The Graduate School

Graduate Record of
The University of North Carolina
at Chapel Hill
2006-2008

October 2006

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 2008. 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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PUBLISHED BY THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL, Chapel Hill, N.C.

www.unc.edu/gradrecord

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The University of North Carolina at Chapel Hill is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Ga. 30033-4097; telephone [404] 679-4501) to award bachelor's, master's, doctoral, and professional degrees.

Cover photos by Will Owens, Dan Sears, and Jason Smith.

Two-Year Schedule
The printed Graduate Record is on a two-year publishing schedule. The next printed version of the Graduate Record will appear in August 2008. 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.

Statement on Equal Educational Opportunity
The University of North Carolina at Chapel Hill is committed to equality of educational opportunity. The University does not discriminate in offering access to its educational programs and activities on the basis of age, gender, race, color, national origin, religion, creed, disability, veteran's status, or sexual orientation. The Dean of Students (01 Steele Building, Chapel Hill, NC 27599-5100 or [919] 966-4042) has been designated to handle inquiries regarding the University's nondiscrimination policies.

Policy on Nondiscrimination
The University is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, it is therefore the University's policy not to discriminate in offering access to its educational programs and activities or with respect to employment terms and conditions on the basis of age, gender, race, color, national origin, religion, creed, disability, veteran's status or sexual orientation. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied. A copy of the University's EEO and SPA Equal Opportunity Plans is available on the University's Web site at www.unc.edu/depts/eooada. Any inquiries regarding the University's nondiscrimination policies should be brought to the attention of one of the following administrators, as noted:

Discrimination in employment and educational programs and activities
University EEO/ADA Officer
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Chapel Hill, N.C. 27599-9160
(919) 966-3576

Discrimination involving students
Dean of Students
CB# 5100, 01 Steele Building
Chapel Hill, N.C. 27599-5100
(919) 966-4042

Sex discrimination in educational programs and activities
University Title IX Officer
CB# 5000, 104 Steele Building
Chapel Hill, N.C. 27599-5000
(919) 966-4045

Discrimination in employment
Associate Vice Chancellor for Human Resources
CB# 1000, 300 South Building
Chapel Hill, N.C. 27599-3000
(919) 962-1554

The University's 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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Degrees Offered

Certificate Programs

Academic Program Listings of Graduate Faculty and Courses

Appointment to the Graduate Faculty
Course Numbers and Credit
Anthropology
Applied and Materials Sciences
Art
Biochemistry and Biophysics
Biology
Biomedical Engineering
Biostatistics
Kenan-Flagler Business School
Cell and Developmental Biology
Cell and Molecular Physiology
Chemistry
City and Regional Planning
Classics
Communication Studies
Computer Science
Dentistry
Dramatic Art
Ecology
Economics
Education
English and Comparative Literature
Environmental Sciences and Engineering
Epidemiology
Exercise and Sport Science
Folklore
Genetics and Molecular Biology
Geography
Geological Sciences
Germanic Languages and Literatures
Government
Health Behavior and Health Education
Health Policy and Administration
History
Human Movement Science
Information and Library Science
Interdisciplinary Biomedical Sciences
Journalism and Mass Communication
Linguistics
Marine Sciences
Maternal and Child Health
Mathematics
Microbiology and Immunology
Music
Neurobiology
Nursing
Nutrition
Occupational Science
Pathology and Laboratory Medicine
Pharmacology
Pharmacy
Philosophy
Physics and Astronomy
Political Science
Psychology
Public Administration
Public Health
Public Health Leadership
Public Policy
Rehabilitation Counseling and Psychology
Religious Studies
Romance Languages and Literatures
Russian and East European Studies
Slavic Languages and Literatures
Social Work
Sociology
Speech and Hearing Sciences
Statistics and Operations Research
Toxicology

Appendix

Campus Map

Index
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-six doctoral-level programs and one hundred 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), information concerning research institutes and centers, and brief descriptions of programs and courses. 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, gradschool.unc.edu, for further 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 our outstanding faculty, our comprehensive research library resources, and our exceptional 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-long tradition of excellence in scholarship, research, teaching, and public service. We hope that your time here is fruitful, challenging, and rewarding.

The Graduate School

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**Academic Calendar**

Mission Statement:  
The University of North Carolina at Chapel Hill

The University of North Carolina at Chapel Hill 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 doctoral/research-extensive 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 the culture.

To fulfill this mission, the University must:
• acquire, discover, preserve, synthesize, and transmit knowledge;
• 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 nation;
• provide graduate and professional programs of national distinction at the doctoral and other advanced levels;
• 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 for all people in the state; and
• address, as appropriate, regional, national, and international needs.

(Approved by the UNC Board of Governors, November, 2003)
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.ncaarts.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.uncw.edu

Western Carolina University
www.wcu.edu

Winston-Salem State University
www.wssu.edu
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The University of North Carolina
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The UNC System: UNC-Chapel Hill

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David M. Parker, JD, Senior Associate University Counsel
William Fletcher Fairey, JD, Associate University Counsel
Mary P. Schriest, JD, Associate University Counsel
Joanna Carey Smith, JD, Associate University Counsel
Paul A. Meggett, JD, Attorney for UNC Hospitals and Assistant University Counsel
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Brenda W. Kirby, Secretary of the University
Phyllis Petree, BS, Director, Internal Audit
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Roger D. Patterson, BBA, Associate Vice Chancellor, Finance
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DeAhn H. Baucom, MAC, CPA, Director, Student Accounts and University Receivables
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James E. Ahy, MS, Director, Facilities Operations
Kirk Pelland, MS, Director, Grounds Services
Ray Dubose, BS, Director, Energy Services
William T. Burston Jr., BS, Director, Housekeeping Services
Bruce L. Runberg, MS Civil Eng., MS Mgmt., Associate Vice Chancellor, Facilities Planning and Construction
Steve Condin, JD, University Property Officer
Abbas Piran, MBA, Director, Engineering Information Services
Sidney W. Stone, Director, Construction Management
Anna Wu, MS, Director, Facilities Planning
Garland Burton, BS, Historically Underutilized Businesses (HUB) Coordinator
Laurie T. Charest, MPA, Associate Vice Chancellor, Human Resources
Victoria Bradley, PhD, Senior Director, HR Programs
Joe Marro, Director, HR Workforce Planning and Compensation
Judy Sladen, BA, Manager, Tar Heel Temp
Chris Chiron, MA, Director, Policy Administration
Rob Kram, MS, Director, Training and Development
Lori Allison, MS, Director, Employee Services
Noreen Montgomery, Acting Director, Benefit Program Administration
Claire Miller, MA, Senior Director, HR Services
Linc Butler, BS, Generalist Team Leader
Gena Carter, BS, Generalist Team Leader
Jessica Moore, Generalist Team Leader
Matthew Brody, MS, Senior Director, HR Planning and Systems
Scott Jackson, Project Manager, HR Project Management
Dave Turner, BA, Director, HRIS Support
Kathy Bryant, BA, HR Communications Director
Maggie Ford, Director, HR Records and Data Management
Archie W. Ervin, PhD, Associate Provost for Diversity and Multicultural Affairs
Terri C. Houston, MA, Director, On-Campus Recruitment and Support Programs
Melva “Cookie” Newsom, PhD, Director, Diversity Education and Research
Chesay Qua Evans, BA, Outreach and Support Programs Coordinator
Margaret A. Jablonski, EdD, Vice Chancellor, Student Affairs
Melissa E. Exum, PhD, Associate Vice Chancellor for Student Affairs and Dean of Students
Sarah W. Jonczak, CPM, Director of Administration, Student Affairs Office
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
Judy M. Deshotel, PhD, Director, New Students/Carolina Parent Programs
Deborah Horne, Director, Student Activities Fund Office
J. Robert Wirag, HSD, Director, Student Health Services
Marcia B. Harris, MEd, Director, University Career Services
Sue M. Gray, MPH, Director, Counseling and Wellness Services
Christopher A. Payne, PhD, Associate Vice Chancellor for Student Affairs
Larry M. Hicks, Director, University Housing and Residential Education
Daniel Reed, PhD, Vice Chancellor for Information Technology and Chief Information Officer
John Oberlin, MBA, Associate Vice Chancellor for Technology Planning and Special Projects
Paul Jones, MFA, Director, ibiblio
John Gallagher, BA, Assistant Vice Chancellor for Financial Planning and Human Resources
Ruth Martinshaw, MA, Acting Assistant Vice Chancellor for Research Computing
Audrey Ward, Assistant Vice Chancellor for IT Communications
Stephen Cornelison, BA, Acting Assistant Vice Chancellor for Enterprise Data Management
Stephanie Szakal, Assistant Vice Chancellor for Enterprise Applications
Candice Davies, BA, Director, Application Specification and Functions
Judson Knott, BSCS, Assistant Vice Chancellor for IT Infrastructure and Operations
John Streck, Assistant Vice Chancellor for IT Telecommunications
Linwood Futrelle, BS, Acting Assistant Vice Chancellor for Academic Computing
Charles Green, Assistant Vice Chancellor for IT Teaching and Learning
Priscilla Alden, Assistant Vice Chancellor for IT User Support and Engagement
Matthew G. Kupec, MEd, Vice Chancellor for University Advancement
Elizabeth Dunn, PhD, Senior Associate Vice Chancellor for Development
June Steed, MBA, Associate Vice Chancellor for Advancement Services
Andi Sobbe, BA, Director, Donor and Prospect Relations
Beth G. Braxton, BA, Director, Annual Fund
Mark Meares, BA, Director, Corporate and Foundation Relations for Academic Affairs
Helen N. Snow, MBA, Director, Corporate and Foundation Relations for Health Affairs
David Routh, BA, Director, Planned Giving
Scott Ragland, MFA, Director, Development Communications
Jean M. Vickery, BA, Associate Vice Chancellor, Information Technology
Nancy K. Davis, BA, Associate Vice Chancellor, University Relations
Lisa Katz, BA, Director, News Services
Michael McFarland, MA, Director, University Communications
H. Scott Jared, BS, Director, Web Content
Lee Kennedy, Director, University Gazette/Internal Communications
Joan Rose, BA, General Manager, WUNC(FM) Radio
Laura H. Morgan, BA, Director, University Events
Sandra Roberts, MS, Director, Visitor Services and Speakers Bureau
Jonathan Howes, MPA, Special Assistant to the Chancellor
Linda Convisor, MRP, Director, Local Relations
Linda Douglas, AB, Director, Community Relations
Carolyn Atkins, BS, Director, Stewardship

Timothy Minor, BA, Director, Director of Development for Centers and Institutes
Bernadette Gray-Little, PhD, Executive Vice Chancellor and Provost
Stephen Alred, JD, Executive Associate Provost
Carol Tresolini, PhD, Associate Provost for Academic Initiatives
Peter Coclans, PhD, Associate Provost for International Affairs
Shirley A. Ott, JD, Associate Provost and Director, Office of Scholarships and Student Aid
Sarah Michalak, MLS, Associate Provost for Libraries and University Librarian
Elmira Mangum, PhD, Associate Provost for Finance and Human Resources
Barron S. Matherly, BS, Assistant Provost for Finance
Stephen M. Farmer, MA, Assistant Provost and Director, Undergraduate Admissions
Marjorie L. Crowell, BA, Assistant Provost for International Affairs
Alice C. Peels, PhD, Assistant Provost and University Registrar
Lynn Williford, Assistant Provost and Director, Institutional Research and Assessment
Emil J. Kang, BA, Executive Director for the Arts
Gerald D. Bolas, PhD, Director, Ackland Art Museum
Martha Cox, PhD, Director, Center for Developmental Science
Lawrence G. Rowan, PhD, Director, Center for Teaching and Learning
Norman L. Loewenthal, MEd, Director, Division of Continuing Education; Director, The William and Ida Friday Continuing Education Center
Todd R. Boyette, PhD, Director, Morehead Planetarium and Science Center
Peter White, PhD, Director, North Carolina Botanical Garden
James L. Murphy, PhD, Dean, Summer School
Scott R. Daugherty, JD, Executive Director, Small Business and Technology Development Center
Douglas Crawford-Brown, PhD, Director, Carolina Environmental Program
Harry L. Watson, PhD, Director, Center for the Study of the American South
William A. Darby Jr., PhD, Director, Institute of African American Research
Joseph F. Jordan, PhD, Director, Sonja Haynes Stone Center for Black Culture and History
Donna Bickford, PhD, Director, Carolina Women's Center
Lynn W. Blanchard, PhD, Director, Carolina Center for Public Service
Madeline Levine, PhD, Interim Dean, College of Arts and Sciences and the General College
Bobbie Owen, PhD, Senior Associate Dean, Undergraduate Education
William Andrews, PhD, Senior Associate Dean, Humanities and Fine Arts
Arno Kalleberg, PhD, Senior Associate Dean, Social Sciences
Tammy McHale, MBA, CPA, Senior Associate Dean, Finance and Planning
Bruce Carney, PhD, Senior Associate Dean, Natural Sciences and Mathematics
Carolyn Cannon, MA, Associate Dean, Academic Advising
Fred Clark, PhD, Associate Dean, Academic Services
Jay Smith, PhD, Associate Dean, Undergraduate Curricula
James L. Leloudis, PhD, Associate Dean, Honors and Director, James M. Johnson Center for Undergraduate Excellence
Harold Woodard, MA, Associate Dean, Academic Counseling
James May, MA, Senior Associate Dean and Executive Director, Arts and Sciences Foundation
W. Steven Jones, MBA, Dean, Kenan-Flagler Business School
Thomas James, PhD, Dean, School of Education
Jean Folkerts, PhD, Dean, School of Journalism and Mass Communication
John Charles “Jack” Boger, JD, Dean, School of Law
José-Marie Griffiths, 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 N. Williams, DMD, Dean, School of Dentistry
William L. Roper, MD, Dean, School of Medicine
Linda R. Cronenwett, PhD, Dean, School of Nursing
Barbara K. Rimer, DPH, Dean, School of Public Health
Robert Blouin, PharmD, Dean, School of Pharmacy
Carol Jenkins, MLS, Director, Health Sciences Library
Carolyn M. Mayo, PhD, Director, North Carolina Health Careers Access Program
Tony G. Waldrop, PhD, Vice Chancellor for Research and Economic Development
Robert P. Lowman, PhD, Associate Vice Chancellor for Research
W. Mark Crowell, MRP, Associate Vice Chancellor for Economic Development and Technology Transfer
Catherine Innes, Director, Office of Technology Development
Allison Rosenberg, PhD, Associate Vice Chancellor for Research, Federal Affairs
Kenneth A. Bollen, PhD, Director, Odum Institute for Research in Social Science
Jacqueline Resnick, BS, Director, Office of Research Development
Neil Caudle, MS, Associate Vice Chancellor for Research; Director, Office of Information and Communication
James E. Peterson, PhD, Associate Vice Chancellor for Research, Office of Sponsored Research
Richard A. Luetich, PhD, Director, Institute of Marine Sciences
W. Scott Blackwood, Acting Director, Office of Sponsored Research
Donald B. Bailey Jr., PhD, Director, Frank Porter Graham Child Development Institute
David L. Harkey, Interim Director, Highway Safety Research Center
Alice S. Ammerman, DrPH, Director, Center for Health Promotion and Disease Prevention
Timothy S. Carey, MD, Director, Cecil G. Sheps Center for Health Services Research
Barbara Enniswele, PhD, Director, Carolina Population Center
Tracy M. Heenan, DVM, Institutional Animal Use Care Committee (IACUC)
Daniel K. Nelson, MS, Director, Office of Human Research Ethics
Barbara Longmire, MSN, Director, Office of Clinical Trials
Joseph M. DeSimone, PhD, Director, Institute for Advanced Materials, Nanoscience, and Technology
Carol W. Runyan, PhD, Director, Injury Prevention Research Center
Victor W. Marshal, PhD, Director, Institute on Aging
Daniel A. Reed, PhD, Director, Renaissance Computing Institute
Jessie L. White, PhD, Director, Office of Economic and Business Development
John F. Bradfield, DVM, PhD, Director, Division of Laboratory Animal Medicine
The UNC System: UNC-Chapel Hill
Administrative Board of The Graduate School

Oscar Barberin, PhD, Professor of Social Work (2007)
Victoria Baurch, PhD, Associate Professor of Biology (2009)
Bruce Fried, PhD, Professor of Health Policy and Administration (2008)
Chuanshu Ji, PhD, Professor of Statistics (2008)
Tom Kawula, PhD, Associate Professor of Microbiology (2009)
Valerie Lambert, PhD, Assistant Professor of Anthropology (2008)
Laurie Maffly-Kipp, PhD, Professor of Religious Studies (2008)
Terence McIntosh, PhD, Associate Professor of History (2008)
Robert Nicholas, PhD, Professor of Pharmacology (2008)
John Stephens, PhD, Professor of Political Science (2008)
Helen Tauchen, PhD, Professor of Economics (2008)
Beverly Taylor, PhD, Professor of English (2008)
Lorraine Taylor, PhD, Assistant Professor of Psychology (2008)
Carroll-Ann Trostan, BDS, Associate Dean, Orthodontics/Dentistry (2009)

Ruth Walden, PhD, Professor of Journalism (2008)
Julia Wood, PhD, Professor of Communication Studies (2007)

* Terms expire July 31 of the year indicated.

Student Representative
Irene Baskerville, Graduate and Professional Student Federation

Ex Officio
Sarah Michalak, PhD, Director of Academic Affairs Libraries and Associate Provost for University Libraries

The Chancellor and the Provost also are ex officio members of the Board.

The Graduate School
Linda Dykstra, PhD, Dean

Sandra H. Hoeftich, PhD, Associate Dean for interdisciplinary Education, Fellowships, and Communication

Stephanie Schmitt, MPA, Assistant Dean for Academics

Leslie Lerea, PhD, Assistant Dean for Student Affairs
The UNC System: UNC-Chapel Hill
Staff of The Graduate School

Steve Boone, Director, Office of Fellowships and Tuition Awards
Vacant, Admissions Processor
Trish Bunn, Director of Administration and Residency Manager
Natasha Chapman, Director, Minority Recruitment and Retention
Lisa Clement, Statistical Analyst
Diane Davis, Manager, Admissions Office
Linda Dykstra, Dean
Kathy Farinola, Dean's Assistant/Special Projects Coordinator
Vacant, Information Office Manager
Sandra H. Hoeflich, Associate Dean for Interdisciplinary Education, Fellowships, and Communication
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Deborah Makemson, Communications Writer
Katie Meyer, Project and Events Coordinator
Lou Anne Phelps, Admissions Processor and Enrolled Students Assistant
Brian Rybarczyk, Director of Educational Support Programs
Stephanie Schmitt, Assistant Dean for Academics
Cheryl Thomas, Director, Admissions and Student Records
Ginger Tompkins, Admissions Processor
Rachell Underhill, Fellowship Coordinator
Leslie Van Meter, Program Review/Student Services Coordinator
Scott Wilber, Systems Analyst
Nancy Wines, Enrolled Students Assistant
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.

In 1922, the graduate faculty voted, first, to vest in the Administrative Board of The Graduate School 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.

With the exception of the master of business administration (MBA), the master of accounting (MAC), 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.

Work toward advanced degrees at 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. At present, the board consists of academic and health affairs faculty representatives appointed by the chancellor upon nomination by the dean of The Graduate School.

The Summer School

The University of North Carolina at Chapel Hill established one of the first summer schools 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 the first to enroll women as university students and has continued this equal admission policy throughout its history. By 1925, records indicate that 19,983 students had enrolled in Summer School at UNC-Chapel Hill.

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. Each 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 in 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, or 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 visiting scholar'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 field 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 Martin Luther King Jr. Boulevard, 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 calendars at the Office of the University Registrar (regweb.unc.edu).
Admissions and Financial Information

General Admissions Information

Application
Application for admission can be made online at www.gradschool.unc.edu. Once an account is created, applicants may return to their application at any time to complete the application and view the current status of materials submitted.

Admission Criteria
Admission is highly competitive, and students are selected on the basis of their preparation and ability. 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 a cumulative average grade of B or better. Meeting this minimal requirement, however, does not ensure admission.

Application Due Dates
Complete fall 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 $70 fee for each program, and any program fee must be received by that program's posted admission closed deadline. The fee can be paid online by credit card, or by mailing a personal check or money order (international applicants should use an 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, pending receipt of the fee. 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:
1. permanent full-time UNC-Chapel Hill employees;
2. current McNair Scholars applying for a graduate program to begin immediately following graduation, with no breaks in enrollment from undergraduate to graduate level; and
3. U.S. citizens who are currently enrolled in a degree program with no breaks in enrollment from the point of entry at the undergraduate level, have continuously received need-based aid, and 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 2 and 3 above. The Graduate School is unable to waive the application fee for international applicants, nor can it refund fees once paid. For more information on application fee waivers, please visit www.gradschool.unc.edu/student_feewaivers.html.

