization of MCH problems, selection of effective program setting measurable objectives, implementation and evaluation. Final product will be a proposal for funding an MCH program. Spring. Staff.

253 VIOLENCE AGAINST WOMEN (3). Permission required for non-MCH majors. Violence against women is examined as a public health problem. Areas investigated include definitional issues, prevalence of the problem, risk factors and outcomes, and community and medical interventions. Spring. Martin.

256 UNDERSTANDING AND ADDRESSING HEALTH INEQUALITIES IN THE U.S. (PUBH 256) (3). Disparities in morbidity/mortality in subpopulations continue compared to other U.S. populations. Explore contributors to inequalities and identify strategies to counterbalance contributors to correct inequalities using public health resources. Three lecture hours per week. Spring. Hogan.

259 THEORETICAL PERSPECTIVES ON MATERNAL AND CHILD HEALTH (3). Prerequisites: doctoral students, permission of instructor. A survey of theoretical models used in MCH research and program development and how those models are used to guide the formulation of questions, hypothesis testing, and evaluation. Fall. Halpern.

260 CONCEPTUALIZATION, DESIGN, AND MEASUREMENT (3). Permission required of nonmajors and master's students. Prerequisite, MHCH 259. The course follows the research process from the formulation of a research question and the design of a research methodology to addressing the question through the design of an appropriate analysis strategy. Three lecture hours a week. Spring. Martin.

261 THEORY AND METHODS RELATED TO MCH DATA ANALYSIS (3). Permission required for nonmajors and master's students. Prerequisites, MHCH 213, EPID 160, and BIOS 110, or equivalents. Topics such as confounding, effect modification, sampling design effects, significance testing, and multivariate analysis will be discussed in greater detail with direct applications to data analysis. Fall. Siga-Ri.

262 MCH PROGRAM EVALUATION (3). Permission required for nonmajors and master's students. Prerequisite, knowledge of SAS or STATA, MHCH 213, or equivalent. Analytic skills seminar focusing on the theory and practice of MCH program evaluation. Through examples of MCH program evaluations and a student class project, students are exposed to all phases and issues surrounding MCH program evaluation (including conceptualization, negotiations, management operations, analytic strategies implementation, presentation, etc.). Three lecture hours a week. Spring. Agnete.

300 DOCTORAL SEMINAR IN MATERNAL AND CHILD HEALTH (2). Permission required for nonmajors and master's students. This seminar explores the major MCH policy and philosophical controversies and dilemmas that provide the paradigms for maternal and child health policy development. Two lecture hours a week. Fall. Staff.

301 DOCTORAL SEMINAR IN MATERNAL AND CHILD HEALTH (3). Permission required for nonmajors and master's students. Prerequisite, MHCH 209, 210, 211, or equivalents, or MPH in MHCH. This seminar explores the origins of and developments in major maternal and child health policies and programs in order to understand their effects on the health of mothers and children. Three lecture hours per week. Spring. Margolin.

302 DOCTORAL RESEARCH SKILLS COLLOQUIUM (1). Permission required for nonmajors and master's students. Prerequisite, enrollment in the MCH doctoral program. The seminar is the first semester of a one-year research skills colloquium for all new doctoral students. The course addresses research, problem definition, proposal design, and development. One-hour seminar a week. Fall. Staff.

303 DOCTORAL RESEARCH SKILLS COLLOQUIUM (1). Permission required for nonmajors and master's students. Prerequisite, enrollment in the MCH doctoral program. The seminar is the second semester of a one-year research skills colloquium for all new doctoral students. The course addresses research, problem definition, proposal design, and development. One-hour seminar a week. Fall. Staff.

315 PROGRAM ASSESSMENT IN MCH (3). Nonmajors require permission of the instructor. Offers an opportunity for students to explore in greater depth a selected MCH practice topic. Students will learn how to provide consultation about a selected program activity. Spring. Parle.

340 MCH DOCTORAL INTERNSHIP (1). Prerequisite, enrollment in MCH doctoral program. MCH internship to enhance doctoral training in areas of Section 1: Teaching, Section 2: Practice, and Section 3: Research. Fall, spring, and summer. Staff.


392 MASTER'S PAPER (Hours vary). Fall, spring, and summer.

393 MASTER'S THESIS (Hours vary). Fall and spring.

394 DOCTORAL DISSERTATION (Hours vary). Fall, spring, and summer.

DEPARTMENT OF NUTRITION (NUTR)

STEVEN H. ZEISEL, Chair

Professors
John J. B. Anderson (3) Calcium, Isoflavones, Other Nutrients and Bone Indices in Women, Osteoporosis, Physical Activity, and Body Composition, Diet and Aging
Margaret Bentley (67) Nutritional Anthropology, Socio-Cultural Determinants of Infant and Child Feeding, Breastfeeding and Reproductive Health
Cynthia M. Bulik: Twin and Molecular Genetic Studies of Eating Disorders and Weight Regulation, Application of Information Technology to Upgrading Cognitive-Behavioral Treatment for Eating Disorders and Overweight; Eating Disorders and Reproduction; Parenting Assistance for Women with Eating Disorders
Stephen G. Chaney (43) Mechanism of Action of Platinum Anticancer Agents, DNA Repair, HP/CL Methodology
Rosalind A. Coleman (39) Diabetes: Lipid and Carbohydrate Metabolism; Obesity: Partitioning of Energy between Triacylglycerol Storage and Fatty Acid Oxidation; Regulation of Triacylglycerol Synthesis; Glycogen Storage Disease
Janice M. Dodds (36) Nutrition Policy, Leadership Development in Public Health Nutrition, Community-Based Program Implementation
Anthony C. Hackney (50) Endocrine and Metabolic Responses to Physical Stress, Physiology of Exercise
Mark Koruda, Surgery, Parenteral and External Nutrition
Pauline K. Lund (69) Insulin-Like Growth Factors, Intestinal Development, Nutrient and Cytokine Interactions in Intestinal Inflammation, Injury and Repair
Nobuyio Maeda (77) Animal Models of Hyperlipidemia, Atherosclerosis, and Cardiomyopathy
Robert G. McMurray (51) Exercise Physiology, Energy Expenditure of Activity, Cardiovascular Disease Risk Factors and Obesity in Youth, Multiple Metabolic Syndrome, Sports Nutrition
Barry M. Popkin (17) The Nutrition Transition: Patterns and Determinants of Dietary Trends and Body Composition Trends (United States and Low Income Countries); Obesity Dynamics and Their Environment Causes; Dietary and Physical Activity Patterns, Trends, and Determinants; the Creation of Large-Scale Program and Policy Initiatives to Address Nutrition-Related Noncommunicable Diseases

June Stevens (56) Epidemiologic Studies of the Causes and Consequences of Obesity; Intervention Trials to Improve Diet, Increase Physical Activity and Prevent Obesity; Obesity Trends, Risk Factors, and Consequences among Ethnic Groups; Long-Term and Short-Term Effects of Obesity and Weight Change on Health; Obesity Policy

James Sweigert, Chemical Carcinogenesis and Toxicology, DNA Damage and Repair, Oxidative Stress, Biomarkers, and Mass Spectrometry

Louis E. Underwood (45) Insulin-Like Growth Factors and Their Effects in Obesity, Fetal Growth, and Dietary Restriction

Dianne Ward, (79) School- and Community-Based Interventions to Promote Physical Activity in Children and Adolescents; Obesity Prevention and Early Intervention in Youth; Measurement of Physical Activity

Steven H. Zeisel (38) Nutrients and Brain Development, Choline and Carcinogenesis, Choline Metabolism and Requirements in the Human, Isoflavonoid and Cancer, Antioxidants and Apoptosis. Computer-Assisted Instruction

Associate Professors

Alice S. Ammerman (41) Design and Evaluation of Nutrition and Physical Activity Interventions for Chronic Disease Risk Reduction (Obesity, Cancer, Heart Disease, Diabetes) in Lower Income and Minority Youth and Adults, Patterns of Diet-Related Practice in Primary Care

Melinda Beck (70) Relationship between Antioxidant Nutrition and Infectious Disease

Marc K. Campbell (57) Nutritional and Health Behavior Change Interventions, Cancer Prevention and Control, Health Communication, Minority Health

Pamela S. Haines (32) Dietary Trends, Patterns, and Determinants, Diet Quality Assessment, Aging and Women's Health, Nutrition and Public Health Policy, Nutrition Epidemiology

Joyce Harper (66) Obesity and Adipocyte Formation

Anna Maria Siega-Riz (62) Maternal Nutrition and Birth Outcomes, Adolescent Dietary Habits, Minority Dietary Trends, Reproductive Epidemiology

Boyd R. Switzer (5) Cancer and Carotenoids, Phytochemicals, Vitamin A and E, and Nutritional Biomarkers

Assistant Professors

Jessie Abouta (81) Nutritional Epidemiology, Cancer Survivorship, Dietary Assessment, Health Disparities, Health Communications

Penny Gordon-Larsen (78) Obesity Epidemiology, Physical Activity, Environmental and Sociodemographic Determinants of Physical Activity, Minority Health, Adolescent Nutrition and Health

Research Professors

Martin Kohlmeier (53) Nutritional Genetics, Biomarkers in Nutritional Epidemiology, Lipoprotein Metabolism, Vitamin K Transport and Function, Nutrition Education in Medical Schools

Rodolf Salaman (80) Oxidative Stress, Apoptosis, and Cancer

Research Associate Professors

Craig D. Albright (54) Dietary Antioxidants, Apoptosis Signaling and Determinants of Cancer Prevention

Miroslav Sybilo (72) Metabolic Interactions of Essential Microelements, Especially Trace Metals, with Toxic Metals and Metalloids that Contaminate Food Chain and Drinking Water Reservoirs

Research Assistant Professors

Kerry Ann da Costa (38) Choline, Folate, and Metabolism

Leslie Fisch, Human Choline Requirements and Sequelae of Choline Deficiency, Choline and Brain Development

Kristine Kelsey (71) Health Promotion and Disease Prevention, Prevention of Childhood Obesity, Health Behavior Change, Women's Health

Barbara Latini (82) Influence of Food Security on Health Outcomes within Vulnerable Populations, Maternal Nutrition and Birth Outcomes, Nutrition Policy

Tal Leibin, Diabetic Cardiomyopathy: Lipid Metabolism; Obesity: Triacylglycerol Accumulation in the Heart; Regulation of Heart Triacylglycerol Synthesis

Carmen Samuel-Hodge, Interventions in Diabetes Self-Management Education, Lifestyle Behavior Change Interventions, Peer Counselors/Lay Advisors in Community-Based Nutrition Interventions

Susan Steck Scott (84) Cancer Epidemiology, Carotenoids, DNA Damage and Repair, Gene-Nutrient Interactions, Nutrient Biomarkers

Philippe Thrudier (83) Dietary Fatty Acids and Cancer Prevention Nutrient-Gene Interactions, Conjugated Linoleic Acid and Skin, Prostate, Colon, Breast Cancer, Omega-3 Fatty Acids and Cancer

Research Instructor

Bobette Jones (76) Women's Health Issues, Diet and Disease, Nutrition and Public Health Interventions

Clinical Professor

William D. Heizer (46) Gastrointestinal Absorption, Malabsorption Syndromes, Consequences of Long-Term Parenteral Nutrition in Hospitalized Patients, Digestive Diseases Causing Malnutrition

Clinical Assistant Professors


Chung-Suk "Chuck" Lee, Educational Technology

Clinical Instructor

Karen Lindell, Nutrition Education in Medicine, Nutrition Research and Clinical Trials

Adjunct Professors

Daniel Carroll, Chemistry and Processing of Plant Products

John A. G第owsi

Steven A. Klewes, Regulation of Lipid and Xenobiotic Metabolism by Nuclear Receptors

Bernadette Marriot

Guy Miller, Energy Metabolism and Metabolic Control: Therapeutics; Entrepreneurship

Richard C. Theuer, Infant Foods and Nutrition

Adjunct Associate Professors

Katherine M. Flegal, Epidemiology of Obesity and Related Conditions, Dietary Assessment Methods, Misclassification and Measurement Error

Frank Kari, Nutrients and Environmental Health

Adjunct Assistant Professors

Jarol Buan, Clinical and Behavioral Treatment of Obesity, Preoperative Assessment or Morbid Obesity, Clinical Management of Bariatric Surgery, Motivational Interviewing, Curriculum Development for Graduate Medical Education, Gastrointestinal Motility Disorders, Gastrointestinal Absorption

Marjorie Busby, Human Clinical Nutrition

Dorothy Caldwell

Rebecca Freeman, Children with Special Needs

Sanford Garner, Regulation of Parathyroid Hormone (PTH) Secretion in Animal Models and in Human Primary and Secondary Hyperparathyroidism

William Norton (73) Food Service Management

Professors Emeriti

Joseph C. Edsion

Mildred Kaufman

Rebecca B. Bryan

MaryAnn A. Farthing
Courses

100 INTRODUCTION TO MEDICAL NUTRITION (3). Prerequisites, NUTR 40, CHEM 11, 21, and BIOL 11. Motion of the human body focusing on nutrient interaction. Review of structure and function of cells and organs. For advanced undergraduates and graduate students needing to enhance background prior to NUTR 110. Spring. Switzer.

110 NUTRITIONAL BIOCHEMISTRY AND NORMAL CELL FUNCTION (3). Prerequisites, NUTR 100, CHEM 11, 21, and BIOL 11 or equivalent. Covers normal cell biochemistry and physiology, emphasizing roles of nutrients throughout the life cycle; chemistry and metabolism of proteins, nucleic acids, carbohydrates, lipids, and enzyme regulation of metabolism. Fall. Coleman, faculty.

111 NUTRITION OF MOTHERS, INFANTS, AND CHILDREN (3). Prerequisites, NUTR 100 or equivalent, to be taken in parallel with NUTR 110. Biologic bases for nutrient requirements and dietary recommendations as they vary throughout the life cycle. Covers the nutritional needs of women during childbearing years, infants, children, and adolescents. Fall. Gordon-Larsen, Sica-Rizzotto.

112 NUTRITION IN THE ELDERLY (1). Prerequisite, NUTR 100 or equivalent. Special dietary and nutritional needs and conditions of the elderly. Includes overview of biology and demography of aging, discussion of nutrition requirements, and assessment of the elderly as well as nutrition in health and various disease states of the elderly. Fall. Kohlmeier.

120 NUTRITIONAL BIOCHEMISTRY AND DISEASE PROCESSES (3). Prerequisite, NUTR 110. Covers biochemistry and pathophysiology of diseases with emphasis on roles of nutrients in prevention, causation, and/or therapy. Materials from prerequisite used as basis for study of molecular mechanisms responsible for disease processes. Spring. Anderson.

121 MEDICAL NUTRITION THERAPY (3). Corequisite, NUTR 120. Course designed to examine the rationale and implementation of diet therapy and nutrition support in the prevention or treatment of disease. Spring. Barrett.

132 NUTRITION ASSESSMENT AND COUNSELING SKILLS (3). Prerequisite, NUTR 40 or equivalent. Functions of a nutritionist working with individuals, emphasizing interviewing, assessment, nutrition care planning, counseling, and service documentation in prevention and therapeutic situations. Prerequisite in the use of current dietary analysis software programs and development of educational materials included. Fall. Barrett.

140 FOOD SCIENCE AND MEAL PREPARATION (2). Prerequisite, NUTR 100. Introduction to foods important in the American diet: composition and properties; factors affecting the selection, handling, and preparation of foods; menu planning and meal preparation. Laboratory fee $50. One lecture hour and two laboratory hours per week. Fall. Barrett.

141 FOOD SERVICE SYSTEMS MANAGEMENT (3). Permission of the instructor required for nonmajors. Basic concepts of institutional food service systems management applied to small and medium-sized health care facilities in the community. Two lecture hours and two laboratory hours per week. Spring. Note.

142 FOOD PRODUCTION, PROCESSING, AND PACKAGING (2). Prerequisite, NUTR 100 or equivalent. Impact of all parts of food industry on availability and nutritive value of foods, and food safety. Spring. Carroll.

150 NUTRITION POLICY AND PROGRAMS (2). Prerequisite, NUTR 40. Introduction to program and policy approaches for improving nutritional status of populations, broad basis and rationale for nutrition policy introduced. Design, implementation of relevant food, nutrition, and health programs examined. Spring. Haines.

170 READINGS IN NUTRITION (1-9). Prerequisite, permission of the instructor. Reading and tutorial guidance in special areas of nutrition. Fall, spring, and summer. Faculty.

190 NUTRITION RESEARCH (1-9). Prerequisite, permission of the instructor. Individual arrangements with faculty for bachelor's and master's students to participate in ongoing research. Fall, spring, and summer. Faculty.

210 NUTRITION ASSESSMENT (1-3). Prerequisite, NUTR 100 or permission of the instructor. This course is taught as three independent one-credit modules. Dietary Assessment (theory and rationale of nutritional assessment in individuals and populations; one credit). Anthropometric Assessment (one credit). Clinical/Laboratory Assessment (one credit). Spring. Switzer.

220 CLINICAL NUTRITION EXPERIENCE (6). Prerequisites, NUTR 120, 121, 122. Students are assigned to medical facilities where they gain the supervision of registered dietitians, participate in the nutritional care of patients. Field fee $450. Forty hours per week for twelve weeks. Summer. Barrett and field preceptors.

230 DIETARY CHANGE INTERVENTIONS (3). Prerequisite, NUTR 150 or permission of instructor. Focus on developing theory-based nutrition interventions at the population level. Address levels of interventions such as schools and worksites: methods of implementation including social marketing and mass media, curriculum analysis and principles of assessing change. Spring. Campbell.

250 PUBLIC HEALTH NUTRITION MANAGEMENT I (4). Prerequisite, NUTR 150. Addresses roles and functions of the health care team and nutritionist in providing nutrition services at the community level. Includes community assessment and organization, quality assurance and program evaluation, and basic personnel management. Three lecture hours and one-day concurrent field experience per week. Fall. Ammerman.

251 PUBLIC HEALTH NUTRITION MANAGEMENT II (4). Prerequisite, NUTR 250. An overview of the planning and management of local, state, federal, and voluntary public health nutrition programs. Examines legislative and administrative structures. Includes grant writing for program development. Three lecture hours and one-day concurrent field experience per week. Spring. Dodds.

252 PUBLIC HEALTH FIELD EXPERIENCE (4). Prerequisite, NUTR 251. During a minimum of eight-week block of time, students are assigned to a state, local, or district health agency or other appropriate agency for supervised field experience. Field fee $540. Fall, spring, and summer. Dodds, Switzer.

253 NATIONAL NUTRITION ISSUES (1). Prerequisite, NUTR 251 or permission of the instructor. Three-day in-depth seminar held in Washington, D.C., on national nutrition issues, policy formulation, and program development with key congressional staff, federal agencies' staff, and pertinent public interest/consumer advocacy groups. Paper required. Field fee $50. Spring. Dodds, Kelley.

254 PHYSICAL ACTIVITY EPIDemiology and public health (3). Prerequisite, EPID 160 or equivalent. This course provides an overview of major issues in physical activity measurement, population distribution, correlates, impacts (physically and economically), and public health recommendations. Interventions, including relevant theories, will be reviewed. Fall. Ward, Everson.

259 NUTRITIONAL EPIDemiology (3). prerequisites, EPID 160 or 168 and BIOS 110 or equivalent. This course reviews current topics in nutrition epidemiology and teaches the skill for critical evaluation of the nutritional epidemiology literature. Spring. Alternate instructors by year: Abousta (odd years), Stevens (even years).

261 INTERNATIONAL NUTRITION (3). Provides a broad overview of international nutrition research issues, programs, and policies. Topics include micronutrient deficiencies, child feeding and growth, determinants of under- and over-nutrition, chronic disease and nutrition, food fortification and supplementation, and nutrition intervention programs and policy. Fall. Adair, Bentley, and Popkin.

262 INTERNATIONAL NUTRITION: SPECIAL TOPICS (1). Prerequisite, NUTR 261. Follow-up in greater detail of selected issues discussed in NUTR 261. Two seminar hours per week. Spring. Adair.
270 NUTRITION RESEARCH METHODS (3). Prerequisites or corequisites. BIOS 110 and EPID 160 or 168. In a journal club format using current peer-reviewed literature, critical-thinking skills are applied to methodological issues related to measurement, design, and analysis of basic, clinical, and population-based nutrition studies. Fall.

305 NUTRITIONAL METABOLISM (3). Prerequisite, NUTR 110 or equivalent. A problem-based approach to examine current topics in biochemistry relevant to nutrition and metabolism. Students interpret data and design experiments related to recent advances in nutritional biochemistry. Spring. Coleman, nutrition biochemistry faculty.

310 ADVANCED NUTRITIONAL BIOCHEMISTRY: SIGNAL TRANSDUCTION (2). Prerequisites, NUTR 110 and 120 or equivalent. Includes interactions of nutrients/growth factors/hormone/second messengers with metabolism, growth and differentiation of oncogenesis. Fall. (Alternating with 311 and 322.) Faculty.

311 ADVANCED NUTRITIONAL BIOCHEMISTRY: NUTRITIONAL GENETICS (2). Prerequisites, NUTR 110 and 120, or equivalent. Integration of human nutrient metabolism with an appreciation for the impact of genetic variation in health and disease. Practical application of genetics in nutrition research, public policy and nutrition practice. Fall. (Alternating with 310 and 322.) Kohlmeier.

315 BIOCHEMISTRY OF NUTRITION-RELATED DISEASES (3). Prerequisite, NUTR 110 or equivalent. Seminar and problem-based approach to the biochemistry of nutrition-related diseases including obesity, diabetes, atherosclerosis, cancer, and osteoporosis. Spring. (Alternating with 305.) Coleman.

320 NUTRIENTS AND DISEASE: MINERALS (2). Prerequisite, NUTR 120. A seminar reviewing the nutrition and metabolism of the major minerals, with a focus on calcium and phosphorus. Spring. (Alternating with 321 and 323.) Anderson.

321 NUTRIENTS AND DISEASE: CARCINOGENESIS (2). Prerequisites, NUTR 110 and 120 or equivalent. Nutrient interactions with the process of carcinogenesis. Effects of cancer on the metabolism of nutrients. Spring. (Alternating with 320 and 323.) Althugh.

322 NUTRIENTS AND DISEASE: CARDIOVASCULAR DISEASE (2). Prerequisites, NUTR 110 and 120 or equivalent. Presents an understanding of molecular and physiological events preceding cardiovascular diseases and the role of nutrition in the prevention of modification of risk and treatment. Fall. (Alternating with 310 and 311.) Switzer.

323 NUTRIENTS AND DISEASE: BRAIN FUNCTION AND DEVELOPMENT (2). Prerequisites, NUTR 110 and 120 or equivalent. Seminar on nutrients that influence brain and neuron development and function. Spring. (Alternating with 320 and 321.) Zeisel.

325 ADVANCES IN CARBOHYDRATE AND LIPID METABOLISM (1). Prerequisites, MEDI 120, NUTR 110, or equivalent. Seminar discussions of recent papers related to carbohydrate and lipid metabolism, including fatty acid regulation of gene expression, glucose transporters, genetic defects causing diabetes, w-3 fatty acids in neural development. Spring. Coleman.

335 NUTRITION POLICY SEMINAR (2). Prerequisite, permission of instructor. Doctoral seminar to introduce federal policy strategies for monitoring and improving nutritional status of populations. Five policy areas will be covered: national nutrition objectives/planning strategies, dietary guidance, nutrition surveillance/monitoring, economic policy as related to federal food programs, and policy analysis. Fall. Larina.

350 ADVANCED NUTRITION POLICY (2). Prerequisite, NUTR 150 or permission of the instructor. Students will evaluate nutrition-related programs and policies designed to achieve individual and organizational behavioral change and governmental regulations and laws, which influence the nutrition of the population. Spring. (Alternate years.) Haines.

351 ADVANCED PUBLIC HEALTH NUTRITION MANAGEMENT (3). Prerequisite, MPH degree or permission of the instructor. Analysis of policy development and management techniques used in the public and private sectors with relevance to development and management of nutrition policy and programs. Spring. (Alternate years.) Dods.

354 QUALITATIVE EVALUATION AND RESEARCH METHODS (3). Prerequisite, HBIHE 250 or equivalent. Theoretical and methodological approaches of applied medical anthropology for health program development and evaluation. Field methods for collecting and analyzing data through observation, interviewing, group methods, and case studies. Fall. Bentley, Steckler.

360 ANALYTICAL METHODS IN NUTRITIONAL EPIDEMIOLOGY (3). Prerequisites, EPID 160 or 168, NUTR 259, and BIOS 145 or permission of instructor. This course covers the skills and techniques required to study dietary exposures, anthropometric status, and disease outcomes. Students gain skills in analysis and interpretation of anthropometric data. Concepts and applications include quantification and measurement of dietary intake, use and management of nutrition monitoring data sets, application and interpretation of epidemiologic and statistical methods for the analysis of these data (such as linear and logistic regression and hazard modeling), and appropriate use and interpretation of anthropometric indices. Fall. (Alternate years.) Adair.

361 OBESITY EPIDEMIOLOGY (3). Prerequisites, EPID 160 or 168 and BIOS 110. Examines epidemiologic research on the causes, consequences, and prevention of obesity. Emphasis on methodologic issues pertinent to obesity research. Spring. (Alternate years.) Stevens.

362 DIET AND CANCER (3). Prerequisites, EPID 160 or 168 and BIOS 110. Examines epidemiologic research on food-related exposures and prevention of cancer of various sites. Emphasis on skills for conducting and analyzing epidemiologic studies on gene-nutrient interactions in carcinogenesis. Spring. (Alternate years.)

371 ELEMENTS OF BEING A SCIENTIST (3). Prerequisite, doctoral students ready to formulate dissertation focus. Focuses on key elements that contribute to a successful career as a scientific researcher. These include: scientific presentations, scientific photography and graphics; writing a scientific manuscript, and evaluating published manuscripts; grant writing and sources of funding; peer review; use of animals and humans in research; scientific ethics. Fall. Zeisel, Popkin, Ward.

373 DOCTORAL SEMINAR (1). This course is designed for doctoral and master of science students only. Critical review of current literature in nutritional biochemistry, intervention and policy, and population-based nutrition science. Focuses on the development of skills in reviewing and critiquing journal articles. Fall (Adair) and spring (Ward).

374 RESEARCH ROTATIONS FOR NUTRITIONAL BIOCHEMISTRY DOCTORAL STUDENTS (1-3). Three laboratory or research group rotations supervised by nutritional biochemistry faculty. Provides a breadth of research experience for students prior to selecting dissertation advisor. Up to six laboratory hours per week. Fall, spring, and summer. Faculty.

375 NUTRITION RESEARCH (1-9). Individual arrangements with faculty for doctoral students to participate in ongoing research. Fall, spring, and summer. Faculty.

392 MASTER'S PAPER (3-6). Fall, spring, and summer. Faculty.

393 MASTER'S THESIS (3-6). Fall, spring, and summer. Faculty.

394 DOCTORAL DISSERTATION (3-9). Fall, spring, and summer. Faculty.

PUBLIC HEALTH LEADERSHIP PROGRAM (PHL)

WILLIAM A. SOLLÈCTIO, Director
Saundra S. Shay, Leadership and Public Health Nursing Director (Residential and Distance)
Vaughn M. Upshaw, DrPH, Leadership Director
Russell Harris, Health Care and Prevention Director
Bonnie Rogers, Occupational Health Nursing Director (Residential and Distance)

Professors
Jean Goeppinger (62) Health Promotion and Leadership
Arnold D. Kaluzny (66) Public Health Leadership, Organizational Design and Behavior, Program Implementation and Evaluation

Associate Professors
Eugenia Eng (75) Public Health Practice, Cross-Cultural Health Education, Program Strategies and Design
Thomas C. Ricketts (72) Public Health Leadership, Rural Health Care, Policy Implementation and Development
Bonnie Rogers (16) Occupational Health Nursing, Public Health Nursing

Assistant Professor
Timothy S. Carey (69) Health Care and Prevention

Research Professor
William A. Sollecito (78) Continuous Quality Improvement, Program Management, Distance Learning

Clinical Professor
Rachel H. Stevens (15) Public Health Practice and Public Health Nursing

Clinical Assistant Professors
Saundra S. Shay (21) Mental Health, Education, and Leadership
Vaughn M. Upshaw (80) Public Health Leadership, Governance, Organizational Behavior

Lecturer
Elizabeth M. Tornquist (18) Research Methodology, Scientific Writing

Clinical Instructors
Judith S. Ostendorf (57) Occupational Health Nursing
Susan A. Randolph (35) Occupational Health Nursing

Research Instructor
Christina A. Harlan (45) Migrant Health

Adjunct Professor
Jan R. Arwood (23) Cancer Prevention and Aging, Health Promotion, Research Instrument Development and Methodology

Adjunct Associate Professor
Virginia Adams, Occupational Health Nursing

Adjunct Assistant Professors
Kim Campbell, Public Health Nursing
Vin Coomwight, Group Dynamics and Organizational Effectiveness
Carole Cox, Public Health Nursing
Elise Handelman, Occupational Health Nursing
Margaret E. Molloy (84) Managed Care, Community Assessment, Partnerships
Samuel Moon, Occupational Health Nursing
Constance F. Mullins (54) Public Health Policy
Patricia O'Leary Cunningham (85) Public Health Nursing Administration, Community Health Nursing
Joy Reed, Public Health Nursing
Rosemary Summers, Leadership
Nancy T>User, Public Health Nursing
Patricia Travers, Occupational Health Nursing
W. Jon Wallace, Occupational Health Nursing

Adjunct Clinical Professors
C. David Hardison, Health and Information Management
Hugh H. Tilson, Epidemiology

Adjunct Instructors
Marjory Ayer, Public Health Nursing
Ruth Barlow, Occupational Health Nursing
Elizabeth Lawhorn, Occupational Health Nursing
Karen Mastroianni, Public Health Nursing

Emily Rivenbark, Public Health Nursing
Grace Rome, Occupational Health Nursing
Geraldine Williamson, Occupational Health Nursing
Angela Zabel, Occupational Health Nursing

Professors Emerita
Nora F. Cline
Marion E. Hightower
Dorothy M. Talbot
Julia D. Watkins

Courses
The Public Health Leadership Program uses both PUBH and PHNU call letters for course listings. PUBH courses are open to any student unless requiring permission of instructor. PHNU courses are open to registered nurses only or by permission of instructor. Visit the Web site for additional information: www.sph.unc.edu/phlp.

PUBH 140 READINGS IN PUBLIC HEALTH PRACTICE (Var.). Intensive study of a special problem in public health practice. Fall, spring, and summer. Staff.

PHNU 140, 141, 142 READINGS IN PUBLIC HEALTH NURSING (1–3). Prerequisites to be arranged with the faculty. Reading and tutorial guidance in a selected area of public health nursing or occupational health nursing. Two or more hours per week. Fall, spring, and summer. Staff.

PUBH 150 DATA SKILLS ONLINE (1). This online, asynchronous class presents a series of discrete tools designed to teach skills to health professionals for using technology and data management/analysis. Fall, spring, summer. Williamson.

PHNU 160 DELIVERY OF COMMUNITY NURSING SERVICES (3). Permission of the instructor required. Analysis of patterns of organization of community nursing services and relationships to the health care delivery system. Special emphasis on basic management skills and their application. Staff.

PHNU 201 SPECIAL STUDIES (1–3). Permission of the instructor required. Sections focus on specific topics of current interest to health workers. flydes describing the section offering are distributed prior to registration each semester. Lecture hours dependent upon credit. Fall and spring. Staff.

PUBH 201 SPECIAL STUDIES (1–3). Permission of instructor required. Sections will focus on specific topics of current interest to health workers. Flyers describing the section offering will be distributed prior to registration each semester. Lecture hours per week dependent upon credit. Fall, spring, summer. Staff.

PHNU 216 OVERVIEW OF AGING AND CHRONIC ILLNESS (3). Course provides a sound understanding of the theories and issues related to the biological, physical, emotional, demographic, and social aspects of aging, including population-based risk factors, with emphasis on health promotion. Fall. Kincade.

PHNU 224 SCHOOL-AGED POPULATION: HEALTH PROBLEMS AND PROGRAMS (MHCH 224) (3). Permission of the instructor required. Health needs and problems of school-aged population. Development and evaluation of programs to meet those needs, including examination of legislative mandates, administrative structures, and manpower utilization. Three lecture hours per week. Staff.

PHNU 225 PRACTICUM: LEADERSHIP IN SCHOOL HEALTH PROGRAMS (MHCH 225) (1–4). Permission of the instructor required. Prerequisite, PHNU 224 or equivalent. An elective, individually planned and supervised school/community based field experience, designed to provide leadership experiences in delivery of school health services. Three to twelve laboratory hours per week. Spring. Staff.

PUBH 226 ADOLESCENT HEALTH (HBHE 189) (MHCH 226) (3). Topics covered include the epidemiology of health problems, developmental issues, health services, and psychosocial influences on adolescent problem behaviors. Course material is useful for research generation and practical application. Three seminar hours per week. Spring, Foshee.
PUBH 230 QUALITY IMPROVEMENT AND LEADERSHIP (3). Prerequisite, PUBH 247. Course designed to provide students with understanding of use of continuous quality improvement methods in community health settings drawn heavily on actual experiences of the students in their professional lives. Spring, Kello.

PUBH 231 SOCIAL MARKETING (3). Course will orient students to market-based strategies, models, and tactics for improving individual and community health status within framework of marketing, strategic communication, and advocacy. (On request) Cooke.

PUBH 232 CULTURAL COMPETENCIES OF HEALTH ORGANIZATIONS (3). Course will provide health care professionals with framework for implementation of National Standards for Culturally and Linguistically Appropriate Services in Health Care (CLAS). Spring, Harlan.

PUBH 240 SPECIAL ISSUES IN PUBLIC HEALTH PRACTICE (1-3). Permission of the instructor required. Guided reading, discussions, and presentations on current and significant issues in public health. (On request) Staff.

PHNU 240, 241 PROBLEMS IN PUBLIC HEALTH NURSING (1-4). Students study a special public health problem relevant to public health/occupational health nursing. Study will result in a paper demonstrating application of research principles. Fall, spring, and summer.

PHNU 242 INSTRUMENT DEVELOPMENT (HBEHE 254) (3). Prerequisite, graduate statistics and graduate methods course. This course provides a knowledge base and experiences in instrument construction and testing, emphasizing a broad spectrum of psychosocial and behavioral instrument scaling methodologies for field research and evaluation.

PHNU 244 ROLES AND FUNCTIONS IN PUBLIC HEALTH NURSING (3). Emerging roles and responsibilities of public health nurses and health departments. Emphasis on program areas in health departments and public health under health care reform. Three lecture hours per week. Fall.

PHNU 245 COMMUNITY INTERACTION AND ASSESSMENT (3). Course focuses on development of knowledge and skills for interaction and assessment of populations, advocacy, collaboration, partnerships, coalition building, and constituency development. Fall, Stevens.

PHNU 246 PUBLIC HEALTH PROGRAM PLANNING AND EVALUATION (3). Permission required for non-SPH majors. Fundamentals of public health program planning and monitoring with emphasis on applications in community settings and proposal development for program funding. Shay

PHNU 247 MANAGEMENT PRINCIPLES AND PRACTICES (HBEHE 204) (3). Graduate students only. Provides an overview of knowledge and skills required for effective health services management. Aimed primarily at individuals who plan to assume management roles in health services and related fields. Three lecture hours per week. Fall, Staff.

PHNU 248 POLICY DEVELOPMENT (2). Permission of the instructor is required for non-SPH students. Focus is on institutional policy development, regulation, and enforcement, and field observation. Spring, Mullinix.

PHNU 249 PROGRAM EVALUATION (2). Permission of the instructor required. Program evaluation methods, including quantitative, qualitative, and quality assurance. Spring, Foshee.

PHNU 250 STRATEGIES OF PREVENTION FOR CLINICIANS (3). Designed for those interested in the clinical arena. Establishes a framework for examining prevention activities for clinicians, then considers a number of important health problems and the evidence for applying prevention strategies to these health problems. Encourages active student participation and involves a multidisciplinary faculty. Limited to thirty students. Fall, Kinsinger, Harris.

PHNU 251 A AND B SEMINAR IN CRITICAL APPRAISAL OF MEDICAL LITERATURE (EVID 208 A and B) (1-2). Emphasizes the process of critical appraisal of existing research literature, with examples from a variety of areas. Student presentations of structured critical appraisals constitute about fifty percent of sessions. Spring, fall, Carey, Weber.

PHNU 253 COMPREHENSIVE STRATEGIES IN PUBLIC HEALTH INTERVENTION: THE CASE OF TOBACCO USE REDUCTION (3). Permission of instructor required for non-SPH majors. Using the case study of reducing tobacco consumption, this course will consider effective means of health education and health advocacy. Three lecture hours per week. Spring, Goldstein.

PHNU 256 ADDRESSING HEALTH INEQUALITIES IN THE U.S. Population (3). Disparities in morbidity/mortality in sub-populations compared to other U.S. populations. Course explores contributors to inequalities and identifies strategies to counterbalance contributors to correct inequalities using public health resources. Spring, Hogan.

PHNU 260 CLINICAL MEASUREMENT/EVALUATION (EVID 170) (3). Prerequisite, epidemiology or HCP major. Introduction to the fundamental concepts of epidemiology, including clinical epidemiology, for clinicians. Emphasis is to applications in clinical research and practice. Fall, Miller.

PHNU 260 ADVANCED STUDIES IN ADMINISTRATION OF COMMUNITY NURSING SERVICES (3). Prerequisite, permission of the instructor. Integration of theories, concepts, methods of administration and nursing, their application to delivery of community nursing services. Emphasis placed on roles and functions of nurse manager. Three lecture hours per week. Spring, Stevens.

PHNU 281 OCCUPATIONAL HEALTH NURSING I - OCCUPATIONAL HEALTH ASSESSMENT (3). Permission of the instructor required. Concerns factors influencing the development and operation of occupational health programs. General and special health services contingent on work environment and inherent health problems in the employed populations are considered. Fall, spring, summer, Rogers.

PHNU 282 OCCUPATIONAL HEALTH NURSING II - OCCUPATIONAL HEALTH PROGRAMMING (3). Prerequisite, PHNU 281. Permission of the instructor required. Continuation of PHNU 281. Role components of occupational health nursing with emphasis on designing, implementing, and evaluating occupational health programs. Emphasis on analysis of factors influencing the delivery of health care at the worksite. Fall, spring, summer, Rogers.

PHNU 283 OCCUPATIONAL HEALTH NURSING, FIELD PRACTICUM I (2-3). Prerequisite or corequisite, PHNU 281. Permission of the instructor required. Students have the opportunity to discuss and apply concepts of OHN practice and the work environment. Concepts related to workplace hazards, interdisciplinary activities, and nursing interventions with worker aggregates are emphasized. Three to nine laboratory hours per week. Fall, spring, summer, Rogers.

PHNU 284 OCCUPATIONAL HEALTH NURSING, FIELD PRACTICUM II (1-3). Prerequisites, PHNU 281, 283. Corequisite, PHNU 282. Permission of the instructor required. Students have the opportunity to learn about the management and administrative role of the OHN. Emphasis is placed upon the analysis of the organizational structure, external influencing factors, and evaluation mechanisms. Fall, spring, summer, Rogers.

PHNU 285 OCCUPATIONAL HEALTH: INTERDISCIPLINARY APPROACHES (2). Overview course on occupational health focusing on interdisciplinary approaches to address complexities of workplace exposures, impact of work-related hazards, and interactions on health. Course offered on request. Rogers, Randolph.

PHNU 286 OCCUPATIONAL SAFETY AND ERGONOMICS (ENVR 137) (3). Fundamentals of occupational safety and ergonomics with emphasis on legislation and organization of industrial safety and ergonomic programs, including hazard recognition, analysis, control, and motivational factors pertaining to industrial accident and cumulative trauma disorder prevention. Fall, Ostendorf, Coble.
PHNU 287 FUNDAMENTALS OF INDUSTRIAL HYGIENE (2). Provides broad understanding of industrial hygiene. Major emphasis is recognition of hazards in the workplace, evaluation of measurement of those hazards, and application of control strategies. Fall. Randolph and Couch.

PHNU 298 RESEARCH METHODS (2-3). Prerequisites or corequisites, BIOS 101, EPID 160. Permission required for nonmajors. Analysis of nursing research emphasizing methodology and implications for community health nursing practice. For more than two credits, students must develop a research design or participate in research. Spring. Kincade.

PHNU 299 DATA MANAGEMENT (AND ANALYSIS) IN PUBLIC HEALTH (2). Prerequisites, BIOS 101, EPID 160, PHNU 298. Focus on data management and analysis prepares the student to code and enter data, choose appropriate statistical techniques, analyze data using SAS-PC, and interpret results. Two lecture hours per week. Fall. Kincade.

PHUB 300 LEADERSHIP SEMINAR I (2). Permission of the instructor required. Public health leadership core course. Application of selected leadership skills and principles. Summer. Staff.

PHUB 301 LEADERSHIP SEMINAR II (2). Permission of the instructor required. Public health leadership core course. Application of selected leadership skills and principles. Fall. Staff.

PHUB 302 LEADERSHIP SEMINAR III (2). Permission of the instructor required. Public health leadership core course. Spring. Staff.

PHUB 303 LEADERSHIP SEMINAR IV (2). Permission of the instructor required. Public health leadership core course. Summer. Staff.

PHUB 304 CURRENT METHODS OF PUBLIC HEALTH ANALYSIS (1-3). Permission of the instructor required. Public health leadership core course. Update on current methods of biostatistics, epidemiology, and automated data management. Summer. Staff.

PHUB 305 PUBLIC HEALTH POLICY DEVELOPMENT I (2-3). Permission of the instructor required. Public health leadership core course. Course uses case studies to examine social, economic, and political context within which public health policy is formulated and operationalized. Summer. Staff.

PHUB 306 PUBLIC HEALTH POLICY DEVELOPMENT II (2-3). Prerequisite, PHUB 305. Permission of the instructor required. Public health leadership core course. Course uses case studies to examine specific methods of public health policy development. Summer. Staff.

PHUB 307 COMMUNITY ASSESSMENT METHODOLOGY (3). Permission of the instructor required. Public health leadership core course. Participatory seminar examines public health tools available for community assessment. A wide range of methods is presented for gathering and analyzing information about the structure, function, resources, and perceived needs of a local community. Fall. Staff.

PHUB 308 PUBLIC HEALTH PROGRAM ASSURANCE (3). Permission of the instructor required. Public health leadership core course. Examination of the role of public health agencies in achieving public health goals. Lecture, discussion, and case studies are used to identify the legal and public health basis for assurance activities and strategies for implementation and evaluation. Spring. Staff.

PHUB 311 LEADERSHIP, PRACTICE, AND RESEARCH I (1-2). Prerequisites, PHUB 300, 301, 302, and 303. Permission of the instructor required. Public health leadership core course. Examination of the relationships among leadership principles, applied research, and public health practice based on participants' experiences. Spring. Staff.

PHUB 312 LEADERSHIP PRACTICE AND RESEARCH II (1-2). Prerequisite, PHUB 311. Permission of the instructor required. Public health leadership core course. Analysis of professional accomplishments in leadership, research, and public health practice and development of five- and ten-year goals in these areas. Spring. Staff.

PHUB 392 MASTER'S PAPER (3). Permission of the instructor required. A major paper on a problem relevant to public health practice. This study may extend over more than one semester. Credit is assigned accordingly. Fall, spring, summer. Staff.

PHUB 393 MASTER'S THESIS (3-9). Fall, spring, summer. Staff.

PHUB 395 DISSERTATION SEMINAR (1-2). Permission of the instructor required. Public health leadership core course. This course facilitates the integration of material from other courses for development of dissertation proposals. Fall, spring, summer. Staff.

PHUB 396 FIELD PRACTICE IN PUBLIC HEALTH (3-6). Second experience to provide opportunity to integrate course work in new health-related setting. Completed after regular course work and cannot be only observational experience. Report required; may be integrated with master's paper. Field fee, $200.

PHUB 396 FIELD PRACTICE IN COMMUNITY HEALTH NURSING (3-6). Permission of the instructor required. Field experience in public health nursing or occupational health nursing practice. Study and observation of selected areas related to students' program of study. Field fee, $450. Three laboratory hours per week for each credit. Fall, spring, summer. Staff.

PHUB 613 INTERMEDIATE SPANISH FOR HEALTH CARE I (3). Prerequisites, college-level Spanish 2, a minimum score on a self-assessment test available on the Web, and permission of instructor. This primarily e-learning course provides public health students with the opportunity to improve their oral communication skills in Spanish at the intermediate level via DVD, Web, and workbook. Instructor-led. Students who meet the criteria but are still not sure if the course is right for them can view a video accessible on the Web along with a sample from the workbook to determine if the course materials are a good match for their abilities. Fall, spring, summer. Instructors from the UNC-Chapel Hill Department of Romance Languages.

PHUB 614 INTERMEDIATE SPANISH FOR HEALTH CARE II (3). Prerequisite, completion of Intermediate Spanish for Health Care I and permission of instructor. This primarily e-learning course provides public health students with the opportunity to improve their oral communication skills in Spanish at the intermediate level via DVD, Web, and workbook. Instructor-led. Fall, spring, summer. Instructors from the UNC-Chapel Hill Department of Romance Languages.

PHUB 615 ADVANCED SPANISH FOR HEALTH CARE I (3). Prerequisite, college-level Spanish 3, a minimum score on a self-assessment test available on the Web, and permission of instructor. This primarily e-learning course provides public health students with the opportunity to improve their oral communication skills in Spanish at the advanced level via DVD, Web, and workbook. Students who meet the criteria but are still not sure if the course is right for them can view a video accessible on the Web along with a sample from the workbook to determine if the course materials are a good match for their abilities. Instructor-led. Fall, spring, summer. Instructors from the UNC-Chapel Hill Department of Romance Languages.

PHUB 616 HEALTH CARE INFORMATICS (PHCY 616) (2). Course designed to provide a multimodal learning experience that prepares health sciences students to learn to become proficient at selecting/using technology for organizing, analyzing, and managing information in health care settings. Spring. Brock and Smith.

DEPARTMENT OF PUBLIC POLICY

MICHAEL A. STEGMAN, Chair

Professors
Richard N. L. Andrews, Environmental Policy
Douglas Crawford-Brown, Environmental Sciences, Environmental Policy
David D. Dill, Higher Education Policy, Concepts and Principles of Policy Analysis, Ethics and Public Policy
The PhD in public policy combines core foundations in theory, empirical and normative analysis, public policy institutions and processes, and research methods with a field specialization area that is chosen and developed by the student with the approval of an individualized doctoral program committee. The curriculum is designed to help each doctoral student develop and use appropriate analytical approaches to solve problems in public policy areas such as economic development, education, health, children and families, environment, employment, housing and urban development, trade, industry, and international affairs.

Admission

Students are admitted to the doctoral program in public policy from diverse backgrounds in both academic preparation and experience, and such diversity is strongly welcomed. In preparation for doctoral study, applicants are encouraged to take preparatory courses in intermediate microeconomics, basic statistics, and quantitative analysis including calculus; a master’s degree and some public policy-related work experience are desirable. All entering students also normally take the ECON 210 course in basic quantitative techniques for economics during August before the beginning of their first semester.

Applications for admission in the fall semester are received and reviewed throughout the year. However, applications must be received by January 1 for the following fall semester to receive full consideration for Graduate School competitive awards. All prospective students must take the Graduate Record Examination (GRE), and applicants from non-English-speaking countries must also submit results of the Test of English as a Foreign Language (TOEFL). Factors considered in the application review include the academic transcript, GRE scores, class rank, references, strength of undergraduate institution, and statements of interest and professional experience.

Applicants are encouraged to visit the campus for a personal interview with the faculty and to meet current students in the program.

Degree Requirements

Core Courses. Once enrolled, each student completes a set of doctoral-level core courses in applications of economic and institutional theory to public policy issues, as well research design, appropriate research methods, and a specialization in a particular subject area of public policy. Doctoral students are required to complete fifty-six hours of coursework, including twenty-nine hours in core courses common to all students and twenty-seven hours in a self-defined policy specialization field. Core courses include PLCY 205, 216, 231, 232, 288 (ECON 200), 289, 301, 302, and 310. Students who have successfully completed graduate courses elsewhere that resemble these required courses may petition to have up to nine such hours counted toward their PhD in public policy. Courses proposed for transfer must be approved as part of the student’s program within the department, and material from those courses may be included as part of the comprehensive doctoral examinations. Students normally spend approximately two years in full-time coursework, and somewhat longer if they enter the program without key prerequisite courses or a master’s degree in a related field. A dissertation is required.

Policy Field Specialization. Each student designs an individual course of study for a policy specialization field. The twenty-seven credit hour requirement gives students rigorous training in the theory, methods, and subject matter of policy analysis within a substantive policy field. The specialization area course of study must include both doctoral-level understanding of the subject matter of the policy specialization area, and at least nine hours of research methods, including at least six hours of quantitative methods, through multivariate statistics. Students take no less than nine credit hours
of courses related to the theory and subject matter of their policy concentration, plus at least three credits (in addition to the core course on institutions) on policy institutions and implementation related to the policy field specialization; up to six hours of specialization area credits may be taken as independent studies. The remaining six hours of required field specialization credits are normally completed as PLCY 394 during dissertation research. The student's research methods courses should provide the student with the ability to design and carry out dissertation research, to continue making scholarly contributions in his or her chosen field, and to conduct policy analyses. Each student is assisted by an individualized program committee in identifying courses, independent readings, and other sources of information to acquire both the substantive knowledge and the quantitative and other analytical skills appropriate for the student's policy field specialization.

Public Policy Research Seminar. The department offers a weekly seminar series in which faculty, public policy scholars, government officials, and public policy doctoral students present their research and share their perspectives on policy issues. The seminars give students the opportunity to assess the relevance of their theoretical, analytical, and political training to the real world of policy analysis. Each student is expected to enroll in this one-credit seminar for two semesters.

Professional Experience. It is the policy of this program to require all PhD students also to have obtained practical experience in a public policy-making or policy research organization in the United States by the time of their graduation. This experience may include internships or other project work for a local, state, or national government, directly or through a third party (or international agency such as the World Bank), or policy research for a client. Experience gained prior to enrolling in the program may also be used to satisfy this requirement.

Graduate Minor
Doctoral and master's students not enrolled in the Department of Public Policy may elect to minor in public policy. Requirements for the minor include sixteen hours of approved coursework in public policy analysis, approved by the Department of Public Policy and the student's major department, and may not include double-counting of courses required for the student's major. Prerequisite courses are intermediate microeconomics and probability and statistics. More information is available on the Web site at www.unc.edu/depts/pubpol/gradminor.htm.

Departmental Research Foci
Students can tap the considerable resources of the broader University community to support a wide range of policy interests. In the past, doctoral students have focused on problems ranging from comparative macroeconomic policy to health, national, and international environmental policy, and state and local public finance and services. However, the Department of Public Policy has developed particular strengths in four broad areas of policy research and application:

Environmental Policy. The department coordinates teaching, research, and public service activities with the Department of Environmental Sciences and Engineering, the Carolina Environmental Program, and several academic units with environmental interests. A large number of core and participating faculty members have research projects relating to environmental issues. The department also contributes to the operation of the UNC Environmental Finance Center. (Related faculty: Andrews, Crawford-Brown, Lugert, Rabindran, Webster, Whittington, Hornstein, Howes, Rondonetti)

Economic Development and Science and Technology Policy. A member of the core faculty directs the UNC Office of Economic Development, which is a pan-university unit that coordinates economic development activities on campus, helping to bring the considerable resources of the University to bear on problems related to income, job, and wealth creation in North Carolina, the southeast, the nation, and the world. The department works closely with other key units on campus with strength in economic development and science and technology policy, including the departments of city and regional planning, sociology, and economics; the School of Government; units in the School of Public Health; and the schools of law and business. Students have ample opportunities to work with economic development and science and technology organizations that are located in the region, including the Southern Growth Policies Board, Rural Economic Development Center, Southern Technology Center, Sigma Xi science fraternity, and others. (Related faculty: Dill, Handa, Lugert, Stegman, Webster, Whittington, Bremer, Carlisle, Goldscin, J. Johnson, F. Reed Johnson, Kasarda)

Social Policy, Including Welfare, Education, and Low-Income Communities. This area of application revolves around activities in two centers: the Center for Community Capitalism, which is a cooperative effort between the department and the Kenan Institute of Private Enterprise, and the Jordan Institute of Family Policy in the School of Social Work. (Related faculty: Dill, Gitterman, Handa, Lugert, Perreira, Stegman, Farrell, Gallagher, Howes, J. Johnson, Kasarda, MacRae, Orthner, Schwartz)

Health Policy. Faculty in public policy study issues relating to mental health and substance abuse, AIDS, environmental health, health insurance and managed care, and health issues in developing countries, all with a focus on the economic and institutional basis of good policy making. The public policy faculty connect the unit to considerable resources outside the Department of Public Policy, in the School of Public Health, the Department of Social Medicine, the Carolina Population Center, neighboring universities, contract research organizations, and international donor organizations. (Related faculty: Gitterman, Perreira, F. Reed Johnson, MacRae, Schwartz)

Financial Assistance
When admitted, students are automatically considered for a range of financial support including Graduate School fellowships, teaching assistantships, and research assistantships. Many awards grant full tuition privileges and medical insurance coverage, substantially increasing their value to the student. Prospective students are encouraged to contact faculty members whose research is in areas of their potential interest and experience.

Resources
Faculty Expertise and Related Units. The University of North Carolina at Chapel Hill has a distinguished tradition in public policy. A charter member of the Association for Public Policy Analysis and Management, the Department of Public Policy currently has an eleven-member core faculty including nationally and internationally recognized expertise in policies for health, education, housing, environment, infrastructure and economic development, institutional design, and other policy areas. Many combine scholarship with valuable governmental experience, and many also hold joint appointments in related academic units. In addition to the PhD, the department offers a strong undergraduate major in public policy a graduate minor for interested students in other academic units, and close cooperation with other policy-related graduate programs at both the master's and
doctoral levels offered by the departments of city and regional planning, environmental sciences and engineering, public administration, health policy and administration, and in the schools of education, law, business administration, social work, and medicine.

Visiting Scholars
The University of North Carolina at Chapel Hill hosts visiting public policy scholars from around the world and trades students and faculty with several universities in Europe and Asia. The Department of Public Policy also hosts a USIA Hubert Humphrey Fellow Program, which brings approximately ten public policy professionals from around the world to UNC for each academic year. Doctoral students in the department may enroll in classes at Duke University (to which there is a regular bus service) as well as North Carolina State University in Raleigh without additional cost.

Research Centers and Institutes
A wide range of University of North Carolina research centers and institutes, many of which conduct nationally and internationally distinguished policy-related research, also extend research opportunities. Examples include:

- **Carolina Environmental Program**
  Supports multidisciplinary research on many aspects of environmental science and decision making.

- **Carolina Population Center**
  Coordinates University-wide programs on national and international population research.

- **Cecil G. Sheps Center for Health Services Research**
  Conducts studies related to delivery of health care services.

- **Center for Urban and Regional Studies**
  Conducts multidisciplinary research on urban issues and processes of urbanization such as new community development, housing market dynamics and national home ownership policies, models of urban growth, residential preferences, coastal zone management, and planning for natural hazards.

- **Frank Hawkins Kenan Institute of Private Enterprise**
  Fosters mutual understanding among people working in business, academia, and government to encourage cooperative efforts to strengthen private enterprise systems in the United States and worldwide.

- **Center for Community Capitalism**
  Conducts research to help fight poverty and inequality by creating more effective strategies to reintegrate America's disadvantaged communities and their residents into the market economy.

- **Center for Competitiveness and Employment Growth**
  Conducts research on demographic, economic, and political forces underlying competitiveness, productivity, and job creation dynamics for private and public sectors.

- **Center for International Trade and Investment Promotion**
  Establishes joint ventures and other cooperative mechanisms between United States businesses and Central European firms seeking to privatize their enterprises. Provides guidance on the development and management practices in specific sectors, market opportunities, organizational structures, and technology transfer.

- **Howard W. Odum Institute for Research in Social Science (IRSS)**
  Oldest institute in the United States for the cooperative study of problems in the general field of social sciences; maintains extensive survey and census archives, and assists in design and analysis of social research.

- **International Private Enterprise Development Research Center**
  Studies the role of private enterprise in economic development worldwide. Conducts applied research on the global business environment and analyzes policies related to private enterprise development.

- **Office of Economic Development**
  The OED's mission is to apply the resources at UNC-Chapel Hill to the problems of economic development, primarily within the state of North Carolina. The OED is a pan-university activity and is housed in the Kenan Institute for Private Enterprise.

- **Frank Porter Graham Child Development Institute**
  Pursues research to create new knowledge to enhance the lives of children and their families.

- **Highway Safety Research Center**
  Conducts research on prevention of collisions and injuries for state and local highway safety agencies.

- **Institute for Transportation Research and Education**
  Provides highway and transportation engineering research and technology transfer to local, state, and federal government agencies.

- **Jordan Institute for Families**
  Created in 1996 in the School of Social Work, the Jordan Institute promotes research and development efforts to improve the quality of services delivered to communities across the state and nation. It maintains four basic missions: (1) to facilitate faculty research; (2) to provide opportunities for students to work on research and development projects in the areas of human services; (3) to build professional relationships with research laboratories and centers across the campus; and (4) to serve as a resource to human service departments and programs in North Carolina.

- **School of Government**
  Provides teaching, research, and consultation to North Carolina state and local government officials.

- **Water Resources Research Institute**
  Formulates research programs responsive to state water resource problems. Provides local, state, and federal agencies with research to make better decisions in managing water resources.

For more information, contact Admissions, Department of Public Policy, CB #3435, Chapel Hill, NC 27599-3435; (919) 962-1600; e-mail: acrowe@email.unc.edu; Web: www.unc.edu/depts/pubpol.

Courses for Graduates and Advanced Undergraduates

111 **ENVIRONMENTAL ECONOMICS AND POLITICS** (3). Explores the microeconomic foundations of environmental problems and their solutions, including property rights, externalities, public goods, justice and equity, and future generations and discounting. NOT an introduction to the major modern environmental regulations. Spring, Staff.