Campus Safety Information
Applicants for admission will be asked several questions regarding criminal pleas, charges and convictions, academic suspensions, and military discharges. Transcripts from every college or university attended must be provided. Failure to provide complete, accurate, and truthful information will be grounds to deny or withdraw your admission, or to dismiss you after enrollment. The same actions will occur if you fail to promptly notify the Admissions Office on writing of such charges that occur at any time after you submit the application.

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 that applicants are given for responding to fall 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 either 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 practice; 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.

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. Terms of entry and deadlines are posted online at www.gradschool.unc.edu/programs.html. Admission is only valid for the term stated in the admission letter and registration for that term is required. 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 reaplication.

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 materials 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 for certain programs are submitted electronically, others must 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. Thus, recommenders 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 transcript of each must be mailed to The Graduate School, and one transcript of each must be mailed directly to the program. Transcripts that bear the statement “Issued to Student” or that do not arrive in sealed envelopes are not considered official. The Graduate School will accept unofficial or internal UNC-Chapel Hill transcripts.) International applicants must also submit a certified English translation of transcripts. If an institution’s registrar will only send transcripts directly to another institution, The Graduate School will accept and process transcripts separately. To prevent delays in review of an application, you should request transcripts before mid-year grades are posted. However, you are still responsible for ensuring that a final transcript is received, showing award of the degree. Transcripts submitted to UNC-Chapel Hill for purposes of admission 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 the Educational Testing Service) 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, contact Sylvan at [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 full admission consideration. If the UNC-Chapel Hill Graduate School is not specified as a score recipient at the time of the exam, ETS will need to send the scores to The Graduate School of the University of North Carolina at Chapel Hill (Institution Code #5816 and GMAT Code D40-HL-72).

Supplemental (Program-Specific) Application Material
Many programs require statements of purpose, supplemental applications, essays, portfolios, etc. The intended program’s Web site will list any supplemental materials required. 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 that 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 $70 for each program. The fee can be paid online by credit card, or by mailing a check (drawn on a U.S. bank) or an international 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 the Educational Testing Service) TOEFL score. The required minimum total score on the paper-based TOEFL test is 550, with a minimum of 50 in each section. For the computer-based test our minimum score is 213, with a minimum of 18 on each section. For the Internet-based test our minimum score is 79. 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 Code #5810) 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 send ETS to send the scores to The Graduate School of the University of North Carolina at Chapel Hill (Institution Code #5810). Their address is TOEFL, CN6151, 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 visas, 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 or bachelor of science, or its equivalent - based on a four-year curriculum - in a foreign institution.

Information concerning a visa, U.S. immigration requirements, or the financial certificate can be obtained by contacting the UNC-Chapel Hill Office of International Student and Scholar Services at (919)962-5661, or by visiting their Web page at oiss.unc.edu.

**Funding Opportunities**

The Graduate School offers a variety of funding opportunities to assist graduate students in funding their graduate programs 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 recommend 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 administered by The Graduate School:

**The Royster Society of Fellows**

The Royster Society of Fellows is a highly competitive fellowship 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 Caroline 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 du Pont (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**

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. These fellowships are named in honor of Joseph E. Pogue, William R. Kenan Jr., William N. Reynolds, and Mrs. Victor Humphreys.

**University Merit Assistantships**

Merit assistantships are one-year awards which provide a competitive stipend for entering master's/dotal 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 a limited number of Native American Incentive Fellowship as one means of increasing 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) students who are pursuing a doctoral degree. These non-service awards provide a competitive stipend plus tuition and student health insurance.

**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 an opportunity for advanced study within an interdisciplinary program at the University of North Carolina at Chapel Hill. Recipients 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 an 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 to society. Recent themes addressed by Scholars for Tomorrow participants have included aesthetics in society, computational sciences, global studies, and health care ethics. 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 non-service 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 Lucy Fellowship for study in France.

**Departmental Awards**

**Teaching and Research Assistantships**

The majority of assistantships available to graduate students at the University 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 by 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 a national private foundation or a 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 processes 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 consultations. 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 Fund is provided by the University to assist with some expenses necessary for the preparation of a thesis or dissertation, such as database acquisition, microfilm, special software for analyzing data, and certain other expenses. Grants may be received
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, PO. 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 studentaid.unc.edu.
Student Affairs Information

Students are at the center of the learning community at the University of North Carolina at Chapel Hill. 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 Assistant Dean for Student Affairs in The Graduate School is responsible for assisting students in a number of capacities. The office of the Assistant Dean for Student Affairs creates and implements programs and services that specifically address the needs of graduate and professional students. Some of these programs are listed below. The Assistant Dean for Student Affairs is available to all graduate and professional students as a source of counsel, information, and referral for questions involving student services, academic procedures, policies, and grievances.

The Director of Minority Recruitment and Retention develops and provides a number of programs and services throughout the year, both academic and social in nature, to assist graduate students of color with a successful transition and experience during their graduate work.

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

Grade Appeals

The procedure for grade appeals can be found in the Graduate School Handbook. Any questions regarding the grade appeals process should be directed to The Graduate School.

Orientation

The Graduate School sponsors a University-wide orientation program for new graduate and professional students to (1) acculturate them to the University community and (2) to provide information sessions on a range of topics relevant to graduate students such as funding, residency for tuition purposes, and getting to know the local area. Important reference materials and guides to the campus and Chapel Hill/Carrboro area community resources are available to students on the Graduate School Web site: gradschool.unc.edu. These resources include 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. As orientation is a continuous process throughout a student’s first year, The Graduate School schedules a number of orientation workshops throughout the fall semester on a variety of issues related to graduate students.

In addition to the Graduate School orientation, individual graduate and professional programs conduct department-based orientations for new students. Information regarding departmental orientations is available in the respective academic departmental offices.

Orientation and relocation information can be found on the Web site of The Graduate School at gradschool.unc.edu. The Graduate School Office, open year-round, is located on the second floor of Bynum Hall. Graduate School staff and the Office of the Assistant Dean for Student Affairs are available 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 to prepare them for their post-graduate careers.

The cornerstone of professional development at Carolina is a series of workshops and one-credit-hour courses. These courses cover topics designed to promote graduate students' academic, professional, and personal growth. Courses 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, is 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 of The Graduate School at: www.gradschool.unc.edu/prodev/index.html.

Graduate Student Foreign Language Proficiency Assessment

The departments of Romance Languages and Literatures, 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. The Graduate School administers registration for these 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.

Telephone: (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 members also work with leaders of a variety of extracurricular organizations.

Telephone: (919) 966-4041
Web: deansofstudents.unc.edu

Campus Y

Since its founding in 1869, 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, 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 offices in the new Student Union to learn about volunteer service and University, local, and global issues.

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

University Career Services

Services for graduate students provided by University Career Services (UCS) 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 on the Web.

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

University Career Services is located in 219 Hanes Hall. Office hours are from 8:00 a.m. to 5:00 p.m. Monday through Friday. Resource Room hours are 8:00 a.m. to 8:00 p.m. Monday through Thursday.

Telephone: (919) 962-6507
Web: careers.unc.edu

Counseling and Wellness Services

Counseling and Wellness Services (CWS), formerly Counseling and Psychological Services, provides free, confidential psychological counseling to help students solve personal, academic, and career problems. CWS 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. CWS is located on the third floor of the James A. Taylor Building.

Telephone: (919) 966-3658
Web: caps.unc.edu

Disability Services

The Department of Disability Services is responsible for ensuring that programs and facilities are accessible to all members of the University community. Students with disabilities and/or 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 and/or medical condition from an appropriate primary care provider.

Telephone: (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, the campus office that works with students with disabilities other than LD and ADHD.

Telephone: (919) 962-7227
Web: www.unc.edu/depts/lds

Housing and Residential Education

The Department of University Housing and Residential Education, 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 at Chapel Hill 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.

Telephone: (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.

Odom Village is Carolina's on-campus community for graduate students providing apartment-style housing for single graduate and undergraduates. The Village is located on south campus off of Manning Drive near the medical facilities, the Dean Smith Center, and the Kenan-Flagler Business School. Its quiet yet friendly atmosphere lends itself to graduate student interests and study.

Parking is available for graduate students on a limited basis, and a fare-free campus bus service offers several routes that connect the north, middle, and south regions of campus. Specifications for Odom Village apartments can be found on the Web at housing.unc.edu/communities/tour/sfh/sftour.html.

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 department's Web site at housing.unc.edu for additional information.

Student Family Housing

The Baity Hill and Mason Farm Communities serve as the Student Family Housing apartment complex for students with families. These one- and two-bedroom apartment communities are situated on rolling hills adjacent to the campus. The apartments are within walking distance of the campus and are served by campus and city bus routes. Rental costs compare favorably with similar area housing. These communities comprise nine buildings with 398 apartments.

The Student Family Housing community is dynamic, diverse, and energetic. A variety of programs and activities provide ample opportunities to become involved. Interested students should apply for an apartment in Baity Hill and Mason Farm Communities as far in advance of their projected enrollment date as possible. Contact the Student Family Housing Office at (919) 962-5401, or visit the department’s 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. The Department of Housing and Residential Education provides an Off-Campus Housing Posting Board as a source of assistance and reference regarding off-campus housing options. This posting board can be found on the Web at housing.unc.edu/get_room/off-campus/index.html.

International Student and Scholar Services

The Office of International Student and Scholar Services promotes international educational exchange through its services and programs. OISSS serves as the principal administrative, programming, and advising office for approximately 2,500 international students, faculty, and administrative staff at UNC-Chapel Hill, including research scholars and visiting professors. Located in Nash Hall on Fitch Street in Chapel Hill, OISSS 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, OISSS 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 center is a focal point for community service organizations, including the Host Family Program, Conversation Partners Program, Speakers’ Bureau, and International Women’s English Conversation Group. It also administers the UNC Class of ’38 Summer Study Abroad Fellowships.

Campus Health Services

Campus Health Services (CHS), located next to Kenan Stadium in the James A. Taylor 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 campus health fee for the current semester (or summer session) is eligible for health care at Campus Health Services. The fee covers the cost of most services provided by CHS 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 CHS 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 CHS.

Hours of operation vary according to the academic calendar. Please call to verify hours of operation Monday through Friday and on the weekends.
Preferred CHS 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 (919) 966-2281 for an appointment. After-hours care is available from 4:30 p.m. to 11 p.m. Monday through Friday and 8:00 a.m. to 5:00 p.m. on weekends. Physician extenders are available with medical and psychiatric backup. 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 Hospitals Emergency Department by the CHS staff when open, or by the HealthLink nurse (966-2281) when CHS is closed. Students should be aware that the campus 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 anytime 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 of 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, Chesson, and Woody Insurance Brokers, Post Office Box 3666, Chapel Hill, NC 27515, or access their Web site at www.hillchesson.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 Campus Health Services at reduced rates for students who need to complete their immunization requirement. For additional information on Campus Health Services, visit the CHS Web site at studenthealth.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 Carolina 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 co-curricular 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. Students 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 Carolina Union also offers lounge space, food services, bowling, billiards, and games for all UNC-Chapel Hill 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 of the Frank Porter Graham Student Union.)

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

**Curricular Student Organizations**

The University requires that co-curricular 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, so long as University sponsorship or endorsement is not implied or stated; the privilege of applying for funding from monies generated by 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. (Note: all information in and attached to the application is considered public information upon the granting of recognition.)

A full list of active student organizations (there are currently more than 600) is available on the Web at www.unc.edu/depts/student/student/list.htm.

**Student Government**

The Graduate and Professional Student Federation (GPSF), the official representative of graduate and professional students at the University, is organized on the basis of school, departmental, and curricula 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 automatically a member of the 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 on the Web at studentorg.unc.edu/studgov.

**I. Executive Branch of Student Government**

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 of Student Government

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 of the Student Attorney General 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 of Student Government

Student Congress. 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 of the Graduate and Professional Student Federation (GPSF) serving as non-voting ex officio members. The Speaker of the Student Congress (SC) is elected from among the representatives. Graduate and professional students and on- and off-campus undergraduates are proportionately represented in the congress. Graduate and professional students represent districts composed of several schools grouped together, while undergraduates represent geographical areas.

The Student Congress handles a vast amount of legislation; one of its primary responsibilities is to appropriate student fees for recognized student organizations. 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

Public Safety

The Office of Public Safety is located on Manning Drive on the UNC-Chapel Hill campus. Public safety administers the parking and transportation system at the University (including the issuing of parking permits) and provides for the overall safety and security of the campus. Parking permits are available for purchase on a limited basis for students. More information about parking availability can be found on the Web at www.dps.unc.edu.

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

Student Dining Service

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

Students can use their meal plans at several of the campus all-you-care-to-eat dining facilities. Top of Lenoir is an award-winning facility with an array of menu choices. The new Ramshead Dining Hall is a 30,000 square foot state-of-the-art facility that includes several restaurants and all-you-care-to-eat venues.

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 Carolina Dining Services 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 opened in a new building on South Road in fall 2004 in the heart of campus, across from the Student Union and near the Bell Tower. As a center within the University's Academic Affairs Division, SHSCBCH has a central role in supporting the University's academic mission by a strong commitment to broaden the range of intellectual discourse about African Americans and to encourage better understanding of peoples of the African diaspora and their perspectives on important social and cultural issues. The Center focuses its efforts on the interdisciplinary examination of African lives, cultures, and histories. The Stone Center works with numerous departments and units of the University to help promote interdisciplinary inquiry, as well as focused examinations from various interdisciplinary and disciplinary perspectives.

The Stone Center 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 Stone Center sponsors concerts, poetry readings, lectures, group discussions, and presentations in drama and dance. Its permanent programs include the Sonja Haynes Stone Fellowship Program and Lecture; the African Diaspora Lecture Series; the Cross-Cultural Communications Institute (CSCI); and the Sonja Haynes Stone Collegiums; and the Visiting Scholar Program. More information about the Stone Center can be found on the Web at biblio.org/shsbcch.
Academic Resources

Scholarly Journals

The University has published scholarly journals since 1884, when the 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.

*American Diplomacy.* A journal for commentary, analysis, and research on American foreign policy and its practice. www.unc.edu/depts/diplomat

*Annali d'Italianistica.* 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.unc.edu/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.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/endeavors

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

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


In addition, the University of North Carolina Press publishes the following journals (uncpress.unc.edu/default.htm):

*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, Roman, 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: uncpress.unc.edu/default.htm

Electronic Publications: www.lib.unc.edu/uncpress/epubs.shtml

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' 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

Web: www.lib.unc.edu

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 1,950 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 courtiers 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 - 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 Estelle Imprint Collection, the Bernard J. Flanagan 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 Area Health Education Centers (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 courseware, 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 an 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.hlsl.unc.edu) free of charge. From this site, users can search MEDLINE, nursing and allied health literature, international pharmaceutical 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 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.

Information Technology Services

Web: its.unc.edu

UNC-Chapel Hill's campus computing services are organized under the central office Information Technology Services (ITS). Most graduate students have their main contact with ITS through divisions that manage
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.

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 and Centers
Most research centers and institutes can be found at the following Web sites. Selected locations are detailed below.
www.unc.edu/provost/centers.html
research.unc.edu/services/offices.php

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

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 Research in Social Science
(see Odum Institute for Research in Social Science)
www.odum.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 is 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/dept/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.iog.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.

sw.unc.edu/jif

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

H. W. Odum Institute for Research in Social Science

H. 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 census 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

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/eduction.htm.

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.

www.orau.org

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/lewis

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 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 through 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 post-doctoral, pre-doctoral, 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 inter-disciplinary 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 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.

www.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 new 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/KI/commCapitalism/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 multi-disciplinary, 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 this 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 post-doctoral 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, Asthma 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

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, micro lithography, 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.nsfsc.unc.edu
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 as 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/wrkunits/3ctrgpm/gibiolog

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 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/chsr

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/~uncchv

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 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.uncvtv.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 the Study of the American South

The Center for the 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 Southerners? 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, 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 quality 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

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

Clinical Center for the Study of Development and Learning

The Clinical Center for the Study of Development and Learning (CDL) 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 dysfunction and handicaps, from learning disorders and attention deficit to mental retardation and multiple handicapping conditions.

(919) 966-5171
cdl.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.cssc.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/3ctrpm/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

The 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/fgidk/welcome.htm
Or www.med.unc.edu/fbs

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) 966-1455
vernc.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 health care delivery. The Gene Therapy Center provides important resources to academic investigators through two core facilities dedicated 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 quantities and qualities 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/gerether

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.hsrec.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.iprc.unc.edu

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

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 cell biology, immunology, molecular carcinogenesis, molecular therapeutics, 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  
cancer.med.unc.edu

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/ncsri

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 associated 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 (NCOSHERC) 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
osherc@sp.sph.unc.edu
www.sph.unc.edu/osherc

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 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/ubahcb

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/wrkunit3/3trpgm/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

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

Baity Air Engineering Laboratory

The Baity 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 conduct pilot scale experiments on water quality. The Baity Laboratory is housed in its own building adjacent to the UNC School of Public Health.

www.sph.unc.edu/baitylab

Research Laboratories of Archaeology

The Research Laboratories of Archaeology were established in 1939 to conduct studies in archaeology and related fields such as ethnography, physical anthropology, and ethnohistory. Today, the research laboratories’ interdepartmental program pursues research in such areas as North American prehistory and history (with a focus on the Native American cultures of North Carolina), Latin American prehistory, Old World archaeology, paleoethnobotany, 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.

rha.unc.edu

L. L. 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 application 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, including 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 conferences or workshops, sponsoring of visiting speakers, and sponsoring and hosting of academic conferences. The laboratory also seeks to establish and promote productive associations 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 departments and become involved in research activities.

www.unc.edu/depts/quantpsy/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 laboratories 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.

secretary@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

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

2. **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.

3. **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:

1. 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.

2. 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.

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

4. 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.

5. 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 violated the Honor Code. Such reports 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.

Procedure for Reporting

Members of the University community who wish to report possible violations of the Honor Code should contact the Student Attorney General (Room 3505 Carolina Union, 966-4084) or the Office of the Dean of Students (Room 01 Steele Building, 966-4042). Faculty members who have cause to report a student should use the online report form available at the following Web site: honors.unc.edu.

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, located in Steele Building. The text of the policy can be accessed on the Web at www.unc.edu/campus/policies/studentalcohol.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 both 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, residence halls, apartments, and common area spaces, including hallways, lounges, lobbies, stairwells, laundry, vending areas, balconies, breezeways, connectors, and porches. In addition, smokers are expected to remain at a reasonable distance from building entrances while smoking, such that second-hand smoke does not interfere with access or the rights of others. Smokers are also to dispose of cigarette and cigar butts appropriately in provided containers. Littering with cigarette butts is not acceptable. The University will make reasonable efforts to provide residential smoking rooms in campus housing in proportion to annual student demand for such spaces.

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 is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, it is therefore the University's policy not to discriminate in offering access to its educational programs and activities or with respect to employment terms and conditions on the basis of age, gender, race, color, national origin, religion, creed, disability, veteran's status or sexual orientation. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied. A copy of the University's EPA and SPA Equal Opportunity Plans is available on the University's Web site at www.unc.edu/depts/eooada. Any inquiries regarding the University's nondiscrimination policies should be brought to the attention of one of the following administrators, as noted:

Discrimination in employment and educational programs and activities: University EEO/ADA Office, CB# 9160, 100 Pettigrew Hall, Chapel Hill, N.C. 27599-9160; (919) 966-3576.

Discrimination involving students: Dean of Students, CB# 5100, 01 Steele Building, Chapel Hill, N.C. 27599-5100; (919) 966-4042.

Sex discrimination in educational programs and activities: University Title IX Office, CB# 5000, 104 Steele Building, Chapel Hill, N.C. 27599-5000; (919) 966-4045.
Discrimination in employment: Associate Vice Chancellor for Human Resources, CB# 1000, 300 South Building, Chapel Hill, N.C. 27599-3000; (919) 962-1554.

The University's 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.

**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, the Office of the Dean of Students, the counseling service in the Office of Human Resources, or online at deanofstudents.unc.edu/policies/sub.policies.improper_relations.html.

**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, the Office of the Dean of Students, the counseling service in the Office of Human Resources, or online at deanofstudents.unc.edu/policies/sub.policies.racial_harassment.html.

**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, the Office of the Dean of Students, the counseling service of the Office of Human Resources, or online at www.unc.edu/campus/policies/sexual_harass.html.

**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 this policy are available from each student's dean, director, or department chair, the Office of the Dean of Students, the counseling service of the Office of Human Resources, or online at deanofstudents.unc.edu/policies/sub.policies.sexual_orientation.html.

**Transportation and Parking**

**Parking**

Every student at UNC-Chapel Hill and UNC Hospitals who parks an automobile between 7:30 a.m. and 5 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 p.m. on weekdays, however, students may park in any unreserved space except those in resident student lots, which are reserved until 9 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 962-3593, Monday through Friday, from 7:30 a.m. to 5 p.m.

The Parking Control Division operates M.A.P., the cost-free Motorist Assistance Program. If a vehicle requires a "jump start" or if the keys are locked inside the vehicle, motorists may call for assistance at 962-8006, weekdays, 7:00 am until 12:00 midnight. During all other times (and on University holidays), the UNC Police Department should be contacted for motorist assistance at 962-8100.

**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 the use of bicycling, walking, transit, park and ride services and ridesharing. CAP requires only that a registrant commute to UNC and not be registered for a parking permit. CAP has a lounge, giveaways, prizes, discounts to local merchants, and daily benefits in relation to alternative transportation.
programs. To request a CAP brochure, call the Department of Public Safety or visit the department’s Web site at www.dps.unc.edu/cap.

Alternatives to Parking

The Web site www.redefinestravel.org provides excellent information on student transportation alternatives. RedefineTravel.org is designed to give students all the information needed to ride the bus, ride with friends, or bike to great destinations all over the Triangle. The site has a Transit Trip Planner to popular destinations, schedules for TTA, DATA, CAT and Chapel Hill Transit, information about TTA’s Express Bus to Raleigh, Bike Safety information and City Bike Maps, a Calorie Counter to show how active transportation affects health, information on student carpool options and a Calculator tool that calculates how much an individual can save by using alternative transportation.

Municipal and Regional Transit

All Chapel Hill Transit routes are fare-free. The exchange of money, coupons, or display of a bus pass is not needed when boarding. Campus “U” route and “RU” (Reverse U) shuttles run in continuous loops from 7:00 AM – 8 PM, serving nearly every area on campus.

Commuting students can join the Commuter Alternative Program and use any of the 5 Town or 4 Campus Park and Ride lots. Chapel Hill Transit provides free and quick service to and from Campus. Student CAP participants receive one 1-day temp pass per semester allowing free parking on S11 lots. In addition, if necessary, they may use UNC’s Emergency Ride Back service to get back to the Park and Ride lots or any location within Carrboro or Chapel Hill municipal boundaries. Consult the Chapel Hill Transit Guide for information on specific routes.

Regional transit (to and from RDU, Raleigh, and Durham) is available aboard Triangle Transit Authority (TTA) buses. Included in the full complement of regional service, is express service from Raleigh to UNC and from Hillsborough to UNC. For more route information, call TTA at 919-549-9999. Students who live more than 2 miles from the Bell Tower and are members of the Commuter Alternative Program can purchase a monthly TTA bus pass for $10. Purchasers of TTA bus passes can register for TTA’s Emergency Ride Home service.

Park and Ride Lots

There are five Town park and ride lots and four additional lots available to those who join UNC’s Commuter Alternative Program. Many commuting students find the park and ride to be a reliable transportation solution. Parking is free and all the lots receive free transit service. TTA also serves some of the lots. The nine lots ring the campus, and space is available on a first come first served basis. Parking at the preferred lot is usually possible, but not guaranteed as the most popular lots fill up by the end of rush hour.

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 p.m. until 3 a.m., seven nights a week (when residence halls are open) during Fall and Spring academic semesters. Students must show their UNC ONE Card to board the P2P Express. After dark, a demand-response can be accessed by students in areas which are not served by the P2P Express route.

P2P also offers fare-free demand-response transportation service to disabled students and students going to the Student Health Services 24 hours a day.

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).

Safe Ride

A student run program called “Safe Ride” aims to provide increased mobility between 11:15 PM and 2:30 AM on weekend evenings. Although it shares part of the name, this is a different program from the P2P Library Safe Ride Shuttle. There are three Safe Ride bus routes operating on Thursday, Friday and Saturday nights. They provide service between campus and many private student housing developments and other off campus destinations after Chapel Hill Transit routes service ends for the evening. More information can be found at by visiting www.unc.edu/saferide/index2.htm or emailing saferide@unc.edu.

UNC Bicycle Registration

The Department of Public Safety requires bicycle registration 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. Forms for bicycle registration are available here: www.dps.unc.edu/dps/alternatives/bikereregistration.htm or by visiting the Department of Public Safety: Cyclists who live more than 2 miles from the Bell Tower may join the Commuter Alternative Program.

Zipcar for Students 21 and Over

For students 21 and over, UNC’s carsharing program, Zipcar, provides another option. For a $20 annual fee, reimbursable in driving credits if used within 30 days, UNC’s four on-campus Zipcars can be reserved for short or long trips. Currently, UNC has two Volkswagen beetles, a Toyota Matrix station wagon and a Scion xA coupe/hatchback. Cars are reserved online or by using a toll-free phone number. The Zipcar membership card serves as the key to the vehicle, and a gas card is inside. Fuel, insurance and maintenance bills are footed by the program, and the reservation rate is $5 per hour with a $55 per day maximum fee. More information can be found by visiting www.zipcar.com/unc, dialing 866-4ZIIPCAR, or emailing info@zipcar.com.

More Information

Visit the Department of Public Safety during regular business hours (weekdays, 7:30 a.m. – 5 p.m.), in the Public Safety Building via Manning 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 Control 962-8006
- Accounts Receivable 962-6073
- Parking Appeals 962-3953
- 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 for complete information. Information about the process for obtaining a disability permit may be obtained by visiting the Department of Public Safety or the Web site at: www.dps.unc.edu/dps/disability/application_process.htm
Degrees Offered

Anthropology - MA, PhD
Art -
  History - MA, PhD
  Studio Art - MFA
Biochemistry and Biophysics - MS, PhD
Biology - MA, MS, PhD
Biomedical Engineering - MS, PhD
Business - PhD
Cell and Developmental Biology - MS, PhD
Cell and Molecular Physiology - MS, 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 and Maxillofacial Pathology - MS
  Oral and Maxillofacial 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
  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 - MS, PhD
Geography - MA, PhD
Geological Sciences - MA, MS, PhD
Germanic Languages - MA, PhD
History - MA, PhD
Human Movement Science - MS, PhD
Information and Library Science - MSIS, MLS, 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 - MS, PhD
Musicology - MA, PhD
Neurobiology - PhD
Nursing - MSN, PhD
Occupational Science - PhD
Occupational Therapy - MS
Pathology - MS, PhD
Pharmaceutical Sciences - MS, PhD
Pharmacology - MS, PhD
Philosophy - MA, PhD
Physics - MS, PhD
Political Science - MA, PhD
Psychology - MA, PhD
Public Administration - MPA
Public Health -
  Biostatistics - DrPH, MPH, MS, MSPH, PhD
  Environmental Sciences and Engineering - MPH, MS, MSEE, MSPH, PhD
  Epidemiology - MPH, PhD
  Health Behavior and Health Education - DrPH, MPH, MSPH, 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 Health Nursing - MS
Public Policy - PhD
Rehabilitation Counseling and Psychology - 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 and Operations Research - MS, PhD
Toxicology - MS, PhD
Certificate Programs

Programs have various options when developing specialized studies for post-baccalaureate, graduate, and professional students. A Certificate Program is a formal program of courses and other work (e.g., a practicum, seminar, or a field study) in a field of specialization. Like an academic degree, a Certificate Program is offered by a host academic department or other unit and is related to an academic area of study. In some disciplines, a certificate is akin to a professional credential, while in others a certificate recognizes competence in a given skill, practice, or field of study.

For additional information about certificate programs, please see: grdschool.unc.edu/academic/certificates.html.
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. Comprehensive listings of the graduate faculty may also be found online at www.unc.edu/gradrecord/faculty.html (for regular graduate faculty), www.unc.edu/gradrecord/faculty2.html (for fixed term graduate faculty) and www.unc.edu/gradrecord/faculty3.html (for special appointees to the regular graduate faculty). Within the school and departmental sections of the Graduate Record, 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 400 to 699 are for advanced undergraduates and graduates; courses numbered 700-999 are for graduates only. Beginning in Fall 2006 all course numbers have been renumbered. Course numbers will be listed according to the new numbering scale, however, the old course number will immediately follow in brackets (e.g., ENGL 401 [101]).

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. Crumley (22) Historical Ecology, State Societies, Complex Systems
  Theory, Global Environment Change, Ethnography, Ethnohistory, Archaeology of Europe
Arturo Escobar (54) Political Ecology, Anthropology of Development, Social Movements, and Science and Technology, Latin America; Colombia
Terence M. S. Evans (5) Social Anthropology, Social Theory, Phenomenology, Ethics, Philosophical Anthropology, Collectivist Settlements
Kaja Finkler (32) Medical Anthropology, Gender and Health, Economic Anthropology, Political Economy, Globalization, Mexico, Latin America
Dorothy C. Holland (16) Identity and Agency, Activism, Social Movements, History in Person, Cultural Studies, Environmental Studies, Schooling and Work, 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
Norris B. Johnson (25) Architectural, Art and Aesthetics, Religious Landscapes, Japan
Paul W. Leslie (37) Biological Anthropology, Human Ecology, Demography, Population Genetics, Reproduction, East Africa

Donald Nonini (34) Theoretical, Transnationalism, Diaspora, and Globalization; Urban Anthropology; Political-Economic Anthropology; Anthropology of the State, Cultural Politics of Ethnicity, Race, Class, Gender, and Nationality; Geographic: Chinese Populations in Southeast Asia; Economic Restructuring, Race Relations, and Local Politics in the Southern United States
James L. Peacock (11) History, Culture, Self, and Global Issues. Southeast Asia and Southeastern United States
Vincas S. Steponaitis (2) Archaeology, Political Economy, Chieftains, Quantitative Methods, Southeastern United States

Associate Professors

Brian Billman (51) Archaeology of Political Organizations, Political Economy, and Human Violence; Settlement Pattern Analysis, Household Archaeology, Heritage Preservation, Andes, and Southwestern United States
Robert E. Daniels (4) Social Anthropology, Psychological Anthropology, Systems Theory, Africa
Glenn D. Hinton (36) Folklore and Folklife, Ethnography of Communication, Belief Studies, Public Folklore, African American Expressive Culture; African Diaspora, the American South
Peter Redfield (53) Anthropology of Science and Technology, Colonial History, Ethics, Humanitarianism and Human Rights, NGOs and Transnational Experts, Europe, French Guiana, Uganda
Patricia Saway (52) Gender, Ethnography of Communication, Performance and Poetics, Local/Global Cultures, Southern United States, Latin America
C. Margaret Scarry (48) Archaeology, Paleobotany, Subsistence Economy, North America, Chieftains
Karla Slocum (56) Globalization, Social Movements, Place, Race, Political Economy, Gender, the Caribbean, North America
Margaret Wiener (47) Politics of Knowledge, History and Memory, Colonial Societies, Science Studies, Translation, Migrant Culture, Indonesia, Southeast Asia

Assistant Professors

Matthew Hull (69) Semiotics, Language, Bureaucracy and Governance, Information Technology, Urban Planning, Material Culture, Science and Technology, South Asia
Valerie Lambert (59) American Indians, Sovereignty, Tribal Nation-Building, Tribal Governance, Oklahoma
Christopher Nelson (64) History and Memory, Everyday Life, Ethnography, Critical Theory, Storytelling, Ritual and Performance, Japan and Okinawa
Charles Price (62) Black and Social Identity, Oral and Life History, Jamaica and the Anglophone Caribbean; Southern United States; Organizing and Capacity Building; Welfare and Higher Education Policies
Mark Serensen (67) Biological Anthropology, 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

Richard Fox, Cultural Anthropology, Social Theory, History of Anthropology, Research Methodology, South Asia
Lawrence Gossberg, Cultural Studies, U.S. Political Culture (1950s to present), U.S. Popular Culture (20th Century), Youth Culture, Cultural and Social Theory, Contemporary Philosophy

R. P. Stephen Davis (40) Archaeology, Computer Applications, Settlement Systems, Contact Period, Southeastern United States

Sue E. Estroff (31) Medical, Psychiatric Anthropology, Chronic Illness, Health Policy as a Cultural System, Research Ethics, Cultural Complications of Maternal-Fetal Interventions

Richard Fox, Sociocultural Anthropology, Urban Anthropology, India

Clark Larsen, Physical Anthropology, Bioarchaeology, Americas, Europe, Western Asia

John Pickles, Globalization, Modernity, Geographies of Social Change

**Adjunct Associate Professors**

Lorraine Aragon (71), Religion and States, Ethnonationalist Conflicts, Land Use and Place Identities, Arts and Intellectual Property Rights, Linguistic Anthropology, Southeast Asia, Indonesia

Michael C. Lambert (51) Political Anthropology, Economic Anthropology, Africa

John F. Scarry (49) Method and Theory, Cultural/Resource Management, Complex Societies, European-Native American Interaction

Philip Settel, Anthropology and Social Epidemiology of Infectious and Non-Infectious Diseases in Developing Countries, Qualitative Health Services Research, Theory and Measurement of Poverty and Marginalization, Demographic and Health Transitions

Debra G. Skinner (46) Culture and Human Development, Families and Childhood Disability, Sociocultural Implications of Genetic Research, Poverty Studies, Identity and Cultural Worlds, Anthropology of Schooling, Nepal, United States

**Adjunct Assistant Professors**

Nita Chantry (60) Political and Historical Anthropology, Migration, Gender, Post-Colonial Issues, South Asia, Diaspora

Kristina Fetherolf, Sociocultural Anthropology, Post-socialist Eastern Europe

Alison Greene, Gender and Globalization in Yucatan, Mexico; Anthropological Theory

Eric Karchmer, Medical Anthropology, Chinese Medicine, Post-colonial studies, Science and Power, Contemporary Chinese Society

Frederick Klaits, Medical Anthropology, Care, AIDS, Comparative Christianity, Southern Africa

William S. Lachicotte Jr. (52) Medical Institutions and Technologies, Human Services, Professions and Public Life, Practice Theories, Sociality and Identity, United States

Karelreich Reichert, Economic Anthropology, Gender and Ethnicity, Conflict Resolution and Coalition Building, Life Histories, Appalachia

Brett Riggs (60) Archaeology, Contact Studies, Southeastern United States, Ethnohistory

Barry Saunders (72) Anthropology of Biomedicine, Technologies, and Embodiment, Sandy Smith-Nonini, Medical Anthropology, Anthropology of Sustainability (Energy and Economics), Professional Knowledge, Health Policy, Military Violence and Health, International Development, Social Movements, Latino Immigrants to the United States, Central America

Laurie C. Steponaitis (35) Archaeology, Hunter-Gatherers, Regional Survey, Settlement Patterns, Coastal Adaptations, Shellfish Analysis, Eastern North America

**Research Professor**

M. Jean Black, Ethnohistory, Cultural Ecology, Ethnography, North America

**Diversity Postdoctoral Fellow**

Erch Fox Tree, Political Economy of Language, Pan-Native Cultural Identity in the Americas, Indigenous Social Movements, Mesoamerica, Maya Ethnohistory, Languages, Ideology, Feuding, Guatemala

**Research Associate Professors**

William H. Jansen III, Applied Anthropology, Behavioral Factors in Public Health, Public Policy, Health Service Delivery Systems, Health Care Seeking Behavior, Diplomacy, Culture Change, Circumpolar Peoples, South and Southeast Asia, Middle East

Scott L. H. Madery (65), Spatial Analysis, Remote Sensing, Geographic Information Systems, Global Positioning System, Modeling, Old World Prehistory

**Lecturer**

Charles Haines, South Asia, Muslim World, Globalization

**Professors Emeriti**

Donald L. Brockington, Archaeology, Latin America, Middle America

John Gunlick, Social Organization, Sex Roles and Identities, Fertility Behavior, Urban Cultures, Middle East


The Department of Anthropology offers advanced work leading to the master of arts and doctor of philosophy degrees. Students admitted into the graduate program are admitted for the PhD degree. A master's degree may be taken as part of the program leading to the PhD degree; however, a master's degree is not an essential part of the doctoral program.

Incoming graduate students are required to complete two two-semester core courses in the fall semester, Sociocultural Theory and Ethnography (ANTH 701) and Evolution and Ecology (ANTH 703), and a choice of two of three core courses in the spring semester: Sociocultural Theory and Ethnography (ANTH 702), Evolution and Ecology (ANTH 704), or Archaeological Theory (ANTH 705). Remaining courses are selected from a list of concentration courses, field research courses, and professional preparation courses. Students are expected to take at least three courses from within their chosen area of concentration or from a set of courses designated by the program in medical anthropology or the program in archaeology.

The PhD degree requires specialization in a defined area of study and the completion of an acceptable dissertation treating some problem within this area. The PhD program is quite flexible; any area and problem can be selected for study, provided they meet the approval of the adviser, the PhD committee, and the faculty. Part of the training of a professional anthropologist should include undertaking research within a culture significantly different from the candidate's own. Such research is normally the context for gathering dissertation data in sociocultural anthropology.

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 for Research in Social Science, the Curriculum of International Studies, the 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: www.anthropology.unc.edu.
Courses for Graduates and Advanced Undergraduates

400 [179] INTRODUCTION TO GENERAL LINGUISTICS (LING 400) (3).
(See LING 400 for description.)

411 [111] LABORATORY METHODS IN ARCHAEOLOGY (3). An examination of the laboratory techniques used by archaeologists to analyze artifacts and organic remains, including the analysis of stone tools, pottery, botanical remains, and bone. Billman. Scarry. Tomaskova.

412 [112] PALEOANTHROPOLOGY (3). This course traces the evolution of humans and non-human primates, including behaviors, tools, and bodies of monkeys, apes, and human hunters and gatherers, evolutionary theory, and paleoanthropological methods. Hutchinson.

413 [111A] ARCHAEOBOTANY LAB METHOD (3). A general survey of the laboratory techniques used to study and draw social and behavioral inferences from plant remains recovered from archaeological sites. Scarry.

413L ARCHAEOBOTANY LAB (1). This is a required one-hour laboratory section to be taken in conjunction with ANTH 413. Prerequisite, any course in archaeology or permission of the instructor. Scarry.

414 [114] HUMAN OSTEOLOGY (3). This course will focus on the analysis of human skeletal materials in the laboratory and in the field, with an emphasis on basic identification, age and sex estimation, and interpretive analysis. Hutchinson.

414L HUMAN OSTEOLOGY LAB (1). The laboratory analysis of human skeletal materials with an emphasis on basic identification, age and sex estimation, and interpretive analysis. Must be taken concurrently with ANTH 414. Hutchinson.

415 [111B] ZOOARCHAEOLOGY (3). This course will focus on the analysis of animal remains from archaeological sites. Introduction to laboratory methods, analytical approaches, and interpretive frameworks for zooarchaeology. Hutchinson.

415L ZOOARCHAEOLOGY LAB (1). Examination of identification techniques, quantitative methods and interpretive frameworks used to analyze animal remains recovered from archaeological sites. Corroquis, ANTH 415. Prerequisite, an archaeological course or permission of the instructor. Hutchinson.

416 [116] BIOARCHAEOLOGY (3). The study of human skeletal remains from archaeological contexts. The collection and interpretation of quantitative and qualitative data is emphasized to assess the relationship between past biology, environment, culture, and behavior. Hutchinson.

417 [111C] LITHICS (3). Laboratory techniques in stone tool research and experimental practice. Tomaskova.

417L LITHIC ANALYSIS LAB (1). This is a required one-hour laboratory section to be taken in conjunction with ANTH 417. Prerequisite, any course in archaeology or permission of the instructor. Tomaskova.

418 LAB METHODS: CERAMIC ANALYSIS (3). A survey of the laboratory techniques used by archaeologists to study and draw social and behavioral inferences from ancient pottery. Steponaitis.

421 [102] ARCHAEOLOGICAL GEOLOGY (GEOI. 421) (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, geographical 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.

428 [142] RELIGION AND ANTHROPOLOGY (FOLK 428) (RELI 428) (3). Religion studied anthropologically as a cultural, social, and psychological phenomenon in the works of classical and contemporary social thought. Peacock.

428H [142H] RELIGION AND ANTHROPOLOGY (3). Religion studied anthropologically as a cultural, social, and psychological phenomenon, in the works of classical and contemporary social thought.


435 [135] CONSCIOUSNESS AND SYMBOLS (FOLK 435) (CMPL 435) (3). This course explores consciousness through symbols. Symbols from religion, art, politics, and self are studied in social, psychological, historical, and ecological context to ascertain meanings in experience and behavior. Peacock.


437 EVOLUTIONARY MEDICINE (3). This course explores evolutionary dimensions in health and disease in human populations. Topics include biocultural and evolutionary models for the emergence of infectious and chronic diseases and cancers. Sorensen.


438H [138H] RELIGION AND NATURE (RELI 435H) (3). Concepts of nature within religions and a variety of worldwide spiritual traditions. Emphasis on sacred space, place, and pilgrimage as a vital interaction of religion and nature. Johnson.

439 POLITICAL ECOLOGY (3). Examines environmental degradation, hunger, and poverty through the lens of power relationships, particularly inequality, political and economic disenfranchisement, and discrimination. Discussion of global case studies, with a Latin American focus.

440 [140] GENDER AND CULTURE (WMST 440) (3). Cross-cultural comparison of gender roles through the life of a person, comparison to student's own experiences. Discussion of changing sex and gender roles through history in different cultures.