120 **ENVIRONMENTAL DECISION MAKING** (ENST 120) (3). Introduces factors shaping environmental decision-making by individuals, businesses, governments, advocacy groups, and international institutions, and chooses public policy incentives and action strategies for influencing them. Spring, Andrews.
160 RACE, POVERTY, PUBLIC POLICY IN THE UNITED STATES (3). Definitions of poverty and their policy implications; the composition and causation of poverty; an assessment of the success and/or failures of public policies directed at the alleviation, reduction, and elimination of poverty. Fall. Schwartz.


175 QUANTITATIVE ANALYSIS FOR PUBLIC POLICY (3). Prerequisite, STAT 31, MATH 2232. Application of statistical techniques, including regression analysis, in public policy program evaluation, research design and data collection and management. Fall, spring. Staff.

179 SCIENCE AND POLICY (3). The problems of using expert knowledge in democratic policy formation. These relate to communication within scientific disciplines, scientists’ values, and the use of scientific information and personnel in decision making. Spring. Staff.

183 POLICY ANALYSIS OF GLOBAL CLIMATE CHANGE (ENST 183) (3). Provides a real-world and relevant case study in which to apply material from multiple other courses, including public policy, economics, environmental science, and international studies. Teaches techniques for building policy models not covered elsewhere. Fall or spring. Webster.

184 ENVIRONMENT AND DEVELOPMENT (INTS 184) (ENST 184) (3). Reviews environmental problems in developing countries. Analyzes proposed solutions, such as legal remedies, market instruments, corporate voluntary approaches, international agreements and development policies. Discusses the link between trade and environment, environmental cases from the World Trade Organization, and sustainable development. Fall. Rabindran.

185 AMERICAN ENVIRONMENTAL POLICY (ENVR 185) (PLAN 185) (ENST 185) (3). Intensive introduction to environmental management and policy, including environmental and health risks, policy processes, instruments, policy analysis, and major elements of American environmental policy. Lectures and case studies. Fall. Andrews.

190 SEMINAR IN DOMESTIC POLICY (POLI 190) (3). Taught as part of the UNC Washington Policy Seminar, the course introduces students to domestic policy making from the federal perspective, using readings and lectures from the Washington policymaking community. Fall. Stegman.

198 SELECTED TOPICS IN PUBLIC POLICY ANALYSIS (3). Special topics in public policy analysis. Fall and spring. Staff.

Courses for Graduates

204 AMERICAN POLITICAL INSTITUTIONS (POLI 204) (3). Theory and practice of political institutions in the American context. Fall, spring. Staff.

205 PUBLIC POLICY ANALYSIS (3). The roles of expertise in policy discourse, the place of values in policy analysis, summarizing preferences, benefits and costs, policy models: policy expertise and democratic political systems. Fall. Pereira.

216 NEW INSTITUTIONALISM AND GOVERNANCE (POLI 216) (3). Examines leading theoretical approaches to study of governance and public policy. Draws on “new institutionalism” scholarship from political science, economics, and sociology to analyze public policy in historical and comparative perspective. Emphasis on applying these theoretical insights to real world issues of governance and public policy. Spring. Gitterman.

221 PUBLIC POLICY AND ADMINISTRATION (POLI 221) (3). Alternative explanation of public policies and policy-making processes; introduction to policy analysis as a way to inform choices among policy options; policy implementation through administrative practices and procedures. Fall or spring. Staff.

226 STATE AND LOCAL PUBLIC FINANCE I (PLAN 226) (3). Prerequisite, PLAN 210 or intermediate microeconomics. Analysis of tools used to finance infrastructure and services essential for economic development, especially by state/local government. Emphasizes revenue side (taxes, fees, charges) including use of bonds. Includes institutional design and case studies. Spring. Lugner.

231 ETHICS AND FORMAL ANALYTIC TECHNIQUES I (3). Ethics considerations are integrated with formal analytical approaches in policy analysis. Topics include criteria for policy choice, user participation, and analysis’ obligations in political situations. First semester: noneconomic techniques. Fall. Webster.


233 ETHICS AND FORMAL ANALYTIC TECHNIQUES II (3). Ethical considerations are integrated with formal analytical approaches in policy advising. Topics include criteria for policy choice, user participation, and analysis’ obligations in political situations. Second semester: mainly cost-benefit analysis. Spring. Rabindran.

253 ENVIRONMENTAL POLICY ANALYSIS (ENVR 253) (3). Prerequisite, ENVR 185/PLCY 185 and instructor permission. Advanced topics and applications in environmental policy analysis. Three lecture hours a week. Fall and spring. Andrews.

258 SEMINAR IN COMMUNITY CAPITALISM (PLAN 258) (3). Limited to graduate students. Reflects convergence of business and community development interests. Seminar explores theory and applications in inner city business and capital markets, development finance, urban policies. Requires major research project. Fall. Stegman.

259 BETWEEN STATE AND MARKET: HOUSING POLICY IN THE TWENTY-FIRST CENTURY (PLAN 259) (3). Prerequisite, PLAN 251 or permission of instructor. Objective is to design the next generation of low-income housing policies that “get the incentives right,” and address the inherent tensions between the “state” and the market. Spring. Stegman.


261 LIVING CASE: NORTH CAROLINA ECONOMIC DEVELOPMENT OPPORTUNITY FUND (MBA 261) (1-3). Prerequisite, PLCY 260 or permission of instructor. Builds on Community Capitalism I. Seminar explores community development technological innovations in financial services industry, implications of asset building strategies for low income communities, and investment opportunities in inner city markets. Spring. Stegman.

288 ADVANCED ECONOMIC ANALYSIS FOR PUBLIC POLICY I (PLAN 288) (3). Economic theory applied to policy issues. Policy issues analyzed require microeconomic theory, including theory of utility and demand, organization and operation of product and factor markets, production theory, regulation, and welfare economics. Fall. Staff.

289 ADVANCED ECONOMIC ANALYSIS FOR PUBLIC POLICY II (PLAN 289) (3). Prerequisite, PLAN 288. Additional public policy issues addressed to study further applications of economic theory. Issues require knowledge of risk and uncertainty, fiscal and monetary theory, and macro income determination. Spring. Staff.

298 PUBLIC POLICY WORKSHOP (1-3). For graduate students in public policy. Analysis to undertake team projects under faculty supervision. Projects vary from year to year. All will relate to public policy and will involve interaction with real clients. The intent is to provide students with an opportunity to apply theory and techniques of policy analysis in actual problem situations. Fall and spring. Staff.
299 INDEPENDENT STUDY (Var.). This course allows graduate students in public policy analysis to receive credit for work on individual projects, designed in conjunction with a faculty supervisor. It is intended for students who are interested in pursuing academic topics not covered in scheduled courses. Fall and spring. Staff.

300 THE USE OF RESEARCH IN THE POLICY PROCESS (3). Systematically examines use and abuse of policy-relevant research in policy process; connects design and execution of policy research with participants in policy process; policy cases are emphasized. Fall. Staff.

301 DESIGN OF POLICY-ORIENTED RESEARCH (PLAN 301) (3). Logic of designing research for the analysis of planning problems and the formulation of public policies. Elements of research design, case study, survey research, quasi-experimental designs, and the social experiment are covered. Goldstein.

302 ADVANCED SEMINAR IN RESEARCH DESIGN: DATA, METHODS, AND EVALUATION (PLAN 302) (3). Prerequisite, PLCY 301. Three main objectives: to deepen students' understanding of important issues and topics in the design of empirical research, to further develop students' ability to critically evaluate research designs and policy-related products, and to aid in developing a research paper, dissertation, or other product. Staff.

303 ADVANCED SEMINAR IN RESEARCH DESIGN: RESEARCH DESIGN PRACTICUM (PLAN 303) (3). Prerequisites, PLAN/PLCY 301 and PLAN/PLCY 302. Applications of skills in research design and methods through a semester-long research project resulting in an article or research report of publishable quality. Fall. Bursby.

310 PUBLIC POLICY SEMINAR (1). Weekly forum for public policy scholars and officials to discuss the relationships between policy research and policy outcomes. Presentations by invited speakers and doctoral students. Fall or spring. Staff.

353 PhD SEMINAR IN ENVIRONMENTAL MANAGEMENT AND POLICY (ENVR 353) (3). Prerequisites, doctoral standing and permission of the instructor. Ph.D. seminar on theory, methods, and current research and literature in environmental management and policy. One to two seminar hours per week. Fall, spring, or summer. Andrews.

355 SEMINAR IN ECONOMIC DEVELOPMENT AND SCIENCE AND TECHNOLOGY POLICY (PLAN 355) (3). Prerequisites, doctoral standing and permission of the instructor. Explores current issues in economic development and science and technology policy through a series of scholarly presentations and student research projects. Spring. Luher.

394 DOCTORAL DISSERTATION (Var.). Staff.

701 SOCIAL WELFARE POLICY (SOWO 701) (3). Prerequisite, doctoral standing or permission of instructor. Review of developments in United States welfare policy and economic, social, and political forces undergirding reform initiatives since the 1960s. Analysis of data on impacts of welfare policies and programs. Othner.

Jodi Magnes (54) Archaeology of the Qumran and the Dead Sea Scrolls; Ancient Synagogues
Thomas A. Tweed (47) Religions in the Americas, Religion and Culture Asian Religions in American Theories of Religion, Catholicism in America, Religion and Transnationalism, Religion and Visual Culture
Rud W. Tyson Jr. (13) Philosophy and Anthropology of Religion, Ethics and Rhetoric

Associate Professors
Yaakov S. Ariel (48) Judaism and Evangelical Christianity in America, Messianic Movements and Missions, Christian-Jewish Relationship
Armin Lange (53) Hebrew Bible, Dead Sea Scrolls
Laurie Maffly-Kipp (29) History of Religion in America, African American Religion

Assistant Professors
Edward Curtis (55) Islamic Studies, African American Religions
Lance Lazar (51) Medieval and Early Modern Religious Studies
Zlatko Plase (49) Religion in Late Antiquity
Randall Syers (52) Critical Approaches to the Study of Religion, Modern Western Religious Thought

Adjunct Professors
Judith Farquhar, Chinese Medicine
Philip Gura, Religion and American Literature
Albert Rabil, Renaissance and Early Modern History, Women's Studies
Tony K. Stewart, Vaishnavism and Islam in South Asia

Adjunct Associate Professor
Margaret Wiener, Indonesian Religions

Adjunct Assistant Professors
Charles Kurzman, Islamic Movements
Barry Saunders, Ritual Studies and Biomedicine

Professors Emeriti
John W. Dixon Jr.
William J. Peck
David Halperin
James H. Sanford
Jack M. Sasson
John H. Schurz
John Van Seters

The graduate program in religious studies at the University of North Carolina at Chapel Hill deals with religion both as a distinctive human experience and as a mode of culture and history. Both orientations define religion as a broad area of human existence, and students are encouraged to explore the tension between these two general approaches. The interests of the department's faculty express the variety of methodological orientations in such study, and faculty members in other departments of the University offer strong interdisciplinary support.

The Graduate School of the University offers two degrees in religious studies, the master of arts and the doctor of philosophy. All students enter at the master's level and, upon successful completion of those requirements, may request to proceed to the PhD.

The MA program introduces students to the general problems and methods in the study of religion. Specific requirements include:
* thirty hours of course credit, including RELI 200 and one "gateway" course;
* two written comprehensive examinations, one in the general field of religion and one in a specialty field;
* a thesis of three to six credits and an oral defense;
* demonstrated competence in French or German.

DEPARTMENT OF RECREATION AND LEISURE STUDIES

See Department of Exercise and Sport Science.

DEPARTMENT OF RELIGIOUS STUDIES

BART D. EHRMAN, Chair

Professors
Carl W. Ernst (43) Islamic Studies, Sufism, South Asia
Peter L. Kaufman (16) History of Christian Traditions, Patristic, Medieval, and Reformation Studies
The doctoral program is primarily intended to prepare students for a
career in university and college teaching and research in religious studies. It
currently offers specialization in American religions, ancient Mediterranean
religions, history of religions, medieval and early modern studies, and reli-
gion and culture.
PhD students should expect to take at least eighteen hours of course work
beyond the MA level. Other requirements in the doctoral program include:
• completion of requirements in one of the specialty fields noted above;
• written and oral qualifying examinations specific to the field of
specialization;
• demonstrated reading competence in French and German;
• a dissertation and oral defense.
For further information, write to the Director of Graduate Studies,
Department of Religious Studies, CB# 3225, 101 Saunders Hall, The
University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-
3225; e-mail: religion@unc.edu. Also see the department Web page at
www.unc.edu/depts/rel_stud.

Courses for Graduates and Advanced Undergraduates

106 MEIIEVAL CHURCH (HIST 106) (3). The nature and workings of the
Western church between roughly 600 and 1300. Emphasis on the church "from
within"; organization, missionary strategies, liturgy, monasticism, popular religion.
Alternate years. Pfaff.

107 TOPICS IN PHILOSOPHICAL PROBLEMS IN RELIGION (3).
Prerequisite, senior or graduate standing, or permission of the instructor. The
problem of intention, or knowledge of other minds, and the study of alien cultures are
central issues. Tyson, Syers.

110 JOSEPH- KING OF DREAMS: JOSEPH IN BIBLE AND TRADITION
(3). A study of the Joseph story as preserved in Genesis 37-50 and interpretative
history in Early Judaism. Lange.

111 ANCIENT SYNAGOGUES (CLAR 110) (3). Prerequisite, RELI 110 or con-
sent of instructor. Ancient synagogues in Palestine and the Diaspora from
the Second Temple period to the seventh century A.D. Magness.

112 BIBLICAL COPTIC AND EARLY EGYPTIAN MONASTICISM (3).
Prerequisite, permission of instructor. Coptic, the last stage of Egyptian, a living
language in the Roman and Byzantine Period. Thorough grounding in grammar of
the Sahidic dialect as a basis for reading biblical, monastic, and gnostic texts.
Faculty.

113 BIBLICAL HEBREW (3). Staff.

114 BIBLICAL HEBREW (3). Prerequisite, RELI 113. Staff.

115 INTERMEDIATE CLASSICAL HEBREW (3). Prerequisite, RELI 114 or
permission of the instructor. Reading in biblical, Mishnaic, and medieval poetry
and prose. Staff.

116 INTERMEDIATE CLASSICAL HEBREW (3). Prerequisite, RELI 115 or
permission of the instructor. Continuation of RELI 115. Staff.

119 GREEK NEW TESTAMENT (GREK 158) (3). Prerequisite, GREK 21 or
equivalent. (On demand.) Stader.

120 RELIGION, FUNDAMENTALISM, AND NATIONALISM (PWAD 120)
(3). An exploration of explosive combinations of religion and politics in the Iranian
revolution, the Palestinian movement, Hindu nationalism in India, and Christian
fundamentalism in America. Ernst.

121 MYTHS AND EPICS OF THE ANCIENT NEAR EAST (FOLK 141) (3).
Prerequisite, permission of the instructor. An examination of Babylonian,
Assyrian, Egyptian, Hitite, and Sumerian texts from the pre-biblical era, focusing
on representative myths, epics, sagas, songs, proverbs, prophecies, and hymns.
(Alternate years.) Staff.

122 EXPLORING THE DEAD SEA SCROLLS (3). A comprehensive intro-
duction to the Dead Sea Scrolls and the different Jewish groups connected with them.
Lange.

123 THE MESSIAH AND THE APOCALYPSE (3). Ideas concerning the
Messiah and the end of the world held by Jews, Christians, and Muslims. Emphasis
on the beginning of the Christian era. (Alternate years.) Staff.

126 WHAT ARE HOLY SCRIPTURES? THE FORMATION OF THE
HEBREW CANON (3). The course traces the canonical process which led to the
Hebrew Bible and the Greek, Old Testament. Lange.

127 PROBLEMS IN EARLY CHRISTIAN LITERATURE AND HISTORY (3).
Prerequisite, one of the following: RELI 22, 58, or 59, or permission of the instruc-
tor. Farman.

129 DEATH AND AFTERLIFE IN THE ANCIENT WORLD (3). Prerequisites,
RELI 21, 22, 24, 27, 61 or permission of instructor. Examination of practices and
discourses pertaining to death and the afterlife in ancient civilizations of the Near
East, Greece, and Rome. Plese.

130 RELIGION, NATURE, AND ENVIRONMENT (ANTH 138) (3).
Concepts of nature within religions and a variety of worldwide spiritual traditions.
Emphasis on sacred space, place, and pilgrimage as a vital intersection of religion
and nature.

132 TOPICS IN MEDIEVAL PHILOSOPHY (PHIL 152) (3). Consult
Philosophy Department. Galligan.

134 THE REFORMATION (HIST 114) (3). Examines a movement of religious
reform that shattered Latin Christendom and contributed many of the conditions of

136 STUDIES IN CHRISTIAN THEOLOGIES AND THEOLOGIANS (3).
Prerequisite, permission of the instructor. An investigation of one writer or school
in the history of Christian theology as an example of typical methods, positions,
and problems within that tradition. Kaufman, Lazar.

137 THE ART OF DEVOTION IN MEDIEVAL AND EARLY MODERN
EUROPE (3). Prerequisite, one of the following: RELI 27, 30, or permission of
instructor. Examines creative expression at religious services from 1000 to 1700.
Poetry, drama, art, architecture, and music will be studied to understand the reli-
gious culture of this rich period. Lazar.

138 MODERN WESTERN RELIGIOUS THOUGHT (3). Prerequisite, one of
the following: RELI 27, 29, 30, 32, 35, or PHIL 32. Representative themes and
approaches in the work of modern Western religious thinkers. Kaufman, Syers.

140 STUDIES IN AMERICAN RELIGION (3). Prerequisite, permission of the
instructor. A consideration of varying topics from the intellectual, literary, social,
and cultural dimensions of American religion. Ariel, Maflly-Kipp, Tweed.

141 REL ELEM/AM LIT TRADITIONS (3). Staff.

142 RELIGION AND ANTHROPOLOGY (ANTH 142) (FOLK 142) (3).
Prerequisite, junior/senior or graduate standing. Religion, studied anthropologically,
as a cultural, social, psychological phenomenon in the works of classical and con-
temporary social thought. Tyson and Peacock.

144 MEDIEVAL SLAVIC CULTURE (SLAV 144) (3). Survey of medieval Slavic
culture, beginning with Christianization in the ninth and tenth centuries. Themes
include Byzantine missions, the replacement of paganism with Christianity, the oral
tradition, and Slavic literary relations. Readings in English for non-Slavic concen-
trators. Putney.

146 RELIGION, MAGIC, AND SCIENCE (3). Critical exploration of the ways
in which religion, magic, and science have been constructed as distinct domains of
knowledge in the West since the late nineteenth century. Saunders, Syers.
147 RELIGION IN MODERN INDIA (3). Staff.

148 HISTORY OF RELIGION IN AMERICA TO 1865 (3). An examination of primary sources in the history of American religion from the precolonial era to the Civil War. Ariel, Maflly-Kipp, Tweed.

149 HISTORY OF RELIGION IN AMERICA SINCE 1865 (3). An examination of primary sources in the history of American religion since the Civil War. Ariel, Maflly-Kipp, Tweed.

152 MORMONISM AND THE AMERICAN EXPERIENCE (3). Prerequisite, RELI 29 or permission of instructor. Exploration of the history, beliefs, and practices of Mormons. Will include visits to Latter-day Saints services, guest speakers, and discussion of race and gender in the contemporary church. Maflly-Kipp.

153 EVANGELICALISM IN CONTEMPORARY AMERICA (3). Prerequisite, junior or senior standing. Examination of Evangelicalism and its role in American society, politics, and culture. Exploration of its various subdivisions and its relation to such movements as Fundamentalism, Pentecostalism, Revivalism and Premillenialism. Ariel.

154 GENDER AND SEX IN JUDAISM (IWST 154) (3). This seminar examines the developments in gender roles and in sexuality in contemporary Judaism. Ariel.

155 THE AMERICAN ENCOUNTER WITH ASIAN RELIGIONS (3). A study of intercultural interaction and interreligious encounter focusing on Asian religion in America, 1784 to the present. Tweed.

156 THEORIES OF RELIGION, ETHNICITY, AND RACE (3). Prerequisite, RELI 29 or permission. A methodological inquiry into ethnicity, race, and religion as constituents of personal and communal identity. Emphasis on the implications of these categories for a religiously pluralistic society. Maflly-Kipp.

160 TOPICS IN COMPARATIVE RELIGION (3). Cross-cultural investigation of specific problems or issues in the general history of religions (e.g., pilgrimage, religious biography, "new" religions). (On demand.)

161 SELECTED TOPICS IN THE STUDY OF ASIAN RELIGIONS (3). Prerequisite, permission of the instructor. A close examination of a selected topic in Asian religions.

164 JUDAISM/RABBIS (3). Staff.

169 MEDIEVAL RELIGIOUS TEXTS (3). Prerequisites, permission of the instructor and reading knowledge of Latin. Readings in two or more major texts in Latin which permit close study of several issues in the development of Christian life and thought during the Middle Ages. Kaufman.

171 SUFISM (3). Prerequisite, permission of the instructor. A survey of Islamic mysticism, its sources in the Qur'an and the Prophet Muhammad, and its literary, cultural, and social development in Arab, Persian, Indic, and Turkish regions. Ernst.

172 ISLAM IN SOUTH ASIA (3). A survey of the formation of Islamic traditions in the subcontinent from the eighth century to the present, with emphasis on religion and politics, the role of Sufism, types of popular religion, and questions of Islamic identity. Ernst.

173 RELIGION AND CULTURE IN IRAN (ASIA 173) (3). Iran from the rise of the Safavid empire to the Islamic Republic. Topics include Shi'ism, politics, intellectual and sectarian movements, encounters with colonialism, art and architecture, music, literature. Ernst.

174 CHINESE WORLD VIEWS (ANTH 174) (3). An approach to Chinese history, literature, science, and society through an exploration of a few pervasive cultural themes. Chinese sources in translation and Western anthropological and philosophical sources are used. Fatqhban.

177 CHINESE RELIGIOUS AND PHILOSOPHICAL TEXTS: II (ASIA 77) (3). Permission of the instructor. An in-depth reading in a single text or tradition of texts.

180 INTRODUCTION TO ISLAMIC CIVILIZATION (3). A broad, comprehensive, and interdisciplinary introduction to Islamic civilization from the time of the Prophet Muhammad to 1500. Ernst, Curtis.

181 LATER ISLAMIC CIVILIZATION AND MODERN MUSLIM CULTURES (3). A broad interdisciplinary survey of Islamic societies and Muslim cultures from 1500 until the present. Ernst, Curtis.

182 GENDER THEORY AND RELIGION (WMST 182) (3). An examination of contemporary gender theory, with particular focus on its application to the study of religion. Syers.

183 ASIAN RELIGIONS (ASIA 39) (3). An introduction to major religions of South Asia and East Asia, such as Hinduism, Buddhism, Confucianism, Taoism, and Shintoism. Staff.

186 NINETEENTH-CENTURY CRITIQUES OF RELIGION (3). Prerequisite, permission of the instructor. An exploration of influential nineteenth-century critiques of religion, including texts by such thinkers as Feuerbach, Marx, Kierkegaard, Nietzsche, Stanton, Douglass, and Freud. Syers.

187 RITUALS AND RHETORICS OF RELIGION (3). Prerequisite, permission of the instructor. Examination of ritual, allegory, and symbol as modes of religious expression in cultural and literary contexts. Tyson.

188 RELIGION IN AMERICAN LAW (3). Prerequisite, junior, senior, or graduate standing. An exploration of the position of religion in American legal and social theory, with particular focus on jurisprudence under the First Amendment. Syers.

190 RELIGION AND SOCIETY (SOCI 121) (3). Prerequisite, SOCI 10 or permission of the instructor. Sociological analysis of group beliefs and practices — both traditionally religious and secular — through which fundamental life experiences are given coherence and meaning. Powell, Reed.

191 RELIGIOUS ETHICS AND ISSUES IN CONTEMPORARY MEDICINE (3). Prerequisite, senior or graduate standing. Examination of religious-ethical dimensions of such issues as the dying patient, organ transplants, abortion, prolongation of life, and experimentation on human beings, drawing on theory from the traditional Western religions and the social sciences. Staff.

194 WOMEN MYSTICS (WMST 194) (3). An investigation of the forms, characteristics, and variety of the mystical experiences of women. Lazar.

195 MYTH, HISTORY, AND RELIGION (3). Staff.

196 UNDERGRADUATE RESEARCH IN RELIGIOUS STUDIES (3). Staff.

197 PHILOSOPHICAL PROBLEMS/STUDY OF RELIGION AND PHILOSOPHY (3). Staff.

199 INDEPENDENT STUDY (3). Prerequisites, advanced undergraduate or graduate standing and permission of the instructor. Subject matter varies with instructor and topic but always focuses on a particular problem or issue. Staff.

200 PRO-SEMINAR IN RELIGIOUS STUDIES (3). Prerequisite, graduate standing in religious studies or permission of the instructor. A basic problems and methods course required of all graduate students in Religious studies. Staff.

202 APPROACHES TO THE STUDY OF AMERICAN RELIGIONS (3). Prerequisite, graduate standing in Religious studies or permission of the instructor. Consideration of methods, theories, and interpretations that have been influential in the study of American religion. Tweed.

203 THEMES IN AFRICAN AMERICAN RELIGIOUS HISTORY (3). Prerequisite, graduate standing in Religious studies or permission of the instructor. A historical and thematic survey of the religions of African Americans from the precolonial era to the present. Maflly-Kipp.

204 RELIGION AND LITERATURE IN AMERICA (3). Prerequisite, graduate standing in Religious studies or permission of the instructor. A study of the religious tradition in American literature from the Puritan period to the present. Staff.
205 CURRENT TRENDS IN AMERICAN JUDAISM (3). The course aims at examining the current developments in American Judaism: cultural, spiritual, literal, as well as social and institutional. Ariel.

206 ROMAN CATHOLICISM IN AMERICA (3). Tweed.

207 APPROACHES TO MEDIEVAL AND EARLY MODERN STUDIES (3). Prerequisite, graduate standing in religious studies or approval of instructor. An introduction to the problems and methods in the study of medieval and early modern religion in the West. Kaufman, Lazar.

220 ADVANCED AKKADIAN (3). Prerequisites, RELI 117-118. Readings in literary, epistolary, and juridical texts. Staff.

222 UGARITIC (3). Prerequisites, RELI 115-116. Readings in the alphabetic texts of Ras Shamra and a study of the elements of Ugaritic grammar. Staff.

223 READINGS IN EARLY JEWISH AND CHRISTIAN APOCALYPTIC (3). Prerequisite, permission of the instructor. Readings from apocalyptic texts in the original languages. Staff.

224 ARAMAIC/RABBINIC HEBREW (3). Prerequisites, RELI 115-116 or permission of the instructor. Reading texts in rabbinic Hebrew; or in Biblical and/or Talmudic Aramaic, with appropriate grammatical instruction. Staff.

226 READINGS IN GRECO-ROMAN RELIGION (3). Prerequisite, permission of the instructor. Opportunity for reading of ancient documents representing the most important religious trends of the Greco-Roman world. Ehrman.

227 EARLY CHRISTIAN HISTORY AND LITERATURE (3). Prerequisite, permission of the instructor. A critical study of the history and literature of early Christianity from Paul to Irenaeus with texts to be read in the original languages. Ehrman.

229 ANCIENT RHETORIC AND EARLY CHRISTIANITY (3). Prerequisite, permission of the instructor. Survey of the development of rhetorical theory and practice through the Hellenistic and Roman Period. Explores the connection between rhetorical tradition and early Christian literature. Reze.

231 DIASPORA JUDAISM (CLAR 231) (3). Prerequisite, graduate standing or professor's consent. Seminar examines the evidence for the ancient Jewish communities of Egypt, Rome, Asia Minor, and Mesopotamia. Magness.

234 SHRINES AND PILGRIMAGES (3). (SS) An introduction to the study of shrines and pilgrimage in multiple cultural contexts. Tweed.

240 CRITICAL APPROACHES TO RELIGION AND CULTURE (3). Prerequisite, graduate standing in Religious Studies, or permission of the instructor. Exploration of various forms of contemporary biblical study (including gender theory, critical race theory, and post-colonial studies) in order to assess the value of these critical tools for the study of religion. Syers.

244 CRITICAL AND COMPARATIVE LINEAGES IN RELIGION AND CULTURE (3). Exploration of intellectual lineages shaping the contemporary study of religion and culture. Tyson, Saunders, Syers.

245 STUDIES IN THE RHETORIC OF IMAGES (3). Prerequisite, permission of the instructor. Selected readings on image production, exhibition, and interpretation, with consideration of different ritual and cultic settings. Saunders.

246 CRITICAL WORKS IN RELIGION AND LITERATURE (3). Prerequisite, permission of the instructor. Textual analysis of several theoretical and literary works dealing with selected problems in religion and literature. Staff.

247 THEORIES OF RELIGION AND CULTURE (3). Prerequisite, permission of the instructor. Studies in early modern, enlightenment and romantic political, philosophical, and literary texts. Saunders, Syers.

248 READINGS IN AMERICAN RELIGION TO 1865 (3). An examination of primary sources in the history of American religion from the precolonial era to the Civil War. Ariel, Malfly-Kipp, Tweed.

249 READINGS IN AMERICAN RELIGION SINCE 1865 (3). An examination of primary sources in the history of American religion since the Civil War. Ariel, Malfly-Kipp, Tweed.


263 EARLY JEWISH HISTORY AND LITERATURE (3). Prerequisite, permission of the instructor. An examination of the various schools of pre-rabbinic Judaism: Hellenistic Judaism, apocalyptic Judaism, and the Judaism of the Dead Sea Scrolls. Staff.

264 PROBLEMS IN RABBINIC HISTORIOGRAPHY (3). Prerequisite, RELI 263 or permission of the instructor. Examination of the methodological problems of using rabbinic materials as sources for the history of Judaism in the period after 70 CE. Staff.

265 CHRISTIAN HISTORICAL LITERATURE

266 READINGS IN RELIGIONS OF THE ANCIENT NEAR EAST (3). Focusing on the Mediterranean religions before Alexander, readings of original documents in translation, illustrating theology and cults, as well as major history of religions interpretations. Staff.

268 THE APOSTOLIC FATHERS (3). Prerequisites, Greek and permission of the instructor. A study of selected works of the Apostolic Fathers, including Barnabas, Ignatius, and Polycarp. Ehrman.

269 MEDIAEV RELIGIOUS TEXTS (3). Prerequisite, permission of the instructor. Selected texts which illuminate significant aspects of medieval religious culture are read in the original languages. Kaufman.

270 TEXTS OF THE CATHOLIC AND PROTESTANT REFORMATIONS (3). Prerequisite, permission of the instructor. Selected texts which illuminate significant aspects of the Catholic and Protestant Reformations are read in the original languages. Kaufman, Lazar.

275 TEXTUAL CRITICISM OF THE GREEK BIBLE (3). Prerequisites, Greek and permission of the instructor. Reconstruction and application of text-critical principles. Ehrman.

277 METHOD ISLAMIC STUDIES (3). Principal topics will include: the history of Islamic studies in relation to Orientalism, area studies, and religious studies; problems of anti-Islamic bias and stereotypes; use of textbooks, primary sources, novels, films, and the Internet; teaching the Qur'an; and being a Muslim in Europe and America; contemporary refection on "classical" sources; modern Muslim thinkers; and other related subjects. Reze.

288 OBSERVATION AND INTERPRETATION OF RELIGIOUS ACTION (3). Prerequisite, permission of the instructor. Exercises in learning to read primary modes of public action in religious traditions: sermons, testimonies, rituals, prayers, etc. Emphasis is on understanding and interpreting textual sources. Reze.

299 TOPICS IN THE STUDY OF RELIGION (3). Prerequisite, graduate standing in religious studies or permission of the instructor. Topics vary. Staff.

300 SEMINAR IN COMPARATIVE AND HISTORICAL STUDIES (3). Topics vary; consult department. Kaufman.

302 READINGS IN TALMUD (3). Prerequisite, permission of the instructor. An introduction to the study of the Babylonian Talmud in the original Hebrew and Aramaic, with the traditional commentaries. The emphasis is on understanding Talmudic logic. Staff.

303 SEMINAR IN AMERICAN RELIGION (3). Topics vary. May be repeated for credit. Malfly-Kipp, Tweed, Ariel.
304 RELIGION AND SOCIAL ISSUES IN AMERICA (3). Historical analysis of the relationship between religious developments and social issues in America. Topics may include economics, politics, social reform. Maffly-Kipp.

305 SEMINAR IN BIBLICAL STUDIES (3). Topics vary; consult department. Ehman.

306 HELLENISTIC RELIGIOUS TEXTS IN GREEK (3). Studies in Greek texts drawn from early Christianity, Judaism, and other religions of the Greco-Roman World. Ehman.

307 THE GNOSTIC SCRIPTURES (3). Prerequisite, REL 112 or permission of instructor. Close reading and interpretation of ancient gnostic texts found near Na Hermadi in Egypt. Plese.

308 METHODS AND TOPICS IN THE STUDY OF WESTERN RELIGIOUS TRADITIONS (3). Prerequisite, permission of the instructor. Exploration of one enduring issue in the history of the Western Christian traditions. The instructor selects several case studies that illustrate both the topic and the developments within traditions. Lazar, staff.

309 POST-COLONIAL APPROACHES TO THE STUDY OF RELIGION (3). Prerequisite, permission of the instructor. An examination of major themes in contemporary post-colonial thought, and the application of this work to the study of religion. Syers.

310 SEMINAR IN RELIGION AND CULTURE (3). Prerequisite, permission of the instructor. Topics vary; consult department. Tyson, Masuzawa, Saunders, Syers.

311 SEMINAR IN RELIGION AND LITERATURE (3). Prerequisite, permission of the instructor. Topics vary. Saunders.

312 RELIGION AND CULTURAL CONTACT IN AMERICA (3). Examination of religion in America through instances of intercultural contact. Topics vary. Maffly-Kipp.

314 THE CHRISTIAN JEWISH ENCOUNTER IN AMERICA (3). Course examines the Christian-Jewish encounter in America from the seventeenth century to the present. Analyzes both theological and social interactions. Azriel.

315 SPACE, PLACE, AND RELIGION (3). Interdisciplinary graduate seminar focuses on religion, space, and place in the United States. Tweed.

321 ETHICS AND AESTHETICS IN PHILOSOPHY AND THEOLOGY

325 READING AND RESEARCH (3). Prerequisite, permission of the instructor. Staff.

363 CHRISTIAN TRADITIONS: REFORMATIONS OF LATE MEMS.

370 SPECIAL TOPICS

383 BUD TRADITIONS OF INDIA AND TIBET (ADVANCED)

384 BUD TRADITIONS OF EAST ASIA (ADVANCED)

393 MASTER'S THESIS (3 or more). Staff.

394 DOCTORAL DISSERTATION (variable). Staff.

DEPARTMENT OF ROMANCE LANGUAGES AND LITERATURES

ERIKA LINDEMANN, Interim Chair

Professors
French
Catherine A. Malen (11) Romance Linguistics
James S. Noblit, Applied Linguistics and Language Learning

Italian
Dino Cervigni (44) Medieval and Renaissance Italian Literature

Portuguese
Fred M. Clark (29) Portuguese Language and Brazilian Literature
Monica P. Rector (43) Portuguese Language and Literature

Spanish
Pablo Gil Casado (23) Contemporary Spanish Literature, Theory of the Novel
Frank A. Domínguez (25) Medieval and Golden Age Literature, Ideology and Literature, Computer Applications in the Humanities
Audrey Heining-Byron, Foreign Language Pedagogy, Curriculum Instruction
Larry D. King (30) Spanish and Romance Linguistics, Semantics and Pragmatics

Associate Professors
French
Martine Antle (45) Twentieth-Century French Literature
Dominique Fisher (46) Nineteenth-Century French Literature
Edward D. Montgomery (9) Romance Philology

Italian
Ennio Rao (15) Italian Renaissance

Spanish
Lucia Binotti (47) Medieval, Renaissance, Golden Age Philology and Linguistic Thought
Marsha S. Collins (42) Golden Age Literature
Rosa Perelman (37) Colonial Spanish American Literature, Contemporary Spanish American Narrative
José Manuel Polo de Bernabé (34) Nineteenth- and Twentieth-Century Spanish Drama and Poetry, Modern Critical Theory and Film
Alicia Rivero (38) Contemporary Spanish American Literature, Modern Critical Theory, Gender Issues, Literature and Science, Intellectual History

Assistant Professors
Spanish
Stuart A. Day (57) Contemporary Spanish American Literature, Mexican Political Theater
Juan Carlos Gonzalez-Espitia (62) Nineteenth-Century Spanish American Literature, Decadentism and the Ideas of Nation Building that Are Not Constructive

Professors Emeriti
Cesáreo Bandera
Angel L. Cilveti
Julio Cortés
Vives de la Queiré
Alva V. Ebensole
I. R. Stirling Haig
Antonio Illiano
Anthony G. Lo Ré
G. Mallory Masters
Maria A. Salgado
Carol Lynn Sherman
Frederick Wright Vogler

Requirements for Advanced Degrees
The degree of master of arts is offered with concentration in French, Italian, Portuguese (Luso-Brazilian), or Hispanic literature. The program for the MA degree is open to students holding the bachelor of arts degree or the equivalent, and whose major field of undergraduate study was normally a Romance language and literature. Students are expected to have proficiency in the Romance language and in English upon admission to the program.
The degree of doctor of philosophy is offered with concentration in Romance languages and literatures; Romance philology; French, Italian, Portuguese (Luso-Brazilian), Spanish American, or Spanish languages and literatures.
Teaching experience is an essential part of professional training. Therefore, teaching assistance or lecture instruction equivalent to at least three contact hours a week for two semesters, or until teaching competence is acquired, is required of all doctoral candidates.

Research Facilities
The Davis Library’s Spanish, French, Portuguese, and Italian collections rank in the top twenty in the nation. Romance philology is supported by the medieval and Renaissance collections in the traditional languages and by significant holdings in Provençal, Catalan, Galician, Romansch, and Rumanian. The Spanish and Spanish American collections are particularly strong in medieval, Golden Age/Colonial, nineteenth-, and twentieth-century holdings. The French collection has similar strengths in the seventeenth, eighteenth, and nineteenth centuries and is enriched by the Charles Nordier and René Char materials. The Italian collection exhibits strength in the nineteenth century and the Portuguese collection in twentieth-century Brazilian. These strengths are enhanced by extensive holdings in reference, specialized journals, and rare books. Among the latter are a notable gathering of twentieth-century first editions of French writers, a distinguished Spanish drama collection of over 25,000 plays (many of them pre-1830 sueltas), and the Flato Collection of Latin American Cronistas, consisting of early imprints of the discovery and conquest of the New World. A more complete description of the collections is available in the “Resources” section of the department’s home page at www.unc.edu/depts/roml.

FRENCH

Courses for Graduates and Advanced Undergraduates

101X, 102X Elementary French for Graduate Students (3).
These courses prepare the student to meet the reading knowledge requirement for graduate degrees. Passing the examination at the end of 102X certifies that this requirement has been satisfied. Three hours a week. Fall and spring. Staff.


126 History of the French Language (LING 164) (3). Prerequisite, FREN 50 or instructor’s permission. Beginning with the Latin foundation, the phonology, morphology and syntax of French are traced from the ninth century to the present through lectures, readings, discussions and written analysis. Spring. (Alternate years.) Maley.

145 French Phonetics (LING 165) (3). Prerequisite, FREN 50 or equivalent, or permission of the instructor. The study of the sound system in modern standard French. Lecture, discussion, laboratory practice in practical phonetics according to individual needs. Spring, Maley.

146 Structure of French (LING 166) (3). Prerequisite, FREN 50 or equivalent, or permission of the instructor. Introduction to phonology, morphology, and syntax of modern standard French and to theories of modern grammar. Attention is also given to the application of linguistic theory to the teaching of French. Fall, Maley.

Courses for Graduates

211 French Novelists of the Twentieth Century (3). Evolution of the novel in France up to the nineties. Spring. Anle.

212 French Poets of the Twentieth Century (3). A study of the poetry of Claudel, Cubist poetry, the major Surrealists, Ponge, Michaux. Spring. (Alternate years.) Staff.

213 Masters of Twentieth-Century Literature (3). Studies of a single author, a literary or an aesthetic movement from the avant-garde to Postmodernism. Fall. Anle.

214 French Drama of the Twentieth Century (3). Semiotic readings in French and Francophone theater at the crossroads of cultures from the Avant-garde to Postmodernism.


216 Readings in Cultural Studies (3). An examination of national and transnational identity within European culture and recent economic and ethnic changes in Western Europe and France. Fall. (Alternate years.) Anle. Fisher.

221 Old French (3). An introductory course designed to enable students to read medieval texts with rapidity and accuracy. Phonology, morphology, semantics, and syntax. Fall. Montgomery.

222 French Studies of the Eleventh through the Thirteenth Centuries (3). Readings in a variety of medieval texts in light of contemporary literary theory. Spring. Montgomery.


233 Theatricality in the Middle Ages (3). Theatrical approaches and techniques in medieval texts. Montgomery.

234 The French Classical Theatre (3). Readings in sixteenth- and seventeenth-century French theater. Cerfillon père, and Voltaire. Selection of texts will be announced by instructor. Fall. Staff.

235 Developments in Postclassical French Drama (3). A study of the genre from Marivaux to the end of the nineteenth century. Fall. (Alternate years.) Staff.


248 French Literature of the Fourteenth and Fifteenth Centuries (3). A study of literary trends with emphasis on the rise of the prose nouvelle and lyric poetry from Machaut through Villon. Spring. (Alternate years.) Montgomery.

261 Studies in French Renaissance (3). Interdisciplinary seminar on a cultural topic or a theme through readings in literary and non-literary texts. Staff.

265 Eros and Gender in Rabelais, Marot, and Marguerite de Navarre (3). A psychological-cultural reading of texts by Rabelais, Marot, and Marguerite de Navarre that contain androgynous symbolism. Fall. Staff.


271 FRENCH PROSE FICTION OF THE SEVENTEENTH CENTURY (3). A study of the development of prose fiction principally through the works of D’Urfé, Cyrano de Bergerac, Sorel, Scarron, Furetière, Perrault, and Mme de Lafayette. Fall. (Alternate years.) Staff.

272 FRENCH POETRY OF THE SEVENTEENTH CENTURY (3). French poetry from Desportes through Racan emphasizing poésie précieuse et galante, religieuse, pastorale, officielle, libertine, and satirique. In addition to Desportes and Racan, works of Chassaigne, Sponde, Le Ceppe, Malherbe, Saint-Aman, Théophile de Viau, Maynard, and Régnier are considered. Spring. (Alternate years.) Staff.

274 THE MORALISTS (3). A study of the works of Pascal, La Rochefoucauld, Bossuet, La Bruyère, and La Fontaine. Spring. (Alternate years.) Staff.

281 MASTERS OF EIGHTEENTH-CENTURY PROSE FICTION (3). An array of novelists and conteurs such as Prévost, Lesage, Marmontel, Laclos, Crébillon fils, Montesquieu, Diderot, Rousseau, and others. Spring. (Alternate years.) Staff.

283 MASTERS OF EIGHTEENTH-CENTURY LITERATURE (3). Intensive study of a major eighteenth-century writer. Fall. Staff.

284 THE "PHILOSOPHES" (3). Intellectual currents (religious, scientific, epistemological) and morals as reflected in such writers as Bayle, la Mettrie, Condillac, Helvétius, d’Holbach, the Encyclopédistes, and others. (On demand.) Staff.


293 MASTERS OF NINETEENTH-CENTURY FRENCH LITERATURE (3). Intensive study of a single major author of the Romantic or Post-Romantic period. The subject changes from year to year among writers in the different literary genres. Fall. (Alternate years.) Fisher.


295 THE FRENCH REALISTIC AND NATURALISTIC NOVEL (3). A study of major Realistic and Naturalistic novelists (Flaubert, the Goncourt, Daudet, Zola, Maupassant, and Huysmans). Fall. (Alternate years.) Staff.


330 SEMINAR (3). Staff.

331 THE HISTORY OF FRENCH LITERATURE BEFORE 1300 (3). (On demand.) Montgomery.

340 SPECIAL READINGS (Var.). Members of the graduate faculty. (Doctoral students only.)

393 MASTER'S THESIS (3). Members of the graduate faculty.

394 DOCTORAL DISSERTATION (3). Research in a special field under the direction of a member of the graduate faculty.

ITALIAN

Courses for Graduates and Advanced Undergraduates

101X, 102X ELEMENTARY ITALIAN FOR GRADUATE STUDENTS (3). These courses prepare the student to meet the reading knowledge requirement for graduate degrees. Passing the examination at the end of 102X certifies that this requirement has been satisfied. (On demand.) Staff.

103 ADVANCED COMPOSITION FOR GRADUATE STUDENTS (3). Review of advanced grammar. Composition on a variety of topics designed to enhance writing proficiency in Italian. Training in the use of stylistic devices. Fall. (Alternate years.) Cervigni, Rao.

111 SURVEY OF ITALIAN LITERATURE I (to 1600) (3). Prerequisite, permission of the instructor for undergraduates; none for graduate students. Survey conducted as comprehensively as feasible on the basis of available anthologies in the original language, with particular attention to authors and texts included in the current departmental reading lists. (On demand.) Staff.

112 SURVEY OF ITALIAN LITERATURE II (1600 to present) (3). Prerequisite, permission of the instructor for undergraduates; none for graduate students. See description under ITAL. 111. (On demand.) Staff.

126 HISTORY OF THE ITALIAN LANGUAGE (3). Prerequisites, ITAL 15 or 21 and consent of instructor. The evolution of the Italian language as documented in literary texts from the origins to the present. Spring. (Alternate years.) Rao.

134 PETRARCH AND LYRIC TRADITION (3). A reading of Petrarch's Canzone within the context of previous lyric traditions and Petrarchism in Europe. Class discussion in English; readings in Italian for majors and in translation for non-majors. (Every third year.) Cervigni.

135 BOCCACCIO AND EUROPEAN NARRATIVE (3). Boccaccio's Decameron within the context of previous narrative traditions and subsequent development of narrative in Europe. Class discussions in English; readings in Italian for majors and in translation for non-majors. (Every third year.) Cervigni.

141 ITALIAN LITERATURE OF THE RENAISSANCE I (3). Prerequisite, ITAL 15 or 21 or equivalent. A study of the major figures of Italian Humanism, Latin and vernacular, from Salicati to Poliziano. Fall. (Alternate years.) Rao.

151 ITALIAN LITERATURE OF THE RENAISSANCE II: THE CINQUECENTO (3). Prerequisite, ITAL 15 or 21 or equivalent. After a brief description of the literary situation in the Cinquecento, the following three authors are studied in detail, with close study of the three works indicated: Machiavelli, Il Principe and at least one book of I Discorsi; Ariosto, Orlando Furioso; Tasso, Gerusalemme Liberata. Spring. (Alternate years.) Rao.

171 THE SEVENTEENTH AND EIGHTEENTH CENTURIES (3). Prerequisite, ITAL 15 or 21. The age of Baroque, Campanella, the new genres, Tassoni. The literature of Arcadia, the Enlightenment, Goldoni, Parini, and Alfieri. Fall. (Alternate years.) Staff.

181 ITALIAN ROMANTICISM (3). Prerequisite, ITAL 15 or 21. Perromanticism; Alfieri; the lyrics and novels of Foscolo, Leopardi, Manzoni; the Romantic drama from Pinzon to Niccolini. Spring. (Every third year.) Staff.

182 ITALIAN LITERATURE IN THE SECOND HALF OF THE NINETEENTH CENTURY (3). Prerequisite, ITAL 51, 21, or equivalent. The major literary forms in the second half of the century with particular regard to Verismo, Verga, Canducci, Pascoli, Saporiti, and women writers. Spring. (Every third year.) Staff.

194 MODERN ITALIAN POETRY (3). Prerequisite, ITAL 15 or 21. The major poets and trends of the late nineteenth and twentieth centuries: Decadenti, Crepuscolari, Futuristi, Ermetici, and women poets. Fall. (On demand.) Staff.
195 MODERN ITALIAN FICTION (3). Prerequisite, ITAL 15 or 21. Svevo, Moravia, Calvino, and women writers. Fall. (On demand.) Staff.

196 MODERN ITALIAN DRAMA (3). Prerequisite, ITAL 15 or 21. Grotteschi, Pirandello, Italian drama after World War II, Eduardo de Filippo. Spring. (Every third year.) Staff.

Courses for Graduates

206 PROSEMINAR (3). Prerequisite, graduate standing. An introduction to modern Italian criticism and to current methods of research and scholarship. Bibliographic survey of basic tools and secondary literature. Guidance to preparation of papers, theses, and dissertations. (On demand.) Staff.

221 OLD ITALIAN (3). An introduction to the historical development of Old Italian, Sardinian, and Dalmatian. Survey of major dialectal areas. Fall. (Every third year.) Montgomery

222 HISTORICAL ITALIAN GRAMMAR (3). The development from Latin to Italian linguistic structures. (On demand.) Montgomery.

231 DANTE I (3). Prerequisite, graduate standing or consent of the instructor. After a brief general presentation of Dante’s life and works, the class studies the Divina Commedia in the original through the Inferno and the first six Cantos of Purgatorio. (Alternate years.) Cervigni.

232 DANTE II (3). Prerequisite, graduate standing or consent of the instructor. This semester completes the critical reading of the Divina Commedia starting Purgatorio. Under satisfactory conditions Dante I will not be a prerequisite for Dante II. Spring. (Alternate years.) Cervigni.

245 THE ITALIAN TRECENTO: PETRARCH AND BOCCACCIO (3). Fall. (On demand.) Cervigni.

330 SEMINAR (3). Special study and research in set topics e.g., Seicento and Baroque; Italian literary Criticism (History of); the Questione dela Lingua; drama through the Renaissance. (On demand.) Staff.

340 SPECIAL READINGS (Var). Members of the graduate faculty.

393 MASTER’S THESIS (3). Members of the graduate faculty.

394 DOCTORAL DISSERTATION (3). Research in a special field under the direction of a member of the graduate faculty.

PORTUGESE

Courses for Graduates and Advanced Undergraduates

101 SURVEY OF PORTUGESE LITERATURE I (3). Prerequisites, PORT 4, 15 or equivalent. An introduction to Portuguese literature from its origin through the eighteenth century. Fall. (Alternate years.) Rector.

102 SURVEY OF PORTUGESE LITERATURE II (3). Prerequisites, PORT 4, 15, or equivalent. A survey of Portuguese literature of the nineteenth and twentieth centuries. Spring. (Alternate years.) Rector.

103 SURVEY OF BRAZILIAN LITERATURE I (3). Prerequisites, PORT 4, 15, or equivalent. A survey of Brazilian literature of the colonial period and nineteenth century. Fall. (Alternate years.) Clark.

104 SURVEY OF BRAZILIAN LITERATURE II (3). Prerequisites, PORT 4, 15, or equivalent. A study of major writers of twentieth-century Brazilian literature. Spring. (Alternate years.) Clark.

126 HISTORY OF THE PORTUGESE LANGUAGE (3). Prerequisites, PORT 4, 15, or equivalent, or consent of the instructor. Survey of the history of Portuguese with special stress on the characteristics of Brazilian Portuguese and the factors underlying them. (On demand.) Rector.

135 BRAZILIAN DRAMA (3). Prerequisites, PORT 4, 15, or equivalent, or consent of instructor. A study of representative Brazilian plays of the twentieth century with a review of the development of the theater in Brazil. Fall. (Alternate years.) Clark.

Courses for Graduates


206 LUSO-BRAZILIAN BIBLIOGRAPHY AND METHODOLOGY (3). An introduction to bibliography and methodology in Luso-Brazilian literary and linguistic research. (On demand.) Clark, Rector.

210 THE PORTUGESE NOVEL (3). A study of prose fiction, particularly from the nineteenth and twentieth centuries, with special emphasis on Camilo Castelo Branco, Eça de Queirós, Aquilino Ribeiro, Ferreira de Castro, and the neo-realists. Fall. (Alternate years.) Rector.

212 THE BRAZILIAN NOVEL (3). Extensive reading of representative Brazilian novels from the second half of the nineteenth century to the present. Spring. (Alternate years.) Clark.

213 MACHADO DE ASSIS (3). A study of the prose fiction, drama, poetry, and criticism of Machado de Assis, with reference to other major writers of the second half of the nineteenth century. Spring. (Every third year.) Clark, Rector.

214 MODERN BRAZILIAN SHORT FICTION AND ESSAYS (3). A study of Brazilian short stories, novellas, and essays of the twentieth century. Spring. (Every third year.) Clark, Rector.

221 OLD PORTUGESE (3). A study of Portuguese historical phonology and morphology with readings from medieval verse and prose. Spring. (Alternate years.) Rector.

231 CAMÕES (3). The works of Camões (epic, lyric poetry, and drama) are studied with reference to the contemporary Iberian historical and literary background. Fall. (Every third year.) Rector.

291 PORTUGESE OVERSEAS LANGUAGE AND LITERATURE (3). A survey of the use and characteristics of Portuguese as used in Africa and Asia (especially Cape Verde creole) and readings from contemporary African authors using Portuguese. Spring. (On demand.) Staff.

330 SEMINAR IN PORTUGESE LITERATURE (3). Rector.

333 SEMINAR IN LUSO-BRAZILIAN LINGUISTICS (3). Rector.

335 SEMINAR IN BRAZILIAN LITERATURE (3). Clark, Rector.

340 SPECIAL READINGS (Var). Member of the graduate faculty.

393 MASTER’S THESIS (3). Member of the graduate faculty.

394 DOCTORAL DISSERTATION (3). Member of the graduate faculty.

ROMANCE

Courses for Graduates and Advanced Undergraduates

104 VIOLENCE AND RELIGION IN LITERATURE FROM EPIC TO NOVEL (CMPL 104) (3). Prerequisite, consent of instructor. A study of the sacred character of epic violence, and its historical decline through a process of religious desacralization associated with the emergence of the modern novel. Spring. Staff.

170 ROMANCE SOCIOLINGUISTICS (3). Study of language in its social context: language variation, multilingualism, social dialects, the role of culture, language, and sex. Includes individual work on a specific language. Spring, King.
200 THEORIES AND TECHNIQUES OF TEACHING (3). Exploration of theoretical issues in teaching Romance languages with their practical applications, including the integration of technology. (Required of all new graduate instructors.) Fall. Jarisch/Cowell.

201 INTRODUCTION TO MEDIEVAL STUDIES (3). Interdisciplinary course to introduce graduate students to the sources, methods, and approaches of Medieval Studies. Fall. Staff.

205 WORKSHOP ON LITERARY THEORY AND RESEARCH METHODS (1-5). An introduction to contemporary theoretical positions designed to acquaint the student with issues posed by formalism, Marxism, feminism, deconstruction, etc. Brief orientation to Romance bibliography and research methods. (Required of all incoming graduate students in Romance languages.) Fall. Staff.

220 VULGAR LATIN (3). An investigation of the development of the sermo plenus from its earliest manifestations to its fragmentation into the Romance vernaculars. Spring. (Alternate years.) Montgomery.

225 PROVENÇAL (3). Linguistic analysis of the langue d’oc and investigation of medieval Provençal literature. Fall. (Alternate years.) Montgomery.

324 ROMANCE PALEOGRAPHY (3). Study of the development of medieval romance book hands and paleography from their origins to the advent of printing; with practical exercises. Spring. (Every third year.) Montgomery.

330 SEMINAR IN ROMANCE LANGUAGES (3). Staff.

340 SPECIAL READINGS (Var.). Member of the graduate faculty.

370 MINOR ROMANCE TONGUES (3). Introduction to historical development of Catalan, Rhaeto-Romance, and Rumanian. Readings in period texts. (Every third year.) Montgomery.


SPANISH

Courses for Graduates and Advanced Undergraduates

101X, 102X ELEMENTARY SPANISH FOR GRADUATE STUDENTS (3). These courses prepare the student to meet the reading knowledge requirement for graduate degrees. Passing the examination at the end of 102X certifies that this requirement has been satisfied. Three hours a week. Fall and spring. Staff.

103 ADVANCED COMPOSITION (3). Prerequisite, SPAN 50. Review of advanced grammar. Compositions on a variety of topics designed to enhance writing proficiency in Spanish. Training in the use of stylistic devices. Staff.

110 THE GENERATION OF 1898 (3). A study of the innovative literary forms and techniques of the Generation of 1898 as seen through representative authors such as Azorín, Baroja, Machado, and Valle-Inclán. Collins.

117 CERVANTES (3). Prerequisites, SPAN 71, 72, or 73. The works of Cervantes, stressing the Quijote and the Novelas ejemplares, with consideration of background of Renaissance prose (the romances of chivalry, pastoral, picaresque novel). Spring. Staff.

120 THE IMAGE OF WOMAN IN THE SIXTEENTH TO SEVENTEENTH CENTURIES (WMST 120) (3). A study of the inscription of femininity in texts by Spanish and Spanish American authors. Readings are available in Spanish or in English translation. Lectures are conducted in English. Pentz/Hunter.

135 MODERN SPANISH DRAMA (3). Prerequisites, SPAN 71, 72. A study of plays by principal Spanish dramatists of the twentieth century. Fall. (Alternate years.) Polo de Bernabé.


Courses for Graduates

201 BEGINNINGS OF CASTILIAN HEGEMONY TO 1369 (3). Early medieval romance period (eleventh century-1369). The establishment of Castilian hegemony studied through a wide variety of texts (chronicles, miracles, collections of law and exempla, furos, epic and lyric poems). Fall. Domínguez.

202 THE TRASTAMARA DYNASTY: 1369-1504/16 (3). The final shaping of Castile and the beginnings of nationhood studied through a wide variety of texts (chronicles, books of chivalry, lyric and narrative poems, sentimental novels, travel narratives, etc.). Fall. Domínguez.

207 THE HISPANIC FILM: THEORY/CULTURE/LITERATURE (3). A study of Spanish-American film with special attention to problems of an aesthetic and ideological nature and to the relationships between literature, culture, and film. Spring. Polo de Bernabé.

209 NONFICTION PROSE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES (3). Consideration of the histories, chronicles, didactic works of the Renaissance and the Siglo de Oro, with special emphasis on the literature of exploration. Fall. (Alternate years.) Pellettier.

210 NINETEENTH-CENTURY SPANISH NOVEL (3). A study of the development of Romanticism, Costumbriismo, Realism, and Naturalism, principally through the novels of G. y Carrasco, Pérez, Valera, Pérez Galdós, Pardo Bazán, Clarín, and Blasco Ibáñez. Spring. (Alternate years.) Casado.

211 TWENTIETH-CENTURY SPANISH NOVEL (TO 1936) (3). A study of major novelists associated with the Generation of 1898, Modernismo, the Generation of 1914, and the Generation of 1927; principally Unamuno, Baroja, Valle-Inclán, Miró, Pérez de Ayala, Gómez de la Serna, Chatel, and Sender. Fall. (Alternate years.) Casado.

212 SPANISH CONTEMPORARY NOVEL (3). A study of major novelists from the Spanish Civil War of 1936 to the present time, with emphasis on Ayala, Cela, García Hertelano, Goytisolo, Bener, and others. Spring. (Alternate years.) Casado.

214 GOLDEN AGE POETRY (3). Major poetic works from García de Quevedo through Cervantes. Fall. (Alternate years.) Staff.

215 SPANISH POETRY AND DRAMA OF THE NINETEENTH AND EARLY TWENTIETH CENTURY (3). Study of Spanish dramatists and poets of the period in the context of the nineteenth-century aesthetics and literary movements such as romanticism, post-romanticism, symbolism, and modernism. Spring. (Alternate years.) Polo de Bernabé.

216 CONTEMPORARY LYRIC POETRY (3). Major poets from the Generation of 1927 to the present. Spring. (Alternate years.) Polo de Bernabé.

221 OLD SPANISH I (3). Fall. Binotti.

222 OLD SPANISH II (3). Spring. (Alternate years.) Binotti.

225 GOLDEN AGE PROSE (3). The major prose works of the Golden Age, excluding those of Cervantes. Fall. (Alternate years.) Staff.

233 TOPICS IN GOLDEN AGE LITERATURE (3). A thorough study of a scholarly topic not covered in any other Golden Age course. Representative topics include: the sense of tragedy in the Comedia, Calderón's sacramental plays, and others. Fall. Staff.

236 SPANISH STYLISTICS (3). A theoretical and practical approach to the study of style. Spring. (Alternate years.) Polo de Bernabé.

237 LITERARY CRITICISM IN SPAIN (3). A study of literary doctrines from the Renaissance to the present. Spring. (Alternate years.) Polo de Bernabé.
238 SPANISH INTELLECTUAL HISTORY I (3). The purpose of this course is to acquaint students with the basic ideology (philosophical, aesthetic, religious, political, economic) underlying Spanish peninsular literature from its origins to the end of the seventeenth century. Bincotti.

239 SPANISH INTELLECTUAL HISTORY II (3). This course is a continuation of SPAN 238 and includes Spanish intellectual history from the eighteenth century to the present.

250 THE EIGHTEENTH CENTURY IN SPAIN (3). Readings from eighteenth-century authors in various genres. Fall. (Alternate years.) Cásado.

260 SPANISH EXISTENTIAL LITERATURE AND ITS EUROPEAN CONTEXT (3). An investigation of the relationship between existential thought and fictional form viewed through works by such authors as Barchau, Unamuno, Machado, Ortega y Gasset, Martín-Santos, Benet, Goytisolo, Martín Gaite, Bueno Vallejo. Collins.

330 SEMINAR (3). Staff.

340 SPECIAL READINGS (Var.). Member of the graduate faculty (doctoral students only).

393 MASTER'S THESIS (3). Member of the graduate faculty.

394 DOCTORAL DISSERTATION (3). Member of the graduate faculty.

SPANISH AMERICAN

Courses for Graduates and Advanced Undergraduates

113 COLONIAL AND NINETEENTH-CENTURY SPANISH AMERICAN LITERATURE (3). Prerequisites, SPAN 71, 73. Fall. Perelmutter.

114 MODERNIST AND CONTEMPORARY SPANISH AMERICAN LITERATURE (3). Prerequisites, SPAN 71, 73. Spring. Perelmutter, Rivero.

120 THE IMAGE OF WOMAN IN SIXTEENTH-SEVENTEENTH CENTURIES (WMST 120)/ (3). A study of the inscription of femininity in texts by Spanish and Spanish American authors. Readings are available in Spanish or in English translation. Lectures are conducted in English. Perelmutter.

Courses for Graduates

209 NONFICTION PROSE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES (3). Consideration of the histories, chronicles, didactic works of the Renaissance and the Siglo de Oro, with special emphasis on the literature of exploration. Fall. (Alternate years.) Perelmutter.

241 SPANISH AMERICAN ESSAYS AND SHORT STORIES (3). Spring. (Alternate years.) Perelmutter, Rivero.

242 SPANISH AMERICAN POETRY (3). Major movements and aesthetic currents. Spring. (Alternate years.) Staff.

243 SPANISH AMERICAN THEATRE (3). A panoramic view of modern theatre. Fall. (Alternate years.) Day.

244 THE AESTHETICS OF THE BAROQUE IN SPANISH AMERICAN LITERATURE (3). The origin, development, and persistence of a baroque aesthetic in Spanish American literature through an examination of diverse theories of baroque and close readings of representative texts. Fall or spring. Perelmutter.


246 THE NOVEL IN SPANISH AMERICA I (3). A study of the novel to 1960. The course examines Romanticism, Realism, Naturalism, Modernism, and the new national literatures, through such authors as Avellaneda, Blest Gana, Silva, Asturias, Carpentier, Rulfo, Bombal, Vargas Llosa. González-Espitia.

247 THE NOVEL IN SPANISH AMERICA II (3). A study of major trends and writers from the "Boom" of the 1960s and 70s to the present. Rivero.

335 SEMINAR IN SPANISH AMERICAN LITERATURE (3). Fall and/or spring. Staff.

CURRICULUM IN RUSSIAN AND EAST EUROPEAN STUDIES

ROBERT M. JENKINS, Chair

Professors
Richard N. Andrews, Public Policy
Christopher Browning, History
Richard R. Cole, Journalism and Mass Communication
Carolyn Connor, Classics
Patrick Conway, Economics
Douglas Crawford-Brown, Environmental Sciences
Richard L. Edwards, School of Social Work
Carl Ernst, Religious Studies
Jaroslav Folda, Art
David M. Griffis, History
H. Garland Hensley, Orthodontics
Iva Herz-Ficciotto, Epidemiology
Beth Holmgren, Slavic Languages and Literatures
Michael Hunt, History
Laura A. Janda, Slavic Languages and Literatures
Konrad Jarasch, History
Robert Jenkins, Curriculum in Russian and East European Studies
Arnold Kaluzny, School of Public Health
Madeline G. Levine, Slavic Languages and Literatures
Bobbie Lubker, School of Education
David McNelis, Carolina Environmental Program
Eric Myln, International Studies
Barbara Moran, School of Information and Library Science
Michael Peck, Surgery
John Pickles, Geography
David Pike, German Department
Barry Popkin, Carolina Population Center
Donald J. Raleigh, History
Steven S. Rosenthal, Economics
Robert L. Stevenson, Journalism and Mass Communication
Chuck Stone, Journalism and Mass Communication

Associate Professors
E. Willis Brooks, History
Lawrence E. Feinberg, Slavic Languages and Literatures
Timothy Meekwain, Political Science
Christopher Putney, Slavic Languages and Literatures
Thomas Ricketts, Health Policy and Administration
David Tate, Medicine
Michael Votta, Music
Ivana Vulic, Slavic Languages and Literatures

Assistant Professors
Stephen Biddle, Political Science
Chad Bryant, History
Suzanne Gulledge, School of Education
Charles Kurzman, Sociology
Zhuleo Plese, Religious Studies
Graeme Robertson, Political Science
Mark Soskice, Anthropology
Silvia Tomaskova, Anthropology
Milada Vachudova, Political Science
Irene Zieper, School of Social Work

Adjunct Assistants Professor
Jonathan Weiler, Russian and East European Studies

Lecturer
Eleonora Magomedova, Slavic Languages and Literatures

Professors Emeriti
Joseph Adderly, History
Samuel H. Baron, History
Paul Debreceny, Slavic Languages and Literatures
Vasa D. Mihailovich, Slavic Languages and Literatures
Anthony R. Oberschall, Sociology
Robert Rupen, Political Science
James D. Stasheff, Mathematics

Requirements for the MA Degree

The Curriculum in Russian and East European Studies offers graduate work leading up to the degree of master of arts in Russian/East European studies. The degree program satisfies the general requirements of The Graduate School. In addition, the student must fulfill the following curriculum requirements:

- Four semester courses in a Slavic language (Bulgarian, Czech, Macedonian, Polish, Russian, or Serbo-Croatian).
- Completion of HIST 204D, RUES 210, and RUES 230.
- Completion of at least three courses in a given concentration. (Fields of concentration include art, biology, business, environmental sciences, classics, comparative literature, computer science, ecology, economics, environmental sciences, geologic sciences, history, journalism, law, linguistics, music, nonprofit leadership, peace, war, and defense, philosophy, political science, psychology, public health, Slavic languages and literatures, social work, sociology, and statistics.)
- Completion and defense of thesis project.

Further information may be obtained from Robert Jenkins, Program Adviser, The Center for Slavic, Eurasian, and East European Studies, CB# 5125, 223 E. Franklin Street, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-5125. Telephone: (919) 962-0901. Fax: (919) 962-2494. E-mail: jenkins@email.unc.edu. Web: www.unc.edu/depts/slavic.

Courses for Graduates and Advanced Undergraduates

RU 299 INDEPENDENT STUDY IN RUSSIAN AND EAST EUROPEAN STUDIES (V). Allows students to undertake advanced research under the supervision of a faculty member. Fall, spring, summer. Staff.

RU 310 GRADUATE SEMINAR IN RUSSIAN AND EAST EUROPEAN STUDIES (3). Advanced seminar. Topics vary. Fall, spring. Staff.

RU 393 MASTER'S THESIS (3). Fall, spring, or summer.

DEPARTMENT OF SLAVIC LANGUAGES AND LITERATURES

BETH HOLMGREN, Chair

Professors
Beth Holmgren (10) Russian and Polish Literatures
Madeline G. Levine (4) Russian and Polish Literatures
Laura A. Janola (8) West Slavic Linguistics and Cognitive Linguistics

Associate Professors
Lawrence Feinberg (3) Slavic Linguistics, Poetics
Christopher Putney (12) Russian Literature, Medieval Slavic Culture
Ivana Vuletic (13) Serbian and Croatian Language and Literature, Russian Literature

Lecturer
Eleonora Magomedova, Russian Language

Professors Emeriti
Paul Debreceny
Vasa D. Mihailovich

The Department of Slavic Languages and Literatures offers graduate work leading to the degrees of master of arts and doctor of philosophy. The degree programs meet general requirements of The Graduate School plus certain departmental requirements.

Requirements for the MA Degree

For the degree of master of arts a student may emphasize Russian literature and culture, comparative Slavic and East European literatures and cultures, or Slavic linguistics. All students are required to take the department's pro-seminar, SLAV 200 (one credit hour), to register for three credits of SLAV 393 (master's thesis credits), and to write and defend a master's thesis. In addition, the student must satisfy a language requirement (reading knowledge only) in one modern foreign language other than a Slavic language.

The master's candidate in Russian literature and culture is required to take a) one course in either medieval or eighteenth-century Russian literature and culture and b) four courses to be distributed, with graduate adviser supervision, in nineteenth- and twentieth-century Russian literature and culture. The student must also take two courses in Slavic linguistics, Evolution of Russian (RUSS 100), and Structure of Russian (RUSS 101), and pass or place out of Fourth-Year Russian Conversation and Reading (RUSS 112).

The master's candidate in comparative Slavic and East European literatures and cultures is required to take a) three courses in Russian literature and culture and b) two comparative Russian and Slavic/East European literature and culture courses or two exclusively non-Russian Slavic/East European literature and culture courses. The student must also take two courses in Slavic linguistics, either Evolution of Russian (RUSS 100) or Structure of Russian (RUSS 101), and one other track-relevant linguistics course. The student must also complete two courses (one year) in a modern Slavic/East European language other than Russian.

RU 199 SELECTED TOPICS IN RUSSIAN AND EAST EUROPEAN STUDIES (3). Topic varies by semester. Fall, spring, summer. Staff.

RU 210 CORE COLLOQUIUM (1). Series of follow-up discussions of guest lectures sponsored by the Center for Slavic, Eurasian, and East European Studies. The discussions will be based on bibliographies previously assigned by guest lecturers. Fall.

RU 230 IDENTITIES AND TRANSITIONS (3). Capstone course for the master of arts in Russian/East European studies. Interdisciplinary course focusing on the variety of problems encountered by the societies of East European countries and successor states of the former Soviet Union in their transition from communism to democracy. Spring. Jenkins.
The master's candidate in Slavic linguistics is required to take at least three courses in Slavic linguistics, including Evolution of Russian (RUSS 100) and Structure of Russian (RUSS 101); two courses (one year) in a modern Slavic/East European language other than Russian, and at least two courses in Russian or another Slavic/East European literature. The student must take at least one course outside the department in linguistics (normally Introduction to Historical and Comparative Linguistics [LING 101], or Introduction to Descriptive Linguistics [LING 120]). A master's candidate in Slavic linguistics must also either pass or place out of Fourth-Year Russian Conversation and Reading (RUSS 112). The student may take one elective course (three hours).

Requirements for the PhD Degree

An admitted candidate must have received an MA degree from this university or be able to show that his or her previous studies have provided a knowledge of the Slavic field comparable to that required for the MA degree at UNC-Chapel Hill. A student may concentrate in Russian literature and culture, comparative Slavic and East European literatures and cultures, or Slavic linguistics.

All students who have completed the master's degree at UNC-Chapel Hill or at another institution and who wish to advance to PhD candidacy must take a qualifying comprehensive examination no later than the third semester of registration following completion of all master's degree requirements. Detailed information about the written and oral PhD comprehensive examinations is available from the department in a separate handout.

Teaching experience is an essential part of professional training. Therefore, teaching assistant instruction equivalent to at least three contact hours a week for one semester is required of all PhD candidates.

Before advancing to candidacy, doctoral students are required to submit a written dissertation proposal and to defend it before their dissertation committee. In order to facilitate this process, students are required to earn the grade of “Satisfactory” in SLAV 360 (research and writing of the dissertation proposal).

Students must register for at least six credits of SLAV 394 (dissertation). The final step after writing the dissertation under supervision of a faculty adviser is the oral defense of the dissertation, which will take place at least one week before the dissertation is to be submitted to The Graduate School and one month after it is submitted to the student's faculty committee.

Special Requirements for Degree Programs

The candidate in Russian literature must demonstrate a sound knowledge of Russian literature and culture and competence in one other Slavic literature and culture. Candidates for the doctorate in Russian literature and culture must have taken the seminar in Old Russian literature (RUSS 259) before they take their doctoral examinations. The candidate in a Slavic literature other than Russian must demonstrate a sound knowledge of that literature and competence in Russian literature.

The candidate for the doctoral degree with a concentration in Slavic linguistics must demonstrate a good working knowledge of Russian, and of one West Slavic and one South Slavic language.

BULGARIAN

101, 102 ELEMENTARY BULGARIAN (3 each). Pronunciation, structure of language, and reading in modern Bulgarian. Fall and spring. Staff.

103, 104 INTERMEDIATE BULGARIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Bulgarian. Fall and spring. Staff.

105, 106 ADVANCED BULGARIAN (3 each). Advanced readings and discussion in Bulgarian in humanities and social science topics. Staff.

111 BULGARIAN LITERATURE (3). Introduction to Bulgarian literature in English translation. Some readings in Bulgarian for students who can read the language. Staff.

CZECH


103, 104 INTERMEDIATE CZECH (3 each). Continuation of the proficiency-based instruction begun in Elementary Czech. Fall and spring. Janda.

105, 106 ADVANCED CZECH (3 each). Advanced readings and discussion in Czech in humanities and social science topics. Janda.

111 CZECH LITERATURE (3). Introduction to Czech literature in English translation. Some readings in Czech for students who can read the language. Staff.

HUNGARIAN

101, 102 ELEMENTARY HUNGARIAN (3 each). Pronunciation, structure of language, and reading in modern elementary Hungarian. Staff.

103, 104 INTERMEDIATE HUNGARIAN (3 each). Continuation of the proficiency-based instruction in modern intermediate Hungarian. Staff.

125 TOPICS IN HUNGARIAN LITERATURE AND CULTURE (3). Study of topics in Hungarian literature and culture not currently covered in any course. The specific topic will be announced in advance. Staff.

MACEDONIAN

101, 102 ELEMENTARY MACEDONIAN (3 each). Pronunciation, structure of language, and reading in modern Macedonian. Fall and spring. Staff.

103, 104 INTERMEDIATE MACEDONIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Macedonian. Fall and spring. Staff.105,

106 ADVANCED MACEDONIAN (3 each). Advanced readings and discussion in Macedonian in humanities and social science topics. Staff.

POLISH


103, 104 INTERMEDIATE POLISH (3 each). Continuation of the proficiency-based instruction begun in Elementary Polish. Holmgren, Levine.

105, 106 ADVANCED POLISH (3 each). Advanced readings and discussion in Polish in humanities and social science topics. Holmgren, Levine.

111 NINETEENTH-CENTURY POLISH LITERATURE AND CULTURE (3). A survey of the major works of nineteenth-century Polish literature and culture in English translation. Some readings in Polish for students who can use the language. Holmgren, Levine.

112 TWENTIETH-CENTURY POLISH LITERATURE AND CULTURE (3). A survey of the major works of twentieth-century Polish literature and culture in English translation. Some readings in Polish for students who can use the language. Holmgren, Levine.
RUSSIAN

100 THE EVOLUTION OF THE RUSSIAN LANGUAGE (3). This course traces the development of Russian from Old Russian to contemporary Russian. Consideration is given to linguistic developments as well as cultural, social, and historical circumstances shaping contemporary Russian. Fall and spring. Feinberg, Janda.


105, 106 ADVANCED RUSSIAN GRAMMAR (3). Prerequisite, Russian 4. A comprehensive review of Russian grammar on an advanced level, emphasizing reading and writing skills. Fall and spring. Staff.

111, 112 ADVANCED RUSSIAN CONVERSATION AND COMPOSITION (3). Designed to develop conversational and writing skills in a variety of situations and subjects. Russian used, except for a minimum of linguistic explanations or comments. Fall and spring. Magomedova.

125 TOPICS IN RUSSIAN LITERATURE (3). Material not presently covered in any course. The specific topic is announced in advance. Staff.


135 LITERATURE AND MUSIC IN RUSSIA (3). Explores the use Russian composers have made of literary works and motifs, as well as the response of Russian writers to musical compositions and composers, and to music as art form. Spring. Feinberg.


160 RUSSIAN SENTIMENTALISM AND ROMANTICISM (3). Prerequisite, Russian 106 or permission of the instructor. Survey of Russian sentimentalism and romanticism, with special attention to the intellectual currents of the period (c. 1770 to 1850). Consideration of Western precursors (Rousseau, Sterne, Byron, et al.). Readings in Russian. Putney.

162 RUSSIAN POETRY OF THE NINETEENTH CENTURY (3). Readings and lectures on nineteenth-century Russian poetry. Staff.

164 DOSTOEVSKY (3). Study of major works of Dostoevsky and a survey of contemporary authors and literary trends relevant to his creative career. Readings in Russian for majors, in English for nonmajors. Fall. Levine. Putney.

165 CHEKHOV (3). Study of major works of Chekhov and a survey of contemporary authors and literary trends relevant to his career. Readings in Russian for majors, in English for nonmajors. Spring. Holmgren, Putney.

171 GOGOL (3). Study of major works of N. V. Gogol and a survey of contemporary authors and literary trends relevant to his creative career. Lectures and seminar discussions. Readings in Russian for majors, in English for nonmajors. Fall. Putney, Levine, Magomedova.

175 LITERATURE OF RUSSIAN TERRORISM: ARSON, BOMBS, MAYHEM (3). Literary representations of Russian revolutionaries and terrorists in the nineteenth and early twentieth centuries. Readings by Dostoevsky, Chernyshevsky, Bely, Joseph Conrad, and by some of the terrorists themselves. Fall. Levine.

179 TOLSTOY (3). Study of major works of Tolstoy and a survey of contemporary authors and literary trends relevant to his creative career. Readings in Russian for majors, in English for nonmajors. Spring. Levine, Vuletic, Putney.

186 CONTEMPORARY RUSSIAN WOMEN'S WRITING (WMST 186) (3). A study of Russian women's writing after World War II, including both fictional and nonfictional works analyzed in their socio-political context. Serves as an introduction to Russian women's studies. Holmgren.

187 POST-STALIN SOVIET LITERATURE (3). This course examines the major literary trends of the post-Stalin period in Soviet literature. Spring. Holmgren.

190 TEACHING METHODS AND MATERIALS (1). For prospective teachers of Russian. Required of all teaching assistants. Fall. Magomedova.

193 RUSSIAN SHORT STORY (3). An introduction to the Russian short story. The readings, in English for nonmajors and in Russian for majors, include works from the seventeenth century to the present. Fall and spring. Holmgren, Putney.

207 RUSSIAN STYLISTICS (3). Prerequisite, RUSS 112. Advanced Russian conversation and composition, with appropriate grammatical and stylistic explanations. Can be taken repeatedly for credit, but only counts once toward degree requirements. Fall. Magomedova.

208 RUSSIAN STYLISTICS. Second semester. Prerequisite, RUSS 207. Continuation of RUSS 207 at a more advanced level. Spring. Magomedova.

251 PUSHKIN (3). Study of major works. Fall. Staff.

259 MEDIEVAL AND BAROQUE RUSSIAN LITERATURE (3). Literature from the advent of literacy to the late seventeenth century. Lectures on and interpretations of literature of Kievian Rus' down to Grand Moscovy. Readings in English for non-Slavic concentrators. Putney.


266 RUSSIAN SYMBOLISM (3). Prerequisite, reading knowledge of Russian or permission of the instructor. Introduction to the leading writers and works of the Symbolist movement in Russia. Feinberg, Vuletic.

267 POST-SYMBOLIST POETRY (3). Prerequisite, reading knowledge of Russian or permission of the instructor. A study of the major poetic works of Gumilev, Akhmatova, Mandelstam, Mayakovsky, Khlebnikov, Pasternak, Tsvetaeva. Spring. Levine.


350 SEMINAR IN RUSSIAN LITERATURE (3). Prerequisite, permission of the instructor. Seminar on selected topics in Russian literature.

393 MASTER'S THESIS (3). Fall and spring. Staff.

394 DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.
SERBIAN AND CROATIAN


103, 104 INTERMEDIATE SERBIAN AND CROATIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Serbian and Croatian. Vuletic.

105, 106 ADVANCED SERBIAN AND CROATIAN (3 each). Advanced readings and discussion in Serbian and Croatian in humanities and social science topics. Vuletic.

111 SERBIAN AND CROATIAN LITERATURE (3). Introduction to Serbian and Croatian literature in English translation. Some readings in Serbian and Croatian for students who can read the language. Vuletic.

SLAVIC

100 OLD CHURCH SLAVONIC (3). An introduction to the language of the oldest Slavic texts. Translation, grammatical analysis, comparison of texts. Feinberg, Janda.

105 INTRODUCTION TO SLAVIC LINGUISTICS (3). The phonological history of Slavic languages from the late Indo-European to the split of the Common Slavic linguistic unity. Spring, Feinberg, Janda.

107 STRUCTURE OF A BALKAN LANGUAGE (LING 107) (3). Study of grammar and readings in selected languages. Choice of language based on student interest: Albanian, Bulgarian, Macedonian, Romany, Turkish; also some adjacent languages: Georgian and Tadjik. Fall and spring. Staff.

108 ADVANCED STRUCTURE OF A BALKAN LANGUAGE (LING 108) (3). Continuation of Slavic 107 at a more advanced level. Fall and spring. Staff.


125 TOPICS IN SLAVIC LITERATURES (3). Material not presently covered in any course. The specific topic is announced in advance. Staff.

144 CHRISTIANIZATION OF THE SLAVS (3). Survey of the Christianization of Slavs from the ninth century to 1453. Themes include Byzantine missions, emergence of literary centers, and role of Balkans. Readings in English for non-Slavic concentrations. Purnell.

160 READING OTHER CULTURES: ISSUES IN LITERARY TRANSLATION (CMPL 160) (3). Prerequisite: reading knowledge of one language other than English. Starting from the proposition that cultural literacy would be impossible without reliance on translations, this course addresses fundamental issues in the practice, art, and politics of literary translation. Spring. Levine.

164 IMAGINED JEWS: JEWISH THEMES IN POLISH AND RUSSIAN LITERATURE (3). "Imagined Jews" explores the fictional representation of Jewish life in Russia and Poland by Russian, Polish, and Jewish authors from the nineteenth century to the present. Holmgren, Levine.

165 LITERATURE OF ATROCITY (PWAD 165) (3). Literary representation - in fiction, poetry, memoirs, and other genres - of the mass annihilation and terror in Eastern Europe and the former Soviet Union under the Nazi and Communist regimes. Levine.

167 ETHNIC AND LINGUISTIC CONFLICTS IN THE FORMER YUGOSLAVIA (PWAD 167) (3). The role of linguistic controversy in the polarized ethnic tension in the former Yugoslavia. Topics: the Yugoslav idea, language and nationalism, ethnic tension, the unleashing of ethnic conflicts. Staff.

169 SLAVIC IMMIGRANT EXPERIENCE IN LITERATURE (3). Fictional and autobiographical expressions of the Slavic and East European immigrant experience in the twentieth century. Readings include Russian, Polish, Jewish, and Czech authors from early 1900s to the present. Holmgren, Levine.

170 TWENTIETH-CENTURY RUSSIAN AND POLISH THEATER (3). A comparative survey of the major trends in twentieth-century Russian and Polish drama and theatrical production, with attention to aesthetic, professional, and political connections between the two. Holmgren.


200 PRO-SEMINAR IN SLAVIC LITERATURE (3). Prerequisite: graduate students only. A seminar that acquaints graduate students with the basic resources for conducting research in their field and trains them in various critical approaches to the analysis of Slavic literatures. Staff.

240 READING COURSE (3 or more). (On demand.) Staff.

251 EAST SLAVIC LINGUISTICS (3). Prerequisites: SLAV 105 and four years of study of any East Slavic language. An examination of the linguistic history and contemporary dialectology of the East Slavic languages (Russian, Ukrainian, Belarusian) with emphasis on Russian. Feinberg.

252 WEST SLAVIC LINGUISTICS (3). Prerequisites: SLAV 105 and/or SLAV 207 and one year of any West Slavic language. An examination of the linguistic history and contemporary dialectology of the West Slavic languages (Polish, Czech, Slovak, Upper and Lower Sorbian, Kashubian, Slovincian, Pomeranian). Janda.

253 SOUTH SLAVIC LINGUISTICS (3). Prerequisites: SLAV 105 and one year of study of any South Slavic language. An examination of the linguistic history and contemporary dialectology of the living South Slavic languages (Slovenian, Serbian, Croatian, Macedonian, Bulgarian). Staff.

260 TOPICS IN SLAVIC SOCIOLINGUISTICS (3). A seminar that acquaints graduate students with the variety of approaches to sociolinguistics research with particular emphasis on the extant literature in Slavic sociolinguistics, language and identity, language and the nation. Fall, spring. Staff.

305 SEMINAR IN SLAVIC LINGUISTICS (3). Selected issues in Slavic synchronic and diachronic linguistics. Staff.

360 PRE-DISSERTATION RESEARCH (3). Staff.

393 MASTER'S THESIS (3 or more). Staff.

394 DOCTORAL DISSERTATION (3 or more). Staff.

SCHOOL OF SOCIAL WORK

JACK M. RICHMAN, Dean

Professors

Oscar A. Barbarin III (180) Children's Health and Mental Health, African American Children and Families, Family and Pre-school Interventions, Black-White Achievement Gap

Richard P. Barth (310) Child Abuse and Neglect, Foster Care Dynamics, Adoption Services, Shared Family Care, Program Evaluation, Linkages between Child Welfare and Juvenile Justice Services

Iris B. Carlton-LaNey (239) Social Welfare History (Especially African Americans and the Progressive Era), Rural Elderly African American Women and Social Support
Andrew W. Dobelstein (7) Local Political Systems, Aging, Social Welfare Policy
Mark W. Fraser (229) Children and Families at Risk, Substance Abuse and Other Forms of Antisocial Behaviors, Research Training and Scholarship
Maeda J. Gainsky (355) Social Group Work Practice, Theory and Research, Development and Evaluation of Social Intervention, Multicultural Practice
Gary M. Nelson (83) Organizational and Community Change, Social Gerontology, Self-Evaluation
Jack M. Richman (88) Individual, Couples, and Family Practice, Social Support, At-Risk Students, Evaluation
Charles L. Utter (227) Social Program Evaluation, Quantitative Research Methods, Human Services Management
Marie O. Weil (95) Community Practice, Social Administration, Services to Families and Children, Community Development, Social Work and the Law

Clinical Professor
Nancy S. Dickinson (364) Social Welfare Policy, Continuing Social Work Education, Children and Family Services

Research Professor
Raymond S. Kirk (245) Human Services Administration, Child Welfare Services, Social Systems Research, Child Protection Services, Family Preservation Services

Associate Professors
Shenyang Guo (413) Research Methods, Quantitative Data Analysis, Child Welfare, Child Mental Health Services, Welfare Policies
Vanessa G. Hodges (241) Intervention Development and Evaluation, High-Risk Families and Children, Culturally Responsive Family Interventions, Social Support Assessment and Interventions
Amelia C. Roberts (292) Women and Cultural Dependency, Cultural Diversity and Social Work Practice, Spirituality and Social Work Practice, Research in Perinatal Substance Abuse, Developing and Evaluating Gender Specific Substance Abuse Programs for Females
Sheryl L. Zimmerman (295) Evaluation of Practice, Social Gerontology, Psychosocial Aspects of Health, Long Term Care, Outcome Research, Methods for Studying Older Populations, Dementia, Hip Fracture

Clinical Associate Professors
Katherine M. Dunlap (52) Preschool Education, Empowerment of Parents and Parent Education, Medical Social Work, Violence Prevention
Dorothy N. Gamble (64) Sustainable Community Development in International and Domestic Locations, Women's Roles in Development, Citizen Involvement, Human Rights and Social Action
Kelly B. Reath (107) Rural Human Services, Policy Implementation, Distance Education
Mary Anne P. Salmon (319) Aging Issues with Focus on Underserved Populations, Survey Development, Aging and Demographics, Family Caregiving
Florence G. Solys (104) Frail Elders, Clinical Interdependency, Community Organizational Planning, Nursing Homes and Other Institutional Settings, Home Health
Irene Nathan Zipper (27) Early Childhood Intervention, Family Support, Children's Mental Health Services, Service Coordination/Case Management, Service Integration

Research Associate Professor
Dean F. Duncan III (280) Program Evaluation, Management of Human Services Agencies, Research Methods, Community Collaboration, the Achievement Gap

Assistant Professors
Mimi V. Chapman (413) Social Work Practice, Child Abuse and Neglect, Children's Health and Mental Health, Immigration, Acculturation, and Mental Health
Rebecca J. Mary (421) Interpersonal and Relationship Violence, Coping with Personal Threats and Trauma, Prevention and Practice Interventions
Susana L. Parish (422) Support for Families of Children with Developmental Disabilities, Economic Implications of Caregiving, Long-Term Care for People with Developmental Disabilities, Health Outcomes for Children and Adults with Disabilities, Mothers with Developmental Disabilities

Visiting Assistant Professor
George M. Gottfried (018) Native Americans, Residential Institutions for Children, Birth Order

Clinical Assistant Professors
Joanne S. Caye (260) Child Welfare, Family-Centered Practice, Adolescence, Work with Foster Care and Adoptive Parents, Effects of Disasters on Families and Children
George P. Cole (290) Child Maltreatment, the Biology of Behavior, Integration of Practice and Research, Brain Injury
Lane G. Cooke (360) Family-Centered Services/Home-Based Services Delivery System in Communities and Neighborhoods, Family Preservation Programs, Child Abuse/Neglect, Family Violence, Rapid Assessment and Planning
Jean Livermore (291) Children's Mental Health, Parent/Provider Partnerships, Learning and Attention Disorders in Children and Adults
Andrea Y. Meier (382) Multi-method Intervention Research Methodologies, Therapeutic Applications of Internet, Prevention and Treatment of Depression/Substance Abuse, Social Support Groups
Margaret L. Morse (398) Aging, Computer-based Training, Web Site Design
Julia Sealf Rutter (426) Developmental Disabilities, Children & Families, Poverty and Disability
Anna M. Scheney (222) Severe Mental Illnesses, Mental Health Consumers, Case Management, Mental Health Policy
Gyntia M. Wiford (420) Addiction, Distance Learning, Program Consultation
Evelyn S. Williams (105) Child Abuse Prevention, Domestic Violence, Cultural Competence, Staff Development, Training, and Supervision, Organizational Change
Research Assistant Professor

Clinical Instructors
Jane A. Armstrong (384) Older Adults, Substance Abuse, Geriatric Mental Health, MRDD, Death and Dying Issues
Marta B. Bacska (415) Participatory Action Research, Qualitative Methods, Group Work, Mental Health
Lyndin W. Bolton (294) Substance Abuse Services, Mental Health
Steven H. Day (387) Program Evaluation, Delinquency Prevention, Community Planning and Development
Debra L. Eng (416) Substance Abuse and Mental Health Services for Women, Trauma Healing, Spirituality and Social Work Practice
Jodan A. Flick (298) Clinical Safety, Suicide, Mental Health, Child Welfare
Robin J. Gault-Winton (389) Gerontology, Organizational Development, Child Development
Leslie Gentry (390) Social Work in Health Care, Home Health and Long-Term Care, Post-Stroke Depression, Helping Families Adjust to Caregiving, Medical Social Work
Rebecca L. Green (392) Families and Children, Child Welfare, Foster Care and Adoption, Data Analysis
Sharon M. Holmes (415) Adolescent Pregnancy Prevention/Risk Behaviors, Families and Children, Interventions with Families of Color
Sherry Mergner Hyniewcz (275) Substance Abuse, Women’s Issues, Spirituality and Psychotherapy, Experiential Therapies, Self-Psychology, Autism Spectrum Disorders
John D. McMahon (357) Family and Children’s Services, Child Welfare, Improving Outcomes for Families
Xiomara E. Mello (417) Biculturalism
S. Yvette Murphy (400) Kinship Care, Family Issues, Improving Outcomes for Families
Laurie J. Seif-Campbell (419) Community-based Services, Mental Illness and Identity, Early Intervention, Children’s Mental Health, Activity-based Therapies, Intervention Design and Evaluation
Karla Sili (418) Biculturalism
Cynthia Wallis-Hill (411) Women and Substance Abuse, Recovery and Spirituality, Grief Work
Kathy D. Woodcock (419) Child Welfare, Child Forensic Interviewing, Child Sexual Abuse, Dynamics of Incarcerated Families, Child Development and the Effects of Maltreatment on the Brain
Anne Smith Worth (405) Substance Abuse, Mental Health, Human Resource Management, Workplace Violence Prevention

Lecturers
Mary E. Hernandez (406) Nonprofit Management and Fundraising, Strategic Planning, Public Relations
Barbara L. Leach (395) Mental Illness, Children’s Issues, Family Advocacy

Professors Emeriti
Phillip W. Cooke
S. Rachel Dedmon
H. Carlisle Herley Jr.
Albert L. Johnson
Albert W. King
Hortense K. McClinton
Merton L. Teichner
John B. Turner

The MSW Program
Students complete the foundation curriculum of twenty-six credit hours of content in the area of research, social work practice, social policy, human behavior and the social environment, institutionalized discrimination, and field education.

In the advanced curriculum students choose an area of concentration for an additional thirty-six credit hours. There are two concentrations in the advanced curriculum. The Direct Practice Concentration consists of three fields of practice: aging, health/mental health, and families and children. The Management and Community Practice Concentration consists of four fields of practice: aging, broad-based human services, health/mental health, and families and children.

In the Direct Practice Concentration, students are prepared for advanced practice with particular populations and social units. In the Management and Community Practice Concentration, students are prepared for administration and large-systems interventions in a particular field of practice. Students develop individualized plans of study in consultation with their advisors, and their course selection must be guided by the distributional requirements of the concentration they have selected. However, students can combine interests in direct services and macro practice and pursue learning and career goals related to more than one area of concentration.

Admission is based on an evaluation of the applicant’s transcripts, references, written statement of interests in the field, Graduate Record Examination scores, and readiness to undertake graduate professional education. The applicant must have received a bachelor’s degree from a college or university, preferably with a broad liberal arts preparation in social and biological sciences and humanities.

The Triangle part-time program is located in Durham, and additional part-time programs are located in Asheville and Fayetteville. The first year of graduate professional education is taken on a part-time basis over two successive academic years. Admission to these programs is granted on the same basis as admission to the full-time program. Upon completion of the first-year requirements, the part-time student completes the degree at a full-time student on the Chapel Hill campus.

The normal time period for degree completion is four semesters for full-time study. However, graduates of undergraduate social work programs which are accredited by the Council on Social Work Education, who meet specific course and admissions requirements, are eligible to apply for a limited number of advanced standing positions. These students fulfill the degree requirements through two summer sessions and two semesters. The undergraduate major course work is considered approximately equivalent to the first year of graduate study.

The PhD Program in Social Work
The PhD program in social work is designed to meet the growing demand for social work and social welfare research scholars in academic and research settings. Graduates are prepared to conduct a variety of theory construction and research activities that include: building, testing, and refining explanatory theory for understanding personal and social problems, and practice theory for understanding change processes; designing social interventions that test explanatory and/or practice theory; and assessing the effects of planned social interventions through models of process, outcome, and impact evaluation.

The curriculum is grounded in core social work and social welfare courses and thorough training in research methodology and data analysis. At the same time, students design their program of study around their special area(s) of interest and complete a supporting program which requires focus on a social problem and intervention of concern to the student.
In the admissions process, students are asked to provide evidence of:

- a master's degree in social work from a school accredited by the Council on Social Work Education, or a master's degree in a related discipline;
- academic ability, as demonstrated in academic achievement and Graduate Record Examination scores;
- commitment to the values, goals, and purposes of the social work profession;
- two years of work experience in human services; and
- a direction for and commitment to scholarly work congruent with the objectives and resources of the doctoral program.

Courses for Graduates and Advanced Undergraduates

101 FOUNDATIONS OF SOCIAL WELFARE AND SOCIAL WORK (3). Introduces public welfare policy through lecture and discussion of the purposes public welfare serves; describes the most important programs created by those policies.

102 INTRODUCTION TO RESEARCH METHODS IN SOCIAL WORK (3). This course introduces the student to scientific research methods. Topics include: problem formulation and definition; hypothesis formulation; measures of central tendency; causality; research designs; measurement; data collection; and data analysis.

103 FAMILY AND INDIVIDUAL DEVELOPMENT (3). Study of family and individual development that examines inclusive definitions; structural variations; theories; and strengths, stressors, and changes that affect functioning.

106 RACISM: IMPLICATIONS FOR HUMAN SERVICES (3). This course's organizing focus will be how to work with minority groups, especially African Americans. The conceptual framework will be directed toward relationship building to enhance service delivery.

129 MANAGING THE EFFECTS OF DISASTERS ON FAMILIES AND CHILDREN (3). Designed to examine the effects that disasters have on children, their families, and communities, this course gives students an understanding of how to deal with survivors' reactions to trauma and how to decrease the chances of long-term damage when long-term disaster strikes.

150 PUBLIC SERVICE AND SOCIAL CHANGE (4). Course examines role of volunteer involvement and citizen participation in community development, grassroots organizing, advocacy, and other efforts to create a more just and democratic society. Service learning requirement.

151 ADVOCACY STRATEGIES FOR SOCIAL CHANGE (4). Course examines different types of advocacy strategies and their use in efforts both to enhance the delivery of services to disadvantaged populations, and to promote social change in communities.

180 SPECIAL TOPICS IN SOCIAL WORK (1-6). Focuses on current social work issues, including human behavior and the social environment, practice methods, social policy, and research. The focus will be specified each time the course is offered.

198 FOUNDATIONS OF FAMILY BEHAVIOR (3). Review of family research and interventions that serve as a foundation for promoting constructive family development and interactions.

199 SCHOOL SOCIAL WORK POLICY/PRACTICE (3). Prerequisite, SOWO 227, equivalent course or permission of instructor. An examination of public school social work policy and practice. The course emphasizes an ecological approach within the context of the school-family-community environment.

Courses for Graduates

203 DISCRIMINATION AND INEQUALITY (3). Examines discrimination and its implications for social work practice. Particular attention is paid to issues of race and gender and the consequences of social inequality on individuals and families.

219 PRE-CONCENTRATION PRACTICUM FOR ADVANCED STANDING STUDENTS (4). Course designed to assist students in summer classroom learning with direct experience in specialized field of practice and serves to bridge the BASW practicum with advanced concentration practicums. (Field fee $300.)

220 SOCIAL WORK PRACTICUM I (4). Students learn beginning practice skills through experimental opportunities and apply core knowledge to direct (individuals, families, groups) and macro (organizations, communities) social work practice two days per week in an agency setting. (Field fee $300.)

221 SOCIAL WORK PRACTICUM II (4). A continuation of SOWO 220, providing opportunities for students to demonstrate increased ability to assess, plan, administer, and evaluate appropriate social work practice interventions. (Field fee $300.)

222 SOCIAL WORK PRACTICUM III (6). Students apply specialized knowledge to social work practice at an advanced level with individuals, families, small groups, organizations, and/or communities in an agency of a specialized field. (Field fee $300.)

223 SOCIAL WORK PRACTICUM IV (6). A continuation of SOWO 222 providing opportunities for the students to demonstrate increased ability to assess, plan, administer, and evaluate appropriate social work interventions in a specialized field of practice. (Field fee $300.)

224 SOCIAL WORK PRACTICE WITH ORGANIZATIONS AND COMMUNITIES (3). Participants explore frameworks, values, and skills to meet individual and family needs through interventions with work groups, organizations, and communities.

227 SOCIAL WORK PRACTICE WITH INDIVIDUALS AND FAMILIES (3). Provides the foundation for social work practice with individuals and their families. It emphasizes basic knowledge, analytic and practice skills, and values necessary for practice.

228 SOCIAL WORK PRACTICE WITH GROUPS (3). Prerequisite or corequisite, SOWO 227, equivalent course, or permission of instructor. Enables students to become more knowledgeable and skillful as social group workers. Phases of group development and worker tasks in each phase provide the course framework.

230 ADULT HEALTH AND MENTAL HEALTH (3). Prerequisite, SOWO 103. This course examines adult health and mental health conditions and focuses on the impact these have on individual and family development and functioning.

233 FAMILY STRESS, COPING AND SOCIAL SUPPORT (3). Prerequisite, SOWO 103. A review of theories and research on family stress, coping, and social support; an examination of family resources and adaptation associated with life cycle transitions, environmental situations, and catastrophic events.

234 CHILD AND ADOLESCENT HEALTH AND MENTAL HEALTH (3). Prerequisite, SOWO 103. Reviews theories and research that serve as a foundation for assessing and serving children with serious health problems, physical disabilities, and mental disorders.

236 HUMAN BEHAVIOR OF AGING (3). Prerequisite, SOWO 103. A presentation of major biological, psychological, and sociological theories used to understand the normal aging process. The course surveys pathologies and functional disorders associated with aging. Special emphasis given to disadvantaged populations.

238 SUSTAINABLE DEVELOPMENT (3). Prerequisite, SOWO 224, equivalent course or permission of instructor. Examines perspectives and models of sustainable development. Students will analyze a project and present a participatory plan for engaging in sustainable development work.

239 ORGANIZATIONAL AND COMMUNITY BEHAVIOR (3). Prerequisites, SOWO 103 and SOWO 224. Explores theories and models for understanding the political, economic, and institutional environment for community planning and the development and management of human service policies and programs.
242 FAMILY-CENTERED SOCIAL WORK PRACTICE (3). Prerequisite or corequisite, SOWO 233. Seminar introduces students to family-centered social work practice. Course provides a theoretical base for developing direct practice skills in the treatment of the family as a unit.

243 SOCIAL WORK PRACTICE WITH COUPLES (3). Prerequisite, SOWO 227. Equivalent course or permission of instructor. A clinical seminar that analyzes the operations and character of couples counseling as a human services technique.

244 APPROACHES TO BRIEF TREATMENT (3). Prerequisite, SOWO 227 or permission of instructor. Clinical seminar introduces students to various types of brief treatment, including crisis intervention, psychodynamic, cognitive, behavioral, and solution-focused.

246 DIRECT PRACTICE WITH AGING POPULATIONS (3). Prerequisite or corequisite, SOWO 236. This course addresses social work practice with elderly in areas of individual and family treatment - group work, case management, supervision, consultation and training, and beginning skills in program planning and administration.

247 HEALTH AND MENTAL HEALTH PRACTICE WITH ADULTS (3). Prerequisite or corequisite, SOWO 230. Seminar on clinical health and mental health social work practice with adults and covers assessment and a wide range of theoretically based interventions. Course includes lectures and experiential exercises.

248 HEALTH AND MENTAL HEALTH PRACTICE WITH CHILDREN AND ADOLESCENTS (3). Prerequisite or corequisite, SOWO 234. This course prepares students for health and mental health practice with children and adolescents and their families. Prevention, assessment, and social intervention will be addressed.

249 MANAGEMENT AND COMMUNITY PRACTICE (3). Prerequisite or corequisite, SOWO 239. Examines social work leadership in management and community practice within complex political and economic environments, emphasizing social work values and intervention methods.

250 COMMUNITY PRACTICE AND PLANNING (3). Prerequisite, SOWO 224. Equivalent course or permission of instructor. Course focuses on roles and skills in community development, planning, and organizing, and on analysis of community practice models. Students will provide peer training in their special interest area.

251 CITIZEN PARTICIPATION AND VOLUNTEER INVOLVEMENT (3). Prerequisite, SOWO 224. Equivalent course or permission of instructor. Examines the role of grassroots organization in advocacy, self-help, and social development; involvement of citizens in public planning and development of volunteer programs.

252 ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): ABUSE AND DEPENDENCE (3). Surveys the field of substance use, abuse, and dependency, providing an overview of macro and micro issues and using the Bio-Psycho-Social-Spiritual model of addictions.

254 MARKETING AND FUNDRAISING FOR NONPROFIT ORGANIZATIONS (3). Prerequisite, SOWO 224, equivalent course or permission of instructor. This course helps students to develop skills and practices associated with marketing and fundraising strategies for nonprofit organizations at the macro level.

255 ANTISOCIAL BEHAVIOR IN CHILDHOOD AND EARLY ADOLESCENCE: THEORY AND PRACTICE (3). Prerequisite, SOWO 227, equivalent course, or permission of instructor. This course explores theories and intervention methods related to practice with children who have antisocial, aggressive behavior. Emphasis is placed on using protective risk factors to design multisystemic service strategies.

256 EXECUTIVE LEADERSHIP IN NONPROFIT ORGANIZATIONS (3). Prerequisite, SOWO 224, equivalent course or permission of instructor. An in-depth analysis of the executive role in nonprofit organizations, particularly in leadership transitions, strategic planning, board development, policy administration, governance, employee relations, and resource planning and acquisition.

257 CHILD WELFARE PERSPECTIVES AND PRACTICES (3). Prerequisite, permission of instructor. Course focuses on knowledge, skills, and critical thinking necessary to be an effective practitioner in public child welfare. Students discuss pertinent readings and meet with others connected with the system.

258 CHILD WELFARE PERSPECTIVES AND PRACTICES (3). Prerequisite, SOWO 257. Course focuses on knowledge, skills necessary to become an effective practitioner in public child welfare. Students will discuss divergent perspectives, practice needed skills, and develop an "ideal" agency.

262 CHILDREN'S SERVICES POLICIES AND PROGRAMS (3). Prerequisite, SOWO 101. This course addresses federal, state, and local children's policies and programs. Students learn to analyze child welfare, mental health, and allied policies, regulations and programs influencing children's services.

264 FAMILY POLICY (3). Prerequisite, SOWO 101. Examines policies affecting families in order to develop a broad understanding of various policy alternatives, their consequences, and the role of social workers as policy advocates.

266 AGING AND PUBLIC POLICY (PSYC 607) (DENT 607) (3). Prerequisite, SOWO 101. Students learn of social service, health, and income policy with the aged. Issues pertaining to informal support systems and disadvantaged groups are explored in the context of aging policy.

267 HEALTH AND MENTAL HEALTH POLICY (3). Prerequisite, SOWO 101. Examines national and state health/mental health policy, focusing on historical, legal, socio-political, and economic factors influencing financing, access, and service delivery. Explores skills and strategies for policy analysis and change.

269 POLICY PRACTICE (3). Prerequisite, SOWO 101. This course focuses on policy and skills development in administrative/legislative policy, lobbying and advocacy at multiple levels. Policy practice roles in a range of human interest areas will be emphasized.

272 SERVICES FOR PERSONS IN GRIEF (3). Understand the dynamics of grieving process and impact of bereavement on individuals/families, examine various determinants of loss and issues of complicated grief, and identify strengths-based clinical interventions.

276 AFRICAN AMERICAN WOMEN'S HEALTH ISSUES (3). Explores selected health issues confronting African American women and identifies race, gender, age, and class variables which impact health.

277 ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): CLINICAL PRACTICE (3). Prerequisites or corequisites, SOWO 252 and SOWO 227, equivalent courses, or permission of instructor. Students develop knowledge, skills, and attitudes specific to substance use, abuse, and dependency in order to work effectively in a variety of clinical settings with clients experiencing substance-related problems.

278 ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): BIOMEDICAL BASIS (3). Prerequisite or corequisite, SOWO 252. This course covers biomedical basis of substance related disorders. Students will develop a broad scientific perspective on different classes of substances of abuse and biological basis of substance dependence.

279 ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): SOCIAL WORK PRACTICE WITH CULTURALLY DIVERSE POPULATIONS (3). Prerequisites or corequisites, SOWO 252 and SOWO 227, equivalent courses, or permission of instructor. Provides an overview of the unique problems and needs of diverse populations who misuse ATOD and focuses on the application of culturally sensitive intervention strategies.

281 SOCIAL WORK AND THE LAW (3). Course provides familiarity with legal processes, legal research, and legal analysis within the context of socio-legal issues important to social work practice.
282 THE NATURE, DYNAMICS, AND TREATMENT OF FAMILY VIOLENCE (3). Prerequisite, SOWO 227, equivalent course or permission of instructor. This course provides an in-depth analysis of the etiology, effects, and dynamics of family violence as well as the identification of appropriate assessment and treatment strategies.

283 CARE OF THE DYING AND BEREAVED (3). Prerequisite, SOWO 227, equivalent course or permission of the instructor. This interdisciplinary clinical course addresses issues and practice models relating to terminal illness and bereavement faced throughout the life span. Taught by social work and nursing faculty.

284 ETHICAL DECISION MAKING IN SOCIAL WORK PRACTICE (3). A study of ethical decision making, along with potential guidelines for resolving dilemmas, and an in-depth examination of current illustrative practice issues.

292 EVALUATION OF SOCIAL INTERVENTIONS (3). Prerequisite, SOWO 102. Students develop knowledge of the purposes of evaluation research and the approaches and methodologies necessary to evaluate social work interventions.

304 THE ANALYSIS AND PRESENTATION OF DATA (3). Prerequisite, SOWO 102 or equivalent. Designed to explore basic principles and to provide advanced instruction in data analysis, including the construction and analysis of tables, statistical tests, and introduction to the use of computer programs.

Additional electives and independent study available for masters and doctoral students in any given semester:
320 INDIVIDUALIZED FIELD PRACTICUM (1-6). (Field fee $300.)

330 SEMINAR IN HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT (1-6).

330 HUMAN SEXUALITY AND SEXUAL IDENTITIES (3). This graduate seminar practice elective addresses a wide range of topics in human sexuality. Students work with the professor to determine the focus and direction of this course, using current technology to identify and incorporate useful information about human sexuality for the class.

340 SEMINAR IN DIRECT PRACTICE (1-6).

340.1 HUMAN RESOURCE MANAGEMENT (1-5). Students will learn requisite knowledge to select and exercise skills in human resource management, including employee recruitment and hiring, performance appraisals, motivation, staff development, and creating a responsive work environment.

340.2 SUPERVISION AND CONSULTATION (1-5). This course focuses on supervisory, administrative, supportive, and educational functions in a range of social work settings. Knowledge and skills for a new supervisor are emphasized.

340.3 LEADERSHIP IN CHILD WELFARE (1.5). This course focuses on skills in consultation, program development, and collaboration to strengthen child welfare programs and render them more responsive to the needs of children and families. Systems reform, cutting-edge programs, and leadership roles will be emphasized.

350 SEMINAR IN SPECIALIZED PRACTICE (1-6).

360 SEMINAR IN SOCIAL POLICY (1-6).

370 SEMINAR IN MACRO PRACTICE (1-6).

370.5 MANAGING SENSITIVE AND DANGEROUS SITUATIONS IN PRACTICE (1.5). Students will apply cognitive-behavioral, strategic, structural, and motivational models in challenging practice situations common to public and nonprofit agency social work. Extensive observed skill practice is followed by analysis, feedback, and reflection.

370.6 USE OF SELF (1.5). This course allows students to consider and explore questions of boundary violations, types of self-disclosure, and the impact these choices have on helping relationship.

370.7 PSYCHODRAMATIC METHODS IN CLINICAL PRACTICE (1-5). This course provides students with a foundation for using experiential techniques. Students will learn basic strategies for facilitating psychodrama groups, experiential family therapy, and skills training sessions.

380 SPECIAL TOPICS IN SOCIAL WORK (1-6).

380 RURAL HEALTH: AN INTERDISCIPLINARY APPROACH (3). This multidisciplinary course in health, pharmacy, dentistry, and social work provides knowledge base and forum for discussing issues in rural health. Provides training in problem solving by means of an interdisciplinary team approach.

381 SPECIAL TOPICS IN HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT (1-6).

382 SPECIAL TOPICS IN PRACTICE (1-6).

382 CLINICAL PRACTICE WITH FAMILIES (3). Prerequisite, SOWO 227, equivalent course, or permission of instructor. This advanced practice course is devoted to intervention with families. Intervention methods will be applied to families coping with major life stresses and relational problems. Family therapy models are covered.

383 SPECIAL TOPICS IN POLICY (1-6).

384 SPECIAL TOPICS IN RESEARCH (1-6).

385 SPECIAL TOPICS IN AGING (1-6).

385 INTERDISCIPLINARY TEAMWORK IN GERIATRICS (MEDI 285) (AHSC 285) (3). This course emphasizes the acquisition of skills and competencies necessary for effective interdisciplinary geriatrics care and leadership. With emphasis on a variety of settings in rural and/or underserved communities, the course includes case- and problem-based learning, presentations on aspects of teamwork, observations of practicing teams, and interviews with team members.

386 SPECIAL TOPICS IN FAMILY AND CHILDREN (1-6).

387 SPECIAL TOPICS IN HEALTH (1-6).

388 SPECIAL TOPICS IN MENTAL HEALTH (1-6).

389 SPECIAL TOPICS IN HUMAN SERVICES ADMINISTRATION (1-6).

390 SEMINAR IN RESEARCH (1-6).


613 INTERMEDIATE SPANISH FOR HEALTH CARE 1 (MEDI 613) (NURS 613) (DENT 613) (PHCY 613) (PUBH 613) (AHSC 613) (3). An intermediate-level Spanish course designed to help students and practicing health professionals develop oral proficiency skills as well as cultural awareness.

615 ADVANCED SPANISH FOR HEALTH CARE 1 (MEDI 615) (NURS 615) (DENT 615) (PHCY 615) (PUBH 615) (AHSC 615) (3). An advanced-level Spanish course designed to help students and practicing health professionals develop oral proficiency skills as well as cultural awareness.

701 SOCIAL WELFARE POLICY ANALYSIS (PSLCY 701) (3). Review of developments in U.S. welfare policy and economics, social and political forces underlying reform initiatives since the 1960s. Analysis of data on impacts of welfare policies and programs.

702 FINANCIAL MANAGEMENT OF NONPROFIT ORGANIZATIONS (PADM 702) (3). Prerequisite, SOWO 224, equivalent course, or permission of instructor. Provides basic financial skills for leaders of nonprofits, including bookkeeping fundamentals, interpreting financial statements, budgeting, cash management and investment, and legal compliance.
PhD Courses

301 FOUNDATIONS FOR THEORY CONSTRUCTION (3). A critical and historical understanding of social work knowledge, values, and intervention provides students with a foundation for theory construction.

303 RESEARCH METHODS IN SOCIAL INTERVENTION (3). Prerequisites, SOWO 102 and SOWO 304 or equivalent. An introduction to the basic principles of research for planning and evaluating social interventions. Topics include problem formulation, design, measurement, analysis, and the application of findings to theory and practice.

305 RESEARCH PRACTICUM I (3). Prerequisite, SOWO 304. Students develop independent research competence through work on a research project under the direction of an experienced researcher.

312 DEVELOPMENT OF SOCIAL INTERVENTION MODELS (3). Prerequisites, SOWO 301, SOWO 302. A systematic approach to the design, implementation, and evaluation of social interventions provides the framework for developing models that address a range of social issues and needs.

313 ADVANCED RESEARCH METHODS IN SOCIAL INTERVENTION (3). Prerequisites, SOWO 301, SOWO 302, SOWO 311, SOWO 312. Students build advanced competence in research design, data collection, data analysis, and statistics, by analyzing exemplary social work research and presenting independent learning projects within specialized areas of study.

314 MEASUREMENT IN SOCIAL INTERVENTION RESEARCH (3). Prerequisites, SOWO 303, SOWO 304. Course deals with quantitative and qualitative measurement strategies. Readings focus on theoretical and conceptual foundations of qualitative and quantitative measurement. Students develop skills through two field studies.

315 RESEARCH PRACTICUM II (Variable credit). Continuation of Research Practicum I. (On request.)

319 TEACHING PRACTICUM (3). This practicum provides a range of supervised classroom or training opportunities designed to prepare advanced doctoral students for faculty positions in undergraduate and graduate level social work education.