441 [141] THE ANTHROPOLOGY OF GENDER, HEALTH, AND ILLNESS (WMST 441) (3). The course explores cultural beliefs, practices and social conditions that influence health and sickness of women and men from a cross-cultural perspective. Finkler.


451 [151] FIELD SCHOOL IN ARCHAEOLOGY (6). Prerequisite, permission of the instructor. Intensive training in archaeological field methods and techniques. Students participate in the excavation, recovery, recording and interpretation of archaeological remains. Instruction given in survey, mapping, photography, flotation recovery, etc. V. Steponaitis.

452 [052] THE PAST IN THE PRESENT (3). Memory and history, history and politics, national narratives, the past in the present - a cross-cultural examination of ways of connecting the present and the past.
455 [155] ETHNOHISTORY (FOLK 455) (3). Integration of data from ethnographic and archaeological research with pertinent historical information. Familiarization with a wide range of sources of ethnographical data and practice in obtaining and evaluating information. Pertinent theoretical concepts are explored. Crumley.

456 [156] SMALL-SCALE SOCIETIES (3). The study of small-scale hunter-gatherer and farming societies from archaeological and ethnographic perspectives. Methods and theories for investigating economic, ecological, and social relations in such societies are explored. Scarry.


460 [160] HISTORICAL ECOLOGY (ENST 460) (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.

462 ANTHROPOLOGY, SPACE, AND POWER (3). Cross-cultural investigation of the relationships between space, power, and representations in modern urban life. Draws on different sources to examine the cultural politics of built forms, architecture, and urban planning. Nonini.

465 [165] ECONOMIC ANTHROPOLOGY (3). A comparative exploration through ethnographic and other social science sources of the sociocultural constitution of economic practices, including, but not limited to, the exchange, production and consumption in modern capitalist societies.

468 [168] STATE FORMATION (3). Prerequisite, permission of the instructor. Integration of ethnographic, 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.

469 [169] HISTORY AND ANTHROPOLOGY (3). Studies links between history and anthropology, cultures in historical perspective and history in cultural perspective, and effects of relations of power and historical interconnections on the peoples of the world. Redfield, Wiener.

470 [170] MEDICINE AND ANTHROPOLOGY (FOLK 470) (3). This course examines cultural understandings of health, illness, and medical systems from an anthropological perspective with a special focus on western medicine. Finkel.

472 [172] REFUGEES AND EXILE (3). This anthropological exploration of refugees and forced migration addresses displacement across national borders, local repercussions, and the influence of the lived experience of exile on displaced people's identity.

473 [173] ANTHROPOLOGY OF THE BODY AND THE SUBJECT (FOLK 473) (3). Prerequisite, ANTH 470 or permission of the instructor. Anthropological and historical studies of cultural constructions of bodily experience and subjectivity are reviewed, with emphasis on the genesis of the modern individual and cultural approaches to gender and sexuality.


485 [146] INTRODUCTION TO FOLKLORE (ENGL 485) (FOLK 485) (3). (See FOLK 485 for description.)

491 [191] POLITICAL ANTHROPOLOGY (3). Introduction to political anthropology. A thematically organized investigation of political processes in state societies, including state formation, with special attention to ethnographic and historical approaches. Nonini.

499 EXPERIMENTAL COURSE IN ANTHROPOLOGY IV (3). Examines selected topics from an anthropological perspective, generally to explore the potential for a course. Course description is available from the departmental office.

502 GLOBALIZATION AND TRANSNATIONALISM (3). Anthropological examination of processes of globalization and transnationalism, with special attention to transnational migration, emergence of transnational ("global") institutions, commodity flows, and dissemination of ideologies, cultural frameworks, and media imagery. Nonini.

520 [180] LINGUISTIC PHONETICS (LING 520) (3). (See LING 520 for description.)

523 [183] PHONOLOGY I (LING 523) (3). (See LING 523 for description.)


537 [137] GENDER AND PERFORMANCE (FOLK 537) (WMST 438) (3). A study of the ways in which individuals constitute themselves as gendered subjects in the contemporary context of economic and cultural globalization. Savin.

539 ENVIRONMENTAL JUSTICE (3). Course examining issues of race, poverty, and equity in the environmental movement. Cases include the siting of toxic incinerators in predominantly people-of-color communities to resource exploitation on indigenous lands. Holt.

541 [171] SOCIOLINGUISTICS (LING 541) (3). Prerequisite, LING 525, 400, or permission of the instructor. This topics course in sociolinguistics treats the microsociolinguistics of everyday interactions, dialect differences, language and sex, language and power, morality, and the politics of pornography.

542 [192] PIDGINS AND CREOLES (GERM 542) (LING 542) (3). Investigation of pidginization, creolization, settlers' dialects, and interlanguage. Case studies from Africa, Virgin Islands Dutch Creole, Pilgrim German, Yiddish, Foreign Workers' German, and Tok Pisin. Roberge.

545 [145] POLITICS OF CULTURE IN CHINA (ASIA 545) (3). Examines struggles to define culture and the nation in twentieth-century China in domains like popular culture, museums, traditional medicine, fiction film, ethnic group politics, and biography and autobiography.

567 [167] URBAN ANTHROPOLOGY (3). Comparative study of the political economy and cultural politics of populations in spaces and landscapes in cities in America and Third World undergoing globalization, economic restructuring, and transnational immigration.

574 [174] CHINESE WORLD VIEWS (RELI 574) (ASIA 574) (3). Explores the indigenous Chinese sciences and the cosmological ideas that informed them. Topics include astronomy, divination, medicine, feng shui, and political and literary theory. Chinese sources in translation are emphasized.

578 [178] THE CHINESE DIASPORA IN THE ASIA PACIFIC (ASIA 578) (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.

581 [181] HISTORICAL AND COMPARATIVE LINGUISTICS (3). (See LING 525 for description.)

585 [185] SCIENCE AND CULTURE (3). Cultural perspectives on science and technology at a global scale, including research settings and social contexts,
knowledge claims and material practice, and relations between scientific worldviews, social institutions and popular imagination.

586 [196] GARDENS OF JAPAN (ASIA 586) (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.

599 EXPERIMENTAL COURSE IN ANTHROPOLOGY V (3). Examines selected topics from an anthropological perspective, generally to explore the potential for a course. Course description is available from the departmental office.

626 AFRICAN CULT DYNAMIC (3). In-depth reading of several books and articles that consider the interaction between indigenous African traditions and intrusive colonial and post-colonial forces. Emphasis on class discussion. Short papers and individual projects. Daniels.

629 [189] LANGUAGE MINORITIES (EDUC 629). (See EDUC 629 for description).

639 BEYOND THE TRAGEDY OF THE COMMONS (3). Re-examination of the "tragedy of the commons" concept in light of recent work on environmental problems, property rights, and community-based conservation. Case studies include fishery, waterway, forest, and pasture management. Holl.

660 [166] KINSHIP REPRODUCTION, REPRODUCTIVE TECHNOLOGY, AND THE NEW GENETICS (WMST 660) (3). This course focuses on the relationship between family, kinship, new reproductive technologies and the new genetics from a cross cultural perspective. Finkler.

660H [166H] (3). KINSHIP AND REPRODUCTION (WMST 660H) (3). This course focuses on the relationship between family, kinship, new reproductive technologies and the new genetics from a cross cultural perspective.

675 [175] ETHNOGRAPHIC METHOD (FOLK 675) (3). Intensive study and practice of the core research methods of cultural and social anthropology.

682 [182] CONTEMPORARY CHINESE SOCIETY (ASIA 682) (3). Presents recent anthropological research on the People's Republic of China. In addition to social sciences sources, fictional genres are used to explore the particular modernity of Chinese society and culture.

686 [186] SCHOOLS AND DIVERSITY (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 (re)production of these divisions. Holland.

688 [188] INTERPRETATION OF RELIGIOUS ACTION (FOLK 688) (RELI 688) (3). Prerequisite, permission of the instructor. Exercises (including field work) in learning to read the primary modes of public action in religious traditions: e.g., sermons, testimonies, rituals, and prayers. Peacock.

691 [095] SENIOR HONORS PROJECT IN ANTHROPOLOGY (3). Open only to honors candidates. Permission of the instructor is required.

692 [096] SENIOR HONORS THESIS IN ANTHROPOLOGY (3). Open only to senior honors candidates. Permission of the instructor is required.

693 SENIOR HONORS THESIS IN ANTHROPOLOGY II (3). Open to honors candidates. Permission of the instructor is required. Writing of honors thesis based on independent research, under the direction of a faculty member of the department.

694 SENIOR HONORS THESIS IN ANTHROPOLOGY III (3). Open only to honors candidates. Permission of the instructor is required. Writing of honors thesis based on independent research, under the direction of a faculty member of the department.

695 SENIOR HONORS THESIS IN ANTHROPOLOGY IV (3). Open only to honors candidates. Permission of the instructor is required. Writing of honors thesis based on independent research, under the direction of a faculty member of the department.

697 [197] ETHNOGRAPHY AND CULTURE AFTER EMPIRE (3). Examination of cultural anthropology's relations to global power, past and present. Critiques and revisions of key concepts (e.g., culture) and forms of knowledge (ethnography). Wiener.

699 EXPERIMENTAL COURSE IN ANTHROPOLOGY VI (3). Examines selected topics from an anthropological perspective, generally to explore the potential for a course. Course description is available from the departmental office.

Courses for Graduates

700 [200] ADVANCED SURVEY OF ANTHROPOLOGY (3). Course description is available from the departmental office.

701 [201] THEORY AND ETHNOGRAPHY (3). Prerequisite, permission of the 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.

702 [202] SOCIOCULTURAL THEORY AND ETHNOGRAPHY (3). Prerequisite, ANTH 701 or permission of the instructor.

703 [203] EVOLUTION AND ECOLOGY (3). Prerequisite, permission of the instructor. Development of a critical understanding of anthropological approaches to evolution and ecology in paleontological, archaeological, and present-day cross-cultural contexts through the historical and comparative study of theory, method, and content.

704 [204] EVOLUTION AND ECOLOGY (3). Prerequisite, ANTH 703 or permission of the instructor.

705 [205] ARCHAEOLOGICAL THEORY (3). Review of the recent history of archaeology and contemporary approaches to archaeological interpretation.

710 [210] WRITING AND PUBLISHING IN ANTHROPOLOGY (3). A seminar on the peer review and analysis of student writing. Training in writing for academic publication.


717 [217] ADVANCED STUDIES IN ART AND ARCHITECTURE (3). Prerequisite, ANTH 334 (FOLK 334) 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.

723 [223] SEMINAR IN ANTHROPOLOGICAL LINGUISTICS (LING 723) (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.

724 [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. Daniels.


726 [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. V. Stesunaitis.

727 ARCHAEOLOGY OF NORTH AMERICA (3). The history of American Indian cultures from 10,000 BC to the time of the European colonization as recon-
728 SEMINAR IN AMERICAN ARCHAEOLOGY (3). This seminar covers current research topics in North American archaeology, with an emphasis on the eastern or southwestern United States. Specific topics may vary from year to year. V. Steponaitis.

733 ADVANCED SEMINAR IN CARIBBEAN STUDIES (3). Prerequisite, permission of the 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.

740 [240] POWER (3). Theories of power within anthropology, from Marxism, poststructuralism, feminist studies, studies in race relations, cultural studies, others. Nonini.

744 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.

749 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.

750 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. Finkler.

751 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.

752 TRANSCULTURAL PSYCHIATRY (3). Prerequisite, ANTH 525, 470, or permission of the instructor. Considers cross-cultural variations in the perception, definition of, and reaction to course and treatment of deviant behavior - especially mental disorders.

753 GENDER, SICKNESS, AND SOCIETY (WMST 753) (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.

754 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.

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


759 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.

760 SEMINAR IN HUMAN EVOLUTIONARY ECOLOGY (3). Prerequisite, permission of the 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.

765 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.

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

770 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.

788 OBSERVATION AND INTERPRETATION OF RELIGIOUS ACTION (3). Explores religious action through field work as a way of studying method and theory. Peacock.

790 DIALECTOLOGY (LING 750) (3). (See LING 790 for description.)

793 LINGUISTIC FIELD WORK I (LING 793) (3). (See LING 793 for description.)

794 LINGUISTIC FIELD WORK II (LING 794) (3). (See LING 794 for description.)

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

817 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.

818 TRAINING IN THE TEACHING OF ANTHROPOLOGY (3). Prerequisites, ANTH 817 and permission of associate chair. The trainee teaches a small class in general anthropology under supervision.

860 ART OF ETHNOGRAPHY (FOLK 860) (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. Hinson.

897 SEMINAR IN SELECTED TOPICS (1 to 4).

898 SEMINAR IN SELECTED TOPICS (1 to 4).

901 READING AND RESEARCH (1 to 4). Registration with permission of professor.

902 READING AND RESEARCH (1 to 4). Registration with permission of professor.

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

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

921 FIELD RESEARCH (3). Registration with permission of the professor. Fall and spring.
922 [322] FIELD RESEARCH (3). Registration with permission of the professor.

993 [393] MASTER'S THESIS (3 or more). Individual research in a special field under the direction of a member of the department.

994 [394] DOCTORAL DISSERTATION (3 or more). Individual research in a special field under the direction of a member of the department.

**CURRICULUM IN APPLIED AND MATERIALS SCIENCES**

SEAN WASHBURN, Chair
Lu-Chang Qin, Associate Chair for Graduate Studies
Richard Goldberg, Associate Chair for Undergraduate Studies

**Professors**
A. J. Banes (Orthopaedics) Cyromechanics, Cell-Cell Communication, Matrix Proteins
Maurice Brookhart (Chemistry) Synthetic, Mechanistic, and Structural Organometallic Chemistry, Synthesis of Highly Electrophilic Metal Carbene Complexes, and Use of Transition Metal Complexes for C-H Bond Activation
Joseph M. DeSimone (Chemistry) Polymeric Materials Synthesis
Eugene Irene (Chemistry) Ultra-thin Films, Interfaces, Surfaces, and Devices for Micro-Electronics
Stephen Kinsley (Biomedical Engineering) Electrophysiology and Biophotonics
Barry Lents (Biochemistry and Biophysics) Biomembrane Structural Features in the Role of Platelet Membranes in Blood Coagulation and the Involvement of Bilayer Microstructures in Cell Membrane Fusion
Jianping Lu (Physics and Astronomy) Theoretical Studies of Materials
Carol Lucas (Biomedical Engineering) Mathematical Modeling of Materials, Pulmonary Circulation in Newborns and Infants
Laurie E. McNeil (Physics and Astronomy) Structure-Property Relations, Optical Spectroscopy
Royce W. Murray (Chemistry) Electron Transfer Active Polymers, Metal Clusters
Michael Rabinstein (Chemistry) Molecular Models of Polymers
Edward T. Samulski (Chemistry) Liquid Crystals and Liquid Crystal Polymers
Richard Superfine (Physics and Astronomy) Interfacial O rdering of Molecules
Sein Washburn (Physics and Astronomy) Quantum Transport, Mechanical and Electrical Response.
Yue Wu (Physics and Astronomy) Quasicrystals, Nanocrystals, Nanotubes and Molecular Motion in Polymers
Oro Zhou (Physics and Astronomy) Synthesis, Properties, and Applications of Nano-Materials

**Associate Professors**
Robert G. Denna (Biomedical Engineering) Tissue Mechanics, Biomechanics, Functional Tissue Engineering
Dorothy Ertl (Chemistry) Physical and Biological Chemistry, Structure and Function of Transcription Processes
Charles Finley (Biomedical Engineering) Design and Optimization of Speech Processor and Electrode Systems Used in Cochlear Implants
Richard Goldberg (Biomedical Engineering) Assistive Technology Devices for People with Disabilities
Wenbin Lin (Chemistry) Nonlinear Optical, Supramolecular, and Chiral Porous Materials, Asymmetric Catalysis, Chiral Sensing and Separations
Nafin Malik (Physics and Astronomy) Ion Beam Modifications and Analysis
Lu-Chang Qin (Physics and Astronomy) Synthesis and Structure of Nano-Materials
Sergei S. Sheiko (Chemistry) Dynamics of Single Molecule on a Surface
Russell Taylor (Computer Science) Advanced Computer Graphics, Data Rendering, Novel Microscopy Instrumentation
Alex Trofima (Medical Chemistry) Biomolecular Informatics, Relationships Between Chemical Structures and Their Functional Properties
Frank Tsui (Physics and Astronomy) Synthesis of Artificially Structured Materials
Paul Weinhold (Orthopaedics) Orthopaedic Biomechanics, Vibration Testing of Orthopaedic Tissues and Constructs

**Assistant Professors**
Christoph Borchers (Biochemistry and Biophysics) Proteomics and Studies of Protein Structure/Function, Dynamics, and Interactions by Mass Spectrometry and Protein Chemistry

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, and 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 polyuretides 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 cnewman@email.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 School govern credit hour, residency, and examination requirements.

**Courses**

All students must pass the following courses, or must have passed their equivalents elsewhere: APPL 470, APPL 473, and MTSC 615, 720, 730, and 735. 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 the Materials Science program at UNC-Chapel Hill; 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 PhD 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 spectroscopy, 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; lVD; thermal oxidation; AFM; RBS and ion channeling; electrical measurements; nonlinear optics; low-temperature and high-pressure facilities. Facilities at North Carolina State University in Raleigh and MCNC in Research Triangle Park are also available.

Fellowships and Assistantships

Teaching assistantships (with stipends of $16,020 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

APPL 341 [110] THERMODYNAMICS AND KINETICS APPLIED TO SOLIDS (3). Prerequisite, PHYS 117, MATH 383, APPL 150. 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, and Physics staff.


MTSC 473 [143] CHEMISTRY AND PHYSICS OF SURFACES (APPL 473) (CHEM 473) (3). Prerequisite, APPL 470. 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 573 [160] INTRODUCTORY SOLID STATE PHYSICS (PHYS 573) (3). Prerequisite, PHYS 321 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. Physics staff.

MTSC 615 [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. Physics staff.

MTSC 715 [215] VISUALIZATION IN SCIENCE (COMP 685) (PHYS 715) (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 720 [102] MATERIALS FABRICATION (3). Prerequisite, permission of the instructor. Introduction of modern materials fabrication and characterization techniques. Topics include: single crystal growth, thin film deposition, synthesis of quantum dots and nanotubes/nanowires, dielectric and electron 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. Physics staff.


MTSC 755 [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 810 [242] DEVICE PHYSICS AND ELECTRONIC PROPERTIES OF SOLIDS (3). Prerequisite, PHYS 573 or APPL 470, MTSC 615, MTSC 730, or permission of the instructor. Survey of crystal structure, band structure, transport. Overview of FETs, heterostructures, light emission, dissipation, noise, integrated circuits, solar cells and ceramics. Emphasis on physical sources of device behavior.

MTSC 820 [245] OPTICAL PROPERTIES OF SOLIDS (3). Prerequisite, APPL 470 or PHYS 573, PHYS 415, or permission of the instructor. Reflection, waveguides, nonlinear optics, optical switching, photorefractor, optical storage. Optical coupling to electronic states, device applications, optical computing.

MTSC 830 [249] ION-SOLID INTERACTIONS (3). Prerequisite, APPL 470 or PHYS 573 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 840 [250] NEW TECHNOLOGIES AND DEVICE ARCHITECTURE (3). Prerequisite, PHYS 573 or APPL 470, MTSC 615, MTSC 730 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 871 [270], 872 [271] SOLID STATE PHYSICS (PHYS 871) (PHYS 872) (3 each). Prerequisite, PHYS 321 or equivalent. Topics considered include those of PHYS 573, 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. Physics staff.

MTSC 891 [200] SPECIAL TOPICS IN MATERIALS SCIENCE (2-3). Prerequisite, permission of the curriculum. Current topics in materials science, including electronic and optical materials, polymers, and biomaterials.

MTSC 992 [392] MASTER'S (NON-THESIS) (3-9).

MTSC 993 [393] MASTER'S THESIS (Var.). Prerequisite, permission of the curriculum.

MTSC 994 [394] DOCTORAL DISSERTATION (Var.). Prerequisite, permission of the curriculum.