394 DOCTORAL DISSERTATION (Variable credit). Dissertation work. (On request.)

399 SPECIAL TOPICS IN DOCTORAL RESEARCH

399 LONGITUDINAL AND MULTILEVEL ANALYSIS (3). This course introduces students to statistical frameworks, analytical tools, and social behavioral applications of three types of models: event history analysis, hierarchical linear modeling (HLM), and growth curve analysis.

DEPARTMENT OF SOCIOLOGY

HOWARD E. ALDRICH, Chair

Professors
Howard E. Aldrich (42) Formal Organizations, Race and Ethnic Relations, Inequality, Evolutionary Theory, Social Networks
Judith Blau (5) Education, Justice Studies, Sociology of Art
Kenneth A. Bollen (47) Comparative Political Structures, Statistics, International Development
Barbara Enuwide (48) Social Demography, Methods, Community, Environment
Larry Griffin (69) Cultural Sociology, Race Ethnic/Minority Relations, Quantitative Methodology
Guanz Guo (51) Biosocial Interactions, Social Statistics, Demography
Kathleen M. Harris (6) Social Demography, Family and Child Well-Being, Poverty, Public Policy

Arne L. Kalleberg (49) Work, Organizations, Occupations, Social Stratification, Economic Sociology
Sheryl Kleinman (38) Social Psychology, Qualitative Research, Sociology of Emotions, Race, Class and Gender
François Nielsen (43) Comparative and Historical, Methods, Sociology
Ronald R. Rindfuss (34) Demography, Family, Environment
Christian Smith (54) Sociology of Religion, Culture Sociology, American Adolescents, Social Movements, Mixed Methods
Peggy Thoits (70) Mental Health, Medical Sociology, Social Psychology, Emotions
Peter Uhlenberg (20) Demography, Family, Aging

Associate Professors
Charles Kurzman (57) Political Sociology, Social Movements, International Development, Comparative and Historical, Social Theory, Islamic Studies
Michael J. Shanahan (65) Social Psychology, Life Course Studies, Sociology of Childhood and Adolescence, Transition to Adulthood

Assistant Professors
Kenneth T. Andrews (68) Social Movements, Political Sociology, Organizations, Race and Ethnic Relations, Environment
Ted Mouw (58) Social Stratification, Demography, Economic Sociology
Lisa D. Pearce (65) Family, Demography, Religion
Andrew J. Perrin (64) Political Sociology, Sociology of Culture, Sociology of Work, Social Theory, Social Movements
Karolyn Tyson (62) Sociology of Education, Qualitative Methods, Social Inequality, Social Psychology

Joint Appointments
John D. Kasarda (32) Human Ecology, Urban Sociology, Public Policy
J. Richard Udry (19) Demography, Family

Adjunct Faculty
M. Richard Cramer, Intergroup Relations and Religion
William A. Darity Jr., Racial and Ethnic Economic Equality across Countries, Motivation and Labor Market Outcomes, Schooling and Social Stratification
Anne S. Hastings, Race and Ethnicity, Social Stratification, Family
Gail Henderson, Medical Sociology, Including Social and Economic Determinants of Health and Health Services Utilization, and Health and Health Care in China, Social Contexts and Factors Related to Research Ethics
James Johnson, Public Policy, Urban Sociology, Social Geography
Robert Miles, Comparative Sociology/Historical Sociology, Racialized and Minority Relations, Migration and Intermarriage
Norman A. Peirce, American Society, Race and Ethnic Relations
John D. Stephens, Political Sociology, Political Economy, Comparative and Historical

Professors Emeriti
Amos H. Hawley
Henry A. Landsberger
Gerhard Lenski
Duncan MacRae Jr.
Anthony Oberschall
John Shelton Reed
Richard L. Simpson
James A. Wiggins

The Department of Sociology offers the master of arts and doctor of philosophy degrees in sociology. Students receive training that equips them for careers in both teaching and research. All sociology students take basic work in sociological theory, research methods and statistics, and substantive areas. The program emphasizes balanced training and the integration of theory, method, and substantive knowledge. Detailed information on graduate degree procedures is online at www.unc.edu/depts/soc. For further
information, including information about financial aid for students, contact the department's administrative assistant for student services.

The department's main concentrations of faculty research interest and graduate training are in comparative social organization and societal change, demography, research methods and social statistics, labor force and industrial relations, stratification and complex organizations. A large proportion of first-year, as well as more advanced, students receive financial assistance. Sources of aid include teaching assistantships, research assistantships, and nonservice fellowships.

The department works closely with the Carolina Population Center, the Odum Institute for Research in Social Science, and the University Computation Center. The department maintains the Odum Computer Laboratory for training and research. Computer programming assistance, consultation, and computing services are available without charge for student research. The department sponsors and edits Social Forces, a national sociological journal.

Courses for Graduates and Advanced Undergraduates

110 FORMAL ORGANIZATIONS AND BUREAUCRACY (3). Varieties of organizational forms, their structures and processes; creation, persistence, transformation, and demise of organizational forms; role of organizations in contemporary society. Aldrich, Nielsen, J. Blau.

111 SOCIAL MOVEMENTS AND COLLECTIVE BEHAVIOR (3). Study of nonroutine collective actions such as demonstrations, strikes, riots, social movements and revolutions, with an emphasis on recent and contemporary movements. Kozuma, Nietsen.

112 SOCIAL STRATIFICATION (3). Analysis of social structure and stratification in terms of class, status, prestige, and rank. Attention to social roles of elites, professionals, the middle class, the working class, and to comparative topics. Aldrich, Mouw.

114 THE CITY AND URBANIZATION (3). The city as a social, spatial, and political-economic phenomenon in the modern world. Analysis of urban demographic trends, spatial characteristics, and economic functions. Substantive topics include segregation, urban turmoil, unemployment, fiscal problems, suburbanization, and urban public policy. J. Blau.

115 ECONOMY AND SOCIETY (3). Examination of the structure and operation of institutions where economy and society intersect and interact, such as education, industrial organization, on-the-job training, labor markets, and professional associations. Emphasis on the contemporary United States, with selected comparisons with other countries. Mouw.

118 COMPARATIVE EUROPEAN SOCIETIES (POLI 114) (3). Examination of commonalities and differences of European societies and of the tensions and difficulties attending the European integration process. Nielsen, Marks.

119 SOCIOLOGY OF THE ISLAMIC WORLD (3). Investigates issues such as tradition and social change, religious authority and cooperation, and state building and opposition, in Muslim societies in the Middle East and around the world. Kozuma.

120 POLITICAL SOCIOLOGY (3). Analysis of the reciprocal influences of state and social organizations upon each other, the social bases of political authority and stability, of revolution and counterrevolution. Perini.

121 RELIGION AND SOCIETY (RELI 190) (3). Sociological analysis of group beliefs and practices—both traditionally religious and secular—through which fundamental life experiences are given coherence and meaning. Smith.

122 SOCIOLOGY OF HEALTH AND MENTAL ILLNESS (3). Course examines uniqueness of the sociological perspective in understanding mental health and illness. It draws upon various fields to explain mental illness in as broad a social context as possible. Attention focuses on how social factors influence definitions and perceptions of illness. Henderson.

123 SOCIOLOGY OF EDUCATION (3). A study of theory and research on the educational institution, with emphasis upon the multiple and changing effects of formal education in industrial societies. Tyson.

124 LAW AND SOCIETY (3). An analysis of the interconnections between law and society. Topics may include definitions and origins of law, legal institutions, dispute resolution, legal impact, and the role of law in social change. Staff.


127 THE LABOR FORCE (3). Supply and characteristics of labor and of jobs, including industrial and occupational changes, education and mobility of labor, and changing demography of the workforce. Kalleberg, J. Blau.

129 RACE, CLASS, AND GENDER (WMST 129) (3). Conceptualizations of gender, race, and class and how, separately and in combination, they are interpreted by the wider society. Emphasis on how black and working-class women make sense of their experiences at work and within the family. Kleinman.

131 AGING (3). The process of aging from birth to death, with a concentration on the later years of life, examined from a broad perspective. Topics include individual change over the life-course, the social context of aging, and the aging of American society. Uhlenberg.

141 SOCIAL deviance (3). Examines how people initiate, continue, and end stigmatized behavior; social construction of deviant categories, identities, and careers; the social psychology of labeling deviants. Staff.

143 CONFLICT AND BARGAINING (PWAD 143) (3). Conflict and conflict-resolution behavior. Application to labor-management relations, family, sports, community politics, international relations. Staff.

145 SOCIOLOGY OF EMOTIONS (3). The course examines how emotions are organized within social groupings and institutions. Differences in socialization by gender, ethnicity, social class, and age are explored. Kleinman.

150 THEORY AND PROBLEMS OF DEVELOPING SOCIETIES (3). Theories concerning the development process (motivational versus institutional, economic versus political and social development; similarity of sequential stages and outcomes) are related to policy problems facing the developing nations. Bollen.

153 SOCIAL CHANGE IN LATIN AMERICA (3). Introduction to Latin American ideologies and values; economic and demographic changes; major pressures (v., especially, the United States, Smith.


168 U.S. POVERTY AND PUBLIC POLICY (3). This course examines issues of poverty and social policy, focusing on the urban underclass, child poverty, single-parent families, the welfare debate, and homelessness, and includes a service-learning component. Fall, Harris.

169 MEDICINE IN THE TWENTY-FIRST CENTURY: HEALTH, PHYSICIANS AND SOCIETY (3). The primary objective of the course is to explain why particular social arrangements affect the types and distribution of diseases and how the medical care system is organized and responds. The course will focus on three topics: social factors in disease and illness; health care practitioners and their patients; and the changing face of the health care system. Staff.
171 URBAN PUBLIC POLICY (PLCY 171) (3). Defining and clarifying urban concerns and policies; emphasis on programs to revitalize cities. Issues include migration of people and jobs, housing, unemployment, poverty, crime, fiscal strain, linkages among settlement patterns, economic development strategies, energy and environmental objectives. Staff.

175 METHODS FOR POLICY ANALYSIS AND EVALUATION (POLI 175) (PLCY 175) (3). Prerequisite: one semester of statistics. Introduction to selected techniques such as multiple regression, decision theory, research design, experiments and quasi-experiments, and program evaluation, as well as policy-related models. Lowery, staff.

199 SOCIOLOGICAL ANALYSIS: SPECIAL TOPICS (3). Examines selected topics from a sociological perspective. Course description for a particular semester is available in the departmental office. Staff.

Courses for Graduates

200 HISTORY OF SOCIAL THOUGHT (3). Prerequisite: graduate standing in sociology or written permission of the instructor. Historic social ideas of Western culture considered against a background of general cultural analysis in terms of systematic theory. Required of all graduate degree candidates in Sociology. Kurtzman.

202 MAJOR SOCIOLOGICAL THEORIES (2-3). Examination of selected writing, concepts, and issues of some major sociological theory or theoretical approach. Staff.

203 CURRENT ISSUES IN SOCIAL THEORY (3). An examination of selected recent work of general significance in sociology. Themes vary. Kurtzman.

204 PRINCIPLES OF THEORIZING (3). This course in meta-theory analyzes methods of theorizing. It examines the criteria for constructing and evaluating scientific theories developed by philosophers of science and applies them to social theorizing. The hypothetico-deductive model of theorizing is contrasted with other theoretical approaches. Staff.

205 MACROSOCIOLOGICAL THEORY (3). The objective of the course is to illustrate three aspects of macrosociological theory: (1) the conception of macrosociology; (2) the structural approach in sociology; (3) hypothetico-deductive theorizing. A hypothetico-deductive macrostructural theory developed by the instructor is analyzed, and extensive empirical tests of the theory are presented. Staff.

207 MEASUREMENT AND DATA COLLECTION (POLI 207) (3). Provides an introduction to measurement theory and a review of various methods of data-gathering. Gaining experience with a variety of techniques of measurement and preparing a pretested research proposal are required for all students. Enwiie.

208 STATISTICS FOR SOCIOLOGISTS (3). Provides an introduction to probability theory, descriptive statistics, inferential statistics, and the algebra of expectations. Emphasis is on elements useful to research sociologists including bivariate regression and correlation. Nielsen.

209 LINEAR REGRESSION MODELS (HPAA 332) (3). The course presents regression analysis and related techniques. The major topics are: the assumptions of the regression model, dummy variables and interaction terms, outlier diagnostics, multicollinearity, specification error, heteroscedasticity, and autocorrelation. The final section introduces path analysis, recursive models, and nonrecursive systems. Bollen, Guo, Nielsen.

211 ANALYSIS OF CATEGORICAL DATA (HPAA 335) (1-3). Prerequisite: permission of the instructor. Introduction to techniques and programs for analyzing categorical variables and nonlinear models. Special attention is given to decomposition of complex contingency tables, discriminant function analysis, Markov chains, and nonmetric multidimensional scaling. Bollen, Guo.

212 DEMOGRAPHY: THEORY, SUBSTANCE, TECHNIQUES, PART I (3). A basic introduction to the discipline of demography. Materials covered include: population history; data sources; mortality and fertility trends and differentials and techniques of analysis. Rindfuss, Uhlenberg, Entwisle, Harris.

213 DEMOGRAPHY: THEORY, SUBSTANCE, TECHNIQUES, PART II (3). A continuation of SOCI 212. Materials covered include: population growth, stable population theory; migration and distribution; population policy; population estimates and projections. Rindfuss, Uhlenberg, Entwisle, Mouw.

214 MARX AND MARXISM (2). Brief exposition and evaluation of Marx's theory of human nature, societal change and evolution, class, the state, family, and other institutions. Summary of dependency theory and critical theory. Staff.

215 EVOLUTIONARY THEORY (3). Introduction to the new evolutionary theory and associated research. Staff.

217 SOCIAL PSYCHOLOGICAL THEORY (3). Introduction to basic theoretical approaches in social psychology, including social learning, social exchange, symbolic interaction, cognitive consistency, and affect control. Kleinman.

218 HUMAN ECOLOGY (3). Examination of how human populations adapt to their environments. Emphasis on linkages among population, organization, environment, and technology. Research applications of this approach to urban communities and organizations. J. Blau, Nielsen.

220 INFLUENTIAL WORKS IN DEMOCRACY (POLI 258) (3). The course covers the major traditions of democratic theory from ancient Greece to the present, ethnographies of political organization, and nineteenth- and twentieth-century observations on democracy. Bollen, staff.

221 COMPARATIVE WELFARE STATES (POLI 202) (3). This course examines the development, achievements, present crisis, and future of welfare states in advanced industrial democracies. Stephens.

223 SOCIAL ATTITUDES (3). Basic theories and methods in attitude research with special attention to attitude dynamics and social relations. Staff.

229 SOCIAL STRUCTURE AND PERSONALITY (3). The generic processes by which individuals become members of a society, with emphasis on the influence of social structure on socialization and the patterning of personality. Elder, Kleinman.

230 SOCIAL STRATIFICATION (3). Prerequisite, SOCI 120 or equivalent. Analysis of major theories of social groupings to the study of social inequality, with attention to how the various theories and approaches are operationalized. Focus on recent research in labor markets and world-wide inequality. Mouw, Nielsen.

231 SOCIOLOGY OF GENDER (WFMST 231) (3). Reviews theory on variation in men's and women's gender roles, with emphasis on industrialized societies and women's roles. Udy.

232 JUSTICE AND INEQUALITY: SELECTED TOPICS (Var.). Prerequisite, permission of instructor. Examination of selected issues regarding societal, economic and political inequality and questions of justice in the United States and Western Europe. Staff.

234 SOCIAL MOVEMENTS (3). The structure and dynamics of social movements and their societal environment, with special reference to sociopolitical movements of minority and low status groups in industrialized and third world societies. Kurtzman, Nielsen, Smith.

245 SOCIOLOGY OF ORGANIZATIONS (3). Prerequisite, permission of the instructor. Structural features of organizations. Behavior in organizations. Organizational career patterns. Comparative analysis of structure, behavior, and careers in different types of organizations. Interorganization and organization-environment relations. Aldrich.

246 OCCUPATIONS AND WORK (3). The changing occupational system. Structural types of labor markets. Occupational organization, role sets, power relations, careers, and satisfaction in different types of labor markets and occupations. Kalleberg.
247 THE SOCIOLOGY OF SCIENCE: SCIENCE AS A SOCIAL AND CULTURAL ACTIVITY (3). This course examines the production of scientific knowledge. The focus is on the processes by which scientific knowledge and technological artifacts are constructed through cultural practices and the organizational of scientific work. Staff.

248 MEDICAL SOCIOLOGY: HEALTH, ILLNESS, AND HEALING (3). This graduate seminar presents a conceptual and substantive overview of some of the most fundamental and salient issues in the field of medical sociology. The focus of the course is on continuity and change in health and health care. The following topics will be examined: social causation of disease; medicalization of social problems; medicine as a profession; treatment systems and organization of care; politics and the changing face of the medical care system. Staff.

250 DATA COLLECTION METHODS (3). Reviews alternative data collection techniques used in surveys concentrating on the impact these techniques have on the quality of survey data. Topics covered include errors associated with nonresponse, interviewing, and data processing. Staff.

251 QUESTIONNAIRE DESIGN (3). Examines the stages of questionnaire design including developmental interviewing, question writing, question evaluation, pretesting, questionnaire ordering and formatting. Reviews the literature on questionnaire construction. Provides hands-on experience in developing questionnaires. Staff.

252 CASE STUDIES IN SURVEYS (3). A number of external speakers from government and industry will describe various problems they encounter for in surveys. Students will be challenged to develop proposals for addressing the problems, citing the literature as appropriate. Staff.

253 EXPERIMENTAL DESIGN IN SOCIOLOGY (3). Prerequisite, permission of the instructor. Statistical aspects of experimental designs with emphasis on applied problems involved in executing a statistically sound design. (On demand.) Staff.

254 SURVEY SAMPLING (3). Prerequisite, permission of the instructor. The different sampling techniques are discussed. Major emphasis on planning of large-scale sample surveys rather than on statistical theory. (On demand.) Staff.

255 SURVEY COMPUTING (3). Introduces basic statistical concepts and practices emphasizing the analysis of real data. Provides training in the use of the SAS statistical analysis system and the practical problems of stratification, clustering, and weighting in survey analysis. Staff.

260 HEALTH ORGANIZATIONS AND OCCUPATIONS (3). Considers various treatment settings, socialization and job performance of health workers, patients, the relation between organizational structure and effectiveness, and professional self-regulation. Staff.

263 SOCIAL GERONTOLOGY (3). Prerequisite, permission of the instructor. The study of the aged in our society. Uhlenberg.

265 CIVIL SOCIETY (1-3). Under the conditions of globalization, civil society takes on new and different meanings. Course examines what the term means and how it is applied.

266 SOCIOLOGY OF CULTURE (3). Focuses on substantive and theoretical issues in this field and their intellectual origins. Topics include organizations, art, religion, science, class, and politics. Quantitative and qualitative approaches are examined. J. Blau, Smith.

267 SOCIOLOGY OF RELIGION (3). An introductory, graduate-level survey of the sociology of religion as a field of study, reviewing literature on important theoretical approaches and key problems and issues in the field. P. Smith.

268 ETHNICITY, RACE, AND EDUCATION (Vary.). Emerging new theory and research paradigms in the sociology of education are reviewed. The course covers the following: social and ethnic variation, parenting, contextual variation, peer influence, and school variation. J. Blau, Tyson.

270 THE LIFE COURSE (3). Provides an intensive introduction to the life course as a theoretical orientation and methodology (logic of inquiry). Elder.

274 SEMINAR IN URBAN SOCIOLOGY (3). Theory and research in the study of the location and growth of urban areas, the effect urban areas have upon behavior, and the study of social behavior in different urban subareas. Each member of the seminar completes a project interrelating theory and research. Staff.

280 SOCIOLOGICAL THEORIES OF AGING AND THE ADULT LIFE COURSE (3). Overview and critical assessment of sociological theory applied to aging, including explicit theories of aging. The course examines historical development of the field, and considers the nature of theory development. Marshall.

287 MIGRATION AND POPULATION DISTRIBUTION (3). Treats migration trends, patterns, and differentials and their effects on population distribution in continental and regional areas. Attention is given to theoretical and methodological problems in the study of population movement. (On demand.) Uhlenberg.

289 SOCIOECONOMIC FACTORS IN FERTILITY (3). Fertility differentials by social and economic factors, changes therein over time, the manner in which these factors affect fertility, and the implications thereof for fertility-control programs are studied. (On demand.) Rindfuss, Entwistle.

290 MORTALITY: SOCIAL DEMOGRAPHIC PERSPECTIVES (3). Prerequisite, SOCI 212 or equivalent, or permission of instructor. This advanced seminar covers mortality data and measurement, the inequality of death, trends in morbidity and mortality, and explanations of mortality decline. Social demographic perspectives receive primary emphasis. Entwistle, Guo.

300 TRAINING PROGRAM SEMINARS (1). Continuing seminars in selected topics. Staff.

301 READING AND RESEARCH (Var. 1-3) (3 each semester). Registration by permission of the instructor.

302, 303 ADVANCED READING. Library research or field research on a selected topic under guidance of the instructor. Staff.

307 SEMINAR ON POLICY ANALYSIS (3). Common normative, political, and behavior aspects of policy choice in diverse fields; e.g., urban, education, health, welfare, population, and foreign policy. Public policies may modify or replace the market. Staff.

308 SEMINAR IN COMPARATIVE AND HISTORICAL SOCIOLOGY (3). Prerequisite, permission of the instructor. Examination of issues involved in societ comparison, with an emphasis upon comparative and historical analysis of substantive issues at the macro-societal level. Special attention is given to methodological problems. Kurzman.

311 SEMINAR IN POLITICAL SOCIOLOGY (POLI 311) (3). The relationship between social structure and political decisions. Regimes and social structure; bureaucracies, political associations, and professions; science and politics; closed and open politics; political movements and change. Kurzman, Stephens.

312 SEMINAR ON SOCIAL NETWORKS (3). Prerequisite, permission of the instructor. Theoretical and substantive issues in social network analysis. Focus is on models of social structure. Staff.

313 POVERTY IN AMERICA (3). This graduate seminar will study trends, causes, and consequences of poverty in America, covering the topics of single-mother families, child poverty, low-wage work, immigrant families, welfare reform, and social policy. Harris.

314 SEMINAR IN SOCIAL CONTROL AND DEVIANC (3). Registration by permission of the instructor. The relation of social norms to conforming and deviant behavior. Types of social and personal controls. Theoretical and research problems are reviewed. Staff.
315, 316 READING AND RESEARCH IN METHODOLOGY (3 each semester). Registration by permission of the instructor. Special work on selected problems of research methodology. Staff.

317 STRUCTURAL EQUATIONS WITH LATENT VARIABLES (HPAA 336) (3). Prerequisites, SOC 209 and permission of the instructor. This course examines models sometimes referred to as LISREL models. Topics include: path analysis, confirmatory factor analysis, measurement error, model identification, nonrecursive models, multiple indicators. Bollen.

318 LONGITUDINAL AND MULTILEVEL DATA ANALYSIS (3). Prerequisite, SOC 209, 211, or equivalent. This course provides an introduction to event history analysis or survival analysis, random effects and fixed effects models for longitudinal data, multilevel models for linear and discrete multilevel data, and growth curve models. Bollen, Guo.

319 SURVEY PRACTICUM (3). Applied workshop in sample survey design and implementation. The student works in a data collection center under the guidance of the instructor. Course focuses on real world problems in data collection and their practical, cost-effective solutions. Staff.

320 SYSTEMATIC METHODS OF QUALITATIVE RESEARCH (3). Course designed to teach methods of data collection and analysis for qualitative research. Kleinman, Smith, Tyson.

321 FIELD RESEARCH (3 each semester). Registration by permission of the instructor.

326 SEMINAR IN SELECTED TOPICS (3). Course description for particular semester is available in department office. Registration by permission of the instructor. Staff.

329 SEMINAR IN SOCIALIZATION AND GROUP PROCESS (3). Prerequisite, permission of the instructor. Analysis of theoretical issues and empirical research relevant to socialization. Special emphasis on group process effects on the evolution of the social self, the "fit" between personality and role, and other issues. Kleinman.

333 SEMINAR IN MARRIAGE AND THE FAMILY (3). (On demand.) Ushlenberg.

380 SEMINAR ON THE TEACHING OF SOCIOLOGY (3). Prerequisite, doctoral candidacy in sociology or permission of the instructor. Examines teacher's role and teaching process; planning a course, constructing syllabi, testing for teaching or grading, evaluating teacher performance, needs of different student populations. Aldrich.

393 MASTER'S THESIS (3 or more). Individual research in a selected field under the direction of a member of the department. Staff.

394 DOCTORAL DISSERTATION (3 or more). Individual research in a selected field under the direction of a member of the department. Staff.

Interdisciplinary Courses for Advanced Undergraduates and Graduates

SOC 604 AGING AND HEALTH (EPID 604) (PSYC 604) (3). Sponsored by UNC-Chapel Hill's campus-wide Institute on Aging. The course provides students in all disciplines with a general background in aging and the problems of older persons. Staff.

Jackson Rouch (59) Pediatric Audiology, Early Intervention
David E. Yoder (47) Language, Augmentative Communication, Literacy

Associate Professors
Melody F. Harrison (40) Speech, Language, and Communication Development in the Hearing Impaired; Auditory
Robert Mayo (49) Craniofacial Anomalies, Adult Language Disorders, Voice Disorders
Katarina L. Haley, Speech Perception and Production, Neurogenic Communication Disorders

Assistant Professor
Sharon William, Geriatrics, Communication Disorders of Older Adults, Multicultural Issues, Counseling

Research Professors
Joseph W. Hall (53) Audiology and Psychoacoustics Research
Robert W. Peters (9) Auditory and Speech Perception, Sensation and Perception, Sustaining
Charles Finley, Cochlear Implant Processing Strategies
Joanne E. Roberts (50) Early Language Development and Disorders, Otitis Media
John H. Grote, Audiology and Psychoacoustics Research

Clinical Associate Professor
Linda R. Watson (67) Language Disorders in Young Children, Autism, Emerging Literacy

Clinical Assistant Professors
Martha R. Mundy (70) Pediatric Audiology, Educational Audiology
Brenda Mitchell, Adult Neurogenic Disorders, Community Re-entry for Adults, Clinical Supervision
Stephanie Sjoblad, Aural Rehabilitation, Hearing Aids and Assistive Devices

Clinical Instructors
Debra Weiszleder, Pediatric and Educational Audiology, Hearing Aids
Lisa Dombry Phonology, Speech-Language Pathology
Kate Kassouf, Hearing Aids, Older Adults

Adjunct Associate Professor
Carolyn M. Mayo, Multicultural Issues, Adult Language Disorders, Prevention of Communication Disorders

Adjunct Assistant Professor
Mark M. Haythorn, Diagnostic Audiology

Adjunct Clinical Instructors
Carolyn Brown, Cochlear Implants in Children
Brian Kanapkey, Dysphagia, Neurogenic Speech Disorders
Holly Teague, Cochlear Implants in Children
Debra R. Reinhart, Augmentative Communication, Clinical Supervision

The Division of Speech and Hearing Sciences in the Department of Allied Health Sciences, School of Medicine, provides academic and professional education for speech-language pathologists and audiologists at the master's and doctoral levels. The study of speech and hearing requires knowledge in both normal and abnormal speech, hearing, and language. The speech and hearing sciences curriculum provides an environment where learning can be based on laboratory and clinical experiences. Three major tracks of study are possible within the curriculum: audiology, speech-language pathology, and speech and hearing sciences. There are three academic degree programs: 1) a master's degree (MS) for entry-level clinical practice of speech-language pathology, 2) a professional doctorate (AuD) for entry-level clinical practice in audiology and 3) a PhD in speech and hearing sciences, for individuals with a background in speech-language pathology or audiology who desire a research degree. The programs are interdisciplinary in that clinical and research activities of other University departments and institutions as well as the Division of Speech and Hearing Sciences are involved in the educational program.
The entrance, academic, and residence requirements correspond to those of The Graduate School. All students following professional tracks are prepared to meet licensure and certification requirements necessary for the practice of speech-language pathology or audiology. More complete information describing the graduate program can be obtained by writing to the Division of Speech and Hearing Sciences, CB# 7190, Department of Allied Health Sciences, School of Medicine.


Courses for Graduates and Advanced Undergraduates

123 INTRODUCTORY AUDIOLOGY I (COMM 180) (3). Theory and practice of the measurement of hearing, causative factors in hearing loss, evaluation of audiometric results, screening for hearing loss and middle ear disease, demonstration of clinical procedures in audiology. Spring, Roush.

130 INTRODUCTION TO PHONETICS (3). Analysis, description, and classification of speech sounds. Broad and narrow phonetic transcription. Spring.

140 SPEECH SCIENCE (COMM 182) (3). Introduction to the science of speech, including production, acoustics, and perception. Fall, Haley.

170 ANATOMY AND PHYSIOLOGY OF THE SPEECH-LANGUAGE AND HEARING MECHANISMS (COMM 183) (3). Anatomy and physiology of the speech-producing and aural mechanisms. Fall, Harrison.

Courses for Graduates

201 INTRODUCTION TO RESEARCH IN SPEECH AND HEARING (3). Prerequisite, statistics course. Experimental and descriptive research designs in speech and hearing sciences including both group and single subjects. Spring, Haley.

203 AUDILOGIC REHABILITATION FOR CHILDREN (3). Prerequisite, SPHS 123. Covers speech perception and the effects of hearing loss on perception and production of speech as background for understanding assessment and treatment, with an auditory-verbal emphasis. Pediatric assessment and amplification are reviewed. Spring, Harrison.

204 AUDILOGIC REHABILITATION FOR ADULTS (3). Theoretical bases and history of audiologic rehabilitation of adults. Also, practical approaches to assessment and therapeutic intervention are presented. The roles of assistive technology and family-based counseling are included. Fall, Sobel.

205 SEMINAR IN ADVANCED AUDITORY VERBAL THERAPY (2). Prerequisites, SPHS 203 and 123. Provides an advanced level of knowledge and skill in the auditory-verbal approach working with birth-5 year olds who have a hearing loss. Spring, Wilson, Harrison.,

206 COMMUNICATION ASSESSMENT AND INTERVENTION WITH INFANTS AND TODDLERS (3). Stages of communication development of infants from birth to two years old, clinical issues related to the assessment tools and intervention and planning for infants and toddlers with disabilities and their families. Spring, Grau.

207 COMMUNICATION ASSESSMENT AND INTERVENTION WITH PRESCHOOLERS (3). Stages of communication development of two-to-five-year-olds, clinical and research issues related to the assessment and intervention of preschoolers with disability and their families. Fall, Watson.

208 PEDIATRIC COCHLEAR IMPLANTS (2). Prerequisites, SPHS 203 and 221. Examines fundamentals of cochlear implants, candidacy, evaluation, equipment, programming, and performance outcomes. Summer, Brown and Teagle.

221 PHYSIOLOGICAL AND PSYCHOLOGICAL BASES OF HEARING (3). Auditory function; anatomy and physiology of the auditory system; auditory processing at the psychoacoustic level. Fall, Grose.

225 HEARING DISORDERS (2). Prerequisite, SPHS 123 or equivalent. Diseases and disorders of the auditory system and their management. Fall, Roush.

241 NEUROANATOMY (3). Prerequisite, SPHS 170 or equivalent. A survey of neurological anatomy in relation to clinical speech-language pathology. Topics considered include organization of the CNS, neuroanatomy, neurophysiology, and neurochemistry. Spring, Harrison.

263 LANGUAGE ASSESSMENT AND MANAGEMENT (3). Communication assessment and treatment for children from age birth through five and their families. Covers communication and related domains (e.g., play, cognition, social aspects). Fall, Craig.

264 LANGUAGE IMPAIRMENTS OF CHILDREN (3). Prerequisite, SPHS 263. Seminar course exploring categorical classifications of young children and the impact of these categories on assessment and intervention. Common topics include: autism, visual impairments, fragile X syndrome, Down syndrome. Spring, Watson, Craig.

265 AUGMENTATIVE AND ALTERNATIVE COMMUNICATION (3). Prerequisite, SPHS 347 or equivalent. A comprehensive look at the theoretical and clinical issues related to augmentative/alternative communication. Techniques and strategies to provide effective communication for the severely handicapped are discussed. Spring, Erickson.

281 APPLIED PSYCHOLINGUISTICS (3). Broad course in theoretical and applied psycholinguistics designed to examine underlying cognitive processes related to language development, comprehension and production. Spring.,

302 PROBLEMS IN SPEECH AND HEARING SCIENCES (1-3). May be repeated for credit. Fall, spring, and summer. Staff.

304 CLINICAL PRACTICUM IN SPEECH-LANGUAGE PATHOLOGY (1-3). Permission of practicum coordinator. Supervised clinical experience. May be repeated for credit. Fall, spring, summer.

305 CLINICAL PRACTICUM IN AUDIOMETRY (1-3). Prerequisite, COMM 184 or equivalent. Supervised observation in clinical experiences. May be repeated for credit. Fall, spring, summer, Weisleder.

306 CLINICAL PRACTICUM IN AUDILOGY (1-3). Prerequisites, permission of practicum coordinator. Supervised clinical experience. May be repeated for credit. Fall, spring, summer, Weisleder.

310 AUDILOGIC EVALUATION I (3). Prerequisite, SPHS 123 or equivalent. Clinical audiology techniques including speech audiometry and special auditory tests. Masking is covered in depth, as well as consolidation of clinical skills for diagnostic and rehabilitative purposes. Fall, Mundy, Roush.

312 CLINICAL PRACTICUM II (3). Prerequisite, SPHS 310 or equivalent. Clinical audiology techniques including special auditory tests for pseudohypoacusis, central auditory processing, and pediatric audiology. Spring, Mundy, Roush.

312 CHARACTERISTICS OF AMPLIFICATION SYSTEMS (3). Amplification options for the hearing-impaired; specifically, hearing aid, electroacoustics, and earmold technologies. Additionally, pre-hearing aid selection procedures are presented. Fall, Weisleder.

313 FITTING AND DISPENSING OF AMPLIFICATION SYSTEMS (3). Prerequisite, SPHS 312 or equivalent. Theoretical and practical approaches to fitting amplification systems and the procedures for dispensing amplification systems to the hearing-impaired. Spring, Sobel, Weisleder.

314 ELECTROPHYSIOLOGIC AUDIOLOGY (3). Prerequisites, SPHS, SPHS 310. This course explores the field of electrophysiology responses within the auditory and vestibular systems. Auditory brainstem response (ABR), electroencephalography (EEG), and evoked potential responses (ERPs) and otoacoustic emissions (OAEs) are covered. Spring, Grose.
315 AUDIOLGY FOR SPECIAL POPULATIONS (3). Prerequisite, SPHS 123 or equivalent. Advanced principles of pediatric audiology and intervention strategies for hearing-impaired children. Procedures for counseling and case management. Spring.

316 INDUSTRIAL AUDIOLGY AND HEARING CONSERVATION (2). Prerequisite, SPHS 123 or equivalent. Military and industrial audiology and hearing conservation, including physiological and psychological factors. Fall.

317 PROFESSIONAL CONSIDERATIONS IN SPEECH AND HEARING (3). To provide the graduate major with information about current issues facing professionals. These include changing delivery systems, leadership, treatment efficacy and quality, reimbursement, and ethics. Fall.

318 ELECTRONYSTAGMOGRAPHY AND VESTIBULAR ASSESSMENT (2). Principles of vestibular function and dysfunction, clinical application of ENG. Fall.

321 SEMINAR IN AUDIOLOGY (1-3). Special topics and significant literature in the field of audiology. (On demand.) Staff.

330 INDEPENDENT STUDY (1-6). This course gives enrolled graduate students in the curriculum an opportunity to pursue research supervised by one or more faculty members culminating in a written document or special project. Fall, spring, and summer. Staff.

341 SEMINAR IN SPEECH-LANGUAGE PATHOLOGY (3). Special topics and significant literature in the field of speech pathology. (On demand.) Staff.

342 ADULT APHASIA (3). Prerequisite, SPHS 170 or equivalent. Discussion of adult aphasia and its clinical management, including assessment, diagnosis, prognosis, counseling, and treatment. Combined lectures and laboratories. Spring. Haley.

343 PHONOLOGICAL DEVIATIONS: ASSESSMENT AND MANAGEMENT (3). Prerequisites, SPHS 130, SPHS 170. Course deals specifically with the major diagnostic tests of articulation and the specific management programs associated with each. Thorough examination of the research supporting each test and treatment plan is included. Fall. Craig.

344 ADULT MOTOR SPEECH DISORDERS (3). Prerequisites, SPHS 140, SPHS 170. Assessment and treatment of adults presenting with disorders of motor speech control (e.g., dysarthria, anarthria, and apraxia of speech). Spring. Mayo.

345 PRINCIPLES OF DIAGNOSIS AND INTERVENTION (3). Diagnostic procedures focusing on interviewing, counseling, report writing and standard measures. Intervention procedures focusing on establishing plans, criteria for success, documentation of progress, discharge planning, and therapy strategies. Fall. Dombey. Robinson.

346 STUTTERING (2). Prerequisite, SPHS 170. Major theories, treatment, identification, and diagnosis with respect to child and adult stuttering. Summer. Mayo.

347 CHILD NEUROMOTOR SPEECH DISORDERS (3). Prerequisite, SPHS 170. Multidisciplinary approach to diagnosis and treatment of childhood neuropsychological disorders. Fall.

348 VOICE DISORDERS (3). Prerequisites, SPHS 140, SPHS 170. Assessment and management of children and adults with voice disorders and laryngeal and Fall. Markus.

349 EVALUATION AND CLINICAL MANAGEMENT OF PERSONS WITH ORAL-FACIAL ANOMALIES (3). Prerequisites, SPHS 140, SPHS 170. In-depth analysis of the embryologic and physiologic bases of oral-facial anomalies and the team approach to assessment and habilitation. Particular emphasis placed upon the following specialties: genetics, plastic surgery, prosthodontics, orthodontics, otolaryngology, and speech-language pathology. Fall. Mayo.

350 THE COMPUTER AS A RESEARCH TOOL (3). This course explores the use of computers in research and clinical practice for speech-language pathologists and audiologists. Summer. Roush.

352 COGNITIVE LINGUISTIC PROCESSING DISORDERS IN ADULTS (3). Prerequisite, SPHS 342 or equivalent. Discussion of normal aging and language. Assessment and treatment of cognitive and linguistic problems in persons with dementia, conditions, right hemisphere dysfunction, and traumatic brain injury. Spring. Haley.

354 DYSPHAGIA (3). Prerequisite, SPHS 342. Discussion of the development of the normal swallow, anatomy and physiology of the swallowing mechanism, and assessment and team management of swallowing disorders. Spring. Mutchler, Brackett, Kasapley.

361 SEMINAR IN LANGUAGE AND LANGUAGE DISORDERS (1-3). May be repeated for credit. Special topics and significant literature in the field of language and language disorders. (On demand.) Staff.

362 LANGUAGE AND LEARNING DISORDERS (3). Prerequisite, SPHS 162 or equivalent. Course in normal and abnormal learning from a language perspective. Emphasis on evaluation and treatment from a psycholinguistic model. Fall.

381 SEMINAR IN HEARING SCIENCE (1-3). May be repeated for credit. Advanced special topics and current research in hearing science. (On demand.) Staff.

382 SEMINAR IN SPEECH SCIENCE (1-3). May be repeated for credit. Advanced special topics and current research in speech science. (On demand.) Staff.

383 SPEECH PATHOLOGY INSTRUMENTATION FOR CLINICAL EFFICACY (1). Prerequisite, SPHS 140. Practical experience in the use of instrumentation to assess the acoustic and physiologic characteristics of speech and voice production. Use of these instruments for therapeutic intervention. Spring. Mayo.

393 MASTER'S THESIS (3 or more). Fall, spring, and summer. Staff.

394 DISSERTATION (3 or more). Fall, spring, and summer.

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DEPARTMENT OF STATISTICS AND OPERATIONS RESEARCH

VIDYADHAR KULKARNI, Chair

Professors
Edward Carlstein (25) Stochastic Processes, Nonparametric Inference
Alan F. Karr (30) [Director, National Institute of Statistical Sciences] Inference for Stochastic Processes, Image Analysis, Engineering Application of Statistics
Rogers G. Kelly (4) [Senior Associate Dean, College of Arts and Sciences] Probability, Combinatorics, Biological Applications
Vidyadhar G. Kulkarni (14) Stochastic Models of Queues, Telecommunication Systems, Warranties, Supply Chains
Malcolm Ross Leadbetter (7) Probability, Stochastic Processes
James Stephen Maron (24) [Amos Hawley Distinguished Professor] Nonparametric Inference, Asymptotic Theory
J. Scott Provan (20) Networks, Computational Complexity, Combinatorial Optimization
David S. Rubin (3) [Professor, Kenan-Flagler Business School] Integer Programming, Networks
Pratibha Kumar Sen (13) [Gary C. Bohmer Professor of Biostatistics] Nonparametric Methods, Multivariate Analysis, Sequential Analysis
Gordon D. Simons (8) Statistical Inference, Probability
Richard L. Smith (27) [Reed Distinguished Professor] Extreme Value Theory, Time Series, Statistical Inference, Environmental Statistics
Jayabhanrana Swamianathan (22) [Benjamin Cone Research Professor, Kenan-Flagler Business School] Supply Chain, Stochastic Models
Jon W. Tolle (6) Optimization Theory
Associate Professors
Amarjit Budhiraja (2) Probability and Stochastic Processes, Stochastic Control and Filtering, Large Deviations, Stochastic Networks
Chuanhu Ji (26) Statistical Modeling and Computing in Materials Science, Image Analysis, and Quantitative Finance
Andrew Nobel (1) Nonparametric Statistics, Pattern Recognition

Assistant Professors
Yufeng Liu (18) Carolina Center for Genome Sciences] Machine Learning, Design of Experiments, Bioinformatics
Gabor Pataki (21) Convex Programming, Combinatorial Optimization, Integer Programming
Vladan Pipiris (11) Long-Range Dependence, Self-Similarity, Heavy-Tails, Fractional Calculus, Wavelets, Applications to Telecommunications
Haipeng Shen (12) Call Center Analysis, Queuing, Internet Traffic
Eylem Tekin (23) Stochastic Models, Health Systems, Markov Decision Processes, Yield Management
Zhengyan Zhu (15) Spatial Sampling Designs, Space-Time Modeling, Network Traffic
Sehan Ziya (28) Stochastic Models, Pricing in Congestion Systems

Lecturer
Charles Dunn, Actuarial Models

Adjunct Professors
Robert J. Adler (5) Stochastic Processes, Random Fields
Kenneth A. Bollen, Comparative Political Structures, Statistics, International Development
George Chriakos, Environmental Sciences and Engineering
Jianqing Fan (9) Nonparametric Functional Estimation, Statistical Inference
Ronald Gallant (39) Econometrics, Nonlinear Models, Non-parametric Inference
Mark E. Harriman, Combinatorial Optimization, Integer Programming, Polyhedral Combinatorics
Harry L. Hunt, Stochastic Processes, Statistical Inference
Valen Johnson, Image Analysis, Bayesian Statistics, Binary Data
Karl Petersen, Ergodic Theory
Eric Renault, Econometrics, Finance
Robert Rodriguez, Statistical Quality Improvement, Statistical Graphics
Shaler Stidham Jr, Stochastic Processes, Control of Queues, Queuing Theory, Markov Decision Processes
Randy Tobias, Linear Models, Experimental Design
Harvey M. Wagner (19) Management, Strategic Thinking, Modeling

Professors Emeriti
Charles R. Baker
George S. Fishman
Norman L. Johnson [Alumni Distinguished Professor Emeritus]
Gopinath Kallianpur [Alumni Distinguished Professor Emeritus]
Walter L. Smith
Shaler Stidham Jr.

The Department of Statistics and the Department of Operations Research were merged on July 1, 2003 to create the Department of Statistics and Operations Research. The merged department offers separate graduate programs in operations research and statistics leading to master's and PhD degrees in operations research, and master's and PhD degrees in statistics. It also offers an undergraduate degree program leading to a BS in mathematical decision sciences. The graduate programs are listed separately below in alphabetical order.

Further information for either program can be obtained from the department's home page at www.stat.or.unc.edu. Information about operations research may also be obtained from the Admissions Chair, Operations Research Program, CB# 3260, Smith Building, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, or by emailing stat@unc.edu. More information about the statistics program may also be obtained from the Director of Graduate Admissions, Statistics Program, CB# 3260, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3260.

Graduate Program in Operations Research

Operations research is concerned with the process of decision making for the purpose of optimal resource allocation. The spectrum of related activities includes basic research in optimization theory, development of deterministic and stochastic mathematical models as aids for decision making, and application of these models to real world problems. The principal steps in modeling consist of analyzing relationships that determine the probable future consequences of decision choices and devising appropriate measures of effectiveness in order to evaluate the relative merits of alternative actions. During the past fifty years, operations research has developed as a mathematical science whose methods of analysis are regularly employed in many diverse industries and governmental agencies.

The operations research faculty consists of a resident faculty and an interdisciplinary faculty, with programs of study that offer considerable opportunity for the pursuit of individual student interests. Both the MS and PhD degrees are offered, with specialization possible in deterministic optimization theory (such as nonlinear and integer programming), in stochastic processes and applied probability (such as queuing theory and simulation), or in an approved area of application (such as management science). The MS program is intended for the student who is preparing for a career in industry, government, or consulting. The PhD program emphasizes theoretical depth and is tailored primarily for the student who is preparing for a career in teaching and/or research. Each program includes study of the mathematical foundations of operations research. In either case the specific program of study for each student is determined to a large extent on an individual basis through consultations with a faculty advisor to obtain a balance between application and theory. Although it is possible for the well-prepared student to complete the MS requirements in two semesters, it more typically requires four semesters. The PhD program, including the dissertation, generally requires four or five years past the bachelor's degree. The department offers a minor for PhD students in other departments. The department also offers a course sequence that enables qualified UNC-Chapel Hill undergraduates in the mathematical decision sciences BS degree program to fulfill the requirements for the MS degree in operations research in one additional academic year beyond the four years required for the undergraduate degree.

Requirements for Admission to Graduate Study

Applicants must have demonstrated a high level of scholastic ability in their undergraduate studies and must satisfy the entrance requirements of The Graduate School. No restrictions are placed on the undergraduate major for admission to the program. However, to be prepared adequately for study in operations research, an applicant should have a good mathematical background including courses in advanced calculus, linear or matrix algebra, and probability, and the knowledge of a computer language. A student admitted with a deficiency in one or more of these topics must make up for it at the beginning of her or his graduate work. If the deficiency is not severe, this can be accomplished without interrupting the normal program.
Degree Requirements

Candidates for degrees in operations research must meet the general requirements of The Graduate School. Course selections for a degree in operations research are taken from the department's offerings and from regular offerings of related departments. In addition to the following courses, selections can be made from the departments of biostatistics, city and regional planning, computer science, epidemiology, economics, health policy and administration, information and library science, mathematics, psychology, and the Kenan-Flagler Business School.

Further information can be obtained from the department's home page (listed above), or from the Admissions Chair, Operations Research Program, CB# 3250, Smith Building, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, or by e-mailing stat-or@unc.edu.

Courses for Graduates and Advanced Undergraduates

140 DECISION MAKING USING SPREADSHEET MODELS (3).
Prerequisite, STAT 31 or BUSI 24 or MATH 22. The use of mathematics to describe and analyze large-scale decision problems. Situations involving the allocation of resources, making decisions in a competitive environment, and dealing with uncertainty are modeled and solved using suitable software packages. Fall.

161 LONG TERM ACTUARIAL MODELS (MATH 161) (STAT 106) (3).
Prerequisites, MATH 32, OR 41, and STAT 31. Probability models for long term insurance and pension systems that involve future contingent payments and failure-time random variables. Introduction to survival distributions and measures of interest and annuities-certain. Fall. Dunn.

162 SHORT TERM ACTUARIAL MODELS (MATH 162) (STAT 107) (3).
Prerequisite, STAT 126. Short term probability models for potential losses and their applications to both traditional insurance systems and conventional business decisions. Introduction to stochastic process models of solvency requirements. Spring. Dunn.

181 DETERMINISTIC MODELS IN OPERATIONS RESEARCH (MATH 151) (STAT 181) (3).
Prerequisite, MATH 147. Linear, integer, nonlinear and dynamic programming, classical optimization problems, network theory. Fall. Provan, Tolle.

183 STOCHASTIC MODELS IN OPERATIONS RESEARCH (3).
Prerequisite, BIOS 160 or STAT 126. Introduction to Markov chains, Poisson process, continuous-time Markov chains, renewal theory. Applications to queueing systems, inventory, and reliability, with emphasis on systems modeling, design, and control. Spring. Kulkarni, Szidarovszky.

190 COMPUTATIONAL MATHEMATICS FOR DECISION SCIENCES (3).
Prerequisite, permission of the instructor. Reviews basic mathematical and computational theory required for analyzing models that arise in operations research, management science, and other policy sciences. Solution techniques that integrate existing software into student-written computer programs will be emphasized. Fall.

Courses for Graduates

210 MODELS IN OPERATIONS RESEARCH (3).
Prerequisites, calculus, linear or matrix algebra. Formulation, solution techniques, and sensitivity analysis for optimization problems which can be modeled as linear, integer, network flow, and dynamic programs. Use of software packages to solve linear, integer, and network problems. Fall. Rubin, Wagner.

211 LINEAR PROGRAMMING (3).
Prerequisites, calculus of several variables, linear or matrix algebra. The theory of linear programming, computational methods for solving linear programs, and an introduction to nonlinear and integer programming. Basic optimality conditions, convexity, duality, sensitivity analysis, cutting planes, and Kuhn-Kuhn-Tucker conditions. Spring. Provan, Rubin.

212 MATHEMATICAL PROGRAMMING I (3).
Prerequisites, OR 211 and either OR 190 or MATH 191 or permission of the instructor. Advanced topics from mathematical programming such as geometry of optimization, parametric analysis, finiteness and convergence proofs, and techniques for large-scale and structured problems. Spring. Tolle.

213 MATHEMATICAL PROGRAMMING II (3).
Prerequisite, OR 212 or permission of the instructor. Advanced theory for nonlinear optimization. Algorithms for unconstrained and constrained problems. Fall. (Alternate years.) Tolle.

214 INTEGER PROGRAMMING (3).
Prerequisite, OR 211 or permission of the instructor. Techniques for formulating and solving discrete valued and combinatorial optimization problems. Topics include enumerative and cutting plane methods, Lagrangian relaxation, Benders' decomposition, knapsack problems, and matching and covering problems. (Alternate years.) Rubin.

215 NETWORKS (3).
Prerequisite, OR 211 or permission of the instructor. Network flow problems and solution algorithms; maximum flow, shortest route, assignment, and minimum cost flow problems; Hungarian and out-of-kilter algorithms; combinatorial and scheduling applications. Spring. Provan.

216 TOPICS IN DISCRETE OPTIMIZATION (3).
Prerequisites, OR 212 and permission of the instructor. Topics may include polynomial algorithms, computational complexity, matching and matroid problems, and the traveling salesman problem. (Alternate years.) Provan.

217 COMPUTATIONAL METHODS IN MATHEMATICAL PROGRAMMING (3).
Prerequisites, OR 212 and permission of the instructor. Advanced topics such as interior point methods, parallel algorithms, branch and cut methods, and subgradient optimization. (Alternate years.) Provan.

220 STOCHASTIC MODELS IN OPERATIONS RESEARCH I (3).

221 STOCHASTIC MODELS IN OPERATIONS RESEARCH II (3).

222 STOCHASTIC MODELS IN OPERATIONS RESEARCH III (3).

223 QUEUEING NETWORKS (3).

224 CONTROL OF STOCHASTIC SYSTEMS IN OPERATIONS RESEARCH (3).

225 INTRODUCTION TO INVENTORY THEORY (3).
Prerequisite, permission of the instructor. Introduction to the techniques of constructing and analyzing mathematical models of inventory systems. (On demand.) Wagner, Swaminathan.

233 DISCRETE EVENT SIMULATION (3). Prerequisites, STAT 127 and OR 220, or the equivalent and familiarity with computer programming. Introduces students to modeling, programming, and statistical concepts applicable to discrete event simulation on digital computers. Emphasizes statistical analysis of simulation output. Students model, program, and run simulations. Fall, Tekin, Ziya.

235 MONTE CARLO METHODS (3). Prerequisites, STAT 127 or STAT 135 and OR 220 or STAT 129. Monte Carlo sampling approach to evaluation. Sampling plan design, accuracy estimation, efficiency-improving techniques. Best-case and worst-case required sample sizes, Markov-chain sampling. (On demand.)

241 SCHEDULING THEORY (3). Prerequisites, OR 181 or 211; and OR 183, OR 220 or STAT 129. Sequencing in flow and job shops. Stochastic scheduling. Buffers, setups, just-in-time policies. Emphasis on formulation of mathematical models. Applications to production lines, flexible manufacturing, and computer/communication systems. (On demand.)

245 DECISION THEORY (3). Prerequisite, OR 210 or equivalent. Axiomatic development of subjective probability and utility theory. Introduction to decision analysis, statistical decision theory, and game theory. (On demand.)

250 DECISION ANALYSIS (3). Prerequisite, STAT 126 or equivalent. Material on decision analysis from texts and papers of Howard, Raiffa, and others. Extensive, normal forms of analysis, subjective probability, utility theory. Analysis of specific decision problems. Orientation to applications. (On demand.)

321 DIRECTED READING IN OPERATIONS RESEARCH AND SYSTEMS ANALYSIS (Var.). Prerequisite, permission of operations research faculty member. Fall and spring. Staff.

350 OPERATIONS RESEARCH PRACTICE (3). Prerequisites, OR 211, 220, 233, and permission of the instructor. Gives students an opportunity to work on an actual operations research project from start to finish under supervision of a faculty member. Intended exclusively for operations research students. Spring.

351 SPECIAL TOPICS IN OPERATIONS RESEARCH AND SYSTEMS ANALYSIS (Var.). Prerequisite, permission of the instructor. Fall and spring. Staff.

389 OPERATIONS RESEARCH AND SYSTEMS ANALYSIS STUDENT SEMINAR (1). Survey of literature in operations research and systems analysis. Spring, Staff.

392 MASTER'S SUBSTITUTE FOR THESIS (Var.). Prerequisite, permission of adviser. Fall and spring.

393 MASTER'S THESIS (3 or more). Prerequisite, permission of the student's adviser. Fall, Staff.

394 DOCTORAL DISSERTATION (3 or more). Prerequisite, permission of the student's adviser. Fall and spring. Staff.

Several of the program's other courses may be suitable for students from other departments. Interested students should contact the director of graduate studies or see the webpage at www.stat-or.unc.edu.

Graduate Degrees in Statistics

The department offers both MS and PhD degrees in statistics. Students who plan to reach statistics or to engage in research of any kind should work for the degree of doctor of philosophy. This requires at least three years of full-time graduate work, predicated upon substantial undergraduate mathematical preparation. Research is an important part of the work for the doctorate. Those interested in obtaining an understanding of the fundamental notions of statistical theory and practice mainly through coursework are directed to the master of science degree program. This degree may be obtained with or without writing a thesis, and normally requires four semesters for completion. Doctoral students without an MS degree in statistics complete the MS program without delaying their PhD work.

The philosophy of the statistics program is that its PhD graduates should be broadly based in statistical theory and practice, and at the same time be able to conduct basic research in some special area. Students in the first year typically take STAT 154-5, 164-5, and 174-5, and possibly other courses chosen from 184-5 and 194-5. In the second and third years students taking advanced courses may specialize in an area of interest. Students may also take courses offered by other departments such as the departments of biostatistics and mathematics, on the Chapel Hill campus, and by various departments of North Carolina State University in Raleigh and of Duke University in Durham.

A departmental network of Sun Sparc stations provides the opportunity for advanced computing in a Unix environment. All graduate students in the department have access to this network, as well as to the University's computing system, through desktop IBM PCs which are situated in every graduate student office. The Mathematics-Physics-Statistics Library, located in nearby Phillips Hall, maintains an extensive collection of books and journals pertaining to statistics.

The Statistics Colloquium Series meets three times per month during the academic year; speakers include visitors from other universities and research institutions.

The graduate curriculum in statistics places strong emphasis on the mathematical theory of probability and statistics. A sound mathematical preparation is thus an essential prerequisite for admission to the program. An applicant's mathematical background should include a one-year course in advanced (multivariable) calculus or real analysis, at least one semester in matrix algebra, and calculus-based courses in probability and statistics.

Application forms for admission and/or financial aid may be obtained by writing to either The Graduate School or to the department. Online application is also available through The Graduate School's Web site at gradschool.unc.edu. Applicants are required to submit scores for both the Aptitude and Advanced Mathematics portions of the Graduate Record Examinations in support of their application, and a supplementary sheet providing brief course descriptions, including text title where applicable, or previous undergraduate and graduate courses in mathematics and statistics.

Applicants for financial aid are considered for assistantships within the department and also for various fellowships and limited service awards provided on a competitive University-wide basis by The Graduate School. Assistants perform academically related duties, such as teaching and assisting instructors. Other awards include merit assistantships, University Graduate and Alumni Fellowships, George E. Nicholson Jr. Fellowships,
Pogue Fellowships, and Morehead Fellowships. Stipends range from $10,000 to $14,000 for the academic year, with tuition included with fellowship awards.

Application for admission and financial aid may be made simultaneously simply by indicating on the admission application form a desire to be considered for financial aid.

More detailed information about the statistics program is available on the department's home page (listed above). Specific inquiries should be addressed to the Director of Graduate Admissions, Statistics Program, CB# 3260, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3260.

Courses for Graduates and Advanced Undergraduates

101 STATISTICAL METHODS I (3). Prerequisite, STAT 31. Review of basic inference; 2-sample comparisons; correlation; introduction to matrices; simple and multiple regression (including significance tests, diagnostics, variable selection); analysis of variance; use of statistical software. Fall. Marron, Nobel, Zhu.

102 STATISTICAL METHODS II (3). Prerequisite, STAT 101. Topics selected from: design of experiments; sample surveys; nonparametric tests; analysis of contingency tables; logistic regression; simulation. Use of statistical software packages. Spring. Marron, Pipiras, Smith.

104 SAMPLE SURVEY METHODOLOGY (BIOS 164) (3). Prerequisite, STAT 101 or equivalent. Fundamental principles and methods associated with survey sampling, giving primary attention to nonmathematical aspects of surveys. Simple random sampling, stratified sampling, and cluster sampling. Also, techniques of questionnaire design, problems of nonresponse, and sources of nonsampling errors. Practical experience in the applied aspects of sampling is provided by student participation in the design, execution, and analysis of an actual survey. Spring. Kalsbeek.

126 INTRODUCTION TO PROBABILITY (MATH 146) (3). Prerequisite, MATH 33. Introduction to mathematical theory of probability; covering random variables, moments, binomial, Poisson, normal and related distributions; generating functions, sums and sequences of random variables, and statistical applications. Fall and spring. Budhiraja, Kelly, Nobel.

127 MATHEMATICAL STATISTICS (3). Prerequisite, STAT 126 or equivalent. Functions of random samples and their probability distributions; introductory theory of point and interval estimation, and of hypothesis testing; elementary decision theory. Spring. Carleman, Kelly, Simsons.

128 APPLIED MULTIVARIATE ANALYSIS I (BIOS 166) (3). Prerequisite, BIOS 163 or equivalent. Application of multivariate techniques, with emphasis on the use of computer programs. Multivariate analysis of variance, multivariate multiple regression, weighted least squares, principal component analysis, canonical correlation, and related techniques. Summer. Muller.

136 ACTUARIAL MATHEMATICS II (MATH 162) (3). Prerequisites, MATH 161, STAT 126. The theory introduced in Actuarial Mathematics I is expanded to encompass more complex models of financial transactions and risks. Spring. Staff.

137 STOCHASTIC MODELS (3). Prerequisite, STAT 126. Introduction to queuing theory (substantial), Markovian sequential decision process, inventory theory and topics from stochastic linear programming, simulations, scheduling, game theory. Applications. Staff.

154 MEASURE AND INTEGRATION (3). Prerequisite, advanced calculus. Lebesgue and abstract measure and integration, convergence theorems, differentiation, Radon-Nikodym theorem, product measures, Fubini theorems, LP spaces. Fall. Budhiraja, Leadbetter, Pipiras.


156 COMBINATORIAL MATHEMATICS (MATH 148) (3). Prerequisite, MATH 81, or permission of the instructor. Recurrence relations and generating function; graphs and graph algorithms, principle of inclusion-exclusion. Fall. Brylawski.


171 INTRODUCTION TO NONPARAMETRIC STATISTICS (BIOS 256) (3). Prerequisite, BIOS 160 or equivalent. Theory and application of nonparametric methods for various problems in statistical analysis. Includes procedures based on randomized, ranked, and U-statistics. Knowledge of elementary computer programming is assumed. Fall. Bangdiwalla.

174 APPLIED STATISTICS I (3). Prerequisite, STAT 127 or equivalent. Introduction to linear models and multiple regression; introduction to statistical computing; statistical data analysis and visualization. Fall. Smith, Marron.


181 DETERMINISTIC MODELS IN OPERATIONS RESEARCH (MATH 151) (OR 181) (3). Prerequisite, MATH 147. Linear, integer, nonlinear, and dynamic programming, classical optimization problems, network theory. Fall. Prowan, Tolle.

184 STOCHASTIC PROCESSES (3). Prerequisite, STAT 126 or equivalent. Discrete and continuous parameter Markov chains, Brownian motion, stationary processes. Fall, alternate years. Leadbetter, Nobel, Ji.

185 TIME SERIES AND MULTIVARIATE ANALYSIS (3). Prerequisites, STAT 126 and 127 or equivalent. Introduction to time series: exploratory analysis, time-domain analysis and ARMA models, Fourier analysis, state space analysis. Introduction to multivariate analysis: principal components, canonical correlation, classification and clustering, dimension reduction. Spring, alternate years. Leadbetter, Marron, Smith.

190 STATISTICAL CONSULTING (3, taught over two semesters). Application of statistics to real problems presented by researchers from the University and local companies and institutes. Fall, spring. Marron, Smith.

194 DESIGN AND ROBUSTNESS (3). Prerequisite, STAT 127 or equivalent. Introduction to experimental design, including classical designs, industrial designs, optimality, and sequential designs. Introduction to robust statistical methods; bootstrap, cross-validation, and resampling. Fall, alternate years. Marron.

195 BAYESIAN STATISTICS AND GENERALIZED LINEAR MODELS (3). Prerequisite, STAT 127 or equivalent. Bayes factors, empirical Bayes theory, applications of generalized linear models. Spring. Staff.
Courses for Graduates

205 STATISTICAL QUALITY IMPROVEMENT (3). Prerequisites, STAT 105, 165, 174 or equivalent. Methods for quality improvement through process control, graphical methods, designed experimentation. Shewhart charts, cusum schemes, methods for autocorrelated multivariate process data, process capability analysis, factorial and response surface designs, attributes sampling. Rodgers.


211 SPECIAL TOPICS IN THE DESIGN OF EXPERIMENTS (3). Prerequisites, STAT 150. Factorial experiments, construction, and analysis of symmetrical, mixed, and fractional factorial designs. Orthogonal and balanced arrays. Response surface methodology. Mixture and screening designs, optimality of designs. Recent developments. Staff.


221 SEQUENTIAL ANALYSIS (3). Prerequisites, STAT 155 and 165, or equivalents. Hypothesis testing and estimation when sample size depends on the observations. Sequential probability ratio tests. Sequential design of experiments. Optimal stopping. Stochastic approximation. Simons.

222 NONPARAMETRIC INFERENCE: RANK-BASED METHODS (3). Prerequisites, STAT 155, 165. Estimation and testing when the functional form of the population distribution is unknown. Rank, sign, and permutation tests. Optimum nonparametric tests and estimators including simple rank test problem. Sen.


224 STATISTICAL LARGE SAMPLE THEORY (3). Prerequisites, STAT 155 and 165, or equivalents. Asymptotically efficient estimators; maximum likelihood estimators. Asymptotically optimal tests; likelihood ratio tests. Simons.

225 SUBSAMPLING TECHNIQUES (3). Prerequisite, STAT 165 or equivalent. Basic subsampling concepts: replicates, empirical c.d.f., U-statistics. Subsampling for i.i.d. data: jackknife, typical-values, bootstrap. Subsampling for dependent or non-identically distributed data: blockwise and other methods. Carlstein.

231 ADVANCED PROBABILITY (3). Prerequisites, STAT 154 and 155, or equivalents. Advanced theoretic course, covering topics selected from: weak convergence theory, central limit theorems, laws of large numbers, stable laws, infinitely divisible laws, random walks, martingales. Staff.

232 STOCHASTIC PROCESSES (3) Prerequisites, STAT 154 and 155, or equivalents. Advanced theoretic course including topics selected from: foundations of stochastic processes, renewal processes, Markov processes, martingales, point processes. Staff.

233 TIME SERIES ANALYSIS (3). Prerequisites, STAT 154 and 155, or equivalents. Analysis of time series data by means of particular models such as autoregressive and moving averages. Spectral theory for stationary processes and associated methods for inference. Stationary testing. Leadbetter.

234 EXTREME VALUE THEORY (3). Prerequisites, STAT 155 and 164, or equivalents. Classical asymptotic distributional theory for maxima and order statistics from i.i.d. sequences, including extreme value theorem, domain of attraction, Poisson processes of high level exceedances. Stationary stochastic sequences and continuous time processes. Leadbetter.

235 POINT PROCESSES (3). Prerequisite, STAT 155 or equivalent. Random measures and point processes on general spaces, Poisson and related processes, regularity, compounding. Point processes on the real line stationarity, Palm distributions, Palm-Khintchine formulae. Convergence and related topics. Leadbetter.

236 STOCHASTIC ANALYSIS (3). Prerequisite, STAT 154 and 155, or equivalents, or permission of the instructor. Advanced course covering topics selected from: semimartingale theory, stochastic integrals, homogenous chaos expansions, stochastic differential equations, Malliavin calculus, infinite dimensional processes, functional central limit theorems, Feynman-Kac formula, Feynman integral. Applications to filtering theory, infinite particle systems, quantum mechanics, and stochastic models in neurophysiology. Pipiras.

240 LINEAR SYSTEMS (3). Prerequisites, advanced calculus, elements of Fourier transform theory, linear algebra and Lebesgue integration helpful. Introduction to linear spaces, including basic results on normed linear spaces. Hilbert space geometry, bounded linear operators. Linear system theory including signal representations, impulse response, transfer functions, dynamical systems, state variable methods, elementary modern control theory. Fall Staff.


245 ADVANCED TOPICS IN STATISTICAL COMMUNICATION THEORY (3). Prerequisite, STAT 242. Applications of probability in linear spaces to problems in information theory, signal detection, and sample path analysis of stochastic processes. Staff.

252 INFORMATION THEORY (3). Prerequisite, STAT 134. Transmission of information, entropy, message ensembles, discrete sources, transmission channels, channel encoding and decoding for discrete channels. Staff.

253 ERROR CORRECTING CODES (3). Prerequisite, STAT 212 or permission of the instructor. Linear codes and their error-correcting capabilities. Hamming codes, Reed-Muller codes, cyclic codes. BCH/Goppa codes. Burst error corrections. Majorly logic decoding. Staff.

261 ADVANCED PARAMETRIC MULTIVARIATE ANALYSIS (3).


280 ADVANCED STOCHASTIC METHODS OF OPERATIONS RESEARCH (3). Prerequisites, STAT 132 and 180, or equivalent. Topics chosen from: renewal theory; queues with random arrivals; inequalities for queues; priority systems; theory of reservoirs; stochastic inventory problems. Staff.

300 Level Courses*

300 SEMINAR IN STATISTICAL LITERATURE (1 each). Prerequisite, STAT 165.

302 SEMINAR IN STATISTICAL DATA ANALYSIS (Var.). Prerequisite, STAT 174. Smith.

310, 311 SEMINAR IN THEORETICAL STATISTICS (3). Prerequisite, STAT 165.

321, 322 SPECIAL PROBLEMS (3). Prerequisite, permission of the instructor.

331, 332 ADVANCED RESEARCH (3). Prerequisite, permission of the instructor.

393 MASTER'S THESIS (Var.). Prerequisite, permission of the student's advisor. Fall and spring. Staff.

394 DOCTORAL DISSERTATION (Var.). Prerequisite, permission of the student's advisor. Fall and spring. Staff.

*The following 300-level courses are new or have been offered in recent years. Some of these courses will be offered on a regular basis with a course number after approval from the Graduate School.

PATTERN RECOGNITION. Nobel.

DESIGN AND CODING. Staff.

TOPICS IN COMPUTATIONAL FINANCE. Ji.

STOCHASTIC FINANCE. Staff.

ENVIRONMENTAL STATISTICS. Smith.

DATA-ANALYTIC MODELLINGS AND THEIR APPLICATIONS. Staff.

GIBBS RANDOM FIELDS AND CERTAIN STATISTICAL APPLICATIONS. Ji.

TOPICS IN WEAK CONVERGENCE, MARKOV PROCESSES, AND STOCHASTIC DIFFERENTIAL EQUATIONS. Staff.

FUNCTIONAL DATA ANALYSIS. Marron.

INDUSTRIAL EXPERIMENTATION AND CLINICAL TRIALS: DESIGN AND STATISTICAL ANALYSIS. Staff.

CURRICULUM IN TOXICOLOGY

JAMES A. SWENBERG, Director

Professors
Louise M. Ball, Metabolism and Genotoxicity of Environmental Xenobiotics
Thomas W. Bouldin, Neuropathology, Ocular Pathology, and Neurotoxicology
Kim Rowe Brouwer, Pharmacokinetics, Hepatic Uptake, Metabolism, and Excretion of Xenobiotics
Stephen G. Chaney, DNA Repair and Platinum Anticancer Drugs
Marila Cordeiro-Stone, DNA Replication in Mammalian Cells and Mechanisms of Chemical Carcinogenesis
Fulton T. Crews, Neurodegeneration and Chronic Drug-Induced Changes in Brain Signaling Pathways
Channing J. Der, Ras Protein Superfamily, Signal Transduction and Oncogenesis
Avram Gold, Structure-Reactivity Relationships in Metabolism and Mutagenicity of Polyaromatic Hydrocarbons
David J. Holbrook Jr., Biochemical Toxicology, Platinum Anticancer Drugs, Xenobiotic Metabolism
David G. Kaufman, DNA Replication, Chemical Carcinogenesis
William K. Kaufmann, DNA Metabolism in Radiation and Chemical Carcinogenesis
Jean M. Lauder, Developmental Neurobiology and Neuroanatomy
John J. Lemasters, Cell Biology of Hypoxic and Toxic Injury, Organ Preservation for Transplantation, Diphtheria Toxoid Microscopy
Terry Magnuson, Mammalian Genetics, Genomics and Development
Richard B. Maluf, Neurotoxicology and Neuropharmacology of the Central Nervous System
Patricia R. Maness, Axon Guidance and Signal Transduction in Nervous System Development
A. Leslie Morrow, Neurotoxicology and Exocytosis of Alcohol
David Pedra, Translational and Clinical Research in Environmental Lung Disease
Gary M. Pollack, Pharmacokinetics and Pharmacodynamics of Therapeutic and Toxic Agents
Stephen M. Rappaport, Exposure Assessment, Industrial Hygiene
R. Jude Samulski, Development of Efficient Viral Vectors for Gene Delivery into Eukaryotic Genes

Associate Professors
Ajit Sardar, Molecular Neurobiology, DNA Repair and Cancer, Structure and Function of DNA Repair Enzymes and Reaction Mechanism of Human Bcl-2 Light Chain Protein
Gary J. Smith, Molecular Toxicology, In Vitro Mutagenesis and Transformation
Kuniko I. Suzuki, Neuropathology, Genetic Neurological Disorders
James A. Swenberg, DNA Adducts, Cell Proliferation
Bernard E. Weissman, Regulation of Tumorogenesis and Differentiation and Tumor Suppressor Genes
Elizabeth M. Wilson, Androgen Receptor Regulation of Gene Expression

Assistant Professors
Mohsin P. Dehmohal, Mechanisms of Neuronal Programmed Cell Death
Edward L. LeCluyse, Mechanisms of Tight Junction Regulation of Paracellular...
Transport and Cellular/Biochemical Mechanisms Regulating Liver Cytochrome P450 Enzymes Levels
Jeffrey M. Macdonald, Metabolomics Using NMR Spectroscopy and Chromatography and Tissue Engineering
Leena A. Nylander-French, Development of Methods to Monitor and Assess Dermal Exposure to Chemical Carcinogens and Contact Sensitizers
Charles M. Perou, Characterize and Classify Human Breast Tumors into Subtypes that Will Be of Biological and Clinical Importance
Dale A. Ramden, V(D)J Recombination and DNA Double Strand Break Repair
Ivan Rusyn, Environmental Genomics
David Threadgill, Mechanisms of Growth and Differentiation, Particularly the Identification and Functional Characterization of Genes Influencing Susceptibility to Cancer Development

Research Associate Professors
Milan J. Hazucha, Health Effects of Air Pollutants, Human Studies, Mechanisms of Response
Miroslav Styblo, Metabolism and Toxicity of Metals and Metalloids

Adjunct Professors
Melvin E. Andersen, Computational Modeling of Signal Transduction Pathways and Their Perturbations by Xenobiotics; Implications for Dose-response and Risk Assessment
Lisa S. Birnbaum, Chemical Disposition of Xenobiotics, Mechanistic Toxicology
John A. Cidlowski, Apoptosis, Steroids, Glucocorticoid Receptors, Hormone Action, Nucleases, Gene Regulation
Daniel L. Costa, Pulmonary Toxicology
Michael D. Waters, Mutagenesis and Carcinogenesis

Adjunct Associate Professors
James W. Allen, Cytochrome P450-Sister Chromatid Exchanges, Chromosome Aberrations and Neoisogenic
David C. Doran, Experimental Neurotoxicology
Ronald P. Mason, Free Radical Intermediates in the Metabolism of Toxic Chemicals
Stephanie Padilla, Behavioral Toxicology and Neurotoxicology
John M. Rogers, Developmental Toxicology, Teratology, Developmental Biology, Embryology, Nutrition
MaryJane K. Seigrist, Immunotoxicology Robert Sills, Molecular Pathology
Ralph J. Smialowicz, Immunotoxicology
Raymond W. Tennant, Transgenic Animals in Carcinogenesis Studies
Hugh A. Tilson Jr., Behavioral Toxicology, Developmental Neurotoxicology
Kenneth R. Tindall, Molecular Mutagenesis, Somatic Cell Mutation, Role of Mutagenesis in Carcinogenesis
Douglas C. Wolf, Chemical Carcinogenesis

Adjunct Assistant Professors
Stanley Barone, Jr., Biomarkers of Developmental Neurotoxicity with an Emphasis on Neurotoxic Mechanisms
Hugh A. Barron, Xenobiotics Metabolism, Pharmacokinetics, Physiologically-based Pharmacokinetic (PBPK) Modeling
Ronald B. Cannon, Cancer Biology, Transgenic Mouse Models
Kevin M. Crippen, Understanding the Consequences of Endocrine Disruption on Neurodevelopment
Michael DeVito, Development of Models for Cumulative Risk to Endocrine Disruptors
Robert B. Devlin, Pulmonary Toxicology, Molecular Biology
Ian Gilmour, Experimental Toxicology
Thomas L. Goldsworthy, Proliferation, Apoptosis and Cell Cycle in Hepatocarcinogenesis
G. Jean Harry, Developmental Neurotoxicology, Molecular Neuro/Immunotoxicology
E. Sidney Hunter, Role of Cell Death in Craniofacial Birth Defects
Stephen R. Kleeberger, Genetic Determinants of Environmental Lung Disease
Michael C. Madden, Arachidonic Acid Metabolism, Oxidative Lung Damage
Michael G. Narusky, Developmental Toxicology, Pregnancy Maintenance and Parturition
James M. Sunet, Inflammatory Responses to Pollutant Inhalation; Cytokines, Eicosanoids
Nigel Walker, Risk Assessment, Receptor-mediated Toxins, Environmental Contaminants and Mechanisms of Carcinogenesis

Adjunct Research Assistant Professor
Ilona Jasper, Cellular Mechanisms of Air Pollutant Toxicity

The Curriculum
The Curriculum in Toxicology administers degree programs leading to the award of the PhD in toxicology and the MS in toxicology. The Curriculum is an interdisciplinary program, and its faculty is drawn from various administrative units of the schools of medicine, pharmacy, and public health. The research interests of the faculty are directed primarily at the biochemical and cellular mechanisms of action of toxic substances in mammalian systems, including cultured cells. The interests include most areas of toxicology but major emphases are directed toward molecular and cellular toxicology; neurotoxicology; pulmonary toxicology; and carcinogenesis and mutagenesis. The faculty generally does not conduct research in the areas of aquatic toxicology, forensic toxicology, the ecological aspects of toxicology, or studies in invertebrate systems. The research activities of the Curriculum in Toxicology are conducted in the laboratory facilities assigned to each faculty member by a participating administrative unit.

Applications
Applications for predoctoral studies are considered from students who have received or expect to receive a BS/BA or an MS degree in a scientific discipline. A desirable background includes courses in biological sciences (including histology and animal physiology), in chemistry (including analytical and organic), and in mathematics through calculus, although all of these are not absolutely essential. A strong course in general biochemistry accelerates the student's progress. Applicants are evaluated on the basis of undergraduate (and graduate) academic performance, Graduate Record Examination scores (General Test, and Subject Test if available), and letters of recommendation. Students are accepted on the basis of their achievement and potential. Special circumstances, including prior research experience and publications, are considered in individual cases in the assessment of qualifications for admission. The curriculum offers a program leading to the MS degree only under special circumstances.

Requirements for the PhD Degree
The selection of a predoctoral student's graduate courses is influenced by that student's prior academic background. The minimum academic courses which we consider to be appropriate for graduate training in toxicology constitute approximately thirty-three credit hours in didactic courses including biochemistry, biostatistics, histology, pathology, toxicology, and three elective courses. In addition, each predoctoral student is expected to participate in a minimum of twelve credit hours of nondidactic training activities; i.e., two semesters of laboratory research experience prior to the doctoral research and four seminars. The satisfactory completion of appropriate courses during the prior academic career permits a student to have a greater latitude in the selection of courses.

A major requirement for the PhD degree is a doctoral dissertation based on the student's independent laboratory research. Written and oral examinations are required in the fields of general toxicology and the major research interest.
Financial Aid

The curriculum seeks to fund predoctoral students each year. All applicants are considered for financial aid awards. For the maximum consideration for financial aid awards, applications for admission for the fall semester should be completed by early February and for the spring semester by early October.

Courses for Graduates and Advanced Undergraduates

123 DEVELOPMENTAL TOXICOLOGY AND TERATOLOGY (CBIO 123) (2). Emphasis is placed on topics of current research interest relative to the genesis of environmentally caused and genetically based birth defects. One two-hour session per week (evening) Spring. (Alternate years.) Cell biology faculty: Sulik (course director).

142 BIOCHEMICAL TOXICOLOGY (BIOL 142) (ENV 132) (3). Prerequisites: any combination of two courses in biochemistry, molecular biology, cell biology, or cell physiology (or permission of course director). Development of a comprehensive understanding of biochemical and molecular actions of environmental chemicals and toxicants, and proper application of novel laboratory techniques for hypothesis-driven mechanistic research. Three lecture hours per week. Spring. Toxicology faculty: Rusyn (course director).

Courses for Graduates

202 PRINCIPLES OF PHARMACOLOGY AND TOXICOLOGY (PHCO 202) (5). Prerequisites: BIOL 100 and PHYI 140 or their equivalent, and permission of the instructor. Introduces the major areas of pharmacology and toxicology and serves as a basis for more advanced courses. Five lecture hours per week. Spring. Pharmacology faculty: McCarthy (course director).

207 ADVANCED TOXICOLOGY (PHCO 207) (ENV 231) (3). Prerequisites: PHCO 202 or permission of the course director. Cellular and physiological basis of toxicity of environmental chemicals, with emphasis on inhalation toxicology, developmental toxicology, immunotoxicology, radiation toxicology, renal toxicology, and neurotoxicology. Three lecture hours per week. Fall. Toxicology faculty: Swenberg (course director).

215 INTRODUCTION TO TOXICOLOGICAL RESEARCH (4). Introductory laboratory experience from research projects of limited scope to acquaint students with the experimental approaches, techniques, and equipment of current research in toxicology. May be repeated. Twelve laboratory hours per week. Fall, spring, and summer. Toxicology faculty: Nylander-French (course director).

220 TOXICOLOGY SEMINAR I (1). Seminar series to introduce recent advances, methodology, and terminology in toxicology. One hour per week. Fall and spring. Toxicology faculty: Harper, Holbrook, Padilla (course directors).

221 TOXICOLOGY SEMINAR II (1). Student-conducted presentations and discussions of recent advances in toxicology; emphasis on critical evaluation of published investigations and on organization and oral delivery of presentations. May be repeated up to six times. One hour per week. Fall and spring. Toxicology faculty: Harper, Holbrook, Padilla (course directors).

222 TOXICOLOGY SEMINAR III (1). (ENV 234) Presentations by the outside invited speakers, local faculty, advanced graduate students, and postdoctoral trainees. Topics will cover all areas of research in toxicology. One hour per week. Fall and spring. Toxicology faculty: Rusyn (course director).

250 DATA ANALYSIS (PATH 250) (PHCO 250) (CBIO 250) (1). Data analysis for biomedical scientists. This course is required for PHCO/TOXOPATH graduate students. Permission of the instructor is required for other students. Fall. Nicholas.

260 TOXICOLOGIC KINETICS (3). A quantitative examination of the time course of absorption, distribution, metabolism, excretion, and biologic effects of agents of toxicologic interest. Three lecture hours per week. Fall. (1999 and alternate years.) Brouwer, Pollack (course codirectors).

292 SEMINAR IN CARCINOGENESIS (PATH 292) (2). Prerequisite, permission of the course director. Survey of classical and current literature on selected critical issues in carcinogenesis. Discussions consider experimental methods and observations as well as theories and generalizations. Two seminar hours per week. Spring. Pathology faculty: Coleman (course director).

301 RESEARCH IN TOXICOLOGY (2-9). May be repeated for credit. Hours and credits to be arranged. Fall, spring, and summer. Toxicology faculty.

393 MASTER’S THESIS (Var.). May be repeated. Hours and credits to be arranged. Fall, spring, and summer. Toxicology faculty.

394 DOCTORAL DISSERTATION (Var.). May be repeated. Hours and credits to be arranged. Fall, spring, and summer. Toxicology faculty.
The Graduate Faculty