DEPARTMENT OF ART
MARY D. SHERIFF, Chair

Professors
Jaroslav Foka (10) Crusader and European Medieval Art
Elizabeth Grebowski (68) Printmaking, Painting, Drawing
Jim Hirschfeld (82) Sculpture
Carol Mavor (94) Critical Theory, Modern Art
Yun-Dong Nam (128) Ceramic Sculpture
Mary Sherifff (56) Eighteenth- and Nineteenth-Century Art, Gender Studies
Elizaveta Shevchenko (118) Mixed Media
Mary Sturgeon (31) Ancient Art, Archaeology
Dennis Zaborowski (15) Painting, Drawing

Associate Professors
Pika Ghosh (144) South Asian Art
Michael D. Harris (131) African, African American Art
Juan Logan (155) Painting, Mixed Media
Mary Pardo (67) Italian Renaissance
Dorothea Verkerk (123) Late Antique, Celtic, Early Medieval

Assistant Professors
Claire Anderson (170) Islamic Art
Carol Magee (168) African, African American, American Art
Kimowani McLain (152) Mixed Media
Jeff Whetsone (154) Photography
Lyneise Williams (169) African, African American, American Art

Lecturer
Susan Harbage Page (165) Photography

Adjunct Professor
Timothy Riggs (65) Sixteenth-, Seventeenth-, and Eighteenth-Century Print (Curator of Collections, Ackland Art Museum)

Adjunct Associate Professors
Barbara Marilsky (139) Curator of Exhibitions, Ackland Museum
Mary Ellen Sokes, Curator of Ancient Art, North Carolina Museum of Art (NCMA)

David H. Steel Jr., Curator of European Art, NCMA
Denis P. Weller, Associate Curator of Northern European Art, NCMA
Carolyn Wood (114) Italian Baroque Art, Ackland Art Museum

Adjunct Assistant Professors
Carolyn Almendinger (161) Educator for University Audiences, Ackland Art Museum
John Coffey, Deputy Director for Art, NCMA

Adjunct Instructor
Evelyn Koehline (106) Conservator of Art on Paper, Ackland Art Museum

Professors Emeriti
Robert Barnard
James Gadsden
Frances Huetter
Sam Immerwahr
J. Richard Judson
Richard Kinnard
Arthur Marks
Kenneth Nes
Jerry Noe
Marvin Saltman

For those considering professional careers as art historians (teaching and research), critics, or museum or gallery professionals, the Department of Art 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. S. Lowe 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 S. Lowe Art Library collection provides a computer terminal for cataloging and houses the reserve holdings for Art Department courses. Graduate students have access to the departmental visual resources library, which has current holdings of 225,000 slides, 15,750 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 (https://gradapp.unc.edu/grad/DEFAULT.ASP). 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 gradschool.unc.edu/applicant_dom.html#app (see last paragraph under Mailing Instructions) 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. Ten 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 envelope with sufficient...
return postage. The Graduate Record Exam (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 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, entering candidates must have taken a minimum of twenty-one semester hours in art history, archaeology, cultural anthropology, or aesthetics.

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 are earned as independent study and critiqued under the direction of a resident professor advisor. 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. Students may have representation of faculty on the thesis committee from outside the Department of Art. 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, the Studio Art 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 medium 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, but suggests that any choices made must be considered as part of the students' intellectual and aesthetic explorations.

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 are Master's Thesis, taken in the final semester. The thesis hours basically constitute the preparation of the thesis exhibition and the writing of 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 department's 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 semester basis. 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 (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 750) during their first semester. Of the remaining eight courses, at least four must be 900-level seminars. The other four can be 400 to 700-level courses, although students are encouraged to take as many 900-level courses as possible. At least four of the 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, if they have passed the MA exam, students must sign up for ART 993 (thesis registration) and ART 992 (thesis writing seminar). By 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 602 or French 602 (graduate reading courses offered by the departments of Germanic Languages and Romance Languages, respectively).

At the start of the third semester, students must take the MA exam.
Students will not be allowed to register for ART 993 or ART 992 until they have passed the exam.

Master's 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 adviser plus two other readers. Two of the three must be permanent Art History faculty members.) The master's thesis must be 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 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 900-level seminars, and the final course must be ART 994 (Dissertation Registration). Students sign up for ART 994 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 (minor department) such as medieval studies, communication studies, women's studies, or English, and will require an additional semester of course work. 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 by passing GERM 602 or FREN 602.

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 994).

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 finished dissertation.

A doctoral candidate 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 studies for 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 non-service awards. Students desiring financial aid should consult as early as possible the Office of Scholarships and Student Aid, CCB 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.

Art History

Courses for Graduates and Advanced Undergraduates

460 [193] GREEK PAINTING (CLAR 460) (3). Sturgeon.
466 [153] HISTORY OF ILLUMINATED MANUSCRIPTS (3). Folda, Verkerk.
552 [185] THE LITERATURE OF ART (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 upon 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.

680 [296] ROMAN SCULPTURE (CLAR 680) (3).
683 [299] ETRUSCAN ART (CLAR 683) (3).
750 [276] ADVANCED READINGS TOPICS IN THE HISTORY OF ART (3).
763 [201] MEDIEVAL STUDIES (3). Folda, Verkerk.
GREG TOPOGRAPHY (CLAR 794) (3).
797 (297) ROMAN PAINTING (CLAR 797) (3).
798 (298) ROMAN TOPOGRAPHY (CLAR 798) (3).
910 (310) SEMINAR IN ARCHITECTURE (3).
950 (301) TOPICS IN THE HISTORY OF ART (3). Staff.
952 (378) SEMINAR IN MUSEUM STUDIES (3).
955 (360) SOUTH ASIAN ART (3). Ghosh.
957 (359) SEMINAR IN AFRICAN ART (3). Harris.
960 (358) SEMINAR IN ANCIENT ART (CLAR 960) (3). Sturgeon.
961 (350) SEMINAR IN MEDIEVAL ART (3). Folda.
962 (351) SEMINAR IN MEDIEVAL ART (3). Verkerk.
970 (352) SEMINAR IN RENAISSANCE ART (3). Pardo.
971 (353) SEMINAR IN RENAISSANCE (3). Pardo.
972 (354) SEMINAR IN BAROQUE ART (3).
980 (357) SEMINAR IN MODERN ART (3). Mavor, Sireif, Harris.
981 (355) SEMINAR IN NINETEENTH-CENTURY ART (3). Sireif.
982 (356) SEMINAR IN AMERICAN ART (3). Marks, Harris.
992 (280) MASTER'S THESIS WRITING SEMINAR (3).
993 (393) MASTER'S THESIS (3 or more).
994 (394) DOCTORAL DISSERTATION (3 or more).

Studio Art

Courses for Graduates

700 [230] GRADUATE STUDIO ART SEMINAR (3).
701 [231]/702 [232] TA PRACTICUM (3).
710 [240] GRADUATE STUDIO (Var).
713 [241] GRADUATE SCULPTURE (Var).
718 [242] GRADUATE PRINTMAKING (Var).
720 [250] GRADUATE CRITIQUE (2).
993 [393] MASTER'S THESIS (3 or more).

DEPARTMENT OF BIOCHEMISTRY AND BIOPHYSICS

HENRIK DOHLMAN, Interim Chair

Proфессор
Sharon Campbell (18) NMR Spectroscopy, Structure and Regulation of Proteins Involved in Ras-Mediated Cell Signaling
Michael Caplow (16) Chemistry of the Micronutile 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
Beverly Errede (144) Function and Regulation of MAP-Kinase Activation Pathways in Saccharomyces cerevisiae
Jack Griffin (41) Architecture of DNA-Protein Complexes Involved in Replication, Repair, and Telomere Maintenance, Electron Microscopy
Hengming Ke (50) X-ray Crystallography, Structure and Function of Biologically Important Proteins such as Phosphodiesterase and Molecular Chaperone System
Barry R. Lentz (62) Biomembrane Structure and its Relationship to Function, Plastic Membranes in Blood Coagulation, Membrane Fusion, Liposomes
Patricia F. Mannes (68) Mechanisms of Cell Signaling and Adhesion, Axon Guidance and Synaptic Plasticity
William F. Marzullo (69) Control of Gene Activity, Cell-Cycle Regulation in Early Embryos, Control of Expression of Histone mRNA
Gerhard M. Weissman (79) Intracellular Ca2+ Signaling and Regulation of Ion Channels in Striated Muscle
Gary Fiebig (99) Protein Structure/Function Using 2-D D NMR
Aziz Sancar (105) DNA Repair and Cancer, Structure and Function of DNA Repair Enzymes, Molecular Neurobiology, Reaction Mechanism of Human Blue-Light Photoreceptor
Gwendalyn 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. Swartlut (120) Molecular Biology of HIV, Resistance to HIV Protease Inhibitor
Michael D. Topal (126) Protein-DNA Recognition, Genomic Instability
Thomas W. Trut (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 Proenzymes by Transformed Cells
Howard M. Fried (39) Cell and Molecular Biology, Mechanisms of Nuclear-Cytoplasmic Transport, Mechanisms of RNA-Protein Recognition
Dale Ramsden (108) Mechanism of V(DJ) Recombination, End-Joining Pathway for Repair of DNA Double Strand Breaks
John Sandel (117) Protein Crystallography and Signal Transduction
Yi Zhang (138) 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
Jean Cook (150) Regulation of DNA Replication in Mammalian Cells
Lyndon Cooper (21) Osteoblast Responses to Physiological Stress: Characterization of the Heat Shock Response and Mechanoschemical 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-nuclear Acid Complexes
Brian Straf (120) Mechanisms of Chromatin-Mediated Gene Transcription

Research Professors

David G. Kaufman (53) Cellular and Molecular Mechanisms of Cancer Development, Epithelial Cell- Stromal Cell Interactions, Cell-Cycle Influences on Carcinogenesis
Ariel D. Toews (125) Neurochemistry, Neurotoxicology: Metabolism and Gene Expression during Demethylation and Remethylation, Molecular Biology of Cholesterol Metabolism and Trafficking

Professors Emeriti

Michael K. Berkut
Edward B. Glassman
Dr. Jan Hermans
David J. Holbrook Jr.
William Henry Pearlman
Ralph Penzias
Howard A. Schneider
George K. Summer
Robert H. Wagner
James R. White
John E. Wilson

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 six courses: BIOC 601, 631, 632, 643, 644, 655, or any three of the physical biochemistry modules (BIOC 650-653, 660-678). In addition, all students take a special seminar course (BIOC 701) and select a minimum of three laboratory rotations (BIOC 702). These four core courses can be completed during the first year when a student has all prerequisites. A scientific writing course, BIOC 712, 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 MD/PhD program are required to complete two of the following courses (six credit hours): BIOC 601, 631, 632, 643, 644, 655, or any three of the physical biochemistry modules (BIOC 650-653, 660-678), as well as BIOC 701 (three credit hours), two rotations in BIOC 702 (four credit hours), and BIOC 712 (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 a 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 a 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 2005 students received a stipend of $22,000 plus in-state tuition and fees. Medical insurance was also provided. Nonresidents with predocctoral 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/wrkunits/2depts/biochem. Applicants should apply online at 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: www.med.unc.edu/wrkunits/2depts/biochem.

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 Evans & Sutherland PS350) and high speed minisupercomputers are available within the department.

Courses for Graduates and Advanced Undergraduates

402 [102] UNDERGRADUATE RESEARCH IN BIOCHEMISTRY (1-3). Prerequisites, an overall G.P.A. of 3.0 and permission of the 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 electives, or other course requirements of another department. A written report is required in each term. Fall and spring. Fried, staff.

442 [142] BIOCHEMICAL TOXICOLOGY (ENV 442) (TOX 442) (3). Prerequisites, CHEM 430 or equivalent, and one additional biochemistry course (or permission of the course director). Biochemical actions of toxicants, and assessment of cellular damage by biochemical measurements. Course intended primarily for graduate students. Spring. Harper (course director).

505 [105] MOLECULAR BIOLOGY (GNET 505) (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. Pavelk, Van Dyke, Xiong.

601 [104] ENZYME PROPERTIES, MECHANISMS, AND REGULATION (3). Prerequisite, CHEM 430 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.

631 [110] ADVANCED MOLECULAR BIOLOGY I (BIOL 631) (GNET 631) (MICRO 631) (PHCO 631) (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 structure, replication, recombination, repair, and genome fluidity. Fall. Griffith, Matson, A. Suncan.

632 [111] ADVANCED MOLECULAR BIOLOGY II (BIOL 632) (GNET 632) (MICRO 632) (PHCO 632) (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, Marzluff, Strahl.

643 [117] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (BIOL 642) (MICRO 643) (PHCO 643) (2 or more). Prerequisites, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure and function. Fall. Meissner, staff.

644 [118] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (BIOL 644) (MICRO 644) (PHCO 644) (2 or more). Prerequisites, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Spring. Cox, staff.

650 [144] MACROMOLECULAR THERMODYNAMICS (1). Prerequisites, CHEM 430 and two semesters of physical chemistry or permission of the instructor. Basic molecular models and their use in developing statistical descriptions of macromolecular function. Fall. Lenz.

651 [145] MACROMOLECULAR STRUCTURE AND DYNAMICS (1). Prerequisites, CHEM 430 and two semesters of physical chemistry or permission of the instructor. Macromolecules as viewed with modern computational methods. Fall. Sondek (course director), Temple. Lenz.

652 [146] MACROMOLECULAR EQUILIBRIA (1). Prerequisites, CHEM 430 and two semesters of physical chemistry or permission of the instructor. Stability of macromolecules and their complexes with other molecules. Fall. Herman.

653 [147] MACROMOLECULAR SPECTROSCOPY (1). Prerequisites, CHEM 430 and two semesters of physical chemistry or permission of the instructor. Principles of UV, IR, Raman, fluorescence, and spin resonance spectroscopies; applications to the study of macromolecules and membranes. Spring. Lenz.

655 [134] CASE STUDIES IN STRUCTURAL MOLECULAR BIOLOGY (3). Prerequisite, CHEM 430 or equivalent. Principles of macromolecular structure and function with emphasis on proteins, molecular assemblies, enzyme mechanisms, and ATP enzymology. Spring. Carter.

660 [150a] INTRODUCTION TO LIGHT MICROSCOPY (1). Prerequisites, BIOC 650-653 or permission of the course director. Fundamentals of optics and light microscope design for the novice student. Spring (even-numbered years). Salmon (course director).

661 [150b] ADVANCED TOPICS IN IMAGING (2). Prerequisites, BIOC 650-653 or permission of the 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-numbered years). Costello (course director), Rice, Jacobson, Salmon, Superfine.

662 [151] MACROMOLECULAR INTERACTIONS (1). Prerequisites, BIOC 650-653 or permission of the 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. Pavelk (course director), Tripathi.

663A [152] MACROMOLECULAR NMR THEORY (1). Prerequisite, BIOC 650-653 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 (BIOC 152L). Spring. Campbell (course director), Pavelk, Young.

663B [152L] MACROMOLECULAR NMR PRACTICE (1). Prerequisite, BIOC 653 or permission of the course director. Lab section for BIOC 152. Spring. Campbell (course director), Pavelk, Young.


667 [157] MACROMOLECULAR CRYSTALLOGRAPHIC METHODS (CHEM 233) (2). Prerequisite, BIOC 666 or permission of the course director. A combined lecture/laboratory workshop for serious students of protein crystallography. Spring (odd-numbered years). Collins (course director), Redinbo, Carter, Sondek.

668 [154] PRINCIPLES OF AND SIMULATION OF MACROMOLECULAR DYNAMICS (1). Prerequisites, BIOC 650-653 or permission of the 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-numbered years). Hermans (course director), Tropsha.

670 [156] BIOMOLECULAR INFORMATICS (1). Prerequisites, BIOC 650-653 or permission of the instructor. A combined workshop/distance learning course introducing the methods and principles of biological data management as this relates to macromolecular sequence analysis. Spring. Vaismor.

673 [158] PROTEOMICS, PROTEIN IDENTIFICATION AND CHARACTERIZATION BY MASS SPECTROMETRY (1). Prerequisite, BIOC 650-653 or one semester of physical chemistry or permission of the instructor. A lecture module that introduces students to the basics of mass spectrometry as applied to protein science. Spring. Borchers (course director).
Courses for Graduates

701 [205] RESEARCH TOPICS IN BIOCHEMISTRY (3). Prerequisites: CHEM 430 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 and Fried, staff.

702 [207] ADVANCED BIOCHEMISTRY LABORATORY (2 or 4). Prerequisite: CHEM 430 or equivalent. Permission of the department required except for departmental majors. Designed to introduce the student to research methods. Minor investigative problems are conducted with advice and guidance of the staff. May be repeated two or more semesters for credit. Hours and credit to be arranged. Fall. Staff.

703 [207] ADVANCED BIOCHEMISTRY LABORATORY (2 or 4). Prerequisite: CHEM 430 or equivalent. Permission of the department required except for departmental majors. Designed to introduce the student to research methods. Minor investigative problems are conducted with advice and guidance of the staff. May be repeated two or more semesters for credit. Hours and credit to be arranged. Spring. Staff.

704 [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. Lenz, staff.

705 [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. Minor investigative projects are conducted with advice and guidance of the staff. May be repeated two or more semesters for credit. Hours and credit to be arranged. Fall and spring. Staff.

711 [211] RESEARCH CONCEPTS IN BIOCHEMISTRY (2). Prerequisite, master's candidate in biochemistry and biophysics. A series of lectures and exercises on formulating a research plan to attack a specific scientific problem, and on presenting the research plan in the form of a grant proposal. Fall. G. Sancar (course director), staff.

712 [212] SCIENTIFIC WRITING (3). Prerequisite, doctoral candidate in biochemistry and biophysics. A course of lectures and workshops on the principles of clear scientific exposition with emphasis on the design and preparation of research grants. Fall. G. Sancar (course director), staff.

715 SCIENTIFIC PRESENTATION (1). Senior graduate students present original research results as a formal seminar. Feedback on presentation effectiveness and style will be provided by faculty instructors and classmates. Fall. Cook (co-director), Sreahl (co-director), Kuhlman and Dolkhanyan.

721 [221] CELL REGULATION BY UBQUITINATION (PHCO 721B) (2). Prerequisite, two semesters of biochemistry. Lecture and literature-based discussion course on ubiquitin-mediated regulation of hormone receptor signaling, trafficking, and degradation. Spring (even-numbered years). Dohlman.

722A [222A] CELLULAR AND MOLECULAR NEUROBIOLOGY: INTRODUCTION (NBIO 722A) (PHCO 722A) (PHYI 722A) (2). Prerequisite, permission of the course director. Introductory section covers basic neurobiology, including neuronal cell biology, action potentials, synaptic potentials, molecular biology, and neuroanatomy. Course meets for four weeks with six lecture hours per week. Fall. Stuart.

722B [222B] CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-RECEPTORS (NBIO 722B) (PHCO 722B) (PHYI 722B) (2). Prerequisite, permission of the 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.

722C [222C] CELLULAR AND MOLECULAR NEUROBIOLOGY: ELECTRICAL SIGNALING (NBIO 722C) (PHCO 722C) (PHYI 722C) (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 coding. Course meets for five weeks with six lecture hours per week. Fall. Stuart.

723A [223A] CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-INTRACELLULAR SIGNALING (NBIO 723A) (PHCO 723A) (PHYI 723A) (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 tyrosine kinases. Course meets for five weeks with six lecture hours per week. Spring. Neurobiology faculty.

723B [223B] CELLULAR AND MOLECULAR NEUROBIOLOGY: PRESYNAPTIC MECHANISMS AND SYNAPTIC PLASTICITY (NBIO 723B) (PHCO 723B) (PHYI 723B) (2). Prerequisite, permission of the 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.

801 [241] SEMINAR ON SPECIAL TOPICS IN BIOCHEMICAL RESEARCH (2). Prerequisites, two semesters of biochemistry. Covers currently active and productive areas of biochemical research. Specific subjects will be announced. May be repeated for credit. (Either semester as announced.) Staff.

802 [244] SEMINAR IN THE PHASE PROBLEM IN X-RAY CRYSTALLOGRAPHY (2). Prerequisite, permission of the instructor. Image formation is treated from a quite general point of view, drawing from Fourier transform methods used in X-ray crystallography, homomorphic replacement, multiple wavelength anomalous scattering, and Bayesian direct methods are covered. One two-hour seminar a week. Spring (odd-numbered years.) Carter.


805 [273] MOLECULAR MODELING (MEDC 805) (3). Prerequisites: MATH 231 and 232, CHEM 481. Introduction to computer-assisted molecular design, techniques, and theory with an emphasis on the practical use of molecular mechanics and quantum mechanics programs. Fall. Troppola (coordinator).

806 [276] MACROMOLECULAR MODELING (MEDC 806) (3). Prerequisites, CHEM 430 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. Trocha (coordinator), Staff.

807 [254] SEMINAR IN CELLULAR RESPONSES TO DNA DAMAGE (3).
Prerequisites, graduate-level courses (one each) 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. Sanz.

901, 902 [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.

993 [393] MASTER'S THESIS (Var.). Staff.