Regular Graduate Faculty

Jeffery S. Abarbanell, PhD, Associate Professor of Business
James R. Abernathy, PhD, Professor of Biostatistics, Emeritus
Jessie Abouta, PhD, Assistant Professor of Nutrition
Linda S. Adair, PhD, Associate Professor of Nutrition
David Adalsteinsson, PhD, Assistant Professor of Mathematics
Elie Maynard Adams, PhD, Kenan Professor of Philosophy, Emeritus
John Berry Adams, PhD, Professor of Journalism and Mass Communication, Emeritus
Rebert S. Adler, JD, Professor of Business
Shawn C. Ahmed, PhD, Assistant Professor of Biology and Assistant Professor of Genetics
Dong-Hyun Ahn, PhD, Associate Professor of Business
Debashish Aikat, PhD, Associate Professor of Journalism and Mass Communication
Michael T. Atiken, PhD, Professor of Environmental Sciences and Engineering
John S. Akin, PhD, Austin H. Carr Professor and Chair of Economics
Howard E. Aldrich, PhD, Kenan Professor of Sociology and Adjunct Professor of Business
Nicholas G. Allen, PhD, Assistant Professor of English
Robert C. Allen, PhD, Professor of American Studies, Professor of Communication Studies, and Professor of History
Stephen Alfred, JD, Professor of Government and Director and Professor of Public Administration
Louis C. Almekinders, MD, Associate Professor of Orthopedics
Marc J. Alperin, PhD, Associate Professor of Marine Sciences
Harry Amana, MA, Professor of Journalism and Mass Communication
Alice S. Ammerman, PhD, Associate Professor of Nutrition
David N. Ammons, PhD, Professor of Public Administration and Government
Josef Anderle, PhD, Professor of History. Emeritus
Allen L. Anderson, PhD, Associate Professor of Music
Carl R. Anderson, PhD, Professor of Business
Daniel R. Anderson, PhD, Associate Professor of English
Evan Anderson, PhD, Assistant Professor of Economics
James M. Anderson, PhD, MD, Professor of Cell and Molecular Physiology
James Anderson, PhD, Professor of Computer Science
John J. B. Anderson, PhD, Professor of Nutrition
Nadia M. Anderson, MD, Professor of Pathology and Laboratory Medicine
Harold Lee Andrews, PhD, Associate Professor of Music, Emeritus
Kenneth T. Andrews, PhD, Assistant Professor of Sociology
Richard N. L. Andrews, PhD, Professor, Department of Public Policy, Carolina Environmental Program, Department of Environmental Sciences and Engineering, Department of City and Regional Planning
William L. Andrews, PhD, E. Maynard Adams Professor of English
Gustavo Angeles, PhD, Assistant Professor of Maternal and Child Health
Jesse Oscar Anthony III, MA, Associate Professor of Journalism and Mass Communication
Marine C. Antle, PhD, Associate Professor of Romance Languages
Eva S. Anton, PhD, Assistant Professor of Cell and Molecular Physiology
Dennis R. Appleyard, PhD, Professor of Economics, Emeritus
William L. Arendshorst, PhD, Professor of Cell and Molecular Physiology
Yakov S. Ariel, PhD, Associate Professor of Religious Studies
Christopher Mead Armitage, PhD, Professor of English
Gary M. Armstrong, PhD, Crist W. Blackwell Distinguished Professor of Business and Clinical Professor of Pharmacy
Roland R. Arnold, PhD, Professor of Dentistry
Carol Arnosti, PhD, Associate Professor of Marine Sciences
Idris Assani, Docteur des Sciences, Professor of Mathematics
Ikramuddin Aukhil, DDS, Professor of Dentistry
Laurence Green Avery, PhD, Professor of English
Guadalupe X. Ayala, PhD, Assistant Professor of Health Behavior and Health Education
Stephen R. Ayward, PhD, Assistant Professor of Radiology and Adjunct Assistant Professor of Computer Science
Steven Bachenheimer, PhD, Professor of Microbiology and Immunology and Professor of Genetics and Molecular Biology
Amarjit Badhira, PhD, Assistant Professor of Statistics
Tomas Baer, PhD, Kenan Professor of Chemistry
L’Tanya J. Bailey, DDS, Associate Professor of Dentistry
Donald B. Bailey Jr., PhD, Professor of Education
Ronald Dale Baker, DDS, Professor of Dentistry, Emeritus
Sridhar Balasubramanian, PhD, Assistant Professor of Business
Albert S. Baldwin Jr., PhD, Professor of Biology and Professor of Genetics and Molecular Biology
Louise M. Ball, PhD, Professor of Environmental Sciences and Engineering and Professor of Toxicology
J. Hunter Ballew, PhD, Professor of Education
V. William Balthrop, PhD, Professor of Communication Studies
Lawrence E. Band, PhD, Voot Gilmore Distinguished Professor and Chair of Geography and Professor of Ecology
Nicholas Bandarenko III, MD, Associate Professor of Pathology and Laboratory Medicine
Cesáreo Banderia, PhD, University Distinguished Professor of Romance Languages, Emeritus
John M. Bane Jr., PhD, Professor of Marine Sciences, Professor of Geological Sciences, Professor of Environmental Sciences and Engineering, and Adjunct Professor of Physics and Astronomy
Vytas A. Bankaitis, PhD, Chair and Professor of Cell and Developmental Biology
Grace T. Baranek, PhD, Associate Professor of Occupational Science
Oscar A. Barbarin III, PhD, L. Richardson and Emily Prizer Distinguished Professor of Social Work
A. Reid Barbour, PhD, Gillian T. Cell Distinguished Professor of English
Ralph S. Baric, PhD, Professor of Epidemiology and Professor of Microbiology and Immunology
Robert J. Barnard, MA, Professor of Art, Emeritus
William L. Barney, PhD, Professor of History
Walter A. Barnhardt, PhD, Assistant Professor of Geological Sciences
Samuel H. Baron, PhD, Alumni Distinguished Professor of History, Emeritus
Dorit Bar-On, PhD, Professor of Philosophy
Milly S. Barranger, PhD, Alumni Distinguished Professor of Dramatic Art
Deborah Barreau, PhD, Assistant Professor of Information and Library Science
Edward G. Barry, PhD, Professor of Biology, Emeritus
Louis R. Bartek III, PhD, Associate Professor of Geological Sciences
Richard Barth, PhD, Frank A. Daniels Distinguished Professor of Social Work
Sanjoy K. Baruah, PhD, Associate Professor of Computer Science
Kenneth F. Barrow, PhD, Associate Professor of Pharmacy
Gretchen M. Batsalis, PhD, Adjunct Professor of English
Donald H. Bursch, PhD, Professor of Psychology
Karl E. Bauman, PhD, Professor of Health Behavior and Health Education
Victoria L. Baun, PhD, Professor of Biology and Associate Professor of Genetics and Molecular Biology
James W. Bawden, DDS, PhD, Alumni Distinguished Professor of Dentistry, Emeritus
Stephen Barrow Baxter, PhD, Kenan Professor of History, Emeritus
Ute J. Bayen, PhD, Associate Professor of Psychology
Stephen C. Bayne, PhD, Professor of Dentistry
Barry L. Bayus, PhD, Roy O. Rodwell Distinguished Professor of Business
Norton L. Beach, EdD, Professor of Education, Emeritus
James Bear, PhD, Assistant Professor of Cell and Developmental Biology
James D. Beck, PhD, Kenan Professor of Dentistry and Adjunct Professor of Epidemiology
Melinda A. Beck, PhD, Associate Professor of Pediatrics and Associate Professor of Nutrition
Susan J. Beck, MS, Associate Professor of Medical Allied Health Professions
Misha Becker, PhD, Assistant Professor of Linguistics
Cornelia J. Beckers, PhD, Associate Professor of Cell and Developmental Biology
Richard J. Beckman, MA, Professor of Journalism and Mass Communication
Linda Beeber, PhD, Professor of Nursing
Wilfrida Behets, PhD, Research Associate Professor of Epidemiology
Frederick Otten Behrendt, PhD, Professor of History, Emeritus
Jack Newton Behrman, PhD, Luther Hodges Distinguished Professor of Business, Emeritus
Prakash Belkale, PhD, Assistant Professor of Mathematics
A. Fleming Bell II, JD, Professor of Public Law and Government
Dwight A. Bellinger, DVM, PhD, Professor of Pathology and Laboratory Medicine
Arthur Benavie, PhD, Professor of Economics
Deborah E. Bender, PhD, Clinical Professor of Health Policy and Administration
Judith M. Bennett, PhD, Martha Nell Hardy Distinguished Professor of History
Trude A. Bennett, DrPH, Associate Professor of Maternal and Child Health
Larry K. Benninger, PhD, Professor of Geological Sciences and Professor of Marine Sciences
Peggy Bentley, PhD, School of Public Health Associate Dean for Global Health and Professor of Nutrition
Philip R. Berke, PhD, Professor of City and Regional Planning and Professor of Ecology
Max L. Berkowitz, PhD, Professor of Chemistry
Maureen Berner, PhD, Assistant Professor of Public Administration
Richard A. Betris, PhD, Luther H. Hodges Professor of Business
Doris Waugh Betts, BA, Alumni Distinguished Professor of English, Emeritus
Thad L. Beyle, PhD, Thomas J. Beanall Professor of Political Science
Manooor Bhat, PhD, Associate Professor of Cell and Molecular Physiology
M. Deborah Bialoszicki, PhD, Professor of Exercise and Sport Science
Susan L. Blackford, PhD, Associate Professor of Political Science
Andrea K. Biddle, PhD, Associate Professor of Health Policy and Administration
Gary A. Biglaiser, PhD, Professor of Economics
John E. Billing, PhD, Professor of Exercise and Sport Science, Emeritus
Brian R. Billman, PhD, Assistant Professor of Anthropology
Lucia Binotti, PhD, Associate Professor of Romance Languages
Stephen S. Birdsell, PhD, Professor of Geography
T. Gary Bishop, PhD, Associate Professor of Computer Science
John R. Bidner, PhD, Professor of Journalism and Mass Communication
Stanley W. Black III, PhD, Lurey Professor of Economics
Richard S. Blackburn, PhD, Associate Professor of Business
Catherine L. Blake, PhD, Assistant Professor of Information and Library Science
Hart Blanton, PhD, Associate Professor of Psychology
Julie Blatt, MD, Professor of Pediatrics and Dissertation Committees of Psychology
David M. Blau, PhD, Professor of Economics
Judith R. Blau, PhD, Professor of Sociology
Mark Blewitt, MD, Assistant Professor of Surgery and Assistant Professor of Biomedical Engineering
Edward J. Blocher, PhD, Professor of Business
Marvin Block, PhD, Professor of Dentistry, Emeritus
Kerry S. Bloom, PhD, Professor of Biology and Professor of Genetics and Molecular Biology
Paul N. Bloom, PhD, Professor of Business
Frayda S. Bluestein, JD, Professor of Public Law and Government
Herbert L. Bodman Jr., PhD, Professor of Health Behavior and Health Education and of History, Emeritus
J. Tiez Boerman, MD, PhD, Associate Professor of Epidemiology
John J. Boland, PhD, J.J. Hermans Professor of Chemistry and Research Associate Professor of Materials Science
Kenneth A. Bollen, PhD, Henry Randolph Immerwahr Professor of Sociology and Adjunct Professor of Statistics
W. E. Bollingbacher, PhD, Professor of Biology
Mark E. Bonds, PhD, Professor of Music
Harriet A. Boone, PhD, Associate Professor of Education
Audrey J. Booth, PhD, Associate Professor of Nursing, Emerita
Raymond G. Booth, PhD, Associate Professor of Pharmacy
Christoph Borchers, PhD, Assistant Professor of Biochemistry and Biophysics
W. Clay Bordley, MD, MPH, Assistant Professor of Pediatrics and Adjunct Professor of Biomedical Engineering
Henry Charles Boren, PhD, Professor of History, Emeritus
Kenneth F. Borr, PhD, Professor of Microbiology and Immunology, Emeritus
Mark F. Botts, JD, Associate Professor of Public Law and Government
Richard C. Boucher Jr., MD, William Rand Kenan Professor of Medicine and Adjunct Professor of Genetics and Molecular Biology
Daniel Bouddah, PhD, Assistant Professor of Education
Thomas W. Bouldin, MD, Professor of Pathology and Laboratory Medicine and Professor of Ophthalmology
Donald A. Boutron, EdD, Clinical Professor of Education, Emeritus
Robert B. Bourret, PhD, Associate Professor of Microbiology and Immunology and Associate Professor of Genetics and Molecular Biology
Gary L. Bowen, PhD, William R. Kenan Jr. Professor of Social Work
Linda C. Bowen, PhD, CPA, Associate Professor of Business
Natasha K. Bowen, PhD, Assistant Professor of Social Work
Thomas A. Bowers, PhD, Senior Associate Dean and James L. Knight Professor of Journalism and Mass Communication
Wayne A. Bowers, PhD, Professor of Physics and Astronomy, Emeritus
Michael Bowling, PhD, Research Assistant Professor of Health Behavior and Health Education
Bernard R. Boxill, PhD, Professor of Philosophy
Alice Boyington, PhD, Assistant Professor of Nursing
Phillip Boyle, PhD, Associate Professor of Public Management and Government
Lois A. Boynton, PhD, Assistant Professor of Journalism and Mass Communication
Timothy J. Bradlow, PhD, Professor of Geological Sciences and Professor of Marine Sciences
Joan G. Brannon, JD, Hinsdale Professor of Public Law and Government
John C. Brantley, PhD, Professor of Education
Miriam Braunstein, PhD, Assistant Professor of Microbiology and Immunology
Mark E. Brecher, MD, Professor of Pathology and Laboratory Medicine
George R. Breese Jr., PhD, Professor of Psychiatry and Professor of Pharmacology
Jay E. Brenman, PhD, Assistant Professor of Cell and Developmental Biology
David A. Brenner, MD, PhD, Professor of Medicine, Professor of Biochemistry and Biophysics, and Professor of Genetics and Molecular Biology
Patrick J. Brennwald, PhD, Associate Professor of Cell and Developmental Biology
Peter J. Brews, PhD, Assistant Professor of Business
Richard A. Brice, EdD, Assistant Professor of Education
Charles V. Briscoe, PhD, Professor of Physics and Astronomy, Emeritus
Donald Leslie Brockington, PhD, Professor of Anthropology, Emeritus
Inger S. B. Brodley, PhD, Assistant Professor of Comparative Literature
Maurice S. Brookhart, PhD, Professor of Chemistry
E. Willis Brooks, PhD, Associate Professor of History and Associate Professor of Russian and East European Studies
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Frederick P. Brooks Jr., PhD, Kenan Professor of Computer Science
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Daniel J. Caplan, DDS, PhD, Associate Professor of Dentistry and Adjunct Assistant Professor of Epidemiology
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Johnny L. Carson, PhD, Professor of Pediatrics and Professor of Cell and Developmental Biology
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Gerald N. Cecil, PhD, Professor of Physics and Astronomy
Dino S. Cervigni, PhD, Professor of Romance Languages and Professor of Comparative Literature
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Stephen G. Chaney, PhD, Professor of Biochemistry and Biophysics, Professor of Toxicology, Professor of Nutrition, Professor of Genetics and Molecular Biology, and Adjunct Professor of Biomedical Engineering
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John F. Chapman Jr., DrPH, Professor of Pathology and Laboratory Medicine
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John C. Chastain, PhD, Associate Professor of History
Richard E. Cheney, PhD, Associate Professor of Cell and Molecular Physiology
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George Christakos, PhD, Professor of Environmental Sciences and Engineering and Adjunct Professor of Statistics
Dale B. Christensen, PhD, Professor of Pharmacy and Adjunct Professor of Health Policy and Administration
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Larry R. Churchill, PhD, Professor of Social Medicine
Angel L. Cilenti, PhD, Professor of Romance Languages, Emeritus
Joseph A. Cima, PhD, Professor of Mathematics
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Fred M. Clark, PhD, Professor of Romance Languages
Mary Gill Clarke, PhD, Professor of Psychology, Emerita
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J. Christopher Clemens, PhD, Associate Professor of Physics and Astronomy
Nora Cline, ML, Associate Professor of Public Health Nursing, Emerita
George W. Cloud, MA, Associate Professor of Journalism and Mass Communication
Anne McKay Coble, MFA, Associate Professor of Dramatic Art
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Myron S. Cohen, MD, Professor of Microbiology and Immunology
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James W. Coleman, PhD, Professor of English and Adjunct Professor of American Studies
Rosalind A. Coleman, MD, Professor of Nutrition and Professor of Pediatrics
William B. Coleman, PhD, Associate Professor of Pathology and Laboratory Medicine and Assistant Professor of Toxicology
Francis Nash Collier Jr., PhD, Professor of Chemistry, Emeritus
Edward J. Collins, PhD, Associate Professor of Microbiology and Immunology and Associate Professor of Biochemistry and Biophysics
Marsha S. Collins, PhD, Professor of Romance Languages and Professor of Comparative Literature
Myra L. Collins, MD, PhD, Associate Professor of Pathology and Laboratory Medicine
John M. Conley, JD, Kenan Professor of Law and Adjunct Professor of Anthropology
Frank Conlon, PhD, Assistant Professor of Genetics
Robert A. Connolly, PhD, Associate Professor of Business
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Pamela J. Conover, PhD, Professor of Political Science
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Philip W. Cooke, DSW, Professor of Social Work, Emeritus
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Herbert A. Cooper, MD, Professor of Pediatrics and Professor of Pathology and Laboratory Medicine
Lyndon E. Cooper, DDS, PhD, Associate Professor of Dentistry and Associate Professor of Biochemistry and Biophysics
Pamela A. Cooper, PhD, Associate Professor of English
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Laurel Archel Copp, PhD, Professor of Nursing, Emeritus
Giselle Corbic-Smith, MD, Assistant Professor of Social Medicine and Adjunct Assistant Professor of Epidemiology
Manila Cordeiro-Stone, PhD, Professor of Pathology and Laboratory Medicine and Professor of Toxicology
Michael Corrado, PhD, JD, Arch T. Allen Distinguished Professor of Law and Professor of Philosophy
Julio Cortés, PhD, Professor of Romance Languages, Emeritus
M. Joseph Costello III, PhD, Professor of Cell and Developmental Biology
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Norman A. Couler Jr., MD, Professor of Biomedical Engineering, Emeritus
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Adrienne D. Cox, PhD, Associate Professor of Radiation Oncology, Associate Professor of Pharmacology, and Associate Professor of Genetics and Molecular Biology
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William James Cromartie, MD, Alumni Distinguished Professor of Microbiology and Immunology, Emeritus
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Robert E. Cross, PhD, Professor of Pathology and Laboratory Medicine, Emeritus
Carole L. Crumley, PhD, Professor of Anthropology, Professor of Folklore, and Professor of Ecology
Carolyn Crump, PhD, Research Assistant Professor of Health Behavior and Health Education
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Tyler Curran, PhD, Assistant Professor of English
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Edward E. Curtis IV, D. Litt., PhD., Assistant Professor of Religious Studies
Douglas M. Cyt, PhD, Associate Professor of Cell and Developmental Biology
Elisabeth S. Czech-Beckerman, PhD, Associate Professor of Communication Studies, Emeritus
William Grant Dahlstrom, PhD, Kenn Professor of Psychology, Emeritus
Frederic Gilbert Dalldorf, MD, Professor of Pathology and Laboratory Medicine, Emeritus
Jo Ann B. Dalton, EdD, Professor of Nursing, Emerita
Kathleen Dalton, PhD, Research Assistant Professor of Health Policy and Administration
Blossom A. Damania, PhD, Assistant Professor of Microbiology and Immunology
James N. Damon, PhD, Professor of Mathematics
Jeffrey L. Dangl, PhD, John N. Couch Professor of Biology, Professor of Genetics and Molecular Biology, and Professor of Microbiology and Immunology
Evelyn H. Daniel, PhD, Professor of Information and Library Science
Mark Daniel, PhD, Assistant Professor of Health Behavior and Health Education and Assistant Professor of Epidemiology
Jane M. Danielewicz, PhD, Associate Professor of English
Julie L. Daniels, PhD, Assistant Professor of Epidemiology and Assistant Professor of Maternal and Child Health
Robert E. Daniels, PhD, Associate Professor of Anthropology and Associate Professor of Folklore
William A. Darby Jr., PhD, Cary B. Goshamer Professor of Economics and Adjunct Professor of Sociology
Cori Dauber, PhD, Associate Professor of Communication Studies
Jennifer L. D'Auria, PhD, Associate Professor of Nursing
C. William Davis, PhD, Research Professor of Cell and Molecular Physiology
Clarence E. Davis, PhD, Chair and Professor of Biostatistics
Morris S. Davis, PhD, Morehead Professor of Physics and Astronomy, Emeritus
Robert L. Davis, PhD, Professor of Mathematics, Emeritus
Virginia G. T. Davis, EdD, Associate Professor of Nursing
Patrick D. Davison, MA, Assistant Professor of Journalism and Mass Communication
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Suan A. Day, PhD, Assistant Professor of Romance Languages
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Dewitt Clinton Dearborn, DCS, Professor of Business, Emeritus
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Henry Hussell Dearman, PhD, Professor of Chemistry, Emeritus
Paul Debreczeny, PhD, Alumni Distinguished Professor of Slavic Languages and Literatures, Professor of Comparative Literature, and Professor of Russian and East European Studies, Emeritus
Sarah Rachel Dedmon, PhD, Associate Professor of Social Work, Emeritus
Gordon H. DeFriese, PhD, Professor of Social Medicine, Professor of Medicine, Clinical Professor of Epidemiology; and Clinical Professor of Health Policy and Administration
Maria DeGuzmán, PhD, MA, Assistant Professor of English
Yves de la Quéré, PhD, Associate Professor of Romance Languages
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Georgette A. Dent, MD, Associate Professor of Pathology and Laboratory Medicine
Channing J. Der, PhD, Professor of Pharmacology, Professor of Toxicology, and Professor of Genetics and Molecular Biology
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Robert B. DesJardins, PhD, Associate Professor of Business, Emeritus
Alan C. Dessen, PhD, Peter G. Philias Professor of English
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Robert DeVellis, PhD, Research Professor of Health Behavior and Health Education
Prasun Dewan, PhD, Professor of Computer Science
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Anne P. Dodds, PhD, Assistant Professor of Dentistry
Janice M. Dodds, EdD, Associate Professor of Nutrition and Associate Professor of Maternal and Child Health
Henrik Dohlman, PhD, Associate Professor of Biochemistry and Biophysics
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Howard Doll, PhD, Professor of Communication Studies, Emeritus
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Aristotle J. Domnas, PhD, Professor of Biology, Emeritus
Raymond E. Dooley, MFA, Chair and Professor of Dramatic Art
Molly C. Dougherty, PhD, Frances Hill Fox Distinguished Professor of Nursing
Elisha Pezis Douglass, PhD, Professor of History, Emeritus
William H. Dow, PhD, Assistant Professor of Health Policy and Administration
Mary C. Dowe, EdD, Associate Professor of Nursing, Emerita
Eric S. Dowling, PhD, Associate Professor of Comparative Literature
Martin Doyle, PhD, Assistant Professor of Geography and Assistant Professor of Ecology
Martin Doyle, PhD, Assistant Professor of Geography
James C. Drennan, JD, Albert Coates Professor of Public Law and Government
Richard R. Ducker, JD, Associate Professor of Public Law and Government
Kenneth H. Dudley, PhD, Professor of Pharmacology and Professor of Toxicology
Margery Duffey, PhD, Professor of Nursing, Emerita
Roberta A. Dunbar, PhD, Associate Professor of African and Afro-American Studies
Cherie H. Dunphy, MD, Associate Professor of Pathology and Laboratory Medicine
R. Pam Durban, PhD, Doris Betts Distinguished Professorship in Creative Writing
Robert J. Duronio, PhD, Associate Professor of Biology and Assistant Professor of Genetics and Molecular Biology
Kian S. Dy, PhD, Professor of Physics and Astronomy, Emeritus
Linda A. Dykstra, PhD, William R. Kenan Jr. Professor of Psychology and Professor of Pharmacology
Patrick F. Earey, PhD, Professor of Exercise and Sport Science, Emeritus
Jo Anne Earp, ScD, Chair and Professor of Health Behavior and Health Education
H. Shelton Earp III, MD, PhD, Professor of Pharmacology
Yvonne D. Eaves, ABD, Assistant Professor of Nursing
Patrick B. Eberlein, PhD, Professor of Mathematics
Alva V. Ebersole Jr., PhD, Professor of Romance Languages, Emeritus
Connie C. Eble, PhD, Professor of English
Frederick M. Eckel, MS, Professor of Pharmacy
David A. Eckerman, PhD, Professor of Psychology, Emeritus
Corine S. Edgell, PhD, Associate Professor of Pathology and Laboratory Medicine and Associate Professor of Genetics and Molecular Biology
Marshall H. Edgell, PhD, Kenan Professor of Microbiology and Immunology, Professor of Biochemistry and Biophysics, and Professor of Genetics and Molecular Biology
Jesse W. Edgerton, PhD, Professor of Psychology, Emeritus
Elizabeth M. Edmonds, MA, Associate Professor of Public Health Nursing, Emerita
Joseph C. Edozie, MD, Professor of Nutrition, Emeritus
Jeffrey R. Edwards, PhD, Belk Foundation Distinguished Professor of Business
Richard L. Edwards, PhD, Alumni Distinguished Professor of Social Work and Professor of Russian and East European Studies
Bart D. Ehrman, PhD, Chair and Professor of Religious Studies
A. Richard Elam, PhD, Professor of Journalism and Mass Communication, Emeritus
Regina C. Eldred-Abraham, PhD, Professor of Biostatistics, Emerita
Glen H. Eldred Jr., PhD, Howard W. Odum Professor of Sociology
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Timothy Elston, PhD, Associate Professor of Mathematics
Douglas A. Elvers, PhD, Professor of Business
Eugenia Eng, DrPH, Professor of Health Behavior and Health Education and Associate Professor of Public Health Leadership Program
Jonathan H. Engle, PhD, Associate Professor of Physics and Astronomy
Fenwick English, PhD, Robert Wendell Eaves Sr. Distinguished Professor of Education
Erik Engstrom, PhD, Assistant Professor of Political Science
Susan T. Ennett, PhD, Associate Professor of Health Behavior and Health Education
Ella Gray Wilson Ennis, PhD, Associate Professor of Medical Allied Health Professions, Emerita
Barbara Entwistle, PhD, Professor of Sociology and Professor of Ecology
Ann H. Erikson, PhD, Associate Professor of Biochemistry and Biophysics
Dorothy A. Eri, PhD, Assistant Professor of Chemistry
Carl W. Ernst, PhD, Distinguished Professor of Religious Studies
Beverly J. Erede, PhD, Professor of Biochemistry and Biophysics and Professor of Genetics and Molecular Biology
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Gregory E. Essick, PhD, Professor of Dentistry
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Rosanna F. Farber, PhD, Professor of Pathology and Laboratory Medicine and Professor of Genetics
Paul B. Farel, PhD, Professor of Cell and Molecular Physiology
Judith B. Farquhar, PhD, Professor of Anthropology and Adjunct Professor of Religious Studies
Walter C. Farrell Jr., PhD, Professor of Social Work, Adjunct Professor of Health Behavior and Health Education, and Adjunct Professor of Public Policy
Anne G. Fauset, PhD, Associate Professor of Music
Robert Gilbert Faust, PhD, Professor of Cell and Molecular Physiology, Emeritus
J. Alan Feduccia, PhD, S. K. Heninger Professor of Biology and Professor of Ecology
Frank E. Fee, PhD, Assistant Professor of Journalism and Mass Communication
Lawrence E. Feinberg, PhD, Associate Professor of Slavic Languages and Literatures and Associate Professor of Russian and East European Studies
David A. Felton, DDS, Associate Professor of Dentistry
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Ofelia Ferrán, PhD, Assistant Professor of Romance Languages
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Susan A. Fiscus, PhD, Professor of Microbiology and Immunology and Professor of Pathology and Laboratory Medicine
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Dominique D. Fisher, PhD, Associate Professor of Romance Languages
George Fishman, PhD, Professor of Operations Research, Emeritus
W. Jill Fitzgerald, PhD, Professor of Education
William Shoemaker Flash, PhD, Associate Professor of Health Policy and Administration, Emeritus
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William Miles Fletcher, PhD, Professor of History
Patrick M. Flood, PhD, Associate Professor of Dentistry and Associate Professor of Microbiology and Immunology
Joseph M. Flora, PhD, Atlanta Professorship in Southern Culture, Department of English
John W. Florin, PhD, Associate Professor of Geography, Associate Professor of Ecology, and Associate Professor of Folklore
Mary L. Floyd-Wilson, PhD, Assistant Professor of English
Michael R. Flynn, ScD, Professor of Environmental Sciences and Engineering
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Vangie A. Foshee, PhD, Associate Professor of Health Behavior and Health Education
Donald L. Fox, PhD, Professor of Environmental Sciences and Engineering
Paul H. Farnham, PhD, Louis D. Rubin Jr. Professor of Physics and Astronomy
Walter K. Franecke, PhD, Associate Professor of Germanic Languages, Emeritus
Mark W. Fraser, PhD, John A. Tate Sr. Distinguished Professor of Social Work
Janet K. Freburger, PhD, PT, Assistant Professor of Physical Therapy
Jeffrey A. Frelinson, PhD, Sarah Graham Kenan Professor of Microbiology and Immunology and Professor of Genetics and Molecular Biology
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Eric C. Frey, PhD, Associate Professor of Biomedical Engineering and Assistant Professor of Radiology
Bruce J. Fried, PhD, Associate Professor of Health Policy and Administration
Howard M. Fried, PhD, Associate Professor of Biochemistry and Biophysics
James W. Friedman, PhD, Professor of Economics, Emeritus
Susan N. Friel, EdD, Associate Professor of Education
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Paolo Fuglieri, PhD, Professor of Business
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M. David Galinsky, PhD, Professor of Psychology, Emeritus
Maeda J. Galinsky, PhD, William R. Kenan Jr. Distinguished Professor of Social Work
James J. Gallagher, PhD, Professor of Education and Adjunct Professor of Public Policy, Emeritus
A. Ronald Gallant, PhD, Henry A. Latané Professor of Economics and Adjunct Professor of Statistics, Emeritus
Edward M. Galligan, PhD, Associate Professor of Philosophy
Marilee D. Gammon, PhD, Professor of Epidemiology
Bin Gao, PhD, Associate Professor of Business
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Joanne Mills Garrett, PhD, Professor of Medicine and Adjunct Professor of Epidemiology
William E. Garrett Jr., MD, Frank C. Wilson MD Distinguished Professor of Orthopaedics
Laura N. Gasaway, JD, Director of the Law Library, Professor of Law, Adjunct Professor of Information and Library Science
John T. Gates Jr., PhD, Professor of Pharmacology, Emeritus
Bradley N. Gaynes, MD, MPH, Assistant Professor of Psychiatry and Adjunct Professor of Epidemiology
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Mary George, MEd, Associate Professor of Dentistry
Thomas Geraghty, PhD, Assistant Professor of Economics
J. Dieter Geratz, MD, Professor of Pathology and Laboratory Medicine, Emeritus
Henry J. Gerfen, PhD, Assistant Professor of Linguistics
Guido Gerig, PhD, Taylor Grandy Professor of Computer Science and Professor of Psychiatry
Barbara Germino, PhD, Carol Ann Beeston-Blackwell Chair of Thanatology and Professor of Nursing
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Eric Ghysels, PhD, Bernstein Professor of Economics and Adjunct Professor of Business
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Lawrence I. Gilbert, PhD, William R. Kenan Jr. Professor of Biology
Wendell G. Gilland, PhD, Assistant Professor of Business
Donna B. Gilleskie, PhD, Associate Professor of Economics
Peter H. Gilligan, PhD, Professor of Microbiology and Immunology and Professor of Pathology and Laboratory Medicine
John H. Gilmore, MD, Associate Professor of Psychiatry and Dissertation Committees of Neurobiology
Marianne Ginger, MFA, Associate Professor of English
Debbie S. Gipson, MD, Assistant Professor of Medicine and Clinical Assistant Professor of Epidemiology
Daniel P. Gitterman, PhD, Assistant Professor of Public Policy
Carol A. Giuliani, PhD, Director and Professor of Human Movement Science and Professor of Physical Therapy
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Avram Gold, PhD, Professor of Environmental Sciences and Engineering and Professor of Toxicology
Derek Goldman, PhD, Assistant Professor of Communication Studies
Eitan Goldman, PhD, Assistant Professor of Business
Adam O. Goldstein, MD, Assistant Professor of Family Medicine
Harvey A. Goldstein, PhD, Professor of City and Regional Planning and Adjunct Professor of Public Policy
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Carol Golin, MD, Research Assistant Professor of Health Behavior and Health Education
Claudia J. Goodp, PhD, Associate Professor of Information and Library Science
Harry Gooder, PhD, Professor of Microbiology and Immunology, Emeritus
Sue Ellen Goodman, PhD, Professor of Mathematics
Betty Nye Gordon, PhD, Research Associate Professor of Psychology, Emerita
Peter C. Gordon, PhD, Professor of Psychology
Penny Gordon-Larsen, PhD, Assistant Professor of Nutrition
Oleg V. Gorkun, PhD, Research Assistant Professor of Pathology and Laboratory Medicine
Geraldine Gourley, PhD, Associate Professor of Maternal and Child Health, Emerita
Michael F. Goy, PhD, Associate Professor of Cell and Molecular Physiology
Barry Goz, PhD, Professor of Pharmacology and Professor of Toxicology
S. Elizabeth Grabowski, MFA, Professor of Art
John Borden Graham, MD, Alumni Distinguished Professor of Pathology and Laboratory Medicine, Emeritus
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Lee M. Graves, PhD, Associate Professor of Pharmacology
Russell B. Graves, PhD, Professor of Dramatic Art, Emeritus
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Virginia Gray, PhD, Robert Watson Winston Professor of Political Science
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Vinton A. Hoyle, PhD, Professor of Mathematics, Emeritus
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G. David Hughes, PhD, Burlington Industries Professor of Business, Emeritus
Barbara S. Hulka, MD, Kenan Professor of Epidemiology, Emeritus
Jaroslav F. Hulka, MD, Professor of Obstetrics and Gynecology and Professor of Maternal and Child Health, Emeritus
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Ronald W. Hyatt, PhD, Professor of Exercise and Sport Science
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Sara Anderson Immerwahr, PhD, Professor of Art, Emerita
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Jerma A. Jackson, PhD, Assistant Professor of History
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Howard Jacobson, PhD, Professor of Maternal and Child Health, Emeritus
Kenneth A. Jacobson, PhD, Professor of Cell and Developmental Biology
Willow S. Jacobson, PhD, Assistant Professor of Public Administration and Government
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David S. Janowsky, MD, Professor of Psychiatry and Professor of Neurobiology
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Timothy A. Johnson, PhD, Associate Professor of Biomedical Engineering, Professor of Medicine, and Professor of Applied and Material Science
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James H. Johnson Jr., PhD, Kenan Professor of Business, and Adjunct Professor of Public Policy and Adjunct Professor of Sociology
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M. Gail Jones, PhD, Associate Professor of Education
W. Steven Jones, MBA, Dean of Kenan-Flagler Business School and Professor of Business
Arthur M. Jordan, PhD, Professor of Education, Emeritus
Joanne M. Jordan, MD, Associate Professor of Medicine and Adjunct Associate Professor of Epidemiology
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Sarang Joshi, PhD, Assistant Professor of Radiation Oncology, Assistant Professor of Biomedical Engineering, and Adjunct Assistant Professor of Computer Science
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Rudolph L. Juliano, PhD, Professor of Pharmacology
Enid R. Kafer, MD, Professor of Anesthesiology and Associate Professor of Cell and Molecular Physiology, Emerita
Tal Kafri, PhD, Assistant Professor of Microbiology and Immunology
Mathias Kahl, PhD, Assistant Professor of Business
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Tom Kalam, MA, Associate Professor of Music
Arne L. Kalleberg, PhD, Kenan Professor of Sociology and Adjunct Professor of Business
Gopi Nath Kallianpur, PhD, Alumni Distinguished Professor of Statistics
William D. K Ebek, PhD, Professor of Biostatistics
Arnold D. Kaluzny, PhD, Professor of Health Policy and Administration, Professor of Public Health Leadership Program, and Clinical Professor of Pharmacy
Sriram Kalyanaraman, PhD, Assistant Professor of School of Journalism and Mass Communication
Richard M. Kamens, MSPH, Professor of Environmental Sciences and Engineering
Andrew H. Kaplan, MD, Associate Professor of Medicine and Associate Professor of Microbiology and Immunology
Berton H. Kaplan, PhD, Professor of Epidemiology, Emeritus
Alan F. Karr, PhD, Professor of Statistics and Professor of Biostatistics
Hugon J. Karczowski, PhD, Professor of Physics and Astronomy
John D. Kasarda, PhD, Kenan Professor of Business, Adjunct Professor of Sociology, Adjunct Professor of Public Policy, and Professor of Ecology
John F. Kasson, PhD, Professor of History and Professor of American Studies
Joy S. Kasson, PhD, Professor of English
David G. Kaufman, MD, PhD, Professor of Pathology and Laboratory Medicine, Professor of Toxicology, and Research Professor of Biochemistry and Biophysics
Jay S. Kaufman, PhD, Assistant Professor of Epidemiology
Mildred Kaufman, MS, Professor of Nutrition, Emerita
Peter I. Kaufman, PhD, Professor of Religious Studies
William K. Kaufmann, PhD, Professor of Pathology and Laboratory Medicine, Professor of Toxicology, and Professor of Genetics and Molecular Biology
Thomas H. Kawula, PhD, Associate Professor of Microbiology and Immunology
Cornelius T. Kayor, PhD, Professor of Cell Biology and Anatomy, Emeritus
Hengming Ke, PhD, Professor of Biochemistry and Biophysics
Kara Keeling, PhD, Assistant Professor of Communication Studies
Janice C. Keene, MS, Associate Professor of Medical Allied Health Professions
Diane Kelly, PhD, Assistant Professor of Information and Library Science
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Albert W. King, MSW, Assistant Professor of Social Work, Emeritus
Arnold K. King, PhD, Professor of Education, Emeritus
James K. King, PhD, Professor of English, Emeritus
Larry D. King, PhD, Professor of Romance Languages
Richard A. King, PhD, Professor of Psychology, Emeritus
Joel G. Kingolver, PhD, William Rand Kenan Jr. Professor of Biology and Professor of Ecology
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Stephen Knisley, PhD, Associate Professor of Biomedical Engineering and Associate Professor of Medicine
Gary G. Koch, PhD, Professor of Biostatistics
William E. Koch, PhD, Professor of Cell and Developmental Biology
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Thomas R. Konrad, PhD, Research Professor of Health Policy and Administration
Jacob Koomen Jr., MD, Clinical Professor of Health Policy and Administration, Emeritus
Lorne D. Koroluk, DMD, Associate Professor of Dentistry
Mark J. Koruda, MD, Professor of Nutrition and Assistant Professor of Surgery
Jonathan B. Korch, MD, MPH, Professor of Maternal and Child Health
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Robert P. Kusy, PhD, Professor of Dentistry, Professor of Biomedical Engineering, and Professor of Materials Science
Mark J. Kusur, DDS, Associate Professor of Dentistry
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Kenneth J. Lehmann, PhD, M.L., Hoggard Professor of Biology and Associate Professor of Neurobiology
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Richard A. Luehrich Jr., ScD, Professor of Marine Sciences and Professor of Environmental Sciences and Engineering
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D. Soyini Madison, PhD, Associate Professor of Communication Studies
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Nobuyo Maeda, PhD, Robert H. Wagner, PhD Distinguished Professor of Pathology and Laboratory Medicine, Professor of Genetics and Molecular Biology, and Professor of Nutrition
Laurie F. Maffly-Kipp, PhD, Associate Professor of Religious Studies
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Arvind Malhotra, PhD, Assistant Professor of Business
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William W. Malloy, EdD, Associate Professor of Education
Patricia F. Maness, PhD, Professor of Biochemistry and Biophysics
G. Philip Manire, PhD, Kenan Professor of Microbiology and Immunology, Emeritus
Paul B. Manis, PhD, Professor of Otolaryngology/Head and Neck Surgery and Professor of Cell and Molecular Physiology
J. Douglas Mann, PhD, Professor of Neurobiology
Raleigh C. Mann, BA, Associate Professor of Journalism and Mass Communication, Emeritus
Richard A. Mann, JD, Professor of Business
William R. Mann, PhD, Professor of Mathematics, Emeritus
Dinesh Manocha, PhD, Professor of Computer Science
Kathryn Marocco, PhD, Adjunct Assistant Professor of Health Behavior and Health Education
Gary J. Marchionini, PhD, Cary C. Boshart Distinguished Professor of Information and Library Science
Lee M. Marcus, PhD, Professor of Psychology in of Psychiatry
Barry H. Margolin, PhD, Professor of Biostatistics, Emeritus
Lewis Margolis, MD, MPH, Associate Professor of Maternal and Child Health
Peter A. Margolis, MD, Associate Professor of Pediatrics and Clinical Associate Professor of Epidemiology
Barbara Mark, PhD, Sara F. Russell Distinguished Professor of Nursing
Peter Marko, PhD, Assistant Professor Marine Sciences
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Bonita L. Marks, PhD, Associate Professor of Exercise and Sport Science, Associate Professor of Human Movement Science, and Adjunct Associate Professor of Emergency Medicine
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Barclay Martin, PhD, Professor of Psychology, Emeritus
Sandra L. Martin, PhD, Professor of Maternal and Child Health
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Charlotte H. Mason, PhD, Associate Professor of Business
Janet Mason, JD, Gladys Hall Coates Professor of Public Law and Government
Shirley C. Mason, EdD, MSN, Associate Professor of Nursing
G. Mallory Masters, PhD, Professor of Romance Languages and Professor of Comparative Literature, Emeritus
Megan M. Matchinske, PhD, Associate Professor of English
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Edward Maydew, PhD, David E Hoffman Professor of Business
Ketan Mayer-Patel, PhD, Assistant Professor of Computer Science
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F. Webb McCracken III, DDS, Professor of Dentistry, Emeritus
Linda S. McDaniel, PhD, Associate Professor of Business
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Kimowan McLain, MFA, Assistant Professor of Art
Curtis P. McLaughlin, DBA, Professor of Business and Professor of Health Policy and Administration, Emeritus
Kenneth McLaughlin, PhD, Associate Professor of Mathematics
Richard M. McLean, PhD, Associate Professor of Mathematics
Lee K. McLean, PhD, Professor of Speech and Hearing Sciences
William W. McLeod, MD, Professor of Pathology and Laboratory Medicine, Emeritus
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Siegfried Mews, PhD, Professor of Germanic Languages
Paul W. Meyer, ThD, Adjunct Professor of Religious Studies
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Thomas J. Meyer, PhD, Kenan Professor of Chemistry and Professor of Materials Science
Claudio Mezzetti, PhD, Professor of Economics
Vasa D. Mihailevich, PhD, Professor of Slavic Languages and Literatures, Emeritus
David L. Miklowitz, PhD, Professor of Psychology
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Nancy Milio, PhD, Professor of Nursing and Professor of Health Policy and Administration, Emeritus
C. Arden Miller, MD, Professor of Maternal and Child Health, Emeritus
Cass T. Miller, PhD, Chair and Professor of Environmental Sciences and Engineering
Robert Moats Miller, PhD, Professor of History, Emeritus
Roger E. Miller, PhD, Professor of Chemistry
William C. Miller, MD, PhD, MPH, Assistant Professor of Medicine and Assistant Professor of Epidemiology
Robert C. Millikan, DVM, PhD, Associate Professor of Epidemiology
Michael L. Minion, PhD, Associate Professor of Mathematics
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Donald W. Misch, PhD, Associate Professor of Biology, Emeritus
Merle M. Mitchel, PhD, William R. Kenan Jr. Professor of Nursing
Beverly S. Mitchell, MD, Professor of Medicine, Professor of Pharmacology, and Professor of Genetics and Molecular Biology
Earl N. Mitchell, PhD, Professor of Physics and Astronomy, Emeritus
Marlys M. Mitchell, PhD, Professor of Occupational Science, Emerita
Ruth U. Mitchell, PhD, Professor of Physical Therapy, Emerita
Sorin Miron, PhD, Assistant Professor of Mathematics
Tom S. Miyamoto, PhD, Professor of Pharmacy and Professor of Toxicology, Emeritus
James C. Moer, PhD, Chancellor and Professor of Music
Dannie J. Mooff, PhD, Professor of Business, Emeritus
Andrew Mol, DMD, MS, Assistant Professor of Dentistry
Mary B. Monahan, PhD, Assistant Professor of Education, Emerita
Beatrice B. Mongeau, PhD, Associate Professor of Public Health Nursing, Emerita
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Royce L. Montgomery, PhD, Professor of Cell and Developmental Biology
Aaron Moody, PhD, Associate Professor of Geography and Associate Professor of Ecology
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Margaret L. Moore, EdD, Professor of Physical Therapy, Emerita
Barbara B. Moran, PhD, Professor of Information and Library Science and Professor of Russian and East European Studies
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Elliott Moreton, PhD, Assistant Professor of Linguistics
Neil Morgan, PhD, Assistant Professor of Business
John D. Motiar, DDS, Associate Professor of Dentistry
James P. Morken, PhD, Assistant Professor of Chemistry
Andrew J. Morris, PhD, Associate Professor of Cell and Developmental Biology
Dexter L. Morris, MD, PhD, Associate Professor of Emergency Medicine, Associate Professor of Medicine, and Adjunct Associate Professor of Epidemiology
James L. Morrison, PhD, Professor of Education
A. Leslie Morrow, PhD, Professor of Psychiatry, Professor of Neurobiology, Professor of Pharmacology, and Professor of Toxicology
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Ted Mow, PhD, Assistant Professor of Sociology
Thomas A. Mroz, PhD, Professor of Economics
Frederick O. Mueller, PhD, Professor of Exercise and Sport Science and Professor of Human Movement Science
Helmut C. Mueller, PhD, Professor of Biology, Emeritus
Robert A. Mueller, MD, PhD, Professor of Anesthesiology and Professor of Pharmacology
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Paul L. Munson, PhD, Sarah Graham Kenan Professor of Pharmacology, Emeritus
Helene M. Murphy, MSN, MPH, Associate Professor of Nursing, Emerita
James L. Murphy, PhD, Professor of Economics and Dean of Summer School
Valerie A. Murrah, DMD, Professor of Dentistry
Royce W. Murray, PhD, Kenan Professor of Chemistry and Professor of Materials Science
Elizabeth Murran, PhD, Professor of Health Behavior and Health Education, Emerita
Richard G. Mynark, PhD, Assistant Professor of Exercise and Sport Science
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Yun-Dong Nam, MFA, Associate Professor of Art
Jocelyn Neal, PhD, Assistant Professor of Music
Alan W. Nee, PhD, Professor of Business
Virginia Neele, PhD, Associate Professor of Nursing and Research Assistant Professor of Cell and Molecular Physiology
Severine Neff, PhD, Professor of Music
Charlene M. Nelson, MA, Associate Professor of Physical Therapy, Emerita
Christopher Nelson, PhD, Assistant Professor of Anthropology
Gary M. Nelson, DSW, Professor of Social Work
John K. Nelson, PhD, Professor of History, Emeritus
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A. Conrad Neumann, PhD, Professor of Marine Sciences and Professor of Geological Sciences, Emeritus
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David S. Newbury, PhD, Associate Professor of History and Adjunct Associate Professor of Anthropology
Yee Jack Ng, PhD, Professor of Physics and Astronomy
Robert A. Nichols, PhD, Professor of Pharmacology and Professor of Neurobiology
Timothy C. Nichols, MD, Professor of Medicine and Professor of Pathology and Laboratory Medicine
Volker Nickeleit, MD, PhD, Associate Professor of Pathology and Laboratory Medicine
Francois D. Nielsen, PhD, Professor of Sociology
Andrew B. Nobel, PhD, Associate Professor of Statistics
Rachel T. Noble, PhD, Assistant Professor of Marine Sciences with joint appointment in the Carolina Environmental Program
George W. Noblit, PhD, Professor of Education
James S. Noblit, PhD, Professor of Romance Languages
Jerry L. Noe, MFA, Professor of Art, Emeritus
Donald M. Nonini, PhD, Professor of Anthropology
Kari North, PhD, Assistant Professor of Epidemiology
Edward C. Norton, PhD, Associate Professor of Health Policy and Administration
G. Joseph Norwood, PhD, Professor of Pharmacy, Emeritus
William Norte, MBA, Assistant Professor of Nutrition
Julius E. Nyang’oro, PhD, JD, Professor of African and Afro-American Studies
Leena Nylander-French, PhD, Assistant Professor of Environmental Sciences and Engineering and Assistant Professor of Toxicology
Thomas H. Oatley, PhD, Associate Professor of Political Science
Anthony R. Oberschall, PhD, Professor of Sociology, Emeritus
Jeffrey Obler, PhD, Associate Professor of Political Science
Deborah A. O’Brien, PhD, Associate Professor of Cell and Developmental Biology, Associate Professor of Pediatrics, and Associate Professor of Genetics and Molecular Biology
Margaret A. O’Connor, PhD, Associate Professor of English and Adjunct Professor of American Studies, Emeritus
Samuel L. Odom Jr., PhD, Professor of Education
Donald J. Oehler, MM, Professor of Music
Steven Offerbacher, DDS, PhD, Professor of Dentistry
James J. O’Hara, PhD, Padidson Professor of Classics
Daniel Oluk, ScD, Kenan Professor of Environmental Sciences and Engineering, Emeritus
Andrew F. Olshan, PhD, Professor of Epidemiology and Adjunct Professor of Otolaryngology/Head and Neck Surgery
Hugh M. O’Neill, PhD, Professor of Business
Patrick P. O’Neill, PhD, Norman and Dorothy Eliason Distinguished Professor of English and Professor of Folklore
David A. Onaies, MD, Eunice Bernhard Distinguished Professor of Medicine and Professor of Pharmacology
Michael G. O’Rand, PhD, Professor of Cell and Developmental Biology
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Thomas J. Orsagh, PhD, Associate Professor of Economics, Emeritus
Dennis K. Orthner, PhD, Professor of Social Work and Adjunct Professor of Public Policy
Barbara J. Osborne, JD, Associate Professor of Exercise and Sport Science
Rita O’Sullivan, PhD, Associate Professor of Education
Carol A. Otery, PhD, Assistant Professor of Cell and Molecular Physiology
Hui Ou-Yang, PhD, Assistant Professor of Business
Roberta A. Owen, MFA, Professor of Dramatic Art
David W. Owens, JD, MRP, Professor of Public Law and Government
Cathy Lee Packer, PhD, Associate Professor of Journalism and Mass Communication
Darin A. Padua, PhD, Assistant Professor of Exercise and Sport Science and Assistant Professor of Human Movement Science
Hans W. Paerl, PhD, William R. Kenan Professor of Marine Sciences and Professor of Environmental Sciences and Engineering
Joseph S. Pagano, MD, Professor of Medicine, Professor of Microbiology and Immunology, and Professor of Genetics and Molecular Biology
Everett D. Palmieri, PhD, Kenan Professor of Physics and Astronomy, Emeritus
Mary Palmer, PhD, Helen W. and Thomas Umphlett Distinguished Professor of Nursing
William S. Palmer, PhD, Professor of Education, Emeritus
Abigail T. Panter, PhD, Associate Professor of Psychology
John M. Papanikolas, PhD, Assistant Professor of Chemistry
David W. Paquette, DMD, Assistant Professor of Dentistry
Mary Pardo, PhD, Associate Professor of Art
Carol J. Pardun, PhD, Associate Professor of Journalism and Mass Communication
Nalin R. Parikh, PhD, Research Associate Professor of Physics and Astronomy
Leslie J. Paris, PhD, Professor of Pharmacology and Professor of Genetics and Molecular Biology
Susan L. Parish, PhD, Assistant Professor of Social Work
William R. Parke, PhD, Associate Professor of Economics
John A. Parker, MArch, MCP, Professor of City and Regional Planning, Emeritus
Mabel M. Parker, MA, Associate Professor of Physical Therapy, Emerita
Patricia S. Parker, PhD, Assistant Professor of Communication Studies
Clifford R. Parks, PhD, Professor of Biology, Emeritus
Carolyn Parks-Bani, PhD, Assistant Professor of Health Behavior and Health Education
Robert G. Parr Jr., PhD, William R. Kenan Jr. Professor of Chemistry
Sergio Parreira, PhD, Assistant Professor of Economics
Gabor Pataki, PhD, Assistant Professor of Operations Research
Dhavalkumar D. Patel, MD/PhD, Professor of Medicine and Professor of Microbiology and Immunology
Cam Patterson, MD, Associate Professor of Medicine and Associate Professor of Pharmacology
Daniel W. Patterson, PhD, Professor of English and Professor of Folklore, Emeritus
J. Herbert Patterson, PharmD, Associate Professor of Pharmacy
Lauren L. Patton, DDS, Associate Professor of Dentistry
Roy Peach, PhD, Associate Professor of Dentistry, Emeritus
James L. Peacock III, PhD, Kenan Professor of Anthropology, Professor of Comparative Literature, and Professor of Folklore
Lisa D. Pearce, PhD, Assistant Professor of Sociology
William J. Peck, PhD, Associate Professor of Religious Studies, Emeritus
David B. Peden, MD, Professor of Pediatrics and of Biomedical Engineering, and Adjunct Professor of Epidemiology
Cort A. Pedersen, MD, Associate Professor of Neurobiology
Lee G. Pedersen, PhD, Mary Ann Smith Professor of Chemistry
Robert K. Peet, PhD, Professor of Biology, and Professor and Chair of Ecology
Mark A. Peifer, PhD, Professor of Biology and Associate Professor of Genetics and Molecular Biology
Ellen R. Peifer, JD, Professor of Business
James W. Pence Jr., PhD, Professor of Communication Studies, Emeritus
David L. Penn, PhD, Associate Professor of Psychology
Theda Perdue, PhD, Professor of History
Patricia Pereira, DDS, PhD, Assistant Professor of Dentistry
Rosa Petelmuter, PhD, Associate Professor of Romance Languages
Louis A. Perez, PhD, J. Carlyle Sitterson Professor of History
Edward R. Perl, MD, Sarah Graham Kenan Professor of Cell and Molecular Physiology
Joseph H. Perlmutt, PhD, Professor of Cell and Molecular Physiology, Emeritus
Charles M. Perou, PhD, Assistant Professor of Genetics and Assistant Professor of Pathology and Laboratory Medicine
William D. Perrenault Jr., PhD, William R. Kenan Jr. Professor of Business
Krista N. Perreira, PhD, Assistant Professor of Public Policy
Andrew Perrin, PhD, Assistant Professor of Sociology
Robert W. Peters, PhD, Research Professor of Speech and Hearing Sciences, Emeritus
Karl E. Petersen, PhD, Professor of Mathematics
Charles H. Peterson, PhD, Professor of Marine Sciences, Professor of Biology, and Professor of Ecology
Herbert Peterson, PhD, Chair and Professor of Maternal and Child Health
Thomas D. Petes, PhD, Professor of Biology and Professor of Genetics and Molecular Biology
Martha D. Petroskey, PhD, Assistant Professor of Education
Peter Petrusz, MD, PhD, Professor of Cell and Developmental Biology
Frederic K. Pfender, PhD, Professor of Environmental Sciences and Engineering, Professor of Marine Sciences, and Professor of Ecology
Richard W. Pfaff, PhD, Professor of History
John A. Pfister, PhD, Professor of Mathematics
David W. Pfennig, PhD, Associate Professor of Biology and Associate Professor of Ecology
Karin S. Pfennig, PhD, Assistant Professor of Biology
Ralph W. Pfouts, PhD, Professor of Economics, Emeritus
Harry T. Phillips, DPH, MD, Professor of Health Policy and Administration and Professor of Medicine, Emeritus
Richard C. Phillips, PhD, Professor of Education, Emeritus
Benjamin Philpot, PhD, Assistant Professor of Cell and Molecular Physiology
Claude Plantaditsa, PhD, Professor of Pharmacy and Professor of Biochemistry and Biophysics, Emeritus
James R. Pick Jr., DVM, Professor of Pathology and Laboratory Medicine, Emeritus
Mitchell J. Pickett, PhD, Professor of Psychology
John Pickles, PhD, Phillips Distinguished Professor of Geography
Gary J. Pielak, PhD, Professor of Chemistry
John A. Pieper, PharmD, Professor of Pharmacy
Susan E. Pierce, PhD, Professor of Nursing
David C. Pike, PhD, Professor of Germanic Languages
A. Wayne Pitman, MS, Associate Professor of Pharmacy
Stephen M. Pizer, PhD, Kenan Professor of Computer Science and Adjunct Professor of Biomedical Engineering
David A. Plaisant, PhD, Professor of Computer Science
Joseph E. Plante, PhD, Professor of Mathematics
Francis Pleasants Jr., PhD, Professor of Exercise and Sport Science, Emeritus
Zlarko Plise, PhD, Assistant Professor of Religious Studies
Pamela Pleusch, PhD, Associate Professor of Nursing
Robert D. Podolsky, PhD, Assistant Professor of Biology
Gary M. Pollack, PhD, Professor of Pharmacy and Professor of Toxicology
Franck Polleux, PhD, Assistant Professor Neurobiology and Assistant Professor of Pharmacology
Della Pollock, PhD, Professor of Communication Studies and Professor of Folklore
José M. Polo de Bernabé, PhD, Associate Professor of Romance Languages and Associate Professor of Comparative Literature
Jeffrey Pomerantz, PhD, Assistant Professor of Information and Library Science
Charles L. Poole III, ScD, Associate Professor of Epidemiology
Doris T. Poole, PhD, Associate Professor of Pharmacology, Emeritus
Barry M. Popkin, PhD, Professor of Nutrition and Professor of Russian and East European Studies
Brian J. Popko, PhD, Professor of Biochemistry and Biophysics and Professor of Genetics and Molecular Biology
Janet E. Porter, PhD, Clinical Associate Professor of Health Policy and Administration
Charles V. Porto, PhD, Clinical Assistant Professor of Health Policy and Administration
Gerald J. Postema, PhD, Cary C. Boschmer Professor of Philosophy
William S. Powell, MA, Professor of History, Emeritus
William E. Prentice Jr., PhD, Professor of Exercise and Sport Science, Professor of Orthopaedics, and Professor of Human Movement Science
Charles Price, PhD, Assistant Professor of Anthropology
John R. Pringle, PhD, William R. Kenan Jr. Professor of Biology and Professor of Genetics and Molecular Biology
Jan F. Prins, PhD, Professor of Computer Science
Robert A. Proctor, PhD, Professor of Mathematics
William R. Proffit, DDS, PhD, Kenan Professor of Dentistry
J. Scott Provancher, PhD, Professor of Operations Research
James W. Pruett, PhD, Professor of Music, Emeritus
Katherine B. Pryzwansky, PhD, Associate Professor of Pathology and Laboratory Medicine, Emerita
Walter A. Pryzwansky, EdD, Professor of Education
Patricia J. Pulkki, PhD, Associate Professor of Biology and Associate Professor of Genetics and Molecular Biology
Christopher R. Putney, PhD, Associate Professor of Slavic Languages and Literatures and Associate Professor of Russian and East European Studies
William Putnis, PhD, Professor of Business
Bahjat J. Qaqish, PhD, Associate Professor of Biostatistics
Dana E. Quade, PhD, Professor of Biostatistics, Emeritus
Roberto G. Quercia, PhD, Associate Professor of City and Regional Planning
Lu-Chang Qin, Associate Professor of Physics and Astronomy
Nancy Raab-Traub, PhD, Professor of Microbiology and Immunology
Ralph H. Rasch, PharmD, Associate Professor of Pharmacy
Shanti Gamber Rabinowits, PhD, Assistant Professor of Public Policy
George B. Rabinowitz, PhD, Professor of Political Science
William H. Race, PhD, Padisson Professor of Classics
Albert E. Radford, PhD, Professor of Biology, Emeritus
Jana S. Raedy, PhD, Assistant Professor of Business
Donald J. Raleigh, PhD, Professor of History and Professor of Russian and East European Studies
James A. Raleigh, PhD, Professor of Radiation Oncology and Professor of Toxicology
Dale A. Ramsden, PhD, Assistant Professor of Biochemistry and Biophysics, Assistant Professor of Toxicology, and Assistant Professor of Genetics and Molecular Biology
Scott Randell, PhD, Research Assistant Professor of Cell and Molecular Physiology
David F. Ransohoff, MD, Professor of Medicine and Clinical Professor of Epidemiology
Ennio I. Rao, PhD, Associate Professor of Romance Languages
Kathleen W. Rao, PhD, Professor of Pediatrics, Professor of Pathology and Laboratory Medicine, and Professor of Genetics and Molecular Biology
Julius R. Raper III, PhD, Professor of English, Emeritus
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Rebecca Ratner, PhD, Assistant Professor of Business
David J. Ravenscraft, PhD, Julian Price Professor of Business
Marjorie S. Read, PhD, Research Professor of Pathology and Laboratory Medicine, Emeritus
Kenneth J. Reckford, PhD, Kenan Distinguished Professor of Classics, Emeritus
Monica P. Rector, PhD, Professor of Romance Languages
Peter Redfield, PhD, Assistant Professor of Anthropology
Matthew Redinbo, PhD, Assistant Professor of Chemistry and Assistant Professor of Biochemistry and Biophysics
Richard W. Redman, PhD, Associate Dean and Professor School of Nursing
Adam V. Reed, PhD, Assistant Professor of Business
Jason W. Reed, PhD, Associate Professor of Biology and Associate Professor of Genetics and Molecular Biology
John S. Reed Jr., PhD, William R. Kenan Jr. Professor of Sociology, Emeritus
Mark L. Reed III, PhD, Professor of English, Emeritus
C.D.C. Reeve, PhD, Professor of Philosophy and Adjunct Professor of Classics
Seth R. Reice, PhD, Associate Professor of Biology and Associate Professor of Ecology
Daniel E. Reichart, PhD, Assistant Professor of Physics and Astronomy
Donald M. Reid, PhD, Professor of History
Lola M. Reid, PhD, Professor of Cell and Molecular Physiology
Marie Reilly, PhD, PT, Associate Professor, Division of Physical Therapy
Thomas J. Reinert, PhD, Associate Professor of English
Howard M. Reiner, PhD, Professor of Pathology and Laboratory Medicine and Professor of Microbiology and Immunology
Parker C. Reist, ScD, Professor of Environmental Sciences and Engineering
Richard J. Rendleman Jr., PhD, Professor of Business
Michael D. Resnik, PhD, University Distinguished Professor of Philosophy
Carol Reuss, PhD, Professor of Journalism and Mass Communication, Emerita
Andrew Reynolds, PhD, Associate Professor of Political Science
Isaac N. Reynolds, PhD, Professor of Business, Emeritus
J. Steven Renzick, PhD, Professor of Psychology
Marc Rhoads, PhD, Professor of Nutrition
Paul W. Rhode, PhD, Professor of Economics
Terry E. Rhodes, DMA, Assistant Professor of Music and Assistant Professor of Russian and East European Studies
Dwight C. Rhyme, EdD, Associate Professor of Education, Emeritus
Jose A. Rial, PhD, Professor of Geological Sciences
Kurt Ribisl, PhD, Assistant Professor of Health Behavior and Health Education
Martin Rice, PhD, Assistant Professor of Occupational Science
Richard J. Richardson, Professor of Political Science, Emeritus
Jack M. Richman, PhD, Dean and Professor of Social Work
Thomas C. Rickert, PhD, Professor of Health Policy and Administration, Associate Professor of Public Health Leadership Program, and Associate Professor of Russian and East European Studies
Werner Riss, PhD, Assistant Professor of Classics
Barbara Rinner, PhD, Alumni Distinguished Professor of Health Behavior and Health Education
Ronald R. Rindfuss, PhD, Robert Paul Ziff Professor of Sociology
Marcia Van Riper, PhD, Associate Professor of Nursing
Andre V. Ritter, DDS, Assistant Professor of Dentistry
William C. Rivenbark, PhD, Assistant Professor of Public Administration and Government
Eric M. Rivera, DDS, MS, Associate Professor of Dentistry
Alicia Rivero, PhD, Associate Professor of Romance Languages and Associate Professor of Comparative Literature
Paul T. Roberge, PhD, Professor of Germanic Languages, and Professor of Linguistics
Theodore M. Roberson, DDS, Professor of Dentistry
Amelia Roberts, PhD, Associate Professor of Social Work
Barry S. Roberts, JD, LLM, Professor of Business
Harold R. Roberts, MD, Sarah Graham Kenan Professor of Medicine and Clinical Professor of Pathology and Laboratory Medicine
John T. Roberts, PhD, Assistant Professor of Philosophy
Michael W. Roberts, DDS, Professor of Dentistry and Professor of Pediatrics
Peter J. Robinson, PhD, Professor of Geography and Professor of Ecology
Beverly J. Rockhill, PhD, Assistant Professor of Epidemiology
Daniel A. Rodriguez, PhD, Assistant Professor of City and Regional Planning
Bonnie Rogers, DrPH, Associate Professor of Public Health Nursing, Associate Professor of Public Health Leadership Program, and Clinical Associate Professor of Epidemiology
Dwight L. Rogers III, PhD, Associate Professor of Education
John J. W. Rogers, PhD, Professor of Geological Sciences and Adjunct Professor of Marine Sciences, Emeritus
William M. Rohe, PhD, Director, Center for Urban and Regional Studies, Professor of City and Regional Planning
Lewis H. Romer, MD, Associate Professor of Pediatrics and Associate Professor of Cell Biology and Anatomy
Dennis A. Rondinelli, PhD, Glaxo Professor of Business and Adjunct Professor of Public Policy
Xue Lan Rong, EdD, Associate Professor of Education
William L. Roper, MD, MPH, Professor of Health Policy and Administration
Wayne D. Rosenmond, PhD, Associate Professor of Epidemiology and Adjunct Associate Professor of Emergency Medicine
James A. Rose, PhD, Professor of Physics and Astronomy
Steven S. Rosefeld, PhD, Professor of Economics
Benson Rosen, PhD, Hanes Professor of Business
Angela Rosenberg, PT, DPH, Assistant Professor, Division of Physical Therapy
Jay F. Rosenberg, PhD, Taylor Grandy Professor of Philosophy
Robert L. Rosenberg, PhD, Professor of Pharmacology and Professor of Cell and Molecular Physiology
Lawrence B. Rosenfeld, PhD, Professor of Communication Studies
Rachel A. Rosenfeld, PhD, Professor of Sociology
Julian G. Rosenman, MD, PhD, Professor of Radiation Oncology, Adjunct Professor of Computer Science, and Adjunct Professor of Biomedical Engineering
Aleida V. Roth, PhD, Mary Farley Ames Lee Distinguished Professor of Business
Kathleen A. Rounds, PhD, Professor of Social Work
Christopher Rouxh, MA, Assistant Professor of Journalism and Mass Communication
Jackson Rouxh, PhD, Professor of Speech and Hearing Sciences
Lawrence G. Rowan, PhD, Professor of Physics and Astronomy
Pamela J. Rowley, PhD, Associate Professor of Nursing
Lev Rozansky, PhD, Associate Professor of Mathematics
Richard G. Rozier, DDS, MPH, Professor of Health Policy and Administration and Professor of Dental Ecology
Michael Rubenstein, PhD, Professor of Chemistry and Professor of Materials Science
David S. Rubin, PhD, Professor of Business and Professor of Operations Research
John Rubin, JD, Professor of Public Law and Government
Michael Rubenstein, PhD, Associate Professor of Chemistry and Research Associate Professor of Materials Science
Joyce J. Rudinsky, MFA, Assistant Professor of Art and Assistant Professor of Communication Studies
Martin Ruef, PhD, Assistant Professor of Sociology
Carol W. Runyan, PhD, Professor of Health Behavior and Health Education and Adjunct Professor of Epidemiology
Desmond K. Runyan, MD, Professor of Social Medicine and Clinical Professor of Epidemiology
Robert A. Rapen, PhD, Professor of Political Science, Emeritus
Caryl E. Rusbult, PhD, J. Ross Macdonald Professor of Psychology
Richard D. Rust, PhD, Professor of English and Adjunct Professor of American Studies, Emeritus
Aldo Russo, MD, Professor of Cell and Developmental Biology and Professor of Cell and Molecular Physiology
Frank W. Ryan Jr., PhD, Professor of History, Emeritus
Rebert (Robin) W. Ryder, MD, MSc, Professor of Epidemiology and Professor of Medicine
Barbara C. Ryaner, MS, Associate Professor of Nursing, Emerita
Rhonda Ryznar, PhD, Assistant Professor of City and Regional Planning
Yasmin Saikia, PhD, Assistant Professor of History
Robert Sakara, PhD, Professor of Rehabilitation Psychology and Counseling, Clinical Professor of Family Medicine, and Clinical Professor of Education
Michael K. Salem, PhD, Professor of Economics
Maria A. Salgado, PhD, Professor of Romance Languages
Edward D. Salmon, PhD, Ballou Professor of Biology
Marvin Saltzman, MFA, Professor of Art, Emeritus
G. Kenneth Sams, PhD, Professor of Classics
Edward T. Samulski, PhD, Professor of Chemistry and Professor of Materials Science
R. Jude Samulski, PhD, Professor of Pharmacology, Professor of Genetics and Molecular Biology, and Professor of Toxicology
Aziz Sancar, MD, PhD, Professor of Biochemistry and Biophysics, Professor of Toxicology, and Professor of Genetics and Molecular Biology
Gwendolyn B. Sancar, PhD, Professor of Biochemistry and Biophysics and Professor of Genetics and Molecular Biology
Margaret J. Sandelowski, PhD, Professor of Nursing
William E. Sanders Jr., MD, Associate Professor of Pathology and Laboratory Medicine
Robert S. Sandler, MD, MPH, Professor of Medicine and Professor of Epidemiology
James H. Sanford, PhD, Associate Professor of Religious Studies, Emeritus
Lawrence Sanna, PhD, Associate Professor of Psychology
R. Ballou Sarto, MD, Professor of Medicine and Professor of Microbiology and Immunology
Jack M. Sasson, PhD, Professor of Religious Studies, Emeritus
Barry F. Saunders, PhD, MD, Assistant Professor of Social Medicine, Clinical Assistant Professor of Medicine and Family Medicine, Adjunct Assistant Professor of Religious Studies, and Adjunct Assistant Professor of Anthropology
David A. Savitz, PhD, Chair and Professor of Epidemiology
Patricia E. Sawin, PhD, Assistant Professor of Anthropology and Assistant Professor of Folklore
John L. Saxons, JD, Professor of Public Law and Government
Jerry D. Saye, PhD, Professor of Information and Library Science
Geoffrey D. Sayre-McCord, PhD, Bowman and Gray Professor of Philosophy
Gene A. Scarborough, PhD, Professor of Pharmacology
C. Margaret Scarry, PhD, Associate Professor of Anthropology
Earl L. Schafer, PhD, Professor of Maternal and Child Health, Emeritus
Morris Schafer, DPA, Clinical Professor of Health Policy and Administration, Emeritus
Michael D. Schaller, PhD, Associate Professor of Cell and Developmental Biology
Anne H. Skelly, PhD, Associate Professor of Nursing
O'Hara Slavick, MFA, Professor of Art
Betsy L. Steath, PhD, Associate Professor of Pharmacy, Adjunct Associate Professor of Health Policy and Administration, and Adjunct Associate Professor of Epidemiology
Lawrence M. Shifkin, PhD, Alumni Distinguished Professor of Physics and Astronomy, Emeritus
Philip D. Sloane, MD, Professor of Family Medicine and Adjunct Professor of Epidemiology
Karta Slocum, PhD, Assistant Professor of Anthropology
Brooks de Wetter-Smith, DMA, J. G. Hanes Distinguished Professor of Music
Christian S. Smith, PhD, Stuart Chapin Professor of Sociology
Frank D. Smith, PhD, Research Professor of Computer Science
Gary J. Smith, PhD, Professor of Pathology and Laboratory Medicine and Professor of Toxicology
Jay M. Smith, PhD, Associate Professor of History
Jennifer L. Smith, PhD, Assistant Professor of Linguistics
Jessica Smith, JD, Assistant Professor of Public Law and Government
John B. Smith, PhD, Professor of Computer Science
Michael R. Smith, JD, Professor of Public Law and Government and Dean of the School of Government
Peter M. Smith, PhD, Associate Professor of Classics
Philip C. Smith, PhD, Associate Professor of Pharmacy and Associate Professor of Toxicology
Richard L. Smith, PhD, Chair and Professor of Statistics
Scott R. Smith, PhD, Assistant Professor of Pharmacy and Adjunct Assistant Professor of Epidemiology
Sidney R. Smith Jr., PhD, Professor of Germanic Languages, Emeritus
Walter L. Smith, PhD, Professor of Statistics, Emeritus
William W. Smith, PhD, Professor of Mathematics
Howard E. Smither, PhD, James Gordon Hanes Professor of the Humanities of Music, Emeritus
Oliver Smithies, DPhil, Excellence Professor of Pathology and Laboratory Medicine and Professor of Genetics and Molecular Biology
Paul R. Smokowski, PhD, Assistant Professor of Social Work
Richard A. Smyth, PhD, Professor of Philosophy and Professor of Comparative Literature, Emeritus
William D. Snider, PhD, Professor of Neurology, Professor of Cell and Molecular Physiology, and Professor of Neurobiology
Jack S. Snydervink, PhD, Professor of Computer Science
Karl N. Snow, PhD, Assistant Professor of Business
Glen H. Snyder, Professor of Political Science, Emeritus
Mark D. Sobsey, PhD, Professor of Environmental Sciences and Engineering and Professor of Marine Sciences
Keith Sockman, PhD, Assistant Professor of Biology
William A. Sollecito, DrPH, Research Professor of Health Policy and Administration
Paul Solomon, PhD, Associate Professor of Information and Library Science
Richard A. Soloway, PhD, Eugen Merzbacher Professor of History
Roy E. Sommerfeld, PhD, Professor of Education, Emeritus
John E. Sondek, PhD, Associate Professor of Pharmacology and Associate Professor of Biochemistry and Biophysics
Congbe Song, PhD, Assistant Professor of Geography and Assistant Professor of Ecology
Yan Song, PhD, Assistant Professor of City and Regional Planning
Johann Sonner, Dr. rer. nat., Professor of Mathematics, Emeritus
Mark Sorensen, PhD, Assistant Professor of Anthropology
James R. Sorensen, PhD, Professor of Health Behavior and Health Education
Thomas N. Sorrell, PhD, Professor of Chemistry
Janet H. Southerland, DDS, Assistant Professor of Dentistry
Joyce W. Sparling, PhD, Associate Professor of Physical Therapy and Dissertation Committees of Education, Emerita
P. Frederick Sparling, MD, Distinguished Professor of Medicine and Professor of Microbiology and Immunology
Dixie L. Spiegel, PhD, Professor of Education
Linda L. Sprenulli, PhD, Professor of Chemistry
Philip A. Stader, PhD, Eugene Falk Professor of Humanities, Professor of Classics and Professor of Comparative Literature, Emeritus
Darrell W. Stafford, PhD, Professor of Biology and Professor of Pathology and Laboratory Medicine
John W. Samm, DDS, DDPH, Dean and Professor of Dentistry and Adjunct Professor of Epidemiology
Lola V. Stamm, PhD, Associate Professor of Epidemiology
Donald F. Stare, PhD, Professor of Computer Science, Emeritus
Kathryn Starkey, PhD, Assistant Professor of Germanic Languages
James D. Stasheff, PhD, Professor of Mathematics, Emeritus
Sally C. Starns, PhD, Associate Professor of Health Policy and Administration
Allan B. Steckler, DrPH, Professor of Health Behavior and Health Education
Donald J. Steedman, PhD, Professor of Education
Marco R. Steenbergen, PhD, Associate Professor of Political Science
Michael A. Stegman, PhD, Duncan MacRae '09 and Rebecca Kyle, MacRae Professor of Public Policy, Professor of City and Regional Planning, and Adjunct Professor of Business
Jurg Steiner, PhD, Professor of Political Science
Carl W. Streiberg, PhD, Professor of Public Administration and Government
John B. Stephens, PhD, Associate Professor of Public Management and Government
John D. Stephens, PhD, Gerhard E. Lenski Jr. Distinguished Professor of Political Science and Adjunct Professor of Sociology
Vincas P. Steponaitis, PhD, Professor of Anthropology
H. June Stevens, PhD, Professor of Nutrition and Professor of Epidemiology
Robert L. Stevenson, PhD, Kenan Professor of Journalism and Mass Communication
John F. Stewart, PhD, Professor of Economics
Kevin G. Stewart, PhD, Associate Professor of Geological Sciences
William S. Stewart, JD, Professor of Law, Emeritus
Shaler Stidham Jr., PhD, Professor of Operations Research
James A. Stimson, PhD, Raymond H. Dawson Distinguished Professor of Political Science
Alan E. Stiven, PhD, Professor of Biology and Professor of Ecology, Emeritus
E. Barbara Stocking, MPH, Associate Professor of Maternal and Child Health, Emerita
C. S. Stone Jr., MA, Walter Spearman Professor of Journalism and Mass Communication
Lynda Stone, PhD, Associate Professor of Education
P. David Storts Jr., Associate Professor of Computer Science
Brian Strahl, PhD, Assistant Professor of Biochemistry and Biophysics
Joseph W. Straley, PhD, Professor of Physics and Astronomy, Emeritus
Dulcie Straughn, PhD, Associate Professor of Journalism and Mass Communication
William R. Straughn Jr., PhD, Professor of Microbiology and Immunology, Emeritus
Ronald P. Strauss, DMD, PhD, Distinguished Professor of Dentistry, Professor of Social Medicine, and Clinical Professor of Epidemiology
Kimberly Strom-Gottfried, PhD, Associate Professor of Social Work
Koleman S. Strumpf, PhD, Associate Professor of Economics
Ann E. Stuart, PhD, Professor of Cell and Molecular Physiology and Professor of Ophthalmology
Gary B. Stuck, EdD, Professor of Education
Thomas A. Stumpf, PhD, Associate Professor of English, Emeritus
John A. Sturdevant, DDS, Associate Professor of Dentistry
Mary C. Sturgeon, PhD, Professor of Art and Adjunct Professor of Classics
Brian W. Sturm, PhD, Assistant Professor of Information and Library Science
Randall G. Syers, JD, PhD, Assistant Professor of Religious Studies
Lihan Su, PhD, Associate Professor of Microbiology and Immunology and Assistant Professor of Genetics and Molecular Biology
Chirayuth M. Suchindran, PhD, Professor of Biostatistics
Kathleen K. Sulik, PhD, Professor of Cell and Developmental Biology
Terry O. Sullivan, PhD, Associate Professor of Political Science
George K. Summer, MD, Professor of Biochemistry and Biophysics, Emeritus
Bao-hong Sun, PhD, Assistant Professor of Business
Richard Superfine, PhD, Associate Professor of Physics and Astronomy, Research Associate Professor of Materials Science, and Adjunct Associate Professor of Computer Science
Kimoko Suzuki, MD, Professor of Pathology and Laboratory Medicine and Professor of Toxicology
Jayshankar Swaminathan, PhD, Benjamin Core Research Term Associate Professor of Operations Research and Associate Professor, Kenan-Flagler Business School
Ronald I. Swanstrom, PhD, Professor of Biochemistry and Biophysics, Professor of Microbiology and Immunology, and Professor of Genetics and Molecular Biology
John M. Sweeney, MEd, Distinguished Professor in Sports Communication and Professor of Journalism and Mass Communication
James A. Swenberg, DVM, PhD, Professor of Environmental Sciences and Engineering, Professor of Nutrition, Professor of Pathology and Laboratory Medicine, and Professor of Toxicology
Ingrid Swenson, DrPH, Associate Professor of Nursing, Emerita
Edward J. Swift, DDS, MS, Professor of Dentistry
Boyd R. Switzer, PhD, Associate Professor of Nutrition
Michael J. Symons, PhD, Professor of Biostatistics
Richard J. A. Talbott, PhD, William R. Kenan Professor of History and Adjunct Professor of Classics
Dorothy M. Talbott, PhD, Professor of Public Health Nursing, Emerita
Francesca Talenti, PhD, Assistant Professor of Communication Studies
Roy Van Nest Talmage, PhD, Professor of Pharmacology, Emeritus
Vincent J. Taras, PhD, Professor of Economics, Emeritus
Donald G. Tarbet, EdD, Professor of Education, Emeritus
Helen V. Tauchen, PhD, Professor and Associate Chair of Economics
Paul W. Tawney, MD, Assistant Professor of Human Movement Science
Peter W. Tax, PhD, Professor of Germanic Languages, Emeritus
Beverly W. Taylor, PhD, Professor of English
George Vanderbeck Taylor, PhD, Professor of History, Emeritus
Joan M. Taylor, PhD, Assistant Professor of Pathology and Laboratory Medicine
Lorraine C. Taylor, PhD, Assistant Professor of Psychology
Michael E. Taylor, PhD, Kenan Professor of Mathematics
Russell M. Taylor, PhD, Research Associate Professor of Computer Science
Todd W. Taylor, PhD, Associate Professor of English
Morton I. Teicher, PhD, Professor of Social Work, Emeritus
Joseph L. Templeton, PhD, Professor of Chemistry
Junius H. Terrell, PhD, CPA, Professor of Business, Emeritus
Nicola Terrenato, PhD, Assistant Professor of Classics
J. Michael Terry, PhD, Assistant Professor of Linguistics
Andreas Teske, PhD, Associate Professor of Marine Sciences with joint appointment in the Carolina Environmental Program
Meenu Tewari, PhD, Assistant Professor of City and Regional Planning
Daniel A. Textoris, PhD, Professor of Geological Sciences, Emeritus
Dhiren Thakker, PhD, Ferguson Distinguished Professor of Pharmacy and Professor of Pharmacology
Todd E. Thiele, PhD, Assistant Professor of Psychology
David M. Thissen, PhD, Professor of Psychology
Peggy Thoits, PhD, Professor of Sociology
James C. Thomas, PhD, Associate Professor of Epidemiology
Herman O. Thompson, PhD, Professor of Pharmacy, Emeritus
James P. Thompson, PhD, Professor of English
Jeffrey Y. Thompson, PhD, Associate Professor of Dentistry and Adjunct Associate Professor of Biomedical Engineering
Nancy L. Thompson, PhD, Professor of Chemistry
Robert L. Thompson, MD, Clinical Professor of Pathology and Laboratory Medicine, Emeritus
Vaida D. Thompson, PhD, Professor of Psychology, Emeritus
William J. Thompson, PhD, Professor of Physics and Astronomy
Thomas H. Thornburg, JD, Professor of Public Law and Government and Associate Dean of the School of Government, Emeritus
Weldon E. Thornton, PhD, William R. and Jeanne H. Jordan Professor of English, Emeritus
H. Holden Thorp, PhD, Professor of Chemistry
John M. Thorp, MD, Associate Professor of Obstetrics and Gynecology, Associate Professor of Radiology, and Adjunct Associate Professor of Epidemiology
Debbie E. Thorpe, PhD, PT, PCS, Assistant Professor of Physical Therapy
Robert L. Thorpe, MEd, Associate Professor of Medical Allied Health Professions
Thomas A. Tweed, PhD, Distinguished Professor of Religious Studies
Eunice N. Tyler, MPH, PhD, Professor of Health Behavior and Health Education, Emerita
Donald A. Tyndall, DDS, MSPH, PhD, Professor of Dentistry and Adjunct Professor of Environmental Sciences and Engineering
Herman A. Tyrolet, MD, Professor of Epidemiology, Emeritus
Carolyn Tyson, PhD, Assistant Professor of Sociology
Ruel W. Tyson Jr., AB, BD, Professor of Religious Studies
Peter R. Uhlenberg, PhD, Professor of Sociology
Martin H. Ushen, MD, Professor of Pediatrics and Professor of Nutrition
Isaac Usah, PhD, Associate Professor of Political Science
Louis E. Underwood, MD, Professor of Pediatrics and Professor of Nutrition
Gerald Unks, PhD, Professor of Education
Vaughn M. Upshaw, DrPH, EdD, Clinical Assistant Professor of Health Policy and Administration
Charles L. Usher, PhD, Wallace H. Kuralt Sr. Distinguished Professor of Social Work
Milada Vachudova, PhD, Assistant Professor of Political Science
Georg Vanberg, PhD, Assistant Professor of Political Science
Robert D. Vance, Ph.D., Assistant Professor of Philosophy, Emeritus
Hendrik Van Dam, PhD, Professor of Physics and Astronomy
H. Wilbert van der Klaauw, PhD, Associate Professor of Economics
Philip Vandermeer, PhD, Music Librarian and Adjunct Associate Professor of Music
Terry A. Van Dyke, PhD, Professor of Biochemistry and Biophysics and Professor of Genetics and Molecular Biology
William F. Vann Jr., DMD, PhD, Professor of Dentistry
Annelys Van Rie, MD, PhD, Assistant Professor of Epidemiology
Alexandre N. Varchenko, PhD, Ernest Elie Professor of Mathematics
Lucila Vargas, PhD, Associate Professor of Journalism and Mass Communication
Rashmi Varma, PhD, Assistant Professor of English
Phiroze Vasunia, PhD, Assistant Professor of Classics
William Veal, PhD, Assistant Professor of Education
James E. Veney, PhD, Professor of Health Policy and Administration and Professor of Public Health Leadership Program
Dorothy H. Verkerk, PhD, Associate Professor of Art
Lynne Vernon-Feagans, PhD, Professor of Education
Adam N. Versenyi, DFA, Associate Professor of Dramatic Art
Barbara J. Vilen, PhD, Assistant Professor of Microbiology and Immunology
Fernando Pardo-Manuel de Villena, PhD, Assistant Professor of Genetics
Joseph S. Viscomi, PhD, James G. Kenan Distinguished Professorship in English
Todd J. Vision, PhD, Assistant Professor of Biology
Frederick W. Vogler, PhD, Professor of Romance Languages
A. John Vogt, PhD, Professor of Public Finance and Government
Ivana Vulentic, PhD, Associate Professor of Slavic Languages and Literatures and Associate Professor of Russian and East European Studies
Suma Vuppaturi, PhD, Assistant Professor of Epidemiology
Harvey M. Wagner, PhD, Professor of Business and Professor of Operations Research
Linda C. Wagner-Martin, PhD, Frank Bordon Hanes and Barbara Lasater Hanes Chair for English
Jonathan M. Wahl, PhD, Professor of Mathematics
James H. Wahlen, PhD, Assistant Professor of Business
Ruth Walden, PhD, Associate Dean for Graduate Studies and Professor of Journalism and Mass Communication
Tony G. Waldrop, PhD, Vice Chancellor and Professor of Cell and Molecular Physiology
Peter F. Walker, PhD, Professor of History, Emeritus
Aimee N. Wall, JD, Assistant Professor of Public Law and Government
Wesley H. Wallace, PhD, Professor of Communication Studies, Emeritus
Scott L. Wallen, PhD, Assistant Professor of Chemistry
Marcus B. Waller, PhD, Professor of Psychology, Emeritus
Christopher E. Walsh, MD, Assistant Professor of Medicine and Assistant Professor of Genetics and Molecular Biology
Linda Walsh, BA, Assistant Professor of Journalism and Mass Communication
Stephen J. Walsh, PhD, Professor of Geography and Professor of Ecology
Michael S. Waltman, ABD, Associate Professor of Communication Studies
Thomas A. Warburton, PhD, Professor of Music
Dianne Ward, EdD, Professor of Nutrition
H. Traviwck Ward, PhD, Research Archaeologist of Anthropology, Emeritus
William B. Ware, PhD, Professor of Education
Donald W. Warren, DDS, PhD, Kenan Professor of Dentistry and Professor of Surgery
Sean Washburn, PhD, Cary C. Boshamer Professor of Physics and Astronomy, Chair and Professor of Materials Science, and Adjunct Professor of Computer Science
Barbara H. Wasik, PhD, Professor of Education
Marcy L. Waters, PhD, Assistant Professor of Chemistry
Elizabeth L. Watkins, DSc, Professor of Maternal and Child Health, Emeritus
Julia D. Watkins, MPH, Associate Professor of Public Health Nursing, Emeritus
Eugene Ray Watson, PhD, Professor of Education, Emeritus
Harry L. Watson, PhD, Professor of History
Andrea Weather, DrPH, Assistant Professor of Maternal and Child Health
E. Leland Webb, DDS, Associate Professor of Dentistry
Gert Webehuth, PhD, Associate Professor of Linguistics
David J. Weber, MD, MPH, Professor of Medicine, Professor of Pediatrics, and Professor of Epidemiology
Mort Webster, PhD, Assistant Professor of Public Policy
Jennifer Webster-Cyquare, DDS, PhD, Assistant Professor of Dentistry and Assistant Professor of Microbiology and Immunology
Kevin M. Weeks, PhD, Assistant Professor of Chemistry
Stanley J. Weidenkopf, EngD, Professor of Environmental Sciences and Engineering, Emeritus
Marie O. Weil, DSW, Berg-Beach Distinguished Professor of Social Work
Morris Weinberger, PhD, Virgil N. Sleet Distinguished Professor of Health Care Quality Management and Professor of Health Policy and Administration
Bryan J. Weiner, PhD, Assistant Professor of Health Policy and Administration
Charles M. Weiss, PhD, Professor of Environmental Sciences and Engineering, Emeritus
Ellen R. Weiss, PhD, Associate Professor of Cell and Developmental Biology and Associate Professor of Genetics and Molecular Biology
Margaret P. Weiss, PhD, Assistant Professor of Education
Sarah Weiss, PhD, Assistant Professor of Music
Shirley F. Weiss, PhD, Professor of City and Regional Planning, Emerita
Stephen F. Weiss, PhD, Chair and Professor of Computer Science
Bernard E. Weiseman, PhD, Professor of Pathology and Laboratory Medicine, Professor of Genetics and Molecular Biology, Professor of Pediatrics, and Professor of Toxicology
Gregory F. Welch, PhD, Research Associate Professor of Computer Science
Ellen C. Wells, MD, Assistant Professor of Obstetrics and Gynecology and Dissertation Committee of Psychology
Henry B. Wells, PhD, Professor of Biostatistics, Emeritus
John T. Wells, PhD, Professor of Marine Sciences and Professor of Geological Sciences
LeRoy D. Werly Jr., PhD, Associate Professor of Pharmacy, Emeritus
Francisco E. Werner, PhD, Professor of Marine Sciences
Suzanne West, PhD, Research Associate Professor of Epidemiology
William C. West III, PhD, Professor of Classics, Emeritus
Brent W. Weston, MD, Associate Professor of Pediatrics and Associate Professor of Genetics and Molecular Biology
Robert G. Wettel, PhD, William R. Kenan Jr., Professor of Environmental Sciences and Engineering and Professor of Ecology
Stephen C. Whalen, PhD, Associate Professor of Environmental Sciences and Engineering and Associate Professor of Ecology
Francis M. Whang, MS, Associate Professor of Music
Herbert C. Whinnia, MD, PhD, Assistant Professor of Pathology and Laboratory Medicine
David E. Whisman, PhD, Professor of English, Adjunct Professor of American Studies, Adjunct Professor of Communication Studies, and Adjunct Professor of Art, Emeritus
Richard B. Whisman, JD, Associate Professor of Public Law and Government
Gordon P. Whitsack, PhD, Professor of Public Administration and Government
Gilbert C. White II, MD, John C. Parker Distinguished Professor of Medicine and Professor of Pharmacology
James W. White, PhD, Professor of Political Science
Kinnard White, PhD, Visiting Professor of Education, Emeritus
Peter S. White, PhD, Professor of Biology and Professor of Ecology
Raymond P. White Jr., DDS, PhD, McMichael Professor of Dentistry
William A. White, PhD, Professor of Geological Sciences, Emeritus
Thomas M. Whitmore, PhD, Associate Professor of Geography and Associate Professor of Ecology
Barry L. Whitsel, PhD, Professor of Cell and Molecular Physiology and Professor of Biomedical Engineering
Dale Whittington, PhD, Professor of Environmental Sciences and Engineering, Professor of City and Regional Planning, and Professor of Public Policy
D. Clay Whybark, PhD, Macon Patton Professor of Business
Ronald Wiegerink, PhD, Professor of Education, Emeritus
Margaret J. Wiener, PhD, Associate Professor of Anthropology and Adjunct Associate Professor of Religious Studies
Jack K. Wier, PhD, Associate Professor of Pharmacy, Emeritus
James A. Wiggins, PhD, Associate Professor of Sociology, Emeritus
R. Mark Wightman, PhD, Kenan Professor of Chemistry
Christopher J. Widl, PhD, Assistant Professor of Germanic Languages
James A. Wilde, PhD, Associate Professor of Economics, Emeritus
Barbara M. Wildemuth, PhD, Professor of Information and Library Science and Adjunct Professor of Biomedical Engineering
Aldridge D. Wilder Jr., DDS, Professor of Dentistry
Rebecca S. Wilder, MS, Associate Professor of Dentistry
Ralph E. Wilmer, EdD, Professor of Education, Emeritus
R. Haven Wiley, PhD, Professor of Biology and Professor of Ecology
William L. Wiley, PhD, Kenan Professor of Romance Languages, Emeritus
Dennis M. Williams, PhD, Associate Professor of Pharmacy
Mark Williams, PhD, Professor of Mathematics
Mark E. Williams, MD, Associate Professor of Medicine
Ray C. Williams, DMD, Professor of Dentistry
Joel R. Williamson, PhD, Lineberger Professor of History
Rachel A. Willis, PhD, Associate Professor of American Studies and Adjunct Associate Professor of Economics
Elizabeth M. Wilson, PhD, Professor of Pediatrics and Professor of Biochemistry and Biophysics
Robert N. Wilson, PhD, Professor of Sociology, Emeritus
Stafford Wing, MM, Associate Professor of Music
Steven B. Wing, PhD, Associate Professor of Epidemiology
Brent S. Wissick, MM, Associate Professor of Music and Associate Professor of Russian and East European Studies
Philip L. Witt, MS, Associate Professor of Physical Therapy
Joseph S. Wittig, PhD, Professor of English
Warren R. Wogen, PhD, Professor of Mathematics
Susan Wolf, PhD, Edna J. Koury Distinguished Professor of Philosophy
Jessica Wolfe, PhD, Assistant Professor of English and Adjunct Assistant Professor of Comparative Literature
Richard V. Wolfenden, PhD, Alumni Distinguished Professor of Biochemistry and Biophysics
Matthew C. Wolfgang, PhD, Assistant Professor of Microbiology and Immunology
Wendy Woford, PhD, Assistant Professor of Geography
Julia T. Wood, PhD, Professor of Communication Studies
Wendy H. Wood, PhD, Associate Professor of Occupational Science
Marion Woods, PhD, Professor of Nursing, Emerita
Ann M. Woodward, DMA, Professor of Music, Emerita
John T. Wooley, MD, PhD, Associate Professor of Pathology and Laboratory Medicine
Cecil W. Wootten, PhD, Professor of Classics
Deil Spencer Wright, PhD, Alumni Distinguished Professor of Political Science and Professor of Public Administration, Emeritus
Fred A. Wright, PhD, Associate Professor of Biostatistics
Fred B. Wright, PhD, Professor of Mathematics, Emeritus
J. Timothy Wright, DDS, Professor of Dentistry
Xiaodong Wu, PhD, Assistant Professor of Economics
Yue Wu, PhD, Professor of Physics and Astronomy and Research Professor of Materials Science
Yue Xiong, PhD, Associate Professor of Biochemistry and Biophysics and Associate Professor of Genetics and Molecular Biology
Mitsuo Yamauchi, DDS, Sunstar Distinguished Professor of Dentistry
Bonnie C. Yankaskas, PhD, Professor of Radiology and Adjunct Professor of Epidemiology
Wendell Yarbrough, MD, Associate Professor of Biochemistry and Biophysics
Richard Asa Yarnell, PhD, Professor of Anthropology, Emeritus
David E. Yoder, PhD, Professor of Speech and Hearing Sciences and Research Professor of Education, Emeritus
Lloyd R. Yonce, PhD, Professor of Physiology and Professor of Biomedical Engineering, Emeritus
Jan J. Yopp, MA, Associate Dean and Professor of Journalism and Mass Communication
James W. York Jr., PhD, Agnew H. Bahnson Professor of Physics and Astronomy, Emeritus
Forrest W. Young, PhD, Professor of Psychology, Emeritus
William J. Young, MD, Professor of Medicine and Professor of Microbiology and Immunology
Bing Yu, PhD, Assistant Professor of Physical Therapy and Assistant Professor of Orthopaedics
Gang Yue, MA, Associate Professor of Asian Studies
Dennis J. Zaborowski, MFA, Professor of Art
Richard H. Zafirn, PhD, Associate Professor of Philosophy
David J. Zajac, PhD, Associate Professor of Dentistry
Gal Zauberman, PhD, Assistant Professor of Business
Steven H. Zeisel, PhD, MD, Chair and Professor of Nutrition
Valerie Zehnder, DBA, Roy & Alice Richards Bicentennial Professor of Business
William N. Zelman, PhD, Professor of Health Policy and Administration and Clinical Associate Professor of Pharmacy
Donglin Zeng, PhD, Assistant Professor of Biostatistics
Michael W. Zenge, MM, Professor of Music, Emeritus
Harold Zhang, PhD, Associate Professor of Business
Yi Zhang, PhD, Assistant Professor of Biochemistry and Biophysics and Assistant Professor of Genetics and Molecular Biology
Xinshu Zhao, PhD, Associate Professor of Journalism and Mass Communication
Haibo Zhou, PhD, Assistant Professor of Biostatistics
Otto Z. Zhou, PhD, Associate Professor of Physics and Astronomy and Research Associate Professor of Materials Science
Thomas L. Ziemiacki, DDS, Associate Professor of Dentistry
S Cheryl I. Zimmerman, PhD, Associate Professor of Social Work and Adjunct Associate Professor of Epidemiology
Leo E. Zonn, PhD, Professor of Geography
Fei Zou, PhD, Assistant Professor of Biostatistics
Charles G. Zug III, PhD, Professor of English and Professor of Folklore, Emeritus
John R. Zuniga, DDS, PhD, Professor of Dentistry
Fixed-Term Faculty

Hussein Abdel-Wahab, PhD, Adjunct Professor of Computer Science
Kimberly Abels, PhD, Writing Center Director, appointed by the Department of English
David S. Abernethy, MPH, Adjunct Lecturer of Health Policy and Administration
Judith L. Adamson, BA, Adjunct Professor of Dramatic Art
Kathryn B. Ahdpart, MSPH, Adjunct Lecturer of Health Policy and Administration
Jim Alb, PhD, Research Assistant Professor of Cell and Developmental Biology
Kathryn Alden, MSN, Clinical Assistant Professor of Nursing
G. Rumi Alexander, EdD, Clinical Assistant Professor of Nursing
James W. Allen, PhD, Adjunct Associate Professor of Toxicology
Mary Alperter, MSW, Adjunct Lecturer of Health Behavior and Health Education
Deborah A. L. Amaral, PhD, Adjunct Assistant Professor of Health Policy and Administration, and Adjunct Assistant Professor of Environmental Sciences and Engineering
Arthur Anastopolous, PhD, Associate Professor of Psychology at the University of North Carolina at Greensboro, appointed by the School of Nursing
Melvin E. Andersen, PhD, Adjunct Professor of Toxicology
Robert Nelson Anderson III, PhD, Adjunct Associate Professor of Romance Languages and Associate Director, Institute of Latin American Studies
Bonnie Angel, EdD, MSN, Clinical Associate Professor of Nursing
Lorraine Aragon, PhD, Adjunct Associate Professor of Anthropology
Thomas A. Arcury, PhD, Adjunct Professor of Health Behavior and Health Education
Larry W. Arnold, PhD, Research Professor of Microbiology and Immunology
Philip J. Arnold III, PhD, Associate Professor of Anthropology at Loyola University, appointed by the Department of Anthropology
Lynnette S. Arth, PsyD, Clinical Assistant Professor of Education
Marta Bacalla, MSW, Clinical Instructor of Social Work
Thomas Bacon, DrPH, Director of AHEC, appointed by the Department of Health Policy and Administration
James D. Bader, DDS, Research Professor of Dentistry and Adjunct Professor of Health Policy and Administration
C. Robert Bagnell Jr., PhD, Research Associate Professor of Pathology and Laboratory Medicine
Donna W. Bailey, MSN, Interim Director of the Center for Teaching and Learning, School of Nursing
Patricia E. Bailey, DrPH, Adjunct Assistant Professor of Maternal and Child Health
Donna D. Baird, PhD, Adjunct Associate Professor of Epidemiology
Lee D. Baker, PhD, Associate Professor of Cultural Anthropology and African and African American Studies at Duke University, appointed by the School of Journalism and Mass Communication
Lyne Baker-Ward, PhD, Professor of Psychology at North Carolina State University, appointed by the Department of Psychology
Shrikant I. Bandivada, PhD, Research Associate Professor of Biostatistics
John Bare, PhD, Director of Evaluation, John S. and James L. Knight Foundation, appointed by the School of Journalism and Mass Communication

Morton A. Barlaz, PhD, Professor of Civil Engineering at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering
Stanley Barone Jr., PhD, Adjunct Assistant Professor of Toxicology
Ann L. Barrick, PhD, Clinical Associate Professor of Psychology
Julie Barroso, PhD, Assistant Professor of Nursing at Duke University, appointed by the School of Nursing
Hugh A. Bartol, PhD, Adjunct Assistant Professor of Toxicology
Michael Battle, PhD, Assistant Professor of Spirituality and Black Church Studies at Duke University, appointed by the School of Nursing
Warren Baunach, PhD, Adjunct Professor of Business
Mary A. Beck, MPH, Adjunct Associate Professor of Health Policy and Administration
Thomas H. Belhorn, PhD, MD, Assistant Professor of Pediatrics, appointed by the Department of Nutrition
Jose Belizan, MD, PhD, Adjunct Professor of Maternal and Child Health
Gerald D. Bell, PhD, Adjunct Professor, Leadership, Management, Negotiation, Teamwork
Michael J. Belyea, PhD, Research Associate Professor of Nursing
Marc Berger, MD, Adjunct Professor, appointed by the Department of Health Policy and Administration
Shulamit L. Bernard, appointed by the Department of Health Policy and Administration
Mark P. Bernstein, MLS, JCD, Clinical Instructor of Information and Library Science
C. Selena Berrier, MSW, Clinical Instructor of Social Work
Pournima Bhiwandiwalla, MBBS, Adjunct Professor of Maternal and Child Health
Deborah Billings, PhD, Adjunct Assistant Professor of Maternal and Child Health
Richard E. Billsborrow, PhD, Research Professor of Biostatistics and Adjunct Professor of Ecology
Frank Biocca, PhD, Professor of Telecommunication Technologies and Information Services at Michigan State University, appointed by the School of Journalism and Mass Communication
Linda S. Birnbaum, PhD, Adjunct Professor of Environmental Sciences and Engineering and Adjunct Professor of Toxicology
Helga Bister, PhD, Adjunct Associate Professor of German Languages
Paul F. Bitting, PhD, Associate Professor of Education at North Carolina State University, appointed by the School of Education
Beth Black, MSN, Clinical Associate Professor of Nursing
Jonathan T. Blackburn, MS, Doctoral Student in Human Movement Science, appointed by the Department of Exercise and Sport Science
Sheelah Bloom, PhD, Research Assistant Professor of Maternal and Child Health
Mary T. Boatwright, PhD, Professor of Classics at Duke University, appointed by the Department of History
Olivier Bodenreider, MD, PhD, National Library of Medicine, appointed by the School of Information and Library Science
Bruce Boehm, MBA, Adjunct Professor of Business
Lyndin W. Bolton, MSW, Clinical Instructor of Social Work
Perri Bomar, PhD, Associate Dean Research and Community Partnerships at the University of North Carolina-Wilmington, appointed by the School of Nursing
Gary A. Boorman, DVM, PhD, Adjunct Associate Professor of Pathology and Laboratory Medicine
Hayden B. Bosworth, appointed by the Department of Health Policy and Administration
Patricia S. Bowers, PhD, Clinical Assistant Professor of Education
Jeanette M. Boxill, PhD, Lecturer of Philosophy
Leslie H. Boyce, MD, Clinical Assistant Professor of Neurology
Jayne C. Boyer, PhD, Research Assistant Professor of Pathology and Laboratory Medicine
Kristen Brackett, MS, Coordinator of Pediatric Feeding and Swallowing Program at the University of North Carolina Hospitals, appointed by the School of Nursing
John T. Brake, Professor of Poultry Science at North Carolina State University, appointed by the Department of Biomedical Engineering
Charles F. Brandley III, DDS, Clinical Associate Professor of Dentistry
Dale E. Brasher, PhD, Department of Speech Communication at the University of Illinois at Urbana-Champaign, appointed by the School of Nursing
Gerard Breatn, MD, MS, Adjunct Professor of Maternal and Child Health
Jennifer Bremer, PhD, Adjunct Professor of Public Policy
Hannah E. Britton, PhD, Assistant Professor of Political Science at Mississippi State University, appointed by the School of Journalism and Mass Communication
Arnold Brossi, PhD, Research Professor of Pharmacy
Eric S. Brown, PhD, Instructor of Sociology
Fred T. Brown Jr., PhD, Adjunct Professor of Health Policy and Administration
Linda Brown, MSN, Clinical Assistant Professor of Nursing
Matthew Brown, PhD, Associate Professor of Music at The Eastman School of Music, appointed by the Department of Music
Thomas D. Brown, PhD, Richard C. Johnston Professor of Biomechanics at the University of Iowa, appointed by the Department of Biomedical Engineering
Gaylen R. Brubaker, PhD, Adjunct Associate Professor of Environmental Sciences and Engineering
Donna M. Bryant, PhD, Research Professor of Education
Charles R. Buck Jr., ScD, Adjunct Professor of Health Policy and Administration
Dawn Carver Buckner, PhD, Adjunct Instructor of Health Policy and Administration
Carmen Buell, MMR, Clinical Professor, appointed by the Department of Health Policy and Administration
Paul A. Buescher, PhD, Adjunct Associate Professor of Maternal and Child Health
Anne C. Burke, PhD, Assistant Professor of Biology at Wesleyan University, appointed by the Department of Biology
Byron E. Butterworth, PhD, Adjunct Professor of Pathology and Laboratory Medicine
John D. Burns, MD, Clinical Professor of Pathology and Laboratory Medicine
William C. Buxton, MBA, Adjunct Lecturer of Business
Margaret G. Bye, EdD, MSN, Clinical Assistant Professor of Nursing
Joseph W. Caddell, PhD, Associate Professor of History at St. Mary's College, appointed by the School of Journalism and Mass Communication
Bruce E. Cain, Director, Institute of Government Studies, University of California-Berkeley, appointed by the Department of Political Science
Gemma Anne Calvert, PhD, MRC Research Training Fellow and Head of Multisensory Research Group, University of Oxford, John Radcliffe Hospital, appointed by the Department of Biomedical Engineering
Kay N. Campbell, EdD, Adjunct Assistant Professor of Public Health Nursing
Ronald E. Cannon, PhD, Adjunct Assistant Professor of Toxicology
Linda S. Carl, PhD, Lecturer of Health Behavior and Health Education
Philip L. Carl, PhD, Research Associate Professor of Pharmacology
Dawn Carlson, PhD, Research Assistant Professor of Education
John Carlson, MS, Research Associate Professor of Nursing
Alicia L. Carriquiry, PhD, Professor of Statistics at Iowa State University, appointed by the Department of Nutrition
Jackson W. Carroll, PhD, Professor of Religion and Society at The Divinity School at Duke University, appointed by the Department of Religious Studies
Diane J. Caudel, PhD, Research Assistant Professor of Biostatistics
James T. Cavanaugh, MS, Doctoral Student in Human Movement Science, appointed by the Department of Exercise and Sport Science
Joanne C. Cawrey, MSW, Clinical Associate Professor of Social Work
Lloyd F. Chambers, PhD, Research Professor of Biostatistics
Catherine Champagne, PhD, Research Assistant Professor of Periodontology
Sha Chang, PhD, Director of Clinical Physics, Associate Professor, appointed by the Department of Physics and Astronomy
Nila Chatterjee, PhD Research Assistant Professor of Anthropology
Siddhartha Chatterjee, PhD, Adjunct Associate Professor of Computer Science
Yen-Feng Chiu, PhD, Research Assistant Professor of Biostatistics
Becky Christian, PhD, Associate Professor of Nursing at the University of Utah, appointed by the School of Nursing
Kathryn A. Clark, PhD, Lecturer of Maternal and Child Health
Laura Clark, PhD, Clinical Assistant Professor of Psychology
Thomas B. Clark III, MD, Clinical Associate Professor of Pathology and Laboratory Medicine
Patrick H. Clayton, PhD, Visiting Lecturer in Division of Multidisciplinary Studies at North Carolina State University, appointed by the Curriculum in Ecology
Jan P. Clement, PhD, Adjunct Professor of Health Policy and Administration
Nathaniel Cobb, MD, Director, Cancer Prevention and Control Program, Indian Health Service Headquarters West, appointed by the Department of Maternal and Child Health and the School of Nursing
Mary R. Coleman, PhD, Clinical Associate Professor of Education
Paul Conway, PhD, Clinical Instructor of Information and Library Science
Suzanne Cook, PhD, Senior Principal Epidemiologic Scientist, Worldwide Epidemiology Glaxo Wellcome, Inc., appointed by the Department of Health Policy and Administration
Lane G. Cooke, MSW, Clinical Assistant Professor of Social Work
Miriam Cooke, DPhil, Chair of Asian and African Languages and Literature at Duke University, appointed by the Department of Romance Languages
H. Dickson Corbett III, PhD, Research Professor of Education
Paul Cornee, Professor, University of Siena, appointed by the Department of Political Science
Edward Cornee, PhD, Adjunct Professor of Business
Maria T. Correa, PhD, Associate Professor of Epidemiology at North Carolina State University College of Veterinary Medicine, appointed by the Department of Environmental Sciences and Engineering
Jorge D. Correao, PhD, Research Assistant Professor of Cell and Developmental Biology
Daniel L. Costa, ScD, Adjunct Professor of Environmental Sciences and Engineering and Adjunct Professor of Toxicology
Nelson W. Couch, PhD, Adjunct Associate Professor of Environmental Sciences and Engineering and Adjunct Instructor of Health Policy and Administration
Forrest Council, PhD, Adjunct Associate Professor of Health Behavior and Health Education
David J. Couper, PhD, Research Assistant Professor of Biostatistics
Clinton Cox, PhD, Chemical Engineer for the Environmental Studies Branch of the National Air and Radiation Environmental Laboratory, appointed by the Department of Environmental Sciences and Engineering
M. Richard Cramer, PhD, Adjunct Associate Professor of Sociology
John P. Creason, PhD, Adjunct Professor of Biostatistics
Madeleine A. Crockett, PhD, Clinical Psychologist at John Unstead Hospital, appointed by the Department of Psychology
Kevin M. Crofton, PhD, Adjunct Assistant Professor of Toxicology
Theresa L. Cromeans, PhD, Research Assistant Professor of Environmental Sciences and Engineering
Steven M. Crooks, MS, Industrial Hygienist for Glaxo Wellcome, appointed by the Department of Environmental Sciences and Engineering
Alan W. Cross, MD, Clinical Professor of Maternal and Child Health
Larry B. Crowder, PhD, Professor of Marine Ecology at Duke University, appointed by the Department of Biology
Timothy M. Crowder, PhD, Adjunct Assistant Professor of Biomedical Engineering
Zheng Cui, PhD, Assistant Professor of Biochemistry at Wake Forest University School of Medicine, appointed by the Department of Nutrition
Sian Curtis, PhD, Research Associate Professor Maternal and Child Health
Janet Dal Santo, DrPH, Lecturer of Health Behavior and Health Education
Patricia A. D'Amore, PhD, MBA, Senior Scientist of Genetics and Molecular Biology
Charles C. Daniel III, PhD, Adjunct Professor of Geological Sciences
Amy D'Aprix, MA, Lecturer, Skidmore College, Saratoga Springs, NY, appointed by the School of Journalism and Mass Communication
Barbara J. Davis, PhD, Acting Chief of Laboratory of Women's Health, Environmental Diseases Program, National Institute of Environmental Health Sciences, appointed by the School of Nursing
Leslie Davis, MSN, Clinical Assistant Professor of Nursing
Mary Davis, DrPH, Lecturer of Health Behavior and Health Education
Nancy L. Davis, PhD, Research Professor of Microbiology and Immunology
R. P. Davis, PhD, Adjunct Professor of Anthropology
Robert F. Davis, PhD, Kobe Steel Ltd. Distinguished Professor at North Carolina State University, appointed by the Department of Physics and Astronomy
John A. Day, PhD, Lecturer of Comparative Literature
Travis Day, MBA, Adjunct Professor of Business
Anthony B. DeAngelo, PhD, Research Toxicologist at the United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering
Joseph de Graft-Johnson, DrPH, Adjunct Assistant Professor of Maternal and Child Health
David M. DeMarini, PhD, Adjunct Associate Professor of Environmental Sciences and Engineering
Melissa DeRosier, PhD, Research Assistant Professor of Psychology
Michael DeVito, PhD, Adjunct Assistant Professor of Toxicology
Nancy S. Dickinson, PhD, Clinical Professor of Social Work
Sharon Doehsler, PhD, Assistant Professor of Nursing at Duke University, appointed by the School of Nursing
Caroline Whitehead Doehsler, MPH, MSW, Adjunct Associate Professor of Maternal and Child Health
Kathleen C. Dorse, PhD, Research Assistant Professor of Epidemiology
Stephen M. Downs, MD, Adjunct Associate Professor of Biomedical Engineering
Elizabeth M. Doyle, MLIS, Clinical Instructor of Information and Library Science
Thomas G. Drake, PhD, Assistant Professor of Marine, Earth and Atmospheric Sciences at North Carolina State University, appointed by the Department of Geological Sciences
Kevin L. Dreher, PhD, Research Chemist for Health Effects Research Laboratory at United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering
Dean F. Duncan III, PhD, Research Associate Professor, School of Social Work, University of North Carolina at Chapel Hill, appointed by the Departments of Public Policy and Social Work
Katherine M. Dunlap, PhD, Clinical Associate Professor of Social Work
R. Joel Dutra, MS, Adjunct Instructor of Information and Library Science
Carol Durham, MSN, Clinical Associate Professor of Nursing
Deborah J. Eaker-Rich, PhD, Clinical Assistant Professor of Education
Courtney Edwards, MBA, Adjunct Lecturer of Business
A. D. Eisner, PhD, Adjunct Professor of Plant Pathology at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering
Inger Ekman, MSN, Assistant Professor Institute of Nursing at Goteborg University, Goteborg, Sweden, appointed by the School of Nursing
Christopher Elkins, PhD, Research Associate Professor of Microbiology and Immunology
John Elter, DDS, Research Assistant Professor of Dental Ecology
Gerald A. Emison, PhD, Adjunct Associate Professor of Environmental Sciences and Engineering
Abigail English, JD, Adjunct Associate Professor of Maternal and Child Health
Robert M. Estman, PhD, Professor of Communication at North Carolina State University, appointed by the School of Journalism and Mass Communication
J. Peter Euben, Professor, Duke University, appointed by the Department of Political Science
Marina V. Evans, PhD, Biomedical Engineer for United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering
Richard M. Evans, PhD, MRPharm, Senior Director of Pharmaceutical Development at Inspire Pharmaceuticals, appointed by the School of Pharmacy
Kelly R. Evenson, PhD, Research Assistant Professor of Epidemiology
Anita M. Farel, DrPH, MSW, Clinical Professor of Maternal and Child Health
Oleg V. Favorov, PhD, Research Associate Professor of Biomedical Engineering
Peter D. Feaver, PhD, Associate Professor of Political Science at Duke University, appointed by the Department of History
Sheri E. Fehnd, appointed by the Department of Health Policy and Administration
Timothy R. Fennell, PhD, Scientist II at the Chemical Industry Institute of Toxicology, appointed by the Department of Environmental Sciences and Engineering
David A. Fenstermacher, PhD, Adjunct Research Assistant Professor of Biomedical Engineering
Beverly Ferriero, PhD, Clinical Associate Professor of Nursing
Olimpia Figueras, PhD, Professor of Mathematics Education, Cinvestav University, appointed by the School of Education
Charles C. Finley, PhD, Research Associate Professor of Otolaryngology and Adjunct Research Associate Professor of Biomedical Engineering
Valeria Finucci, PhD, Professor of Italian for the Romance Studies Department at Duke University, appointed by the Department of Romance Languages
Thomas H. Fischer, PhD, Research Associate Professor of Pathology and Laboratory Medicine
Tekola Fisseha, MPH, Adjunct Instructor of Health Behavior and Health Education
Stephen G. Flanagan, PhD, Clinical Associate Professor of Psychology
Julie Fleury, PhD, Associate Professor at Arizona State University, appointed by the School of Nursing
Robert L. Flewelling, PhD, Adjunct Assistant Professor of Health Behavior and Health Education
Jodon A. Flick, MSSW, Clinical Instructor of Social Work
Robert Foglesong, PhD, Research Scientist at Sphinx Pharmaceuticals, appointed by the School of Pharmacy
Barbara Jo Foley, PhD, Clinical Associate Professor of Nursing
Jean Folkerts, PhD, Interim Dean at Columbian College of Arts and Sciences at The George Washington University, appointed by the School of Journalism and Mass Communication
S. W. (Felix) Fong, PhD, Chief of Nuclear Facilities and Environmental Radiation Survey, appointed by the Department of Environmental Sciences and Engineering
Alfredo L. Fort, PhD, Adjunct Assistant Professor of Maternal and Child Health
Judith A. Fortney, PhD, MS, Adjunct Professor of Maternal and Child Health
Robert D. Foss, PhD, Lecturer of Health Behavior and Health Education
Beverly B. Foster, PhD, Clinical Associate Professor of Nursing
Donald E. Francisco, PhD, Clinical Professor of Environmental Sciences and Engineering
John D. French, PhD, Associate Professor of Latin American History at Duke University, appointed by the Department of Political Science
Eric C. Frey, PhD, Adjunct Associate Professor of Biomedical Engineering
Edward H. Friedman, PhD, Professor of Spanish and Portuguese at the University of Indiana, appointed by the Department of Romance Languages
Sally Friedman, PhD, Associate Professor of Political Science at State University of New York at Albany, appointed by the Department of Political Science
Nina M. Furry, PhD, Lecturer in French of Romance Languages
Jane E. Gallagher, PhD, Adjunct Assistant Professor of Environmental Sciences and Engineering
Sean Gallagher, PhD, Assistant Professor of Music at Harvard University, appointed by the Department of Music
Dorothy Gamble, MSW, Clinical Associate Professor of Social Work
John T. Ganzi, MBA, Adjunct Lecturer of Business
Paul Garbe, appointed by the Department of Health Policy and Administration
J. Alston Gardner, BA, Adjunct Lecturer of Business
Steven A. Garfinkel, PhD, MPH, Adjunct Associate Professor of Health Policy and Administration
Julie A. Garrison, MLIS, Clinical Lecturer of Information and Library Science
Scott Garrison, MLIS, Clinical Lecturer of Information and Library Science
Susan A. Gaylord, PhD, Lecturer of Health Behavior and Health Education
Leslie Gentry, MSW, Clinical Instructor of Social Work
James F. Gilliam, PhD, Professor of Zoology at North Carolina State University, appointed by the Curriculum in Ecology
Susan S. Girdler, PhD, Research Assistant Professor of Psychology
Ger-Joachim Glaehnner, PhD, Professor for German Politics at Humboldt University Berlin, appointed by the Department of Political Science
Noah D. Glick, MSE, MHA, Adjunct Instructor of Health Policy and Administration
John Glushik, MBA, Adjunct Lecturer of Business
Virginia L. Godfrey, DVM, PhD, Research Professor of Genetics and Molecular Biology and Research Professor of Pathology and Laboratory Medicine
James P. Gogan, BA, Director, ATN Networking and Communications of Biomedical Engineering, Clinical Lecturer of Information Science
Richard L. Goldberg, PhD, Research Assistant Professor of Biomedical Engineering
Pamela L. Golden, PhD, Senior Research Scientist at DuPont Pharmaceuticals Company, appointed by the School of Pharmacy
Shelley Golden, MPH, Lecturer, Health Behavior and Health Education
Brian Goldstein, MD, MBA, Clinical Assistant Professor of Health Policy and Administration
Ricki F. Goldstein, MD, Assistant Clinical Professor of Pediatrics at Duke University Medical Center, appointed by the School of Education
Thomas L. Goldsmith, PhD, Adjunct Assistant Professor of Pathology and Laboratory Medicine and Adjunct Assistant Professor of Toxicology
Jamie Gomez, PhD, Adjunct Professor of Business
Penny Gordon-Larsen, PhD, Research Assistant Professor of Nutrition
Oleg V. Gorkun, PhD, Research Assistant Professor of Pathology and Laboratory Medicine
Sarah R. Grant, PhD, Research Assistant Professor of Genetics and Molecular Biology

Walter M. Grayman, PhD, Independent Consulting Engineer, Cincinnati, Ohio, appointed by the Department of Environmental Sciences and Engineering

Christopher W. Gregory, PhD, Research Assistant Professor of Pathology and Laboratory Medicine

Noel Greis, PhD, Adjunct Professor of Business

Pamela A. Groben, MD, Clinical Associate Professor of Pathology and Laboratory Medicine

Harry A. Guess, PhD, MD, Adjunct Professor of Biostatistics, and Adjunct Professor of Epidemiology

Priscilla A. Guild, MSPH, Adjunct Associate Professor of Maternal and Child Health

Grant T. Gullberg, PhD, Professor of Radiology at the University of Utah, appointed by the Department of Biomedical Engineering

Suzanne A. Gullidge, PhD, Clinical Associate Professor of Education

Nick Haddad, PhD, Assistant Professor of Zoology, North Carolina State University, appointed by the Curriculum in Ecology

Benjamin D. Hall, PhD, Professor of Botany at the University of Washington, appointed by the Department of Biology

Rosalie H. Hammond, PhD, Clinical Assistant Professor of Nursing

Philip E. Hamrick, PhD, Adjunct Associate Professor of Environmental Sciences and Engineering

Wallace Hammon, PhD, Associate Director, Intrah, School of Medicine at the University of North Carolina at Chapel Hill, appointed by the School of Journalism and Mass Communication

John W. Hardin, Adjunct Assistant Professor, UNC, appointed by the Department of Political Science

Christina A. Harlan, MA, Research Instructor of Public Health Leadership Program

Patricia Harms, PhD, Adjunct Assistant Professor of Business

Antony Harrison, PhD, Professor of English at North Carolina State University, appointed by the Department of English

Perry W. Harrison, PhD, MEd, Clinical Associate Professor of Education

Mark E. Hartmann, PhD, Adjunct Associate Professor of Operations Research

J. Ronald Hass, PhD, Adjunct Professor of Environmental Sciences and Engineering and President and Chief Executive Officer of Chemistry

Anne S. Hastings, PhD, Adjunct Instructor of Sociology

Gary E. Hatch, PhD, Pharmacologist, Experimental Toxicology Division, U.S. Environmental Protection Agency, Research Triangle Park, appointed by the Curriculum in Toxicology

Deborah D. Hatton, PhD, Investigator and Director of Carolina Fragile X Project at Frank Porter Graham Child Development Center, appointed by the School of Education

David C. Hauser, PhD, MPA, Dreyfus Postdoctoral Fellow for the Carolina Environmental Program at The University of North Carolina at Chapel Hill, appointed by the Department of Environmental Sciences and Engineering

John E. Haynes, PhD, Manuscript Historian for the Library of Congress, appointed by the Department of History

J. William Hays, MA, Clinical Lecturer of Information Science

Judith C. Hays, RN, PhD, Associate Medical Research Professor of Psychiatry at Duke University Medical Center, appointed by the Department of Nutrition

Milan J. Hazucha, MD, PhD, Research Associate Professor of Medicine and Research Associate Professor of Toxicology

Elizabeth G. Hedgpeth, EdD, MEd, Adjunct Assistant Professor of Exercise and Sport Science

Tracy M. Heenan, DVM, Research Assistant Professor of Pathology and Laboratory Medicine

Anna M. Henson, PhD, Research Professor of Genetics and Molecular Biology

Marcia E. Herman-Giddens, DrPH, Adjunct Professor of Maternal and Child Health

Mary E. Hernandez, MA, Lecturer of Social Work

Anne E. Hersh, PhD, Professor of Biology at the University of Minnesota at Duluth, appointed by the Department of Environmental Sciences and Engineering

Michael S. Hershfield, MD, Professor of Medicine at Duke University Medical Center, appointed by the Department of Pharmacology

Nancy A. Hewitt, PhD, Professor of History and Women's Studies at Rutgers University, appointed by the Department of Political Science

James P. Hibbard, PhD, Associate Professor of Marine, Earth and Atmospheric Sciences at North Carolina State University, appointed by the Department of Geological Sciences

David E. Hinton, PhD, Nicholas Professor of Environmental Quality, Duke University, appointed by the Curriculum in Toxicology

Christopher J. Hirth, MS, Physical Therapist and Athletic Trainer, appointed by the Department of Exercise and Sport Science

MarciaMERARG Hobbs, PhD, Research Associate Professor of Medicine and Research Assistant Professor of Microbiology and Immunology

Irving F. Hoffman, PA, MPH, Director of International Operations at the Center for Infectious Diseases, Department of Medicine, UNC-Chapel Hill, appointed by the Department of Maternal and Child Health

Kathleen Hoffman, PhD, Adjunct Assistant Professor of Health Behavior and Health Education

Vijaya Hogan, DrPH, Clinical Associate Professor of Maternal and Child Health

Gregory Hohn, MBA, Adjunct Lecturer of Business

Corey L. Holliday, MA, Assistant Athletic Director for Football Student-Athlete Services, UNC-Chapel Hill, appointed by the Department of Exercise and Sport Science

Anita P. Holmes, JD, MPH, Adjunct Assistant Professor of Health Behavior and Health Education

Sharon M. Holmes, MSW, Clinical Instructor of Social Work

Elizabeth Holzman, MSN, Assistant Professor of Nursing

Frederick K. Homan, PhD, Adjunct Assistant Professor of Health Policy and Administration

Leonard Homer, BA, Visiting Lecturer of Business

Daniel Hooker, PhD, Adjunct Assistant Professor of Exercise and Sport Science

James D. Hosking, PhD, Research Associate Professor of Biostatistics

Gary R. Hovatter, Colonel, U.S. Army, appointed by the School of Journalism and Mass Communication

Frank M. Howell, PhD, Professor of Sociology at Mississippi State University, appointed by the Department of Environmental Sciences and Engineering
Jolyon Howorth, PhD, Professor of European Studies and Modern Languages at the University of Bath, England, appointed by the Department of Political Science

Dionissios T. Hristopoulos, PhD, Paper and Pulp Research Institute of Canada, appointed by the Department of Environmental Sciences and Engineering

Stephen P. Hubbell, PhD, Professor of Plant Biology, University of Georgia, appointed by the Curriculum in Ecology

Daniel M. Huff, PhD, Clinical Associate Professor of Education

Michael F. Hughes, PhD, Toxicologist for the United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering

Frank J. Humeck, PhD, Professor and Department Head of Biological and Agricultural Engineering at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering

Harry L. Hurd, PhD, Adjunct Professor of Statistics

Jon M. Hussey, MPH, Research Assistant Professor of Maternal and Child Health

William D. Ilgen, PhD, Latin American and Iberian Resources Bibliographer Collection Development for the Department of Romance Languages

Marija Ivanovic, PhD, Clinical Associate Professor of Radiology and Adjunct Associate Professor of Biomedical Engineering

Shawn Jackson, BA, Lecturer in Information and Library Science

Walter A. Jackson, PhD, Associate Professor of History at North Carolina State University, appointed by the School of Journalism and Mass Communication

Laura Jansen, RDH, MS, Clinical Associate Professor of Dentistry

Ilona Jasprae, PhD, Adjunct Research Assistant Professor of Toxicology and Research Assistant Professor of Pediatrics

Michael A. Jenkins, PhD, Forest Ecologist, National Park Service, appointed by the Curriculum in Ecology

Christian Jobin, PhD, Research Assistant Professor of Medicine

Josephine Johnstone, PhD, Adjunct Assistant Professor of Psychology

F. Reed Johnson, PhD, Adjunct Professor in Public Policy, appointed by the Department of Health Policy and Administration

Melissa A. Johnson, PhD, Associate Professor of Communication at North Carolina State University, appointed by the School of Journalism and Mass Communication

Douglas A. Johnston, JD, Adjunct Instructor of Health Policy and Administration

Heidi Barr Johnston, PhD, Adjunct Assistant Professor of Maternal and Child Health

David H. Jolly, DrPH, Adjunct Assistant Professor of Health Behavior and Health Education

Anne Jones, PhD, Clinical Assistant Professor of Social Work

Paul Jones, MFA, Clinical Associate Professor and Director of Ibiblio, School of Journalism and Mass Communication and School of Information and Library Science

Cynthia Jorgensen, PhD, Chief, Communication and Behavioral Sciences Branch, Division of Cancer Prevention and Control, Centers for Disease Control and Prevention, Atlanta GA, appointed by the Department of Health Behavior and Health Education

Kathleen M. Joyce, PhD, Assistant Professor of Religion at Duke University, appointed by the Department of Religious Studies

Dennis Ray Joyner, MPH, Adjunct Instructor of Health Behavior and Health Education

Michael Kafriessen, MD, Adjunct Professor of Maternal and Child Health

Norman L. Kaplan, PhD, Adjunct Professor of Biostatistics

Spero Karas, PhD, Assistant Professor of Orthopaedics, UNC-CH

Jane Kaufman, MSN, Clinical Assistant Professor of Nursing

Wendy E. Kaye, PhD, Chief of the Epidemiology and Surveillance Branch at the Agency for Toxic Substances and Disease Registry, appointed by the Department of Environmental Sciences and Engineering

Francis Keele, PhD, Professor Department of Psychiatry and Behavioral Sciences at Duke University, appointed by the School of Nursing

Jack D. Keene, PhD, James B. Duke Professor of Molecular Genetics and Microbiology at Duke University Medical Center, appointed by the Department of Microbiology and Immunology

Temitope Keku, PhD, Research Assistant Professor of Epidemiology

Carl T. (Timm) Kelley, PhD, Professor of Mathematics at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering

Maureen Kelly, PMSN, Clinical Assistant Professor of Nursing

Kristine S. Kelsey, PhD, Research Assistant Professor of Nutrition

Terence P. Kenakin, PhD, Research Scientist, appointed by the Department of Neurology

Edward Kernick, DPM, Instructor, Cell and Developmental Biology

Lawrence Kessler, PhD, Professor Emeritus of Chinese History and East Asian Civilization at the University of North Carolina at Chapel Hill, appointed by the School of Journalism and Mass Communication

Richard Killingsworth, PhD, Research Associate Professor of Health Behavior and Health Education

Chong S. Kim, PhD, Senior Research Scientist, Human Studies Division, National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering

Hyung-Suk Kim, PhD, Research Associate Professor of Pathology and Laboratory Medicine

Jae Sung Kim, PhD, Research Assistant Professor, Cell and Developmental Biology

Tanya Kinsella, PhD, Adjunct Associate of Germanic Languages

Linda Kinsinger, MD, MPH, Adjunct Assistant Professor of Health Behavior and Health Education

Raymond S. Kirk, PhD, Research Professor of Social Work

Donald T. Kirkendall, PhD, Clinical Assistant Professor of Exercise and Sport Science

Herbert Kitschelt, PhD, Professor, appointed by the Department of Political Science

Stephen R. Kleberger, PhD, Adjunct Assistant Professor of Toxicology

Katherine W. Klein, PhD, Associate Professor of Psychology at North Carolina State University, appointed by the School of Nursing

Tadeusz E. Kleindienst, PhD, Principal Scientist at Mantech Environmental Technology, Inc., appointed by the Department of Environmental Sciences and Engineering

Alfred Kleinhampmes, PhD, Research Assistant Professor of Physics and Astronomy at UNC-Chapel Hill, appointed by the Department of Physics and Astronomy

Anne Kluefelter, MLS, JD, Clinical Lecturer of Information and Library Science
Gary R. Klinefelter, PhD, Research Biologist for the Developmental Toxicology Division of the Environmental Protection Agency, appointed by the Curriculum in Toxicology

Lynn K. Krauff, MSPH, Adjunct Professor of Maternal and Child Health
Vernon J. Knight, PhD, Professor of Anthropology at the University of Alabama, appointed by the Department of Anthropology

Hasan Koc, PhD, Postdoctoral Research Associate of Environmental Sciences and Engineering

Julia Koch, MILS, Clinical Instructor of Information and Library Science
Evelyn Kehrl, MA, Ackland Museum, Adjunct Professor, appointed by the Department of Art

Robert P. Kolker, PhD, Professor of English at the University of Maryland at College Park, appointed by the Department of English

Milton Kotechuck, PhD, Chair and Professor of Maternal and Child Health at Boston University, appointed by the Department of Maternal and Child Health

Richard Kouzi, PhD, Adjunct Professor of Business
Beatrice Kovacs, PhD, Associate Professor, Department of Library and Information Studies, School of Education, University of North Carolina at Greensboro, appointed by School of Information and Library Science

Mary G. Kovar, PhD, Adjunct Professor of Health Policy and Administration

Vicki Kowalowicz, PhD, Clinical Associate Professor of Nursing
Matthew Kreutzer, PhD, Associate Professor at St. Louis University, appointed by the Department of Health Behavior and Health Education

Corinne Krupp, PhD, Adjunct Assistant Professor of Business
Eileen C. Kugler, MSN, MPH, Adjunct Assistant Professor of Maternal and Child Health

Thomas A. Kunkel, PhD, Director of Environmental Biology Program at the National Institute of Environmental Health Sciences, appointed by the Department of Biology

Susan Labyak, PhD, Assistant Professor of Nursing at University of Washington, appointed by the School of Nursing

David S. Lalush, PhD, MSE, Adjunct Research Assistant Professor of Biomedical Engineering

Beth F. Lammerts, MPH, Clinical Instructor of Nursing

Chris Lamb, PhD, Associate Professor of Media Studies at College of Charleston, appointed by the School of Journalism and Mass Communication

Millard H. Lambert, PhD, Research Investigator II at Glaxo Wellcome, appointed by the School of Pharmacy

Selden Durgin Lamoureux, MSLS, Clinical Instructor of Information and Library Science

Claudine Langan, MA, Regional General Manager at Cox Interactive Media, appointed by the School of Journalism and Mass Communication

Barbara Laraia, PhD, Research Assistant Professor of Nutrition
Gregory F. Lavater, PhD, Professor of Mathematics at Duke University, appointed by the Department of Statistics

Sheila Leatherman, MSW, Research Professor of Health Policy and Administration

Martin E. Lebo, PhD, Research Scientist for Weyerhaeuser Company, appointed by the Department of Environmental Sciences and Engineering

C. Virginia Lee, MD, MPH, Medical Officer for Division of Health Assessment and Consultation at Agency for Toxic Substances and Disease Registry, appointed by the Department of Environmental Sciences and Engineering

Jessica Lee, PhD, Research Assistant Professor of Health Policy and Administration
Virginia S. Lee, PhD, Research Assistant Professor of Education

Jennifer Leeman, DrPH, Research Assistant Professor of Nursing
Jack K. Leiss, PhD, Adjunct Assistant Professor of Maternal and Child Health

Kimberly Jeffries Leonard, PhD, Director, Substance Abuse Program, Maytech Corporation, Silver Springs, MD, appointed by the Department of Health Behavior and Health Education

James C. Lester, PhD, Associate Professor of Computer Science at North Carolina State University, appointed by the School of Journalism and Mass Communication

Jay F. Levine, DVM, MPH, Associate Professor of Farm Animal Health and Resource Management, Epidemiology and Public Health, College of Veterinary Medicine, North Carolina State University, appointed by the Curriculum in Ecology

Linda Levitch, PhD, Instructor, Cell and Developmental Biology
Ross Lewin, PhD, Adjunct Assistant Professor of Germanic Languages

Joellen Lewes, PhD, Adjunct Professor of Environmental Sciences and Engineering

Yutai Li, PhD, Director of the UNC Mass Spectrometry Facility, Department of Environmental Sciences and Engineering at UNC-Chapel Hill, appointed by the Curriculum in Toxicology

Susan Lieff, PhD, Research Assistant Professor of Dentistry

Karl G. Linden, PhD, Assistant Professor of Civil and Environmental Engineering at Duke University, appointed by the Department of Environmental Sciences and Engineering

Richard Lischer, PhD, Professor of Religion at Duke Divinity School, appointed by the Department of Religious Studies

Jean Livermore, MSW, Clinical Assistant Professor of Social Work

Dietra Lowdermill, PhD, Clinical Professor of Nursing

Frances M. Lynn, DrPH, Clinical Professor of Environmental Sciences and Engineering

Larry G. Mabe, EdD, Clinical Associate Professor of Education

Robert C. MacPhail, PhD, Research Professor of Psychology

Michael C. Madden, PhD, Adjunct Assistant Professor of Environmental Sciences and Engineering and Adjunct Assistant Professor of Toxicology

Scott Madry, PhD, Research Associate Professor of Anthropology

Eleonora Magomedova, PhD, Lecturer of Russian Language

Lawrence K. Mandelkhr, MBA, MEng, Adjunct Instructor of Health Policy and Administration

Howard Manifold, EdD, Clinical Associate Professor of Education

Paul S. Manos, PhD, Assistant Professor of Botany at Duke University, appointed by the Department of Biology

Arlene Margolis, PhD, Clinical Associate Professor of Psychology

Robert R. Maronpot, DVM, MPH, Adjunct Professor of Pathology and Laboratory Medicine