994 [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, Immunoglobulin Gene Expression
Victoria L. Bauch, Molecular Basis of Development
Kerry S. Bloom, Molecular Genetics
W. E. Bollenbacher, Invertebrate Neuroendocrinology
Jeffrey L. Dangl, Genetic and Molecular Analysis of Disease Resistance
J. Alan Feduccia, Vertebrate Evolution and Paleontology
Patricia G. Gensel, Paleobotany and Morphology
Lawrence L. Gilbert, Developmental Insect Physiology, Neuroendocrinology, and Biochemistry
Albert K. Harris, Morphogenesis and Embryology
Alan M. Jones, Plant Molecular and Cellular Biology
William M. Kiet, Functional Morphology of Invertebrates, Biomechanics
Joel G. Kingsolver, Evolutionary Ecology and Physiological Ecology
Kenneth J. Lohmann, Neuroendocrinology and Invertebrate Zoology
William P. Marzluff, Transcriptional and Posttranscriptional Regulation of RNA Metabolism, Cell Cycle Regulation during Development
Ann G. Matthysse, Molecular Biology and Plant Pathology
Steven W. Matson, Molecular Biology and Biochemistry
Robert K. Peet, Plant Ecology
Charles H. Peterson, Marine Ecology
Mark A. Peifer, Developmental Genetics
Edward D. Salmon, Cell Biology
Darrel W. Stafford, Developmental Biochemistry
Peter S. White, Plant Ecology
R. Haven Wiley, Animal Behavior

Associate Professors
Joseph J. Kieber, Plant Cell Biology
Gustavo P. Maron, Molecular Genetics of Drosophila
David Pfennig, Behavioral Ecology and Evolutionary Biology
Patricia C. Pulkki, Molecular Genetics
Jason W. Reed, Light Signal Transduction in Plants
Seth K. Reitz, Community Ecology, Stream Ecology
Lillie L. Searles, Molecular Biology

Assistant Professors
Shawn C. Ahmed, Telomeres, DNA Damage and Germine Immortality
Christina L. Burch, Experimental Evolution of Viruses

Gregory P. Copenhaver, Plant Genome Biology, Recombination, Centromeres
Robert E. Goldstein, Generation of Cell Diversity in Development
Corbin D. Jones, Evolutionary Genetics and Genomics
Jason D. Lieb, Understanding Specificity and Function in Protein-Genome Interactions
Sarah Liljegren, Molecular Genetic Analysis of Flower Development
Charles Mitchell, Disease Ecology
Steven Rogers, Cytoskeletal Filaments
Karin S. Pfennig, Ecology, Behavior, and Evolution
Jeff Sekelsky, Meiotic Recombination, DNA Repair
Maria R. Servedio, Evolutionary Theory
Keith Sockman, Neuroendocrine Control of Reproductive Flexibility
Todd J. Vision, Evolutionary and Computational Genetics

Associated Faculty
Stephen T. Crews, Molecular Genetics
Frank L. Conlon, Xenopus, Mesoderm, Heart, Thorax Genes
Brian K. Kay, Molecular Recognition
Wayne W. Linder, Molecular Biology
Rogers McEaugh, Plant Systematics
Michael A. Resnick, Molecular Genetics
Gary Wineberger, Reproductive and Developmental Toxicology
R. E. Wyatt, Ecological Evolution, Plant Reproduction

Professors Emeriti
Edward G. Barry
C. Ritchie Bell
Aristotle J. Demmas
Nelson G. Haintson
Max H. Hommersand
William J. Koch
H. Eugene Lehman
Jimmy R. Masey
Elizabeth A. McManus
Donald W. Mitch
Helmut C. Mueller
Clifford R. Parks
Albert E. Radford
Tom K. Scott
Alan E. Stiver

The Department of Biology offers a program of study leading to a doctoral degree of philosophy in biology. Master's degrees are only received by those students that have progressed far enough in the PhD program, but cannot complete the program. 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) cytology and cell biology (with emphasis on mitotic mechanisms, histochromy, 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 study 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 ecosystem 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, neuroethology, 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, symposium 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 (O.T.S.). Financial support is available for students attending O.T.S. 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 Alma Holland Beers Scholarships are awarded annually to support summer research of students in botany. They are one-half of the cost of tuition.
- The William Chambers Coker Fellowship is awarded annually to a student or students in the final year of a research project at a university.
- The Mrs. W. C. Coker Fellowship is awarded annually to a student in the first year of graduate study in plant biology. This is also a one-half of the cost of tuition and fees.
- The H. V. Wilson Marine Scholarship is awarded annually for summer work at a marine laboratory. It is also a one-half of the cost of tuition.

**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.

**321 [124] INTRODUCTION TO IMMUNOLOGY (3).** Prerequisites, BIOL 202, 205, and permission of the instructor. This course provides a general overview of the immune system, including the function of the immune system, and the role of the immune system. It is also a one-half of the cost of tuition and fees.

**324 [135] MOLECULAR BASIS OF DISEASE (3).** Prerequisites, BIOL 202 and BIOL 205, or permission of the 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. Bollenbacher, Weintraub.

**350 [126] OCEANOGRAPHY (MASC 401) (ENVR 417) (GEOL 403) (3).** Prerequisite: major in a natural science or at least two college-level courses in physical sciences. The origin of ocean basins, chemistry and dynamics of seawater, biological communities and processes, the sedimentary record, and the history of the ocean. Term paper. Intended for students with college science background; others should see Geology 12. Three lecture hours a week. Fall. Neumann. Spring, staff (Marine Sciences).

**422 [108] MICROBIOLOGY (3).** Prerequisite, BIOL 202 or consent of instructor. Bacterial, fungal, 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. Mathysse.

**422L [108L] MICROBIOLOGY LABORATORY (1 or 2).** Prerequisite or corequisite, BIOL 422. Sterile technique, bacterial growth and physiology, bacterial genetics, bacteriophage, and bacterial diversity. One or two laboratory hours per week. Fall. Mathysse.

**423L [163] LABORATORY EXPERIMENTS IN GENETICS (4).** Prerequisite, BIOL 202. Experiments using organisms from bacteria to Drosophila, higher plants, and man to study organismal and molecular genetics. One lecture hour and four laboratory hours a week. Spring, Grant.
424 [115] STRATEGIES OF HOST-MICROBE INTERACTIONS (3).
Prerequisites, BIOL 205 and 422, 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.

425 [122] HUMAN GENETICS (GNET 425) (3). Prerequisite, BIOL 202. 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. Maroni.

426 [134] BIOLOGY OF BLOOD DISEASES (PATH 426) (3). Prerequisite, BIOL 205 or permission of the instructor. An introduction to the biology and pathophysiology of blood and the molecular mechanisms of some human diseases, including malignant neoplasms, anemias, hemophilies, thromboplasias, atherosclerosis, and viral infections. Fall. Church.

427 [127] HUMAN POPULATION GENETICS (3).

429 [125] CLINICAL AND COUNSELING ASPECTS OF HUMAN GENETICS (GNET 435) (3). Prerequisites, BIOL 122 and permission of the 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.

430 [130] INTRODUCTION TO BIOLOGICAL CHEMISTRY (CHEM 430) (3). Prerequisites, CHEM 262, 262L, BIOL 101. 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.

434 [164] MOLECULAR BIOLOGY (3). Prerequisites or corequisites, CHEM 261 and BIOL 202. Emphasis is on prekaryotic molecular biology, plasmids, phage, and single-strand phages. Three lecture hours a week. Fall and spring. Searles, Stafford.

435 [171] MOLECULAR BIOLOGY TECHNIQUES (4). Prerequisite, permission of the instructor; BIOL 434 recommended. Experiments with bacterial phage, nucleic acid isolation and properties, recombinant DNA techniques and DNA sequencing. Additional hours in laboratory are necessary to complete assignments. Fall. Stafford.

436 [131] ENDOCRINOLOGY (3). Prerequisite, BIOL 205. 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 interendocrine relationships are also discussed. Three lecture hours a week. Spring. Bollenbacher.

438 [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.)

439 [165] INTRODUCTION TO SIGNAL TRANSDUCTION (3). Prerequisites, BIOL 101, 202, 205. 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. Kiefer.

441 [104] VERTEBRATE EMBRYOLOGY (3). Prerequisite, BIOL 252 or 205. 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.

441L [104L] VERTEBRATE EMBRYOLOGY LABORATORY (1). Prerequisite or corequisite, BIOL 441. Descriptive and experimental aspects of vertebrate development. Four to six laboratory hours a week. Spring. Harris.

443 [144] DEVELOPMENTAL BIOLOGY (3). Prerequisites, BIOL 202, 205 and CHEM 261. 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, Pfeifer.

445 [169] CANCER BIOLOGY (3). Prerequisites, BIOL 202, 205. Selected examples will be used to illustrate how basic research allows us to understand the mechanistic basis of cancer and how these insights offer hope for new treatments. Three lecture hours per week. Spring. Duronio, Pfeifer.

446 [166] UNSOLVED PROBLEMS IN CELLULAR BIOLOGY (3).
Prerequisite, BIOL 205. A survey of areas of current interest in cellular biology, 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.


448 [167] ADVANCED CELL BIOLOGY (3). Prerequisite, BIOL 205. 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. Kiefer.

450 [121] INTRODUCTION TO NEUROBIOLOGY (3).
Prerequisite, BIOL 202 and 205. Survey of nervous system development and function. Three lecture hours a week. Spring. Bollenbacher.

451 [120] COMPARATIVE PHYSIOLOGY (3).
Prerequisites, BIOL 101, 101L, PHYS 104 and 105. Examination of the physiology of animals using a comparative approach. Both vertebrate and invertebrate animals are discussed in order to elucidate general principles. Spring. Kier.

452 [170] MATHEMATICAL AND COMPUTATIONAL MODELS IN BIOLOGY (MATH 452) (4). Prerequisites, BIOL 202, 201, MATH 231, MATH 232 (or STAT 151). Introduction to analytical, computational, and statistical techniques, such as discrete models, numerical integration 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. Servedio, Elston.

453 [150] ANIMAL SOCIETIES AND COMMUNICATION (3).
Prerequisite or corequisite, BIOL 278. 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.

454 [158] EVOLUTIONARY GENETICS (3). Prerequisites, BIOL 202 and 201 or permission of the instructor. The role 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.) Lehmann.

455 [154] BEHAVIORAL NEUROSCIENCE (3).
Prerequisite, BIOL 205 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.) V. B. Hurley.

457 [157] PROBLEMS IN VERTEBRATE EVOLUTION (GEOL 456) (3).
Prerequisite, BIOL 276 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. Three lecture hours a week. (Occasionally.) Reddick.

458 [148] MARINE BIOLOGY (MASC 442) (3). Prerequisites, MASC 101 or BIOL 101. 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.
459 [195] FIELD BIOLOGY AT HIGHLANDS BIOLOGICAL STATION (1-4). Prerequisite, BIOL 101 or equivalent or permission of the instructor. Content varies. Summer field biology at the Highlands Biological Station focuses generally on the special faunal and floras in processes and patterns characteristic of the southern Appalachian mountain region. Five lecture and three to five laboratory and field hours for the week depend on credit. Summer. Staff.

461 [112] FUNDAMENTALS OF ECOLOGY (ECOL 461) (ENST 461) (4).

462 [146] MARINE ECOLOGY (MASC 440) (3). Prerequisite, BIOL 201 or 475. A survey of ecological and oceanographic processes structuring marine communities in a broad range of habitats with emphasis on experimental approaches to addressing both basic and applied problems in marine systems. Three lecture hours a week. Spring. Bruno.

463 [147] FIELD ECOLOGY (4). Prerequisite, BIOL 201 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.) Rice.

467 [156] EVOLUTIONARY ECOLOGY (3). Prerequisite, BIOL 4710 or permission of the instructor. Advanced topics in the evolution of form and function. May include issues in life history evolution, evolutionary physiology, morphological, and the evolution of complexity. Three lecture hours per week. Spring. (Alternate years.) Podolsky.

469 [151] BEHAVIORAL ECOLOGY (3). Prerequisite, BIOL 201 or 278. 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.) D. Pennig.

471 [132] EVOLUTIONARY MECHANISMS (3). Prerequisite, BIOL 202 and 201 or permission of the instructor. Introduction to mechanisms of evolutionary change, including natural selection, populaton genetics, life history evolution, speciation, and micro/macro-evolutionary trends. Three lecture hours plus two hours of laboratory/recitation per week. Fall. Pennig. Kingsolver.

472 [103] INTRODUCTION TO PLANT TAXONOMY (4).


476L [114L] AVIAN BIOLOGY LABORATORY (1). Corequisite, BIOL 476. 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.

478 [110] INVERTEBRATE PALEONTOLOGY (GEOL 478) (4). Prerequisites, GEOL 159 or BIOL 101, 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 APPELS service learning program in addition to the laboratory taught on campus. Fall. Carter.

490 [175] SPECIAL TOPICS (3). Prerequisite, permission of instructor. Content will vary. Three lecture and discussion hours a week by visiting or resident faculty. Fall and spring. Staff.

501 [176] ETHICAL ISSUES IN LIFE SCIENCES (3).

514 [133] EVOLUTION AND DEVELOPMENT (3). Prerequisites, BIOL 202, 205, 201. 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.

522 [109] BACTERIAL GENETICS (3). Prerequisite: general, BIOL 422; for graduate students, a molecular microbiology course. Genetics of bacteria with emphasis on molecular genetics including regulation of gene expression, transposons, operons, regulons, plasmids, transformations and conjugation. Spring. Matyasue.

526 [162] COMPUTATIONAL GENETICS (4). Prerequisites, BIOL 202, COMP 101, STAT 151. A study of the concepts underlying the bioinformatic tools used in genetics. 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.

536 [136] MACROMOLECULAR STRUCTURE AND METABOLISM (3).

537 [137] METABOLIC CHEMISTRY AND CELLULAR REGULATORY NETWORKS (3).

542 [188] LIGHT MICROSCOPY FOR THE BIOLOGICAL SCIENCES (3). Prerequisites, BIOL 205 and permission of the instructor. Introduction to various types of light microscopy, digital and video imaging techniques and their applications in biological sciences. Spring. Salmon.

551 [155] COMPARATIVE BIOMECHANICS (3). Prerequisites, BIOL 101, 101L, PHYS 104 and 105. The structure and function of organisms in relation to the principles of fluid mechanics and solid mechanics. Fall. (Alternate years.) Kier.

553 [152] PLANT ANATOMY (5). Prerequisite, BIOL 274. 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.

554 [153] COMPARATIVE MORPHOLOGY OF VASCULAR PLANTS (5). Prerequisite, BIOL 274. 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.) Genzel.

555 [181] PALEOBOTANY (GEOL 555) (4). Prerequisites, BIOL 101-101L 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.) Genzel.

561 [143] ECOLOGICAL PLANT GEOGRAPHY (3). Prerequisite, BIOL 101. 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.

562 [141] STATISTICS FOR ENVIRONMENTAL SCIENTISTS (ECOL 562) (5).

563 [145] STATISTICAL ANALYSIS IN ECOLOGY AND EVOLUTION (ECOL 563) (ENST 563) (3). Prerequisites, BIOL 201, STAT 11 or 31. Statistical methods and modeling of data in ecology and evolutionary biology. Analyzes 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.

564 [149] ECO SYSTEM STRUCTURE AND FUNCTION (3). Prerequisite, BIOL 201 or a course in limnology or geochemistry. Pattern and process in natural ecosystems, with stress on comparative approaches to ecosystems 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.

56L [149L] ECO SYSTEM STRUCTURE AND FUNCTION LABORATORY (1). Corequisite, BIOL 564 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.

56S [184] CONSERVATION BIOLOGY (3). Prerequisite, BIOL 201. 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.

579 [183] ORGANISMAL DIVERSITY (4).

621 [161] PRINCIPLES OF GENETIC ANALYSIS I (GNET 621) (4). Prerequisite for undergraduates, BIOL 202; for graduate students, an undergraduate genetics course or permission of the instructor. Genetic principles of genetic analysis in prokaryotes and lower eukaryotes. Fall. Peters, Pringle.


624 [160] DEVELOPMENTAL GENETICS (GNET 624) (3). Prerequisites, BIOL 202, 205, and permission of the instructor required of undergraduates. Genetic and molecular control of plant and animal development. Extensive reading from primary literature. Fall. Bautch, Reed.

631 [178] ADVANCED MOLECULAR BIOLOGY I (BIOL 631) (GNET 631) (MCRO 109) (PHCO 631) (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, Sancar.

632 [179] ADVANCED MOLECULAR BIOLOGY II (BIOL 632) (GNET 632) (MCRO 623) (PHCO 632) (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, Marzullo, Stahl.

642 [177] CURRENT TOPICS IN CELL DIVISION (3). Prerequisite, BIOL 205. 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.

649 [254] SEMINAR IN CELL BIOLOGY (2).

656 [146] BIOLOGICAL OCEANOGRAPHY (MASC 594) (ENVR 520) (4). Prerequisite, BIOL 201 or 475 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.

661 [142] PLANT ECOLOGY (4). Prerequisite, BIOL 201. Terrestrial, vascular plant ecology including environmental physiology, population dynamics, and community structure. Laboratory stress on collection and interpretation of field data. Three lecture and two laboratory hours a week. Fall. (Alternate years.) Pett.

663 [185] POPULATION ECOLOGY (3).

663L [185L] POPULATION ECOLOGY LAB (1).

666 [186] COMMUNITY AND SYSTEMS ECOLOGY (3). Prerequisite, BIOL 201. 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.) Reiche.

666L [186L] COMMUNITY AND SYSTEMS ECOLOGY LABORATORY (1). Prerequisite or corequisite, BIOL 666. Community and/or ecosystem modeling and computer simulation. Experimental analysis and validation in the field. Individual and group projects. Three laboratory and field hours a week. Spring. (Alternate years.) Reiche.

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 600-800 level for the purpose of later receiving graduate credit.

Courses for Graduates

625 [270] SEMINAR IN GENETICS (GNET 625) (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall and spring. Baurch, Maroni, Peters, Pfeifer, Pobjst, Zeale, Sorensen.

639 [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, Kiefer, Lillegren.

648 [282] PALYNOLGY (5). Prerequisite, consent of the instructor. A consideration of various aspects of palynology, including the morphology, structure, development, systematic, evolution, preparation techniques, and analysis of living and fossil pollen grains, spores, and other palynomorphs. Two lecture and six laboratory hours a week. Fall or spring. (Alternate years.) Gerschel.

649 [254] SEMINAR IN CELL BIOLOGY (2). Prerequisite, BIOL 205 or permission of the instructor. May be repeated for credit. Fall or spring, Bloom, Goldberg, Harris, Salmon.

659 [258] SEMINAR IN EVOLUTIONARY BIOLOGY (2). Prerequisite, BIOL 471 or permission of the instructor. Advanced topics in evolutionary biology. Fall and spring. Baurch, Kingsolver, D. Pfenning, Podolsky, Servedio, Willett, Visscher.

662 [247] FIELD PLANT GEOGRAPHY (2). Prerequisites, BIOL 661 or 561 and permission of the instructor. Intensive literature and field study of the plant geography and ecology of a selected region. Weekly seminar-style discussion followed by approximately nine days of field experience. May be repeated for credit. Spring. (Alternate years.) Pett.

669 [255] SEMINAR IN ECOLOGY (ECOL 669) (2). Prerequisite, BIOL 201 or permission of the instructor. May be repeated for credit. Fall and spring, Bruno, Reiche, White.

758 [159] MOLECULAR POPULATION BIOLOGY (MASC 742) (4). Prerequisites, BIOL 471 and permission of the instructor. Hands-on training, experience, and discussion of the application of molecular genetic tools to questions of ecology, evolution, systematics, and conservation. Lab/lecture/workshop is included and contributes three credit hours to the course. Marks.

822 [275] GENETICS SYSTEMS (GNET 703) (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.

831 [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.
832 [264] SEMINAR IN MOLECULAR BIOLOGY (2). Prerequisite, BIOL 202 or permission of the instructor. May be repeated for credit. Fall or spring. Bausch, Bloom, Stafford.

841 [253] SEMINAR IN EMBRYOLOGY (2). Prerequisite, BIOL 205 or permission of the instructor. May be repeated for credit. Fall or spring. Bausch, Harris.

842 [268] SEMINAR IN CELL BIOLOGY AND BIOCHEMISTRY (2). Prerequisite, permission of the instructor or research director. Fall and spring. Gilbert.

850 [290] SEMINAR IN NEUROBIOLOGY (NBIO 850) (PHCO 850) (PHYI 850) (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.

852 [269] SEMINAR IN PLANT SYSTEMATICS (2). Prerequisite, permission of the instructor or the research director. Fall and spring. Gensel, Parks.

853 [271] SEMINAR IN PLANT MORPHOLOGY AND ANATOMY (2). Prerequisite, permission of the research director. Fall and spring. Gensel.

854 [266] SEMINAR IN NEUROPHYSIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Kier, Lohmann, staff of the Neurobiology Curriculum.

855 [256] SEMINAR IN INVERTEBRATE ZOOLOGY (2). Prerequisite, BIOL 475 or permission of the instructor. May be repeated for credit. Fall or spring. Kier, Lohmann, Podolsky.

856 [257] SEMINAR IN VERTEBRATE EVOLUTIONARY BIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Feduccia.

857 [259] SEMINAR IN COMPARATIVE ANIMAL BEHAVIOR (NBIO 857) (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Lohmann, Wiley.