Donald Marple, ScD, Adjunct Lecturer of Business

Catherine Marshall, PhD, Senior Researcher, Microsoft Corporation, appointed by the School of Information and Library Science
Stephen W. Marshall, PhD, Research Assistant Professor of Epidemiology
Victor Marshall, PhD, Adjunct Professor of Health Behavior and Health Education
Ted B. Martonen, PhD, Senior Research Scientist, Experimental Toxicology Division, United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering
Sharon P. Maskel, EdD, Clinical Assistant Professor of Education
Barbara Matiuky, PhD, Curator of Exhibitions, Ackland Museum, Adjunct Associate Professor, appointed by the Department of Art
Elizabeth S. Matteson, MA, Exercise Specialist, Orange Cardiovascular Foundation, appointed by the Department of Exercise and Sport Science
Josephine Maukopf, appointed by the Department of Health Policy and Administration
Sally D. Mays, MA, Head Athletic Trainer at Fetzer Gymnasium, appointed by the Department of Exercise and Sport Science
Gail O. Mazzocco, EdD, Clinical Assistant Professor of Nursing
Colleen M. McBride, PhD, Adjunct Associate Professor of Health Behavior and Health Education
Regina McCarthy, MSN, Clinical Assistant Professor of Nursing
David R. McClay Jr., PhD, Professor of Zoology, Immunology, and Neurobiology at Duke University, appointed by the Department of Biochemistry and Biophysics
William McCollum Jr., appointed by the Department of Health Policy and Administration
Mark A. McGowan, MS, Lecturer of Mathematics
David T. McCoy, JD, MPH, Adjunct Assistant Professor of Health Behavior and Health Education
June McDermott, MS, Research Scientist and Adjunct Assistant Professor of Family Medicine, University of North Carolina, appointed by the School of Nursing
Stephen J. McGregor, PhD, Associate Director, Spatial Analysis, Carolina Population Center, appointed by the Department of Environmental Sciences and Engineering
Rosemary McKaig, PhD, Research Assistant Professor of Dentistry
Timothy J. McMillan, PhD, Adjunct Assistant Professor of Education
Janey S. McMillen, PhD, Clinical Assistant Professor of Education
David N. McNelis, PhD, Adjunct Professor of Environmental Sciences and Engineering
Louise McReynolds, PhD, Assistant to Professor of History at the University of Hawaii, appointed by the Department of History
Robert A. McWilliams, PhD, Research Associate Professor of Education
Andrea Meier, PhD, Clinical Assistant Professor of Social Work
Cathy Melvin, PhD, Research Associate Professor of Maternal and Child Health
Thomas E. Menzgers, MA, Lecturer of Education
Robert E. Meyer, PhD, MPH, Adjunct Professor of Maternal and Child Health
Roland E. Mihalga, MPH, Dip.MCH, Adjunct Assistant Professor of Maternal and Child Health
Mabel M. Miguel, PhD, Adjunct Professor of Business
Robert F. Miles, PhD, Adjunct Professor of Sociology
Jeri R. Miller, PhD, Clinical Assistant Professor of Pathology and Laboratory Medicine
Martin A. Miller, PhD, Professor of History at Duke University, appointed by the Department of History
Ronald C. Miller, PhD, Lecturer of Exercise and Sport Science
Thomas J. Miller, PhD, Assistant Professor of Environmental Science at the University of Maryland, appointed by the Curriculum in Marine Sciences
Mark B. Milstein, MBA, MS, Adjunct Assistant Professor, Kenan-Flagler Business School, appointed by the School of Journalism and Mass Communication
Karen A. Monaco, MS, Adjunct Instructor of Health Behavior and Health Education
David C. Montefiori, PhD, Associate Research Professor of Experimental Surgery at Duke University, appointed by the Curriculum in Genetics and Molecular Biology
Sonya Montgomery, PMSN, Clinical Assistant Professor of Nursing
Katherine Anne Moore, MSN, Clinical Assistant Professor of Nursing
William Moore, MBA, Adjunct Professor of Business
Elizabeth E. Moracco, PhD, Adjunct Assistant Professor of Maternal and Child Health
Miriam C. Morey, PhD, Assistant Research Professor of Geriatrics at Duke University Medical Center, appointed by the Department of Nutrition
Anne L. Morisseau, MSLS, Clinical Instructors in Information and Library Science
Susan Morris-Narschke, PhD, Research Associate Professor of Pharmacy
Ron F. Morrison, PhD, Assistant Professor of Nutrition at the University of North Carolina at Greensboro, appointed by the Department of Nutrition
Margaret L. Morse, PhD, Clinical Assistant Professor of Social Work
Debra K. Moses, PhD, Professor of Nursing, University of Kentucky, appointed by the School of Nursing
Judy L. Munford, PhD, Research Health Scientist for National Health and Environmental Effects Research Laboratory for the United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering
Mitch Munna, BA, Adjunct Lecturer of Business
Eric Munson, MBA, Adjunct Professor, appointed by the Department of Health Policy and Administration
Charles R. Myer, MBA, Adjunct Professor
David J. Myers, Professor, Pennsylvania State University, appointed by the Department of Political Science
Denise Nadeau, MD, MPH, Adjunct Assistant Professor of Maternal and Child Health
H. Troy Nagle, MD, PhD, Founding Chair and Professor of Biomedical Engineering
Jun Nakamura, PhD, DVM, Research Assistant Professor of Environmental Sciences and Engineering
Michael G. Narosky, PhD, Adjunct Assistant Professor of Toxicology
David A. Neal, JD, Adjunct Associate Professor of Business
Edward M. Neal, PhD, Research Assistant Professor of Education
Lucas M. Neas, ScD, Adjunct Associate Professor of Epidemiology
Stephen C. Nessow, PhD, Adjunct Professor of Pathology and Laboratory Medicine
David E. Nichols, PhD, Professor, Department of Pharmacology
Steve H. Nickles, JD, C.C. Hope Chair in Law and Management, School of Law, Wake Forest University, appointed by the School of Information and Library Science
Stephen Nowicki, PhD, Associate Professor of Zoology at Duke University, appointed by the Department of Biology
John P. O'Bryan, PhD, Investigator, Laboratory of Signal Transduction, NIEHS, Research Triangle Park, appointed by the Curriculum in Toxicology
Paul O'Connor, MA, Lecturer of Journalism and Mass Communication
Christine Ogan, PhD, Professor of Journalism, Associate Dean for Graduate Studies and Research, School of Informatics at Indiana University, appointed by the School of Journalism and Mass Communication
Patrick Oglesby, JD, Lecturer of Business
Ann Marie O'Hale, MPH, Clinical Assistant Professor of Nursing
Carol J. Oja, PhD, William Mason Powell Professor of Music at Harvard University, appointed by the Department of Music
Linda Oldham, PhD, Social Anthropologist, appointed by the Department of Anthropology
Jack Olin, PhD, Adjunct Professor of Business
John C. Olsen, MD, Assistant Professor of Medicine, Adjunct Assistant Professor of Pharmacology, and Research Assistant Professor of Genetics and Molecular Biology
Sonda Oppewal, PhD, Associate Dean for Clinical Affairs and Clinical Assistant Professor of Nursing
Gerry S. Oxford, PhD, Adjunct Professor of Cell and Molecular Physiology
Stephanie Padilla, PhD, Adjunct Associate Professor of Toxicology
John S. Painter, PhD, Clinical Assistant Professor of Social Work
David L. Pauley, PhD, Professor of Political Science at Duke University, appointed by the School of Journalism and Mass Communication
Gary S. Palmer, MHA, Associate Director and Clinical Instructor of Health Policy and Administration
Susan Palmer, PhD, Adjunct Assistant Professor of Business
John S. Park, PhD, Professor of Pathology at Wake Forest University School of Medicine, appointed by the Curriculum in Genetics and Molecular Biology
Emilio A. Parrado, PhD, Assistant Professor of Sociology at Duke University, appointed by the Department of Sociology
John Paul, PhD, Adjunct Professor, appointed by the Department of Health Policy and Administration
Richard S. Paulus, PhD, Adjunct Associate Professor of Pathology and Laboratory Medicine
Charles M. Payne, PhD, Professor of African and African American Studies and History at Duke University, appointed by the Department of History
Norman A. Peart, PhD, Adjunct Instructor of Sociology
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Charlotte Peterson, MS, Assistant Clinical Professor of Dental Ecology
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Meredith Busby Petschauer, MA, Lecturer of Exercise and Sport Science
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Joachim D. Pfeil, MS, Research Physical Scientist for National Exposure Research Lab at United States Environmental Protection Agency, appointed by the Department of Environmental Sciences and Engineering
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R. Julian Preston, PhD, Director, Environmental Carcinogenesis Division, U.S. Environmental Protection Agency, Research Triangle Park, appointed by the Curriculum in Toxicology
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John J. Pringle, PhD, Adjunct Professor of Business
James W. Purney Jr., PhD, Adjunct Professor of Pharmacology
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S. Ranji Ranjithan, PhD, Associate Professor of Civil Engineering at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering
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Thomas S. Rankin, MFA, MA, Director, Center for Documentary Studies and Associate Professor of the Practice of Art and Documentary Studies at Duke University, appointed by the School of Journalism and Mass Communication
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Wanda F. Reives, MSW, Clinical Instructor of Social Work
Jacqueline C. Resnick, BS, Lecturer of Maternal and Child Health
Michael A. Resnick, PhD, Geneticist and Head, Chromosome Stability Group for the National Environmental Institute for Environmental Health Sciences, appointed by the Curriculum in Genetics and Molecular Biology
Kenneth Rehmeyer, DrPH, Adjunct Professor appointed by the Department of Health Policy and Administration
Dennis A. Revicki, PhD, Adjunct Professor of Health Policy and Administration
Richard Richardson, PhD, Research Associate Professor, Cell and Developmental Biology
Russell E. Richy, PhD, Professor of Church History at Duke University, appointed by the Department of History
Brett Riggs, PhD, Adjunct Assistant Professor of Anthropology
Jim E. Riviere, DVM, PhD, Director, Center for Chemical Toxicology Research, North Carolina State University, appointed by the Department of Biomedical Engineering
Douglas H. Robertson, PhD, Research Associate Professor of Health Behavior and Health Education
Howard A. Rockman, MD, Associate Professor of Medicine at Duke University, appointed by the Curriculum in Genetics and Molecular Biology
Sheila Rodgers, PhD, Clinical Associate Professor of Nursing
Robert N. Rodriguez, PhD, Adjunct Associate Professor of Statistics
John M. Rogers, PhD, Adjunct Associate Professor of Toxicology
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James L. Rolleston, PhD, Professor and Chair of German at Duke University, appointed by the Department of Germanic Languages
Carol A. Romano, PhD, Chief of Clinical Informatics Services at National Institutes of Health Clinical Center, appointed by the School of Nursing
Joan Siefert Rose, BA, General Manager, WUNC-FM at the University of North Carolina at Chapel Hill, appointed by the School of Journalism and Mass Communication
Kathryn M. Rose, PhD, Research Assistant Professor of Epidemiology
Daniela A. Rubin, MS, Doctoral Student in Human Movement Science, appointed by the Department of Exercise and Sport Science
Julia Seall Rusert, MSW, Clinical Assistant Professor of Social Work
Anne Ryan, appointed by the Department of Health Policy and Administration
Kevin J. Ryan, MD, MPH, Adjunct Associate Professor of Maternal and Child Health
Ibrahim A. Salama, PhD, Adjunct Professor of Biostatistics
Mary Anne P. Salmon, PhD, Clinical Associate Professor of Social Work
George F. Salviaterra, PhD, The Pennsylvania State University, appointed by the Department of Exercise and Sport Science
Sherry L. Salyer, EdD, Lecturer of Exercise and Sport Science
Ehsan Samei, PhD, DABR, Assistant Professor, Duke University, appointed by the Department of Biomedical Engineering
James M. Samet, PhD, MPH, Adjunct Assistant Professor of Toxicology
Carmen Samuel-Hodge, PhD, Research Assistant Professor of Nutrition
Dale P. Sandler, PhD, Adjunct Assistant Professor of Epidemiology
Jose Sandoval, MS, Programmer Analyst at Carolina Population Center, appointed by the Department of Political Science
Ramiah Sangaiyah, PhD, Research Assistant Professor of Environmental Sciences and Engineering
Carolyn L. Sarro, MD, Assistant Professor of Radiation Oncology and Assistant Professor of Genetics and Molecular Biology
Marjorie A. Sarinsky, MBA, Adjunct Lecturer of Health Policy and Administration
Barry Saunders, PhD, Adjunct Assistant Professor of Anthropology
Denise E. Saunders, PhD, Clinical Assistant Professor of Education
Lucy A. Savitz, PhD, Research Assistant Professor of Health Policy and Administration
Roby B. Sawyer, PhD, Adjunct Associate Professor of Business
Martina Roeland M. Schaep, PhD, Visiting Scientist/Principal Investigator, Laboratory of Molecular Genetics, National Institute of Environmental Health Sciences, appointed by the Department of Environmental Sciences and Engineering
Stanley A. Schaufler, EdD, Clinical Associate Professor of Education
Connie Schartz, MLS, Clinical Instructor of Information and Library Science
Michael A. Schell, PhD, Research Associate Professor of Biostatistics
Anna M. Scheyett, MSW, Clinical Assistant Professor of Social Work
Anne L. Schiller, PhD, Associate Professor of Anthropology at North Carolina State University, appointed by the Department of Geography
William H. Schlesinger, PhD, James B. Duke Professor of Botany at Duke University, appointed by the Department of Biology
Eric Schnell, MLS, Clinical Instructor of Information and Library Science
Laura Schoppe, MBA, Adjunct Lecturer of Business
Kevin Alan Schulman, appointed by the Department of Health Policy and Administration
Heidi Schultz, PhD, Adjunct Associate Professor of Business
Michael L. Schwabbe, PhD, Associate Professor of Sociology at North Carolina State University, appointed by the Department of Sociology
Scott Schwartz, PhD, Clinical Assistant Professor of Psychology
Todd A. Schware, MS, Research Instructor Department of Biostatistics, appointed by the School of Nursing
Alberto D. Scotti, PhD, Research Assistant Professor of Marine Sciences
William A. Seary, PhD, Professor and Chair of Biology at the University of Miami, appointed by the Department of Biology
Marc L. Setre, PhD, Research Assistant Professor of Environmental Sciences and Engineering
Miriam Settle, PhD, Adjunct Assistant Professor of Health Behavior and Health Education
Cynthia Lynn Setzer, MBA, Adjunct Lecturer of Business
Ken Sexton, PhD, Research Associate of Environmental Sciences and Engineering
Phoebe J. Shackleford, MPH, MEd, Adjunct Assistant Professor of Maternal and Child Health
Mary Alice Shaver, PhD, Professor and Director of the Nicholson School of Communication at the University of Central Florida, appointed by the School of Journalism and Mass Communication
Thomas J. Shaw, PhD, Research Assistant Professor of Marine Sciences
Barbara Sherry, PhD, Associate Professor of Microbiology, Pathology, and Parasitology at North Carolina State University, appointed by the Department of Microbiology and Immunology
Y. S. Carol Shieh, PhD, Food and Drug Administration Gulf Coast Seafood Lab in Alabama, appointed by the Department of Environmental Sciences and Engineering
William J. Showers, PhD, Associate Professor of Marine, Earth, and Atmospheric Sciences at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering
Sadha Shreenivas, PhD, Adjunct Assistant Professor of Health Behavior and Health Education
Tiffani E. Shubert, MS, Doctoral Student in Human Movement Science, appointed by the Department of Exercise and Sport Science
William Shulby, MBA, Adjunct Lecturer of Business
Carl M. Shy, MD, DrPH, Professor of Epidemiology
Lucille P. Siegel, MPH, Adjunct Assistant Professor of Maternal and Child Health
Robert C. Sills, DVM, PhD, Adjunct Associate Professor of Toxicology
Andrew Silton, MA, Adjunct Lecturer of Business
Ruth E. Silverman, PhD, Research Assistant Professor of Microbiology and Immunology
Elliot Silverstein, PhD, Adjunct Associate Professor of Business
Nancy Simonsson, MPH, Clinical Assistant Professor of Nursing
Neal R. Simonsen, PhD, Research Assistant Professor of Epidemiology
C. J. Skender, PhD, Adjunct Professor of Business
Celerete S. Skinner, PhD, Adjunct Associate Professor of Health Behavior and Health Education
Debra G. Skinner, PhD, Investigator at Frank Porter Graham Child Development Institute, Dissertation Committees of Psychology and Adjunct Associate Professor of Anthropology
Michael Slater, PhD, Professor of Journalism and Technical Communications, Colorado State University, appointed by the Department of Health Behavior and Health Education
Barbara H. Smith, PhD, Braxton Craven Professor of Literature and English at Duke University, appointed by the Department of Anthropology
Kenneth L. Smith, PhD, Associate Professor of Communication at the University of Wyoming, appointed by the School of Journalism and Mass Communication
Paige Smith, PhD, Adjunct Assistant Professor of Health Behavior and Health Education
Phillip L. Smith, MD, MPH, Director of Indian Health Services, appointed by the Department of Maternal and Child Health
S. Peter Smith, MBA, Adjunct Professor of Business
Steven M. Snapinn, PhD, Adjunct Associate Professor of Biostatistics
Jennifer Ann Snyder, PhD, Clinical Assistant Professor of Psychology
Mary Ellen Soles, PhD, Curator of Ancient Art, NCMA, Adjunct Associate Professor, appointed by the Department of Art
Geraldine K. Solomon, MLS, Clinical Instructor of Information and Library Science
Florence G. Solyris, MSW, Clinical Associate Professor of Social Work
Bonita Sorensen, appointed by the Department of Health Policy and Administration
Susan Spald, MPH, Adjunct Associate Professor of Maternal and Child Health
Thomas A. Spragens Jr., PhD, Professor of Political Science at Duke University, appointed by the Department of Political Science
John Stanback, PhD, Adjunct Assistant Professor of Maternal and Child Health
Donald Mcver Stanford Jr., PhD, Adjunct Associate Professor of Business
Olin Sarn, PhD, Assistant Professor of Cultural Anthropology at Duke University, appointed by the Department of Anthropology
Herman F. Sturts, PhD, Assistant Research Professor of Pathology at Duke University Medical Center, appointed by the Department of Microbiology and Immunology
David H. Steel Jr., PhD, Curator of European Art, NCMA, Adjunct Associate Professor, appointed by the Department of Art
David C. Steffens, MD, MHS, Associate Professor of Psychiatry and Medicine at Duke University Medical Center, appointed by the Department of Nutrition
Jane Stein, DrPH, MS, Adjunct Associate Professor of Maternal and Child Health
Karen Steinhauer, Research Assistant Professor, Duke University, appointed by the Department of Health Behavior and Health Education
Marah Steketee, PhD, Clinical Assistant Professor of Psychology
Laurie Steponaitis, PhD, Research Assistant Professor of Anthropology
Elizabeth Stern, MPH, Adjunct Instructor of Health Behavior and Health Education
Stephen Stimson, PhD, Adjunct Associate Professor of Medicine
Dana Strickland, PhD, Adjunct Assistant Professor of Business
M. Jackson Stutz, PhD, Associate Professor of Medicine
Miroslav Syrbo, PhD, Research Associate Professor of Nutrition
William H. Swallow, PhD, Professor of Statistics at North Carolina State University, appointed by the Department of Environmental Sciences and Engineering
Carl W. Swartz, PhD, Clinical Assistant Professor of Education
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Douglas Taylor, PhD, Research Assistant Professor of Biostatistics
Norwood T. Tegue, Associate Athletic Director/Sports Marketing, UNC-Chapel Hill Department of Athletics, appointed by the Department of Exercise and Sport Science
Irene Tesoro, DRPH, Research Professor of Health Promotion/Risk Reduction at West Virginia University, appointed by the Department of Nutrition
Charles A. Thigpen, MS, Doctoral Student in Human Movement Science, appointed by the Department of Exercise and Sport Science
David Thomas, MBA, Associate Dean for Corporate & Community Relations, Emeritus, appointed by the School of Education
Erik Thomas, PhD, Assistant Professor of English at North Carolina State University, appointed by the Department of Linguistics
Kathleen C. Thomas, PhD, Adjunct Assistant Professor of Health Policy and Administration
Deborah Thompson, EdD, Clinical Associate Professor of Nursing
Susan E. Thorne, PhD, Assistant Professor of History at Duke University, appointed by the Department of History
Dan F. Thorntor, PhD, Adjunct Assistant Professor of Germanic Languages
Philippe Thuillier, PhD, Research Assistant Professor of Nutrition
Domenic Tiani, PhD, Assistant Professor of Chemistry
Raymond R. Tice, PhD, Senior Vice President of Integrated Laboratory Systems, appointed by the Department of Environmental Sciences and Engineering
Nancy L. Tigar, DrPH, Adjunct Assistant Professor of Public Health Nursing and Adjunct Assistant Professor of Public Health Leadership Program
Hugh A. Tilson Jr., PhD, Adjunct Associate Professor of Toxicology
Judy Jones Tisdale, PhD, Adjunct Assistant Professor of Business
Sue Tolleson-Rinehart, PhD, Research Assistant Professor of Health Policy and Administration
Mark A. Tonnndahl, PhD, Research Associate Professor of Biomedical Engineering
Mary C. Tonges, PhD, Senior Vice President and Chief Nursing Officer and Clinical Professor of Nursing
Werner Tornow, PhD, Professor of Physics at Duke University, appointed by the Department of Physics and Astronomy
John A. Trangrstein, PhD, Professor of Mathematics at Duke University, appointed by the Department of Environmental Sciences and Engineering
Amy O. Tsui, PhD, Adjunct Professor of Maternal and Child Health
Benjamin M.W. Tsui, PhD, Adjunct Professor of Biomedical Engineering
Gail E. Tudor, PhD, Clinical Assistant Professor of Biostatistics
Mary Rose Tully, MPH, Adjunct Assistant Professor of Maternal and Child Health
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Katherine L. Turner, MPH, Adjunct Instructor of Health Behavior and Health Education
Emily T. Tyler, MPH, Adjunct Instructor of Health Behavior and Health Education
Herman A. Tyroler, PhD, Professor of Epidemiology
Dean L. Urban, PhD, Associate Professor of Landscape Ecology, Nicholas School of the Environment, Duke University, appointed by the Curriculum in Ecology
Julie Vaktschanoff, MD, Research Associate Professor, Cell and Developmental Biology
Michael Van Fossen, MS, Clinical Instructor of Information and Library Science
Marten H. van Kerkwijk, PhD, Professor of Astrophysics at University of Toronto, appointed by the Department of Physics and Astronomy
Russel Van Wyk, PhD, MA, Lecturer and Assistant Dean of History
Augusto F. Varas, PhD, Ford Foundation Andean Region and Southern Cone Office Representative, appointed by the Department of Political Science
Maria Elena Varquez, MBA, Adjunct Lecturer of Business
Dharni Vasudevan, PhD, Assistant Professor at Nicholas School of the Environment at Duke University, appointed by the Department of Environmental Sciences and Engineering
Jane K. Vella, EdD, Adjunct Assistant Professor of Health Behavior and Health Education
Leandra Vicci, BS, Director of Microelectronic Systems Laboratory and Lecturer of Computer Science
James E. Vickers, MA, Research Assistant Professor of Epidemiology and Lecturer of Nursing
Teresa M. Vilaros, PhD, Associate Professor of Romance Studies at Duke University, appointed by the Department of Romance Languages
K. Steven Vincent, PhD, Professor of History at North Carolina State University, appointed by the Department of History
Thomas J. Vitagliano, MPH, Adjunct Professor of Maternal and Child Health
Grant Wacker, PhD, Associate Professor of Religion at Duke University, appointed by the Department of Religious Studies
Colin Wahl, MBA, Adjunct Lecturer of Business
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Thomas Walke, PhD, Adjunct Assistant Professor, appointed by the Department of Health Policy and Administration
Jean L. Walker, PhD, Research Plant Ecologist, Department of Forest Resources, Clemson University, appointed by the Curriculum in Ecology
Cynthia T. Wallis-Hill, MSW, Clinical Instructor of Social Work
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Barbara T. Walton, PhD, Adjunct Professor of Environmental Sciences and Engineering
Paul P. Wang, PhD, Professor of Electrical and Computer Engineering at Duke University, appointed by the Department of Geological Sciences
Jerry W. Ward Jr., PhD, Distinguished Scholar and Professor English and African World Studies at Dillard University, appointed by the Department of English
William P. Watkinson, PhD, Research Physiologist for Health Effects Research Laboratory at United States Environmental Protection Agency Dissertation Committees, appointed by the Department of Environmental Sciences and Engineering
Alan S. Weakley, Curator of the University of North Carolina Herbarium, Adjunct Instructor of Ecology
Wendee M. Wechsberg, PhD, Director, Substance Abuse Treatment Evaluations and Interventions, Research Triangle Institute, appointed by Maternal and Child Health
Clarece R. Weinberg, PhD, Adjunct Professor of Biostatistics
Howard S. Weinberg, DSc, Research Assistant Professor of Environmental Sciences and Engineering
Richard J. Weinberg, PhD, Research Professor, Cell and Developmental Biology
Paul S. Weinhold, PhD, Research Assistant Professor of Orthopaedics and Adjunct Research Assistant Professor of Biomedical Engineering
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Jack M. Weiss, PhD, Adjunct Assistant Professor of Ecology
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Vivian Welch, MSN, Clinical Instructor of Nursing
Dennis P. Weller, PhD, Associate Curator of Northern European Art, NCMA, Adjunct Associate Professor, appointed by the Department of Art
Liliana Wendorff, PhD, Adjunct Assistant Professor of Business
Thomas R. Wentworth, PhD, Professor of Botany, North Carolina State University, appointed by the Curriculum in Ecology
Jeff Whetstone, MFA, Instructor of Photography, appointed by the Department of Art
Michael Whittlesey, PhD, Lecturer of Exercise and Sport Science
Mary C. Whitton, MS, Research Assistant Professor of Computer Science and Information Science
Christopher Wiesen, PhD, Statistical Analyst, Odom Institute, appointed by the School of Nursing
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Redford B. Williams, MD, Professor of Medicine at Duke University Medical Center, appointed by the School of Nursing
Ronald Williams, MBA, Adjunct Professor of Business
Deborah Willis, MA, Professor of Photography and Imaging at New York University, appointed by the School of Journalism and Mass Communication
John E. Wimmer, MD, Neonatologist, Women's Hospital of Greensboro at Moses Cone Health System, appointed by the School of Nursing
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Pamela J. Wintron, PhD, Research Professor of Education
Carol Wise, PhD, Associate Professor, School of Advanced International Studies, John Hopkins University, appointed by the Department of Political Science
Roger W. Wiseman, PhD, Adjunct Associate Professor of Genetics and Molecular Biology and Adjunct Associate Professor of Pathology and Laboratory Medicine
Douglas C. Wolf, PhD, DVM, Adjunct Associate Professor of Toxicology
Russell D. Wolflinger, PhD, Adjunct Assistant Professor of Biostatistics
Walter A. Wolfram, PhD, William Friday Distinguished Professor of English at North Carolina State University, appointed by the Department of Linguistics
Elizabeth Woodard, PhD, Clinical Assistant Professor of Nursing
Anne Smith Worth, MSW, Clinical Instructor of Social Work
Rebecca Worthylake, PhD, Research Assistant Professor, Cell and Developmental Biology
Robert E. Wyatt, PhD, Director of the Highlands Biological Station and Adjunct Professor of Ecology, Adjunct Professor of Biology
Ajit Prithviraj Yoganathan, PhD, Professor of Biomedical Engineering at the Georgia Institute of Technology, appointed by the Department of Biomedical Engineering
Anne Y. York, PhD, Adjunct Assistant Professor of Business
Clarence N. York, EdD, Clinical Professor of Education
Evridiki Zachopoulou, Lecturer, Democritus University of Thrace, Greece, appointed by the Department of Exercise and Sport Science
Jun Zhang, PhD, Investigator, Epidemiology Branch, National Institute of Health, appointed by the Department of Maternal and Child Health
Irene Nathan Zipper, PhD, Clinical Associate Professor of Social Work
Ted B. Zoller, MPA, Adjunct Lecturer of Business
Appendix

Residence Status for Tuition Purposes

The following sections summarize important aspects of the residency law. A complete explanation of the statute and the procedures under the statute is contained in A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes. This manual and other information concerning the application of this law are available for inspection in the Admissions Offices of the University. Copies of the manual are also on reserve at the Robert B. House Undergraduate Library and in the Reserve Reading Room of the Health Sciences Library. All students are responsible for knowing the contents of the statute and the manual.

Every applicant for admission is required to make a statement of his or her length of residence in North Carolina. A person who qualifies as a resident for tuition purposes under North Carolina law pays a lower rate of tuition than a nonresident. To qualify for in-state tuition, a legal resident must have been domiciled in North Carolina for at least twelve months immediately prior to the beginning of the term for which classification as a resident for tuition purposes is sought. The student must also establish that his or her presence in the state during such twelve-month period was for purposes of maintaining a bona fide domicile rather than for purposes of maintaining a mere temporary residence incident to enrollment in an institution of higher education. Domicile means one’s permanent home of indefinite duration, as distinguished from a temporary place of abode. Domicile is synonymous with legal residence and is established by being physically present in a place with the concurrent intent to make that place a domicile. To determine intent, the University evaluates an individual’s objectively verifiable conduct as an indicator of his or her state of mind.

Procedural Information
General. A student admitted to initial enrollment in an institution (or permitted to reenroll following an absence that involved a formal withdrawal from enrollment) is classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual matriculation. In the absence of a current and final determination of the student’s residence status prior to matriculation, the student is classified as a nonresident for tuition purposes. The institution will thereafter reach a final determination of the student’s residence status. Unless a person supplies enough information to allow the admissions officer to classify him or her as a resident for tuition purposes, the person will be classified a nonresident for tuition purposes. A residence classification once assigned (and confirmed pursuant to any appellate process invoked) may be changed thereafter (with a corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic calendar.

Transfer Students. When a student transfers from one North Carolina public institution of higher education to another, he or she is required to be treated as a new student by the institution to which he or she is transferring and must be assigned an initial residence classification for tuition purposes. The residence classification of a student by one institution is not binding on another institution. The North Carolina institutions of higher education will assist each other by supplying residency information and classification records concerning a student to another classifying institution upon request.

The transfer into or admission to a different component of the same institution (e.g., from an undergraduate to a graduate or professional program) is not considered as a transfer from one institution to another and thus does not by itself require a reclassification inquiry unless (1) the affected student requests a reclassification inquiry or (2) the transfer or enrollment occurs following the lapse of more than one quarter, semester, or term during which the individual was not enrolled as a student.

Responsibility of Students and Prospective Students. Any student or prospective student in doubt concerning his or her residence status is responsible for securing a ruling by completing an application for resident status and filing it with the admissions officer. The student who subsequently becomes eligible for a change in classification, whether from out-of-state to in-state or the reverse, is responsible for immediately informing the Office of Admissions in writing of his or her new status. Failure to give correct and complete information regarding residence constitutes grounds for disciplinary action.

Application Process. A person may obtain an application for resident status by visiting his or her admissions office or by going online to regweb.unc.edu and clicking on “residency.” Also available on the Web site is the resident status manual, which sets forth the requirements of the statute. Applicants for admission who claim eligibility for the in-state tuition rate customarily complete a two-page residency application as part of the admissions application packet. If a person has not been living in North Carolina for at least three consecutive years, he or she would complete the four-page “long form.” Even if a person completes the two-page residency application, some applicants for admission will thereafter be required to complete a more detailed four-page residency application. Enrolled students seeking a change from nonresident to resident status are required to complete a four-page residency application. All applications for resident status must be filed with the proper admissions office before the end of the term for which resident status for tuition purposes is sought. The last day of the final examination period is considered the last day of the term.

After filing a resident status application, a person may receive a letter from his or her admissions office requesting more information in connection with that application. When a student receives such a request before the end of the term for which classification is sought, he or she must respond to that request no later than three weeks after the end of the term. If the student receives the request for supplemental information after the end of the term in question, he or she must supply the requested information within three weeks after receipt of the request. Failure to supply the requested information within the specified time limit will result in a continuation of the student’s nonresident classification unless good cause is shown for such failure.

The admissions office may require an applicant for admission to file a residency application or respond to a request for more information more quickly when resident status is a factor in the admissions decision.

For more details about the residency application process and other important information about the resident status for tuition purposes, visit the Web site regweb.unc.edu and click on “residency.”

Fraudulent Applications. If a student is classified a resident for tuition purposes after submitting falsified residency information or after knowingly withholding residency information, the student’s application for in-state tuition status is fraudulent.
The institution may reexamine any application suspected of being fraudulent and, if warranted, will change the student’s residence status retroactively to the beginning of the term for which the student originally made the fraudulent application. If this occurs, the student must pay the out-of-state tuition differential for all the enrolled terms intervening between the fraudulent application and its discovery. Further, knowing falsification of responses on a resident status application may subject the applicant to disciplinary action, including dismissal from the institution.

Burden of Proof and Statutory Prima Facie Evidence. A person has the burden of establishing facts that justify his or her classification as a resident for tuition purposes. The balancing of all the evidence must produce a preponderance of evidence supporting the assertion of in-state residence. Under the statute, proof of resident status is controlled initially by one of two evidentiary beginning points which are stated in terms of prima facie evidence.

a. Even if the person is an adult, if his or her parents (or court-appointed guardian in the case of some minors) are not legal residents of North Carolina, this is prima facie evidence that the person is a nonresident of North Carolina unless he or she has lived in the state five consecutive years prior to enrolling or reenrolling. To overcome this prima facie showing of nonresidence, a person must produce evidence that he or she is a North Carolina domiciliary despite the parents’ nonresident status.

b. Conversely, if the person’s parents are domiciliaries of North Carolina under the Statute, this fact constitutes prima facie evidence that the person is a domiciliary of North Carolina. This prima facie showing may also be overcome by other evidence to the contrary. If a person has neither living parents nor legal guardian, the prescribed prima facie evidence rule cannot and does not apply.

Erroneous Notices Concerning Classification. If a student who has been found to be a nonresident for tuition purposes receives an erroneous written notice from an institutional officer identifying the student as a resident for tuition purposes, the student is not responsible for paying the out-of-state tuition differential for any enrolled term beginning before the classifying institution notified the student that the prior notice was erroneous.

Grace Period. If a student has been properly classified as a North Carolina resident for tuition purposes and, thereafter, his or her state of legal residence changes while he or she is enrolled at the North Carolina public institution of higher education, the statute provides for a grace period during which the student is allowed to pay tuition at the in-state rate despite the fact that the student is no longer a North Carolina legal resident. This grace period extends for a minimum of twelve months from the date of change in legal residence, and if the twelve-month period ends during a semester or academic term in which the student is enrolled, the grace period extends also to the end of that semester or academic term.

Reacquisition of Resident Tuition Status. The prescribed twelve-month period of legal residence may be shortened if the person seeking to be classified as a resident for tuition purposes was formerly classified as a North Carolina resident for tuition purposes, abandoned North Carolina domicile, and subsequently reestablished North Carolina domicile within twelve months after abandoning it. Interested persons should consult their admissions offices for a detailed explanation of the conditions which must be met to qualify under this section.

Appeals. A student appeal of a classification decision made by any admissions officer must be in writing and signed by the student and must be filed by the student with that officer within fifteen working days after the student receives notice of the classification decision. The appeal is transmitted to the Residence Status Committee by that officer, who does not vote in that committee on the disposition of such appeal. The student is notified of the date set for consideration of the appeal, and on request of the student, he or she is afforded the opportunity to appear and be heard by the committee. Any student desiring to appeal a decision of the Residence Status Committee must give notice in writing of that fact (within ten days of receipt of the committee’s decision) to the chairman of the Residence Status Committee, and the chairman promptly processes the appeal for transmission to the State Residence Committee.

Tuition Payments. It is the responsibility of the student to pay tuition at the rate charged and billed while an appeal is pending. In effect, the student who is classified a nonresident at the time of tuition billing pays the nonresident rate. Conversely, if a student is classified as a resident at the time of billing, he or she pays the resident rate. Any necessary adjustments in the rate paid will be made at the conclusion of the appeal.

Application of the Law to Specific Situations

Aliens. Aliens who are permanent residents of the United States, or who hold a visa that will permit eventual permanent residence in the United States, are subject to the same considerations with respect to determination of legal residence as citizens. An alien admissible in the United States under a visa conditioned at least in part upon intent not to abandon a foreign domicile (B, F, J, B, Q, and S visas) cannot be classified a resident. An alien admissible in the United States under a visa issued for a purpose that is so restricted as to be fundamentally incompatible with an assertion by the alien of bona fide intent to establish a legal residence (C, D, and M visas) cannot be classified a resident.

Possession of certain other immigration documents may also allow an alien to be considered for in-state tuition status. For more details, aliens should consult their admissions offices and the manual. Aliens must file a Residence Status Supplemental Form in addition to the forms normally required of applicants for resident status for tuition purposes. More information concerning alien resident status for tuition purposes information and supplemental applications may be found online at regweb.unc.edu (click on “residency”).

Married Persons. The domicile of a married person, irrespective of sex, is determined by reference to all relevant evidence of domiciliary intent. No person is precluded, solely by reason of marriage to a person domiciled outside of North Carolina, from establishing or maintaining legal residence in North Carolina. No person is deemed, solely by reason of marriage to a person domiciled in North Carolina, to have established or maintained a legal residence in North Carolina. The fact of marriage and the place of domicile of his or her spouse are deemed relevant evidence to be considered in ascertaining domiciliary intent.

If a person otherwise can demonstrate compliance with the fundamental statutory requirement that he or she be a legal resident of North Carolina before the beginning of the term for which resident status is sought, the second statutory requirement relating to duration of residence may be satisfied derivatively, in less than twelve months, by reference to the length of the legal residence of the person’s spouse, if the spouse has been a legal resident of the state for the requisite twelve-month period.

Please note: If a person feels he or she qualifies for the marital status provision, special application procedures must be followed. A separate spousal residency application should be filed at the same time as either the short or long residency form is submitted. These applications are not to be submitted to the admissions office. They should be filed to the Residence Status Committee Office/Married Student Residency Classification Office on campus. Applications are available online at regweb.unc.edu.

Military Personnel. The domicile of a person employed by the federal government, Department of Defense, is not necessarily affected by assignment in or reassignment out of North Carolina. Such a person may establish domicile by the usual requirements of residential act plus intent. No person loses his or her in-state resident status solely by serving in the armed forces outside of the state of North Carolina. See the section entitled Military Tuition Benefits for other benefits provided to military personnel and their dependents.

Minors. A minor is any person who has not reached the age of eighteen years. Under the common law, a minor child whose parents are not divorced or legally separated is presumed to have the domicile of his or her father. This presumption may be rebutted if a preponderance of the evidence indicates that the mother and father have separate domiciles and that, under the circumstances, the child can fairly be said to derive his or her domicile from the mother. If the father is deceased, the domicile of the minor is that of the surviving mother. If the parents are divorced or legally separated, the domicile of the minor is that of the parent having custody by virtue of a court order; or, if no custody has been granted by virtue of court order, the domicile of the minor is that of the parent with whom he or she lives; or, if the
minor lives with neither parent, in the absence of a custody award, the domicile of the minor is presumed to remain that of the father. If the minor lives for part of the year with each parent, in the absence of a custody award, the minor’s domicile is presumed to remain that of the father. These common law presumptions control even if the minor has lived in North Carolina for five years as set forth above in Burden of Proof and Statutory Prima Facie Evidence, subsection a.

In determining residence status for tuition purposes, there are three exceptions to the above provisions:

1. If a minor’s parents are divorced, separated, or otherwise living apart and one parent is a legal resident of North Carolina, during the time period when that parent is entitled to claim, and does claim, the minor as a dependent on the North Carolina individual income tax return, the minor is deemed to be a legal resident of North Carolina for tuition purposes, notwithstanding any judicially determined custody award with respect to the minor.

If immediately prior to his or her eighteenth birthday a person would have been deemed a North Carolina legal resident under this provision but he or she achieves majority before enrolling in a North Carolina institution of higher education, that person will not lose the benefit of this provision if the following conditions are met:

a. Upon achieving majority the person must act, as much as possible, in a manner consistent with bona fide legal residence in North Carolina; and

b. The person must begin enrollment at a North Carolina institution of higher education not later than the fall academic term next following completion of education prerequisite to admission at the institution.

2. If immediately prior to beginning an enrolled term the minor has lived in North Carolina for five or more consecutive years in the home of an adult relative (other than a parent) who is a legal resident of North Carolina, and if the adult relative during those years has functioned as a de facto guardian of the minor, then the minor is considered a legal resident of North Carolina for tuition purposes. If a minor qualifies for resident status for tuition purposes under this provision immediately prior to his or her eighteenth birthday, then, upon becoming eighteen, he or she will be deemed a legal resident of North Carolina for at least twelve months’ duration.

3. Even though a person is a minor, under certain circumstances the person may be treated by the law as being sufficiently independent from his or her parents as to enjoy a species of adulthood for legal purposes. If the minor marries or obtains a judicial decree of emancipation under NC Gen. Stat. 7A-717, et seq., he or she is emancipated. The consequence, for present purposes, of such emancipation is that the affected person is presumed to be capable of establishing a domicile independent of that of the parents; it remains for that person to demonstrate that a separate domicile has, in fact, been established.

*Prisoners.* There are special provisions concerning domicile of prisoners. For more information, persons to whom these provisions may apply should consult the manual.

*Property and Taxes.* Ownership of property in or payment of taxes to the State of North Carolina apart from legal residence will not qualify one for in-state tuition rate.

Students or prospective students who believe that they are entitled to be classified as residents for tuition purposes should be aware that the processing of requests and appeals can take a considerable amount of time. A student is more likely to obtain a final decision on an application before tuition payment is due if he or she files the application several months in advance.

**Military Tuition Benefit**

The information in this section comes from three sources: (1) North Carolina General Statutes, Sect. 116-143,3 (b), as amended Fall 03, (2) A Manual to Assist the Public Higher Education Institutions of North Carolina in the Master of Student Residence Classification for Tuition Purposes, revised September 1985, (3) Chancellor’s Rules and Procedures for Residence Classification of Students for Tuition Purposes and Determination of Eligibility for the Special Military Tuition Benefit.

Certain members of the Armed Services and their dependent relatives who are not residents for tuition purposes may become eligible to be charged less than the out-of-state tuition rate under NC Gen. Stat. 116-143,3, the military tuition benefit provision. Any person seeking the military tuition benefit must qualify for admission to UNC-Chapel Hill and must file an application for the benefit with his or her admissions office before the first day of classes of the term for which he or she initially seeks the benefit. To remain eligible to receive the military tuition benefit, he or she must file another application for the benefit before the first day of classes of the first term in which he or she is enrolled in each academic year. The burden of proving eligibility for the military tuition benefit lies with the applicant for the benefit, and the application and all required supporting affidavits must be complete and in proper order before the first day of classes of the term in question. Because of the time involved in securing the necessary affidavits from the appropriate military authorities, prospective applicants for the military tuition benefit are urged to secure application forms from their admissions offices and begin the application process several weeks before the first day of classes of the term for which they seek the benefit.

*Eligibility of Members of the Armed Services.* Eligible members of the Armed Services pay a rate of tuition computed by applying a statutory formula which is dependent, in part, on the amount of money payable by their Service employer to them or to the institution by reason of their enrollment.

The new military tuition and fee calculation applies to all active duty personnel; it is no longer required that they be "abiding in North Carolina incident to military duty."

In response to the Board's request for a special rate for nonresident students who are active duty members of the Armed Services, the General Assembly approved (effective fall 2003) the establishment of a rate for tuition and applicable mandatory fees that is equal to "the maximum available tuition assistance" provided by the armed services. Currently, the rate paid by the armed services is $250 per student credit hour up to a maximum of 18 credit hours. If an active duty member of the military exceeds the maximum number of hours, the additional hours will be billed at the resident rate consistent with GS 116-143.3.b.2.

To calculate the fee and tuition charge, take the "maximum" military tuition assistance rate (presently set at $250 per credit hour), then subtract the Education and Technology fee (calculated on a per student credit hour basis). The amount left is the tuition to be charged.

If a military member does not receive tuition assistance from his/her service employer, he or she pays the in-state rate plus all applicable mandatory fees.

To be eligible for this military tuition benefit, the individual must be on active duty and a member of the United States Air Force, Army, Coast Guard, Marine Corps, Navy, North Carolina National Guard, or a reserve component of one of these services; and if he or she has military dependents that may be eligible for the military tuition benefit, then he or she must be residing in North Carolina on permanent change of duty status.

*Eligibility of Dependent Relatives of Service Members.* If the service member meets the conditions set forth above, his or her dependent relatives may be eligible to pay the in-state tuition rate if they share the service member's North Carolina abode, if they have complied with the requirements of the Selective Service System (if applicable), and if they qualify as military dependents of the service member.

If the service member voluntarily ceases to live in North Carolina or is involuntarily absent from the state on military orders (other than absences on routine maneuvers and temporary assignments), he or she is deemed to have moved his or her abode from North Carolina. If a dependent relative of a service member has become eligible for the military tuition benefit, and after the beginning of the term of eligibility the service member moves his or her abode from North Carolina, the dependent relative will continue to be eligible for the military tuition benefit only for the remainder of that academic year. An academic year runs from the first day of classes of the fall semester through the last day of exams of the following summer session, second term.

For a detailed explanation of the military tuition benefit provision, a complete list of categories of persons who are considered "dependent relatives" for purposes of
establishing eligibility for the military tuition benefit, and information about the registration requirements of the Selective Service System, applicants should consult A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes (as amended September 1985). This manual is available for inspection in the Admissions Offices of the University. Copies of the manual are also on reserve at the Robert B. House Undergraduate Library, in the Reserve Reading Room of the Health Sciences Library, and online at regweb.unc.edu/residency (click on “residency manual” in the upper right corner of the home page).

Appeals of Eligibility Determinations of Admissions Officers. A student appeal of an eligibility determination made by any admissions officer must be in writing and signed by the student and must be filed by the student with that officer within fifteen working days after the student receives notice of the eligibility determination. The appeal is transmitted to the Residence Status Committee by that officer, who does not vote in that committee on the disposition of such appeal. The student is notified of the date set for consideration of the appeal, and, upon request by the student, is afforded an opportunity to appear and be heard by the committee.

Any student desiring to appeal a determination of the Residence Status Committee must give notice in writing of that fact to the chairman of the Residence Status Committee within ten days of receipt of the committee’s decision. The chairman will promptly process the appeal for transmittal to the State Residence Committee.

Tuition Waiver for Family Members of Deceased or Disabled Emergency Workers

Any applicant desiring to appeal a determination of the Residence Status Committee must give written notice of that fact to the chairman of the Residence Status Committee within ten days of receipt of the committee’s decision. The chairman will promptly process the appeal for transmittal to the State Residence Committee.

North Carolina Teachers Tuition Benefit

The information in this section comes from two sources: (1) North Carolina General Statutes Section 116-143.5, and (2) University of North Carolina Administrative Memorandum No. 375 dated October 22, 1997.

Certain North Carolina teachers may become eligible to be charged the in-state tuition rate even if they do not qualify as residents for tuition purposes under GS 116-143.1. These applicants may receive the benefit for courses “relevant to teacher certification or to professional development as a teacher” if approved by the principal of the applicant’s school.

To qualify, an applicant must be a teacher or other person paid on the North Carolina teacher salary schedule incident to full-time employment by a North Carolina public school. “Full-time employment” means the employee’s duties qualify him/her for membership in the Teacher’s and State Employees’ Retirement System or would so qualify the employee if he/she were employed on a permanent basis. Applicants must qualify academically for admission to any school of UNC-Chapel Hill.

Additionally, to be eligible, he or she must be a North Carolina legal resident (domiciliary) and must have established North Carolina domicile before the commencement of the approved course(s). However, he or she does not have to have been a legal resident for twelve months.

To apply for the benefit, applicants must submit the following documents to the proper admissions office no later than the first day of classes of the term for which this benefit is sought:

• a completed NC Teachers Tuition Benefit application,
• a completed “Principal’s Declaration for In-State Tuition Benefit for NC Teachers,” and
• a four-page application for resident tuition status.

For a detailed explanation of the teachers tuition benefit law and to acquire application forms, applicants should contact the appropriate admissions office. Information concerning the application of this law is on reserve at the Undergraduate Library and Health Sciences Library. It is also available at all admissions offices, at the Residence Status Committee Office, and online at regweb.unc.edu/residency.

Any applicant desiring to appeal a determination of the Residence Status Committee must give written notice of that fact to the chairman of the Residence Status Committee within ten days of receipt of the committee’s decision. The chairman will promptly process the appeal for transmittal to the State Residence Committee.

Tuition Waiver for Family Members of Deceased or Disabled Emergency Workers

The information in this section comes from three sources: (1) North Carolina General Statutes Section 115B-1 et seq., (2) University of North Carolina Administrative Memorandum No. 377 dated November 17, 1997, and (3) University of North Carolina Administrative Memorandum No. 385 dated August 6, 1998.

Certain family members of emergency workers killed or permanently disabled in the line of duty may become eligible for tuition-free enrollment.

The statute sets out the following requirements that must be met before the waiver can be obtained:

• the deceased or disabled emergency worker (firefighter, volunteer firefighter, law enforcement officer, or rescue squad member) must have been a North Carolina legal resident (domiciliary), in active service or training for active service at the time of death or disability occurring in the line of duty;
• the emergency worker’s death or disability must have occurred on or after October 1, 1997;
• the emergency worker must have been employed by the State of North Carolina or by any of its departments, agencies, or institutions, OR a county, city, town or other political subdivision of the State of North Carolina;
• the applicant for the tuition waiver must be either a child or unremarried widow or widower of a deceased emergency worker killed in the line of duty, OR a spouse or a child (at least age 17, but not yet 23) of an emergency worker who became permanently and totally disabled as a result of a traumatic injury sustained in the line of duty as an emergency worker;
• the applicant must qualify academically for admission to UNC-Chapel Hill, must meet all the requirements of the statute and implementing University regulations, and there must be space available in the course(s) for which he or she intends to register; and
• the completed application, with all supporting documents, must be submitted to the proper admissions office no later than the first day of class of the term for which the waiver is sought. If the applicant is under 18 years of age, a parent must also sign.

The following documents are required as proof of eligibility for this tuition waiver:

To prove permanent and total disability of an emergency worker: Documentation of the permanent and total disability from the NC Industrial Commission

To prove cause of death of an emergency worker: Certification of the cause of death from

• The Department of State Treasurer; or
• The appropriate city or county law enforcement agency that employed the deceased, or
• The administrative agency for the fire department or fire protection district funded under the Department of State Auditor; or
• The administrative agency having jurisdiction over any paid firefighters of all counties and cities.

To prove the parent/child relationship: Applicant’s birth certificate or legal adoption papers

To prove the marital relationship: Applicant’s marriage certificate

Copies of the applicable law and implementing University regulations are on reserve in the Undergraduate Library and the Health Sciences Library. They are also available for inspection upon request in all UNC-Chapel Hill admissions offices and the Residence Status Committee Office. Applications can be acquired at the proper admissions office. More detailed information may be found online at regweb.unc.edu/residency.
Appeals of Eligibility Determinations of Admissions Offices must be in writing and signed by the applicant and must be filed by the applicant with that admissions officer within fifteen working days after the applicant receives notice of the eligibility determination. The appeal is submitted to the Residence Status Committee by that office, who does not vote in that committee on the disposition of such appeal. The applicant is notified of the date set for consideration of the appeal, and, on request by the applicant, is afforded an opportunity to appear and be heard by the committee.

Any applicant desiring to appeal a determination of the Residence Status Committee must give written notice of that fact to the chairman of the Residence Status Committee within ten days of receipt of the committee’s decision. The chairman will promptly process the appeal for transmittal to the State Residence Committee.

**Proration of Tuition**

If a student withdraws from the University during a fall or spring semester, tuition and fees will be prorated over a period of nine weeks at a rate of approximately one-tenth of the term’s bill each week. If a student withdraws during a summer session, tuition and fees will be prorated over a period of three weeks at a rate of one-fourth of the term’s bill each week. If a student drops the only course he or she is taking, this constitutes a withdrawal from the University.

**Students’ Education Records at the Office of the President, The University of North Carolina: Annual Notification of Rights**

Certain personally identifiable information about students (“education records”) may be maintained at The University of North Carolina Office of the President, which serves the Board of Governors of the University system. This student information may be the same as, or derivative of, information maintained by a constituent institution of the University; or it may be additional information. Whatever their origins, education records maintained at the Office of the President are subject to the federal Family Educational Rights and Privacy Act of 1974 (FERPA). FERPA provides that a student may inspect his or her education records. If the student finds the record to be inaccurate, misleading, or otherwise in violation of the student’s privacy rights, the student may request amendment to the record. FERPA also provides that a student’s personally identifiable information may not be released to someone else unless (1) the student has given a proper consent for disclosure or (2) provisions of FERPA or federal regulations issued pursuant to FERPA permit the information to be released without the student’s consent.

A student may file with the United States Department of Education a complaint concerning failure of the Office of the President or an institution to comply with FERPA.

The policies of The University of North Carolina Office of the President concerning FERPA may be inspected in the office at each constituent institution designated to maintain the FERPA policies of the institution. Policies of the Office of the President may also be accessed in the Office of the Secretary of The University of North Carolina, 910 Raleigh Road, Chapel Hill, NC.

Further details about FERPA and FERPA procedures at the Office of the President are to be found in the referenced policies. Questions about the policies may be directed to Legal Section, Office of the President, The University of North Carolina, Annex Building, 910 Raleigh Road, Chapel Hill, NC. Mailing address: P.O. Box 2688, Chapel Hill, NC 27515-2688; tel: (919) 962-4588.

**Family Educational Rights and Privacy Act**

As a general rule, under the federal Family Educational Rights and Privacy Act (FERPA), personally identifiable information may not be released from a student’s education records without his or her prior written consent. Exceptions to this rule are set out in the FERPA regulations and the FERPA policy of the University of North Carolina at Chapel Hill. A few of the exceptions are listed below.

The University will disclose personally identifiable information from a student’s education records to officials of another school or school system in which the student seeks or intends to enroll and to officials of another school or school system in which a currently-enrolled UNC-Chapel Hill student is contemporaneously enrolled.

If the University takes disciplinary action against a student for conduct that posed a significant risk to the safety or well-being of the student, other students, or members of the University community, the University may disclose information about that disciplinary action to officials of other schools who have a legitimate educational interest in the student’s behavior.

If the University, pursuant to campus disciplinary procedures, finds that a student has committed a violation of the Code of Student Conduct that constitutes a crime of violence or a nonforcible sex offense, the University will, upon request, disclose the name of the student, the violation committed, and any disciplinary sanction imposed on the student.

The University makes public certain information that has been designated as “directory information” unless the student has notified the Office of the University Registrar to restrict the release of this information. The University considers the following to be “directory information”: the student’s name; address (local and grade/hallway addresses); student e-mail address; telephone listing (local and grade/hallway telephone numbers); date and place of birth; county, state and/or United States territory from which the student entered the University; major field of study, class (freshman, senior, etc.); enrollment status (full-time, half-time, or part-time); Person ID Number (PID); anticipated graduation date; participation in officially recognized activities and sports; weight and height of members of athletic teams; dates of attendance; degrees and awards received; and the most recent previous educational agency or institution attended by the student. The University also publishes the Campus Directory annually, and some professional and graduate student groups publish directories of students in their departments or schools.

Students who wish to restrict how address information is printed in the Campus Directory, or who wish to have all directory information restricted, must notify the Office of the University Registrar. A “Request for Non-Disclosure of Information” form available in 105 Hanes Hall, gives students certain options about release of information on campus. The Office of the University Registrar will accept request forms at any time, however, it cannot guarantee a proper listing in the Campus Directory unless it receives the request by the end of the first week of classes in the fall.

Receipt of an approved master’s thesis or doctoral dissertation in The Graduate School is tantamount to publication, and the thesis or dissertation will be available to the public in the University Library and available for interlibrary loan. Honors theses are also made available to the public through the University Library. Other student papers may be put in campus libraries or otherwise made public in accordance with individual course or program requirements.

The Family Educational Rights and Privacy Act also gives a student the right to inspect his or her education records and to request amendment of those records if they are inaccurate, misleading, or otherwise in violation of the student’s privacy rights. To inspect his or her education records, a student must file a written request with the individual who has custody of the records that the student wishes to inspect. To request amendment of his or her records, a student first discusses the matter informally with the records custodian, and if the custodian does not agree to amend the records, he or she will inform the student of applicable appeal rights. Students also have the right to file a complaint with the U.S. Department of Education alleging that the University has not complied with FERPA.

Questions about FERPA should be addressed to the Office of University Counsel (CBF 9105). The University’s FERPA policy and the text of the federal FERPA regulations are available on the Web at www.unc.edu/policies/ferpapoli.
Emergency Disciplinary Action

In order to protect University property or members of the University community or to prevent disruption of the academic process, occasionally the University must take emergency action to separate a student from the University. The chancellor has, therefore, created the Emergency Evaluation and Action Committee. With respect to disciplinary matters, the committee acts only when no other administrative solution, including action by the Students Judicial System, is in its judgment adequate to deal effectively with the situation.

Students whose cases may require action by the committee fall into four categories:

A. Applicants for admission or readmission to the University who have been convicted of a crime involving assaultive or felonious behavior, who have a record of violent behavior, or who have a record of academic dishonesty or disciplinary rule violations elsewhere;

B. Students whose behavior, on or off campus, is such that their presence in the University, in the judgment of the committee, poses a serious threat of disruption of the academic process or a continuing danger to themselves, other members of the University community or University property;

C. Students who, after an arrest and conviction for a violent or dangerous nature, or a serious crime that involved placing another person in fear of imminent physical injury or danger, have a record of subsequent behavior that the University, in the judgment of the committee, poses a serious threat of disruption of the academic process or a continuing danger to the student's campus and University environment;

D. Students who, after arrest and conviction for any serious crime, have a record of subsequent behavior that the University, in the judgment of the committee, poses a serious threat of disruption of the academic process or a continuing danger to the student's campus and University environment.

Full information on the committee and its procedures is available from the Division of Student Affairs through the office of the Dean of Students. The text of the committee's policy and procedures is on the Web at www.unc.edu/policies/ uapede58.pdf.

Expulsion

A student who has been expelled from an institution in the University of North Carolina system may not be admitted to another UNC-system school unless the institution that originally expelled the student rescinds that expulsion.

Fireworks, Firearms, and Other Weapons

It is a felony, punishable by fine and/or imprisonment, to possess or carry, openly or concealed, any gun, rifle, pistol, or other firearm of any kind, or any dynamite cartridge, bomb, grenade, mine or powerful explosive on any University campus or in any University-owned or operated facility. Such conduct may also constitute a violation of the Honor Code.

It is a Class 1 misdemeanor, punishable by fine and/or imprisonment, to possess or carry any BB gun, stun gun, air rifle, air pistol, bowie knife, dirk, dagger, sling-shot, leaded cane, switchblade knife, blackjack, metallic knuckles, razors and razor blades (except for personal shaving), fireworks, or any sharp-pointed or edged instrument (except instructional supplies, unaltered nail files, and clips and tools used solely for preparation of food, instruction, and maintenance) upon any University campus or in any University-owned or operated facility. Such conduct may also constitute a violation of the Honor Code.

Immunization Requirement

Effective July 1, 1986, North Carolina state law requires that no person shall attend a college or university in North Carolina unless a certificate of immunization indicating that the person has received the immunizations required by the law is presented to the college or university on or before the first day of matriculation. Students enrolled at UNC-Chapel Hill on July 1, 1986 are exempt from this requirement.

If the UNC-Chapel Hill Medical History Form containing the certificate of immunization is not in the possession of the UNC-Chapel Hill Student Health Service ten days prior to the registration date, the University shall present a notice of deficiency to the person. The person shall have thirty calendar days from the first day of attendance to obtain the required immunizations. Those persons who have not complied with the immunization requirements by the end of thirty calendar days will be administratively withdrawn from the University.

Policy on Illegal Drugs

Introduction.

The Board of Trustees of The University of North Carolina at Chapel Hill, in conformity with the direction of the Board of Governors of The University of North Carolina, hereby adopts this Policy on Illegal Drugs, effective August 24, 1988. It is applicable to all students, faculty members, administrators, and other employees.

Education, Counseling, and Rehabilitation.

A. The University of North Carolina at Chapel Hill has established and maintains a program of education designed to help all members of the University community avoid involvement with illegal drugs. This educational program emphasizes these subjects: - The incompatibility of the use or sale of illegal drugs with the goals of the University; - The legal consequences of involvement with illegal drugs; - The medical implications of the use of illegal drugs; and - The ways in which illegal drugs jeopardize an individual’s present accomplishments and future opportunities.

B. The University of North Carolina at Chapel Hill provides information about drug counseling and rehabilitation services available to members of the University community through campus-based programs and through community-based organizations. Persons who voluntarily avail themselves of University services are hereby assured that applicable professional standards of confidentiality will be observed.

Enforcement and Penalties.

A. The University of North Carolina at Chapel Hill shall take all actions necessary, consistent with state and federal law and applicable University policy, to eliminate illegal drugs from the University community. The University's Policy on Illegal Drugs is publicized in catalogs and other materials prepared for all enrolled and prospective students and in materials distributed to faculty members, administrators, and other employees.

B. Students, faculty members, administrators, and other employees are responsible, as citizens, for knowing about and complying with the provisions of North Carolina law that make it a crime to possess, sell, deliver, or manufacture those drugs designated collectively as controlled substances in Article 5 of Chapter 59 of the North Carolina General Statutes. Any member of the University community who violates that law is subject both to prosecution and punishment by the civil authorities and to disciplinary proceedings by the University. It is not “double jeopardy” for both the civil authorities and the University to proceed against and punish a person for the same specified conduct. The University will initiate its own disciplinary proceeding against a student, faculty member, administrator, or other employee when the alleged conduct is deemed to affect the interests of the University.

C. Penalties will be imposed by the University in accordance with procedural safeguards applicable to disciplinary actions against students, faculty members, administrators, and other employees, as required by Section 3 of the Trustee Policies and Regulations Governing Academic Tenure in The University of North Carolina at Chapel Hill; by Section III.B. of the Employment Policies for EPA Non-Faculty Employees of The University of North Carolina at Chapel Hill; by regulations of the State Personnel Commission, and the Disciplinary Procedure
of the Staff Personnel Administration Guides (Human Resources Manual for SPA Employees), by the Instrument of Student Judicial Governance, and by all other applicable provisions of the policies and procedures of The University of North Carolina at Chapel Hill.

D. The penalties to be imposed by the University may range from written warnings with probationary status to expulsions from enrollment and discharges from employment. However, the following minimum penalties shall be imposed for the particular offenses described.

**Trafficking in Illegal Drugs**

a. For the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedule I, NC Gen. Stat. 90-89, or Schedule II, NC Gen. Stat. 90-90 (including, but not limited to, heroin, mescaline, lysergic acid diethylamide, opium, cocaine, amphetamine, methaqualone), any student shall be expelled and any faculty member, administrator, or other employee shall be discharged.

b. For a first offense involving the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedules III through VI, NC Gen. Stat. 90-90 through 90-94, (including, but not limited to, marijuana, anabolic steroids, pentobarbitol, codeine), the minimum penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent. (Employees subject to the State Personnel Act are governed by regulations of the State Personnel Commission. Because the minimum penalty specified in this Section and required by the Board of Governors exceeds the maximum period of suspension without pay that is permitted by State Personnel Commission regulations, the penalty for a first offense for employees subject to the State Personnel Act is discharge.) For a second offense, any student shall be expelled and any faculty member, administrator, or other employee shall be discharged.

**Illegal Possession of Drugs**

a. For a first offense involving the illegal possession of any controlled substance identified in Schedule I, NC Gen. Stat. 90-89, or Schedule II, NC Gen. Stat. 90-90, the minimum penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent. (Employees subject to the State Personnel Act are governed by regulations of the State Personnel Commission. Because the minimum penalty specified in this Section and required by the Board of Governors exceeds the maximum period of suspension without pay that is permitted by State Personnel Commission regulations, the penalty for a first offense for employees subject to the State Personnel Act is discharge.)

b. For a first offense involving the illegal possession of any controlled substance identified in Schedules III through VI, NC Gen. Stat. 90-90 through 90-94, the minimum penalty shall be probation, for a period to be determined on a case-by-case basis. A person on probation must agree to participate in a drug education and counseling program, consent to regular drug testing, and accept such other conditions and restrictions, including a program of community service, as the Chancellor or the Chancellor’s designee deems appropriate. Refusal or failure to abide by the terms of probation shall result in suspension from enrollment or from employment for any unexpended balance of the prescribed period of probation. (If this balance for an employee subject to the State Personnel Act exceeds three days, that employee shall be discharged.)

c. For second or other subsequent offenses involving the illegal possession of controlled substances, progressively more severe penalties shall be imposed, including expulsion of students and discharge of faculty members, administrators, or other employees.

E. Suspension Pending Final Disposition

When a student, faculty member, administrator, or other employee has been charged by the University with a violation of policies concerning illegal drugs, he or she may be suspended from enrollment or employment before initiation or completion of regular disciplinary proceedings if, assuming the truth of the charges, the Chancellor, or in the Chancellor’s absence, the Chancellor’s designee concludes that the person’s continued presence within the University Community would constitute a clear and immediate danger to the health or welfare of other members of the University community; provided, that if such a suspension is imposed, an appropriate hearing of the charges against the suspended person shall be held as promptly as possible thereafter.

**Implementation and Reporting**

Annually, the Chancellor shall submit to the Board of Trustees a report on campus activities related to illegal drugs for the preceding year. The reports shall include, as a minimum, the following:

1. a listing of the major educational activities conducted during the year;
2. a report on any illegal drug-related incidents, including any sanctions imposed;
3. an assessment by the Chancellor of the effectiveness of the campus program; and
4. any proposed changes in the Policy on Illegal Drugs.

A copy of the report shall be provided to the President, who shall confer with the Chancellor about the effectiveness of campus programs.

**Alcoholic Beverages**

The University’s Policy on Student Possession and Consumption of Alcoholic Beverages in Facilities of The University of North Carolina at Chapel Hill sets forth the conditions under which alcoholic beverages are available in the University’s facilities and on University property.

According to North Carolina law:

A. Generally persons twenty-one or older may purchase or consume alcoholic beverages and may possess alcoholic beverages at their homes or temporary residences.

B. It is against the law for any person under twenty-one to purchase or possess any alcoholic beverage.

C. It is against the law for anyone to sell or give any alcoholic beverage to a person under twenty-one or to aid or abet such a person in selling, purchasing, or possessing any alcoholic beverage.

D. No alcoholic beverages may be sold by any person, organization, or corporation on a college campus except by a hotel or nonprofit alumni organization with a mixed beverages or special occasion permit. Both direct and indirect sales are unlawful.

According to Chapel Hill ordinance, it is against the law for anyone to possess any open alcoholic beverage on streets, sidewalks, alleys, or any other property owned or controlled by the Town of Chapel Hill.

In addition to the above, the University’s Policy on Student Possession and Consumption of Alcoholic Beverages in Facilities of The University of North Carolina at Chapel Hill sets special rules for alcohol for students and student organizations.

The Office of the Dean of Students will provide copies of the policy and assistance in understanding its full implications. The text of the policy can also be found in the Campus Security Policies notebook on reserve at the Undergraduate, Law, and Health Sciences libraries, and can be accessed on the World Wide Web at studentaffairs.unc.edu/who_we_are/dos/policies/alcohol.html. Under the policy:

A. Alcohol may not be served or consumed in any University building or open space except as provided in the University’s Guidelines for Serving Alcohol at University-Sponsored Events.

B. Alcohol may not be possessed or consumed at any campus athletic event or at any performance on campus, and alcohol may not be consumed at any outdoor campus location.

C. Common source containers of alcohol (e.g., kegs) are not permitted on campus.

D. Students and their guests aged twenty-one and older may possess and consume alcoholic beverages in individual campus residence hall rooms or apartments on campus, but not in the common areas of a campus residence hall.

E. No Student Activity Fees or other University-collected fees may be used to purchase alcohol.

F. No other funds of an officially recognized student group deposited or administered through the Student Activities Fund Office may be used to purchase alcohol.

G. Student groups are not prohibited from having events off campus at which individual group members aged twenty-one or older bring or buy their own alcoholic beverages.
Students who violate the policy face mandatory alcohol education, housing sanctions (for violations arising in University Housing), and sanctions including written reprimand, restitution, counseling/referral, and/or educational/community service activities. Students who violate the policy face sanctions of written reprimand, restitution, mandatory educational programs or community service, and/or loss of University recognition. Behavior that violates the Code of Student Conduct, state or federal laws may also be referred to the Student Judicial System, the Committee on Problem Admissions and Extraordinary Disciplinary Emergencies, and/or state and federal authorities.

**Equity in Athletics Disclosure Act**

Information compiled under the federal Equity in Athletics Disclosure Act is available on request from the Office of the Director of Athletics.

**Student Right-to-Know Act**

Pursuant to the federal Student Right-to-Know Act, we report that, in 2002-2003, the completion or graduation rate for undergraduates who entered the University of North Carolina at Chapel Hill in 1997 on a full-time basis was 82.8 percent.

**UNC Campus Scholarships Programs — Undergraduates (Effective July 1, 2003)**

The University of North Carolina offers a two-part scholarship program to promote educational access and diversity:

- Part I provides need-based scholarships for undergraduate students with exceptional financial need whose enrollment contributes to the intellectual experiences and diversity of the undergraduate population. Students must be residents of North Carolina who are enrolled in full-time degree credit course work.

- Part II provides need-based scholarship for undergraduate Native American students. To be eligible for these funds, students must be residents of North Carolina and must be Native American, defined as an individual who maintains cultural and political identification as a Native American through membership in an Indian Tribe recognized by the State of North Carolina or by the United States. (Include this second part in the graduate school and Law School catalogs and all catalogs that describe doctoral degree programs.)

**UNC Campus Scholarships Programs — Doctoral and Law (Effective July 1, 2003)**

The University of North Carolina seeks to enhance access to and diversity within the graduate programs and law program at the University of North Carolina at Chapel Hill. Stipends are available for the traditional academic year (9 months), with an option of additional support for study in the summer session. Recipients must be residents of North Carolina and full-time students pursuing doctoral degrees or law degrees at The University of North Carolina at Chapel Hill.
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I/We would be interested in joining the $1000 Preferred Future Owners Campaign.

Phone (___) ____-____

Email __________________________

State __________ Zip ______

City __________________________

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