858 [260] SEMINAR IN COMPARATIVE PHYSIOLOGY (NBIO 858) (2). Prerequisite, BIOL 451 or permission of the instructor. Fall or spring. Lohmann.

859 [265] SEMINAR IN MARINE BIOLOGY (2). Prerequisite, permission of the instructor. May be repeated for credit. Fall or spring. Kier, Podolsky.

890 [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.

891 [25] GRADUATE SEMINAR IN BIOLOGY (2). Prerequisite, graduate standing or permission of the 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.

Courses numbered 900 and above are designed for applicants for advanced degrees. Each course requires permission of the instructor or the research director. Each may be repeated for two or more semesters for credit.

901 [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.


931 [308] RESEARCH IN MOLECULAR BIOLOGY (2 or more). Bloom, Bausch, Dutton, Gilbert, Searles, Stafford.

932 [314] RESEARCH IN PLANT MOLECULAR BIOLOGY (2 or more). Fall and spring. Copenhaver, Dangl, A. Jones, Kiefer, Liljegren, Reed.

941 [300] RESEARCH IN CYTOLOGY AND CELL BIOLOGY (2 or more). Bollenbacher, Conlon, Gilbert, Goldstein, Harris, Liljegren, Salmon.

942 [304] RESEARCH IN EMBRYOLOGY (2 or more). Bausch, Gilbert, Harris, Peifer.

943 [309] RESEARCH IN PHYSIOLOGY: CELLULAR, COMPARATIVE, NEUROPHYSIOLOGY (2 or more). Bollenbacher, Gilbert, Kier, Lohmann, Salmon.

951 [302] RESEARCH IN NEUROBIOLOGY (NBIO 951) (PHCO 951) (PHYI 951) (2 or more). Bollenbacher, Gilbert, Wiley, and faculty of the Neurobiology Curriculum.

952 [303] RESEARCH IN ETHOLOGY AND ANIMAL BEHAVIOR (2 or more). Kier, Lohmann, Wiley.

953 [306] RESEARCH IN MARINE SCIENCES (MASC 940) (2 or more). Kier, Lohmann, Peterson, Podolsky.

954 [307] RESEARCH IN MARINE SCIENCES ON MOLLUSCA. CRUSTACEA, ICHTHYOTOLOGY, OR OCEANOGRAPHY (at the Institute for Marine Sciences, Morehead City, NC) (2 or more). Approval by the Department of Biology required. Chestnut, Faby, Peterson, Schwartz.

955 [310] RESEARCH IN VERTEBRATE OR INVERTEBRATE ZOOLOGY (2 or more). Feduccia, Kier, Lohmann.

957 [316] RESEARCH IN PLANT SYSTEMATICS (2 or more). Fall and spring. Parks, staff.

958 [317] RESEARCH IN PLANT MORPHOLOGY AND ANATOMY (2 or more). Fall and spring. Gensel.

959 [318] RESEARCH IN PALEOBOTANY (2 or more). Fall and spring. Gensel.

961 [301] RESEARCH IN ECOLOGY (2 or more). Kingsolver, Peet, Peterson, Reice, Sistave, White, Wiley.

Special Graduate Registration

993 [333] MASTER'S THESIS IN BIOLOGY (2 or more). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION IN BIOLOGY (2 or more). Fall and spring. Staff.

DEPARTMENT OF BIOMEDICAL ENGINEERING

H. TROY NAGLE, Founding Chair, (38) Medical Devices, Minimizers

Faculty at the University of North Carolina at Chapel Hill

Professors
* Albert J. Banes (49) Cyromechanics
* Henry S. Hsiao (3) Medical Instrumentation
* Stephen Knaile (51) Biomedical Systems, Medical Devices, Medical Instrumentation, Mathematical Modeling, Cardiac Electrophysiology
* Carol L. Lucas (24) Biomechanics
* Wei Lin (56) Medical Imaging
* Terry Magnussen, Genomics, Genetics
* Harold Pillsbury, Neurobiology, Cochlear Implants
* Elisa Pisano (33) Medical Imaging, Breast Cancer Research
* J. Michael Ramsey, Medical Instrumentation
* Barry Whisel (52) Neurobiology
Adjunct Professors
Edward Chaney (58) Biomedical Imaging
Greg Forest, Transport Processes in the Lung, Flow and Structure of Nano-Materials and Macromolecules Fluids
Henry Fuchs (11) Virtual Reality
Anthony Hickey (42) Pharmacy
Timothy A. Johnson (46) Cardiac Electrophysiology
Stephen M. Pizer (23) Medical Image Processing, Three-Dimensional Display Techniques
Lola M. Reid, Functional Tissue Engineering
Alexander Troppa (47) Computer Assisted Drug Delivery
Benjamin Tsai (34) Medical Imaging
Bradley Vaughn, Sleep Monitoring
Sean Washburn, Medical Instrumentation

Associate Professors
*Robert Dennis (61) Tissue Mechanics, Biomechanics, Functional Tissue Engineering
*Roger Narayan (63) Biomedical Sensors, Medical Devices, Biomaterials, Nanometer Systems
*Mark Tommerdahl (48) Neurobiology, Image Processing and Analysis, Physiological Systems

Adjunct Associate Professors
Eric Frey (35) Biomedical Imaging
Jeffrey Y. Thompson, Biomaterials
Bing Yu (50) Biomechanics, Rehabilitation, Movement Analysis

Research Associate Professors
*Oleg Favorov (31) Digital Signal Processing/Multidimensional Signal Processing, Biomedical Systems, Neural Networks, Bioinformatics, Neurobiology

Adjunct Research Associate Professors
*Charles C. Finley (44) Digital Signal Processing/Multidimensional Signal Processing, Medical Devices, Medical Instrumentation, Cochlear Implants
*Paul Weinhold (59) Orthopaedics, Biomechanics and Biomaterials

Assistant Professors
*Gallippi, Caterina (60) Biomedical Imaging, Medical Imaging, Image Processing and Analysis
Morgan Giddings (32) Bioinformatics
Sean Gomez (62) Bioinformatics, Mathematical Modeling, Genomics, Systems Biology
*Jeffrey MacDonald (30) Metabolomics

Adjunct Assistant Professors
Timothy Crowder, Drug Inhalation
Darin Padua, Sports Medicine

Research Assistant Professor
*Richard Goldberg (5) Medical Instrumentation

Professors Emeriti
N. A. Coulter Jr.
Richard N. Johnson
Lloyd R. Yance

Faculty at North Carolina State University

Core Faculty
C. Frank Abrams, Tissue Mechanics, Biomechanics
Lianne Carte, Mathematical Modeling, Bioelectric Stimulation
Edward Grant, Robotics, Biomedical Systems, Neural Networks, Biomedical Sensors, Medical Devices

Clement Kleinstreuer, Medical Instrumentation, Biomechanics, Nanometer Systems, BioMEMS, Fluid Dynamics, Physiological Systems, Mathematical Modeling
David Laub, Image Analysis, Biomedical Imaging, Medical Imaging, Bioinformatics, Image Processing and Analysis
Elizabeth Lobov, Tissue Mechanics, Cytomechanics, Modeling in Mechanobiology, Musculoskeletal Biomechanics, Biomechanics
Greg McCarty, Nanometer Systems, BioMEMS, Bioelectric Stimulation, Biochemical Engineering
Marian McCord, Medical Textiles
Peter Mente, Tissue Mechanics, Cytomechanics, Modeling in Mechanobiology, Musculoskeletal Biomechanics, Biomechanics
Hartoc O. Ozurk, Digital Signal Processing/Multidimensional Signal Processing, Biomedical Image Processing and Analysis
Brooke N. Steele, Medical Imaging, Biomechanics, Physiology Systems, Mathematical Modeling, Biofluids Modeling, Simulation Based Medical Planning
Glenn Walter, BioMEMS

Associate Faculty
Nina Allen, Microscopy
Donald L. Birrer, Bioinformatics
Mohamed Bounah, Biomedical Imaging, Medical Imaging, Fluid Dynamics, Mathematical Modeling
Gregory D. Buckner, Robotics
John Cavanaugh, Biomedical Sensors
Mo-Yuen Chow, Intelligent Systems, Biomedical Engineering
Stuart L. Cooper, Biomaterials
Denis Cormier, Medical Devices, Medical Instrumentation, Biomaterials, Implant Design
Dan Feldheim, Nanometer Systems
Robin Gardner, Biomedical Imaging
Mayaann Ghoorvanlo, Implantable Electronics
Robert Grossfeld, Neurobiology, Physiological Systems
Manooor A. Haider, Tissue Mechanics, Biomechanics, Mathematical Modeling
S. Andrew Hale, Medical Instrumentation
Ola L. A. Harrysson, Biomedical Imaging, Biomaterials, Functional Tissue Engineering
Hamid Krim, Digital Systems and Signal Processing, Medical Imaging
Andrey Kuznetsov, Medical Devices, Tissue Mechanics, Biomaterials, Biomechanics, Fluid Dynamics, Biofluids Modeling, Biochemical Engineering
Gianluca Lazzi, Computer-Aided Design, Modeling, Electromagnetic Fields, Antenna Analysis, Microwave Devices and Circuits
Sharri R. Lubkin, Tissue Mechanics, Cytomechanics, Modeling in Mechanobiology, Biomechanics, Biomechanics, Image Processing and Analysis
Gary A. Mirka, Biomechanics
Nancy A. Monteiro-Riviere, Functional Tissue Engineering
John F. Muth, Optical Materials and Devices
John P. O'Donnell, Telecommunications and Networking, Embedded Systems, Biomedical Sensors, BioMEMS, Physiological Systems, Radiation Oncology
Bruce Oberhardt, Medical Devices
Merle S. Olufsen, Biomedical Systems, Large-Scale Non-linear Systems, Distribution Systems, Biomechanics
Behnam Pourdeyhimi, Medical Textiles
Jie Qi, Tissue Mechanics
Asfaneh Rabiei, Biomechanics
Sarah Rajala, Digital Communications, Digital Signal Processing, Multidimensional Signal Processing, Image Analysis
M. K. Ramasubramanian, Biomechanics
Simon C. Roe, Tissue Mechanics, Musculoskeletal Biomechanics, Biomaterials, Biomechanics
Stefan Seelcke, Biomechanics, Fluid Dynamics
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 School of the University of North Carolina at Chapel Hill and the North Carolina State University Graduate School. 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

- **400 [100] INTOUOTION TO BIOMEDICAL ENGINEERING (1).** Seminar introducing students to biomedical engineering research, including literature review, faculty presentation of ongoing research, and student discussion of research papers. Fall. Staff.

- **405 [102] BIOMECHANICS (3).** Prerequisites: PHYS 415, MATH 383, and permission of the instructor. Fundamentals 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.

- **410 [106] SYSTEMS AND SIGNALS (APL 410) (4).** Prerequisite, PHYS 351 and permission of the instructor. Analysis of linear systems by transform methods to networks, including stability analysis. Spring. Quint.

- **415 [107] ANALOG AND DIGITAL COMMUNICATION SYSTEMS (APL 415) (4).** Prerequisites, PHYS 415 and permission of the instructor. Modulation and demodulation of signals using AM, FM, and PM. Practical applications are studied. Goldberg.

- **430 [121] DIGITAL SIGNAL PROCESSING I (APL 430) (3).** Prerequisite, COMP 110 or equivalent. This is an introduction to methods of automatic computation of special relevance to biomedical problems. Sampling theory, analog-to-digital conversion, and digital filtering are explored in depth. Spring. Lucas.

- **440 [128] ANALYSIS AND SYNTHESIS OF DIGITAL SYSTEMS (APL 440) (4).** Prerequisites, PHYS 351 and 352. Application of Boolean algebra to the analysis and synthesis of switching circuits, asynchronous and synchronous machines, programmed logic arrays, and fault-tolerant design. Includes two hours of laboratory per week. Fall. Quint.

- **450 [132] LINEAR CONTROL THEORY (APL 450) (4).** Prerequisite, MATH 528 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. Quint.

- **460 [110] SURVEY OF ENGINEERING MATH APPLICATIONS (APL 460) (1).** Computational laboratory that surveys engineering math with emphasis on differential equations, and Laplace and Fourier analysis. Application in biomedical engineering emphasized through problem set computations using Matlab. Fall. Finley.

- **465 [111] BIOMEDICAL INSTRUMENTATION I (APL 465) (4).** Prerequisite, PHYS 351. 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. Hsiao.

- **480 [120] REAL-TIME COMPUTER APPLICATIONS I (APL 480) (3).** Prerequisite, COMP 110. 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. Goldberg.
510 [112] BIOMATERIALS (APPL 510) (3). Prerequisite, BIOL 101. Chemical, physical, engineering, and biocompatibility aspects of materials, devices, or systems for implantation in or interfacing with the body, cells, or tissues. Food and Drug Administration and legal aspects. Fall. Banes/Narayan.

520 [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. Staff.

530 [154] MICROELECTRODE TECHNIQUES (4). Prerequisite, PHYS 101 and BIOL 101 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. Kinsley.

550 [141] MEDICAL IMAGING I (3). Prerequisites: PHYS 128, BMME 410, BMME 430, BMME 730, Statistics; or equivalents. Basic physics of X radiation, 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. (Alternate years). Gallippi.

560 [142] MEDICAL IMAGING II (3). Prerequisite, BMME 550. Modern medical imaging techniques and instrumentation are studied, including classical and digital radiography, computed tomography, nuclear medicine, magnetic resonance, and ultrasound. Includes discussion of clinical utility. Fall. (Alternate years). Laksh.

*570 [151] FROM GENES TO TISSUES: MOLECULAR BIOLOGY AND GENETICS FOR BIOMEDICAL ENGINEERS (4). Prerequisites, undergraduate organic chemistry (or biochemistry) and undergraduate biology (or permission of instructor). An introduction to molecular, cellular, and tissue biology for BME students covering molecular genetics, gene expression, self-assembling mechanisms, metabolism, biocomputing, cell organelles, regulation of growth and differentiation, and signaling. Fall. Macdonald, Bernacki.

*589 [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 systems, cardiac electrophysiology, and endocrinology. Fall. Tommerdahl.

600 [153] BIOMATHEMATICAL MODELING I (3). Prerequisites, engineering-level mathematics, e.g., MATH 353, 528. 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.

Courses for Graduate Students

705 [260] BIOMATERIALS INSTRUMENTATION (3). Prerequisite, BMME 529 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.

730 [223] DIGITAL SIGNAL PROCESSING II (3). Prerequisites, BMME 430. MATH 528, and BMME 450 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. Favorov.

740 [212] ADVANCED BIOMATERIALS (MTSC 740) (3). Prerequisite, BMME 510 or permission of the instructor. Medical or dental implants or explants are highlighted from textbooks, scientific literature, and personal accounts. Spring. Banes/Narayan.

750 [232] DIGITAL CONTROL THEORY (3). Prerequisite, BMME 450 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. Spring. Quint.

760 [235] FINITE ELEMENT ANALYSIS (3). Prerequisites, BMME 405 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-numbered years). Weinhold.

765 [201] BIOMEDICAL INSTRUMENTATION II (3). Prerequisite, BMME 465 or permission of the instructor. The fundamentals of interfacing microprocessors 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.

770 [251] PHYSIOLOGY AND METHODS IN GENOMICS (3). Prerequisites, BMME 570 or undergraduate organic chemistry or biochemistry and undergraduate biology or 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. Spring. Macdonald, Bernacki.


780 [220] REAL-TIME COMPUTER APPLICATIONS II (3). Prerequisites, BMME 480, 465. Problems of interfacing computers with biomedical and systems are studied. Students collaborate to develop a new biomedical instrument. Projects have included process control, data acquisition, disk systems interfaces, and DMW interfaces between interconnected computers. Spring. Goldberg.

*790 [281] SYSTEMS PHYSIOLOGY FOR BIOMEDICAL ENGINEERS (3). Prerequisite, BMME 589. 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.

795 [282] INFORMATION PROCESSING IN THE SOMATOSENSORY NERVOUS SYSTEM: BRAIN IMAGING AND DATA ANALYSIS METHODS (3). Prerequisite, BMME 589. 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 stimuli properties, pharmacological manipulations, and other factors that dynamically modify the functional status of the network. Spring. (Alternate years.) Tommerdahl.

810 [252] DIGITAL NUCLEAR IMAGING (3). Prerequisites, BMME 550, 560. Advanced topics in physics and instrumentation in nuclear imaging and magnetic resonance techniques. Fall. (Alternate years.)

820 [253] ADVANCED MEDICAL IMAGE PROCESSING (3). Prerequisites, BMME 550, 560. 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.)

830 [256] HIGH RESOLUTION X-RAY AND NUCLEAR IMAGING (3). Prerequisites, BMME 550, 560. 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.

840 [290] REHABILITATION ENGINEERING DESIGN (4). Prerequisites, BMME 465 or permission of the instructor. Students will design an assistive technology device to help individuals with disabilities to become more independent. The project will be used in the community when it is completed. Spring. Goldberg.
860 [230] NUMERICAL METHODS FOR BIOMEDICAL ENGINEERING (3). Prerequisites, MATH 383, BMME 480, or experience in computer 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.) Favors.

890 [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 students is on a tutorial basis and subject matter is selected on the basis of individual needs and interests. Fall and spring. Staff.

900 [311] RESEARCH IN BIOMEDICAL ENGINEERING AND BIOMATHEMATICS (Hours to be arranged.) Prerequisite, permission of the instructor. Staff.

910L [300] LABORATORY ROTATION IN BIOMEDICAL ENGINEERING (1). Laboratory practicum in a University of North Carolina at Chapel Hill lab. Observational and hands-on experience in state-of-the-art biomedical laboratories with bioengineering faculty/preceptor. Fall and spring. Hsian.

920L [201] LABORATORY ROTATION IN FUNCTIONAL GENOMICS (1). Prerequisites, BMME 570 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. Macdonald.

993 [393] MASTER'S THESIS (Hours to be arranged.) Staff.

994 [394] DOCTORAL DISSERTATION (Hours to be arranged.) Staff.

North Carolina State University Biomedical Engineering Courses

522 MEDICAL INSTRUMENTATION (3). Students should have a background in electronics design using operational amplifiers. Fundamentals of medical instrumentation systems, sensors, and biomedical signal processing. Example instruments for cardiovascular and respiratory assessment. Clinical laboratory measurements, therapeutic and prothetic devices, and electrical safety requirements.

525 BIOELECTRICITY (3). Prerequisites, BME 392 or ZO 421 and a course in electrical circuits, senior or graduate standing. (Credit is not given for both BME 425 and BME 525.) Quantitative analysis of excitatory membranes and their signals, including plasma membrane characteristics, origin of electrical membrane potentials, action potentials, voltage clamp experiments, Hodgkin-Huxley equations, propagation, subthreshold stimuli, extracellular fields, membrane biophysics, and electrophysiology of the heart. Design and development of an electrocardiogram analysis system. Fall. Carter.

541 BIOMECHANICS (3). Prerequisites, ZO 160 or BIO 183, BME 342, ST 370. Credit is not allowed for both BME 441 and BME 541. Students study human body kinematics, force analysis of joints, and the structure and composition of biological materials. Emphasis is placed on the measurement of mechanical properties and the development and understanding of models of biological material. Fall. Mente.

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. Staff.

590R LABORATORY ROTATION IN BIOMEDICAL ENGINEERING (1). Laboratory practicum in a North Carolina State University lab. Observational and hands-on experience in state-of-the-art biomedical laboratories with bioengineering faculty/preceptor. Fall and spring. Abrams.

601 BIOMEDICAL ENGINEERING SEMINAR (1). Prerequisite, graduate standing. Elaboration of subject areas, 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.

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.

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.

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.

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.

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. Bays (131) Marketing Research, Technology Changes, Product Management
Richard A. Benis, Strategic Management, Global Competition, Technological Innovation, Strategic Change
Edward Joseph Biocher (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
Daniel Cable (154) Human Resources Management, Selection, Recruitment, Compensation
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 Fulghieri, Finance
John R. M. Hand (126) Financial Accounting, Capital Markets, Market Efficiency
David James Hartzell (16) Mortgage Bank Securities, Real Estate Investment, Finance
Walter Steven Jones, Business Education
John Dale Kasarda (32) Business Globalization, Privatization, Job Creation
Mark H. Lang (142) International Accounting and Finance, Corporate Disclosure
Policy, Earnings, Stock Price Issues
Richard Allan Mann (37) Legal Studies, Regulation of Business, Business Ethics
Ann E. Maruschek (21) Production/Operations Management, Distributions
Systems Design and Management, Engineering Management
Edward Maydew, Accounting, Taxation, Corporate Tax Planning, Mergers and
Acquisitions - Tax Aspects, Economic Effects of Tax Changes
Alan William Neebe (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. Potratz, Marketing
David J. Ravesnrech (10) Mergers, Takeovers, Sell-Offs
Richard James Rendleman Jr. (89) Investments, Corporate Finance, Capital Markets
Efficiency
Barry Stuart Roberts (63) Legal Studies, Business Ethics, Government Regulation
Benson Rosen (46) Organizational Behavior, Human Resources Management
David Stephen Rubin (67) Operations Research, Integer Programming,
Combinatorial Optimization
Albert H. Segars (152) Telecommunications Management, Impact of Technology,
Corporate-Level Planning for Information Technology
Systems
Anil Shrivastani (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
Jayashankar M. Swaminathan, Operations, Technology and Innovation
Management
Harvey M. Wagner (64) Management, Modeling
D. Clay Whybark (67) Operations Management, International Operations
Manufacturing Strategy, Business Logistics
Valarie Zeitlin (169) Service Quality, Services Marketing

Associate Professors
Jeffery Abarbanell, Financial Statement Analysis, Analyst Forecasting, Valuation,
Accounting in Transition-to-Market Economies
Srividhar Balasubramanian, Marketing
Richard Stanley Blackburn (81) Organizational Behavior, Organizational Research
Methods, Philosophy of Organizational Science
Gregory W. Brown (7) Asset Pricing, Capital Markets, Derivative Securities,
Investments, Mutual Funds, Risk Management, Corporate Hedging
Joseph Henry Bylinski (83) Financial Accounting, Auditing
Robert A. Connelly (127) Foreign Currency Markets, Empirical Investments,
Capital Markets
Nicholas Michael Didow (15) Consumer Behavior, Marketing Research Methods,
Evaluation Research
Wendell Gilland (162) Production Planning and Control, Capacity Management,
Business Process Reengineering
Mustafa N. Guilekin (106) Portfolio Theory, Asset Pricing Models, Corporate
Finance
David A. Hofmann, Management
J. Morgan Jones (19) Quantitative Consumer Models, Bayesian Decision Theory
Charlotte H. Mason (108) New Product Evaluation, Diffusion of Innovation,
Marketing Research Methodologies

Rebecca K. Ramer, Consumer Behavior, Decision Making, Individual Decision
Making, Marketing
Jeffrey Reuter, Organizational Behavior and Strategy

Assistant Professors
Peter J. Breus, Management
Qiang Dai, Finance
Alison Frangie, Organizational Behavior and Strategy
Elan Goldman, Corporate Finance, Microeconomic Theory
Steve E. Hoefls, Marketing, Consumer Behavior, Decision Making, Sales
Forecasting, Information Technology, Electronic Commerce, Internet Marketing
Eda Kermadaglu-Ziya, Operations
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
Ali Parlakhan, Operations
Jana Smith Raedy (166) Market Efficiency/Market Anomalies, Financial Analyst
Forecasts
Adam V. Reed, Finance
Jorg Rocholl, Finance
Sergey Sandhar, Finance
Meret Sevits, Finance
Gunter Stroh, Finance
Brian Tomlin, Finance
Egil Zuenders, Marketing

Research Assistant Professor
Stephen Appold, Kenan Institute of Private Enterprise

Adjunct Professors
Susan Aaronson, Kenan Institute of Private Enterprise
Warren E. Baunach (143) Executive Education, Marketing, Competitive Strategy
Gerald D. Bell, Leadership, Management, Negotiation, Teamwork
Bruce Boehm, Management
Linda Carolyn Bowen (9) Financial Accounting, Taxation, Auditing
Jennifer Brenner, Management
Anthony Brown, Entrepreneurial Studies
Geoffrey Chetas, Finance
Edward Copper, Management
Travis Day, Business Computing Skills
Eric Ghyse, Finance
David Godschalk, Finance
Noel Greis, Air Logistics, Aviation, Innovation, International Manufacturing,
International Operations, Logistics, Manufacturing
William H. Grumbles, Organizational Behavior and Strategy
Clay Hannen, Entrepreneurial Studies
Claudia Harris, Organizational Behavior and Strategy
James Harris, Finance
Michael Huisey, Finance
Richard Kouri, CETV
Kevin Leibel, Marketing
Michael Ian Luger, Economic Development, Employment and Welfare Policy,
Infrastructure, Public Finance, Urban and Regional Economics
Alexey Malakoff, Finance
Mabel M. Miguel (53) Career Development, Cross-Cultural Management,
Management, Distance Learning, Management
Bill Moore, Investment Banking, Venture Capital, Investment Management,
Entrepreneurship
Charles R. Myer, Management
Jack Olin, Management
John J. Pringle, Financial Management
William Reynolds, Finance
Heidi Schultz (167) Business Communication
C. J. Skender, Accounting, Auditing, Decision Making
James Smith, Finance
S. Peter Smith, Manufacturing, Marketing - Strategy, Operations Management, Product Design, Product Development
Judy Jones Tisdale, Consumer Banking Retail Sales, Professional Communication, Sales Coaching and Development
Ronald Williams, Management
Min Wei, Finance

Adjunct Associate Professors
Robert Fairlie, Entrepreneurial Studies
David Neal, Organizational Behavior and Strategy
Atul Nerkar, Finance
Kevin Raedy, Accounting
Donald McIver Stanford Jr., Commercial Law, Legal Environment of Business, Managerial Law, Mutual Funds, Sports Law and Management
Roby B. Sawyer, Accounting
Glenn Voss, Marketing

Adjunct Assistant Professors
Bruce Carlin, Finance
Courtney Edwards, Accounting
Rael Elaydi, Organizational Behavior and Strategy
Eliener Fich, Finance
Burton Goldstein, Entrepreneurial Studies
Richard Gooner, Marketing
Douglas Guth, Finance
Lisa Jones, Finance
Cosmin Krupp, Finance Trade, Antidumping Trade, Exchange Rates
Elliot Silverstein, Management
Kenneth Wiley, Finance
Ted Zoller, Entrepreneurial Studies

Adjunct Lecturers
James Bick, Marketing
John T. Ganzi, Management
Alston Gardner, Entrepreneurial Studies
John Glushik, Entrepreneurial Studies
Lowell Hoffman, Kenan Institute of Private Enterprise
Gregory Huhn, MBA Program
Donald Maples, Management
Merrill Mason, Organizational Behavior and Strategy
Mitch Mumma, Management
Patrick Oglesby, Organizational Behavior and Strategy
Shelby Pohlmam, MAC Program
William Powell, Kenan Institute of Private Enterprise
Edward G. Pringle, Consulting, Management, Service Industry
Maria Elena Rodriguez, Kenan Institute of Private Enterprise
Cynthia Setzer, Management
William Shufly, Marketing
Andrew Silton, EMBA Program
Kelley Shephard, MAC Program
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 Klompfner
Clifton Holland Kreps Jr.
Hans E. Krusa
Harold Q. Langenderfer
J. Finley Lee
Richard Levin
Richard Wolcott McEnally
Dannie Joseph Moffie
Isaac Newton Reynolds
Dennis A. Rondinelli
Aleda V. Roth
William S. Stewart
Janus H. Terrell
Rollie Tillman

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, the Kenan-Flagler Business School moved to its new state-of-the-art facility located on South Campus. Building features include eighteen classrooms with multimedia capabilities, a 456-seat auditorium, and a 250-plus seat multipurpose 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 megabits 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 CD's for company research and historical financial market data.

Master of Business Administration

The Kenan-Flagler Business School's highly ranked master of business administration (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 and 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 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, organizational 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 $16,900 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.

**Courses for Doctoral Candidates**

808 [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.

809 [309] APPLIED RESEARCH METHODS II (3). Continuation of BUSI 808. 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.

830 [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.

831 [331] THEORY OF OPERATIONS MANAGEMENT II (3). Prerequisite, BUSI 830 or equivalent. A continuation of BUSI 830. Fall and spring. Staff.

832 [332] THEORY OF OPERATIONS MANAGEMENT III (3). Prerequisite, BUSI 830 or equivalent. A continuation of BUSI 330. Fall and spring. Staff.

837 [337] ADVANCED TOPICS IN OPERATIONS MANAGEMENT (3). Prerequisite, permission of the instructor. Intensive study of a specific area in operations management. Spring. Staff.

838 [338] SEMINAR IN OPERATIONS MANAGEMENT (3). Prerequisite, permission of the instructor. Intensive study of a specific area in operations management. Spring. Staff.


852 [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.


854 [354] ORGANIZATIONAL DESIGN AND DEVELOPMENT (3). The development of understanding and skills in changing and evolving organizational design, interpersonal relationships, and people to achieve organizational goals. Spring. Staff.

856 [356] SEMINAR IN ORGANIZATIONAL BEHAVIOR (3). Prerequisite, permission of the instructor. Intensive study of important current theory and research in organizational behavior. Fall. Staff.

857 [357] SEMINAR IN HUMAN RESOURCE MANAGEMENT (3). Review the research literature on how firms are made more effective through people. Coverage includes topics like recruiting, hiring, compensation, socialization, culture, and performance management. Fall. Cable.

860 [360] SEMINAR IN MARKETING I (3). Prerequisite, permission of the instructor. Overview of current paradigms and research in marketing. Topics include philosophy of science, differing views of what marketing is, strengths and weaknesses of various research approaches, and career socialization issues. Fall. Lurie.

861 [361] SEMINAR IN MARKETING II (3). Prerequisite, BUSI 860. Intensive study of the empirical and analytical literature involving problems in pricing, product development and management, advertising and promotion, distribution, and strategy. Staff.

865 [365] SEMINAR IN CURRENT MARKETING TOPICS (1). 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.

867 [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.

868 [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.

875 [386] SEMINAR IN PORTFOLIO MANAGEMENT (ECON 875) (3). Prerequisite, permission of the instructor. Theoretical asset pricing: continuous time finance, option pricing, and term structure models. Spring. Staff.

876 [376] SEMINAR IN RESEARCH IN ACCOUNTING (1). Prerequisite, permission of the instructor. An informal seminar to discuss current research in accounting. Fall and spring. Staff.

880 [380] FINANCIAL ECONOMICS (3). Prerequisite, permission of the instructor. Introduction to the theories of asset pricing. Fall. Staff.

881 [381] CORPORATE FINANCE (3). Prerequisite, BUSI 880 or equivalent and permission of the instructor. Introduction to corporate finance theory. Spring. Goldman.
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 MD/PhD program must be accepted into the School of Medicine and the departmental graduate program, whether 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, biochemistry, 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 biophysical 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, Graduate Record Examination (GRE) scores (with a subject test score), and three letters of recommendation should be submitted online to the Office of The Graduate School, Bynum Hall. A personal statement 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 students 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-Philips Tecnai 12 transmission electron microscope. Ancillary facilities include fully equipped darkrooms and equipment for ultramicroscopy, 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, nanovoid microscopy, and fluorescence recovery after photobleaching.

Assistantships and Other Student Aid

Students are supported by a stipend of $23,000 annually plus tuition, fees, and medical insurance.

Courses for Graduates and Advanced Undergraduates

423 [123] DEVELOPMENTAL TOXICOLOGY AND TERATOLOGY (TOXC 423) (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.) Sulik.

607 [107A/B] GROSS ANATOMY (6). Prerequisite, permission of the instructor. Primarily for medical students. Graduate enrollment will be based on availability of space and material. Three seminars; one lecture, six laboratory hours; fall; two lecture hours, six laboratory hours; eight weeks of spring. Sulik, Staff.

643 [117] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (MCRO 643) (BIOL 643) (PHCO 643) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Fall. Lee, Meissner, Paris.

644 [118] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (MCRO 644) (BIOL 644) (PHCO 644) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function and transformation. Spring. Cox, Lee, Meissner, Paris.

741 [041] INTRODUCTION TO HUMAN ANATOMY (3).

750 [250] APPLIED BIOSTATISTICS (PATH 750) (PHCO 750) (TOXC 750) (2).

790 [060] INTRODUCTION TO HUMAN ANATOMY (3).


793 [193] FUNCTIONAL NEUROANATOMY (PHYT 793) (3). Prerequisites, BIOL 791, BIOL 607 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.

804 [010] 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.


Courses for Graduates

610A/B [200A/B] ADVANCED GROSS ANATOMY (4/3). Prerequisites, BIOL 610A/B 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.

627 [207] REGIONAL ANATOMY (3). Prerequisite, permission of the instructor. For students of oral surgery, surgical residents, and graduate students. Second summer session. Kernick.

890A/B [320A/B] ADVANCED TOPICS IN CELL AND DEVELOPMENTAL BIOLOGY (Vac). Prerequisite, permission of the instructor. Seminar/discussion course dealing with advanced topics in modern cell biology and/or developmental biology. Based mainly on discussion of current literature. Fall and spring. Staff.

891A/B [321A/B] CONTEMPORARY APPROACHES TO SOLVING BASIC PROBLEMS IN CELL AND DEVELOPMENTAL BIOLOGY (3). Prerequisite, permission of the instructor. Analysis of grant proposals dealing with advanced topics in modern cell biology and/or developmental biology. Spring, fall. Bankaitis.
892b [321B] CONTEMPORARY PROBLEMS (3).
893 [324] CELL BIOLOGY I (4).
894 [325] CELL BIOLOGY II (4).
899 [209] ELECTRON MICROSCOPY-PRINCIPLES AND APPLICATIONS (3). Permission 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 hours and twelve laboratory hours per week. First summer session. Costello.
910 [310] RESEARCH (2 or more). Credit to be arranged in individual cases. Fall, spring, and summer. Staff.
915 [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, and summer. Staff.
993 [393] MASTER'S DISSERTATION (3).
994 [394] DOCTORAL DISSERTATION (3).

DEPARTMENT OF CELL AND MOLECULAR PHYSIOLOGY
JAMES M. ANDERSON, Chair

Professors
James M. Anderson (78) Epithelial Cell Biology, Tight Junction Structure and Function and the Physiologic Implications of Paracellular Selectivity
James E. Faber (49) Vascular Physiology, Signal Transduction of Vascular Smooth Muscle and Fibroblast Cells, Adenosine, Adrenergic Receptors
Paul B. Fehl (5) Regulation of Neuron Number, Development of Specific Neural Connections, Regulation
Pauline K. Lund (50) Growth Factors, Cytokines, Gastrointestinal Growth, Molecular Biology, Signal Transduction, Aging and Memory Loss
Anthony-Samuel LaMania (73) Induction and Patternning of the Mammalian Forebrain, Inductive Signaling Mechanisms in the Developing and Regenerating Nervous System, Function of Genes Associated with Human Developmental Disorders
Paul Manis (81) Cellular Mechanisms of Auditory Information Processing, Synaptic Plasticity, Ion Channels
Gerhard W. D. Messer (26) Mechanisms in Excitation-Contraction Coupling in Muscle, Ion Channels
Edward R. Perl (18) Physiological and Molecular Bases for Pain and Other Somatic Sensations, Spinal Cord Synaptic Mechanisms
Daniel N. Pomp (89) Genetics of Growth, Obesity, and Body Weight Regulation in Animal Models
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 Rustioni (39) Somatosensory System; Connections, Neurotransmitters, and Interneuronal Integration
Robert Seale (32) Cell Biology and Biochemistry of the Neuromuscular Junction, Proteins Involved in Duchenne Muscular Dystrophy
William Snider (74) Developmental Regulation by Neuronal Growth Factors
Ann E. Smart (41) Aspects of Synaptic Transmission from Photoreceptors, Histaminergic Synapses
Tony G. Waldrop (77) Genetic Aspects of Hypertension, Developmental Neurobiology, Effects of Hypoxia on Brainstem Neurons
Barry L. Whitsel (23) Neuronal Mechanisms of Somatic Sensation

Associate Professors
Eva Anton (76) Molecular Analysis of Neuronal Migration and Development of the Cerebral Cortex
Richard E. Cheney (69) Motor Proteins, Cytoskeleton, Neuronal Cell Biology
Michael F. Goy (60) Biochemistry and Physiology of Excitable Cells, Second Messenger Mechanisms in Signal Transduction, Epithelial Biology, Natriuretic Peptides
Carol A. Orey (72) Mechanisms of Cell Adhesion, Cell Migration and Cytoskeletal Organization, and Neuronal Cell Biology
Scott Randell (75) Airway Epithelial Cell Biology-Stem Cells, Host Defense and Response to Injury

Assistant Professors
Kathleen Caron (80) Gene Targeted Models of Human Disease, Reproductive Biology, Cardiovascular Biology, G-Protein Coupled Receptor Signaling
Suk-Won Jin (92) Endothelial Cell Specification and Vascular Tube Morphogenesis
Jeffrey M. MacDonald (93) Metabolism and Its Applications to Physiology
Benjamin Philpot (82) Mechanisms of Experience-Dependent Synaptic Plasticity in Visual Cortex
John P. Rawl (91) Molecular and Genetic Analysis of Host-Microbial Interactions in the Vertebrate Digestive Tract
Nobuyuki Takahashi (84) Mechanisms of Hypertension, Diabetic Complications, and Obesity Using Genetically Engineered Animals
Eleni Taima (88) Mechanisms of Vascular Endothelial Cell Signaling and Angiogenesis in Response to Hemodynamic Stimuli
Mark J. Zylka (90) Molecules and Mechanisms for Pain

Research Professor
C. William Davis (51) Airway Epithelial Cell Physiology

Research Associate Professor
Nicholas G. Moss (94) Biological Signal Transduction

Research Assistant Professor
Robert Turrand (87) Regulation of Airway Epithelial Ion and Water Transport

Professors Emeriti
Robert G. Faust
Enid K. Kafer
Alan Light
David L. McIwain
Joseph H. Petruzzelli
Lloyd R. Vance

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, and
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 the following courses: cell biology plus PHYI 703, molecular and integrative physiology; PHYI 710 and 720, human physiology and neurobiology; and one advanced physiology course plus three electives. Requirements may be waived for students with previous graduate-level coursework.

Research rotations introduce students to faculty laboratories and develop and broaden research experience. 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 formal way for students to develop research and analytical skills. Teaching experience is available in pre-professional courses, graduate school, and medical school courses. The qualifying examination is scheduled at the end of the first year. 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, immunobiology, and whole-animal studies. UNC-Chapel Hill has outstanding centers for the development and breeding of transgenic and gene-knockout mice for molecular biology/recombinant DNA-related research, cardiovascular biology, and cystic fibrosis and pulmonary medicine. Construction of a zebrafish facility is underway. Researchers in the department routinely collaborate with members of other School of Medicine departments and centers, with laboratories at Duke University, and with researchers at NIEHS in nearby Research Triangle Park.

Financial Aid

All students in good academic standing receive a stipend, tuition scholarship, and health insurance. Many students compete successfully for individual pre-doctoral fellowships from the AHA, NIH, and NSF, and for competitive awards from The Graduate School. Interdisciplinary training grants in vascular biology, nutrition, cell and molecular biology, and integrative medicine support students across the campus. In addition, the department and individual labs provide funds for students to attend national and international research meetings and specialty courses on- and off-campus.

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

701 [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, and summer. Staff.

703 [125] MOLECULAR AND INTEGRATIVE PHYSIOLOGY (2-4). 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. Seidman, staff.

705 [205] COMMUNICATING SCIENTIFIC RESULTS (1). Practice in oral and written communication evaluated by peers and faculty. Includes delivery of coached presentations on topics in physiology and preparation of writing assignments typically encountered in scientific life. Fall. Stuart.


710 [201] MEDICAL NEUROBIOLOGY (NBIO 710) (1-3). 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. Goy, staff.

714 [114] PHYSIOLOGY (DENT 114) (4). This basic physiology course introduces students to the functions of and interactions between the various systems of the body. Particular emphasis is placed on those concepts 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. Moss, staff.

720 [200] HUMAN PHYSIOLOGY (1-5). 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. Six lecture hours per week. Spring. Goy, staff.

722A [222A] CELLULAR AND MOLECULAR NEUROBIOLOGY; INTRODUCTION (BIOC722A) (NBIO722A) (PHCO722A) (2). Prerequisite. permission of course director. Introductory section covers basic neurobiology, including neuronal cell biology, axon potentials, synaptic potentials, molecular biology, and neuroanatomy. Course meets three weeks with six lecture hours per week. Fall. Stuart.

722B [222B] CELLULAR AND MOLECULAR NEUROBIOLOGY: RECEPTORS (BIOC722B) (NBIO722B) (PHCO722B) (2). Prerequisite. permission of the 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.

722C [222C] CELLULAR AND MOLECULAR NEUROBIOLOGY: ELECTRICAL SIGNALING (BIOC722C) (NBIO722C) (PHCO722C) (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 six weeks with six lecture hours per week. Fall. Stuart.
723A [223A] CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-INTRACELLULAR SIGNALING (BIOC723A) (NBIO723A) (PHCO723A) (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 tyrosine kinases. Course meets for five weeks with six lecture hours per week. Spring. Stuart.

723B [223B] CELLULAR AND MOLECULAR NEUROBIOLOGY: PRESYNAPTIC MECHANISMS (BIOC723B) (NBIO723B) (PHCO723B) (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.


751 [220] SEMINAR IN PHYSIOLOGY (1). Prerequisite, permission of the director of graduate studies. Fall. Staff.

752 [221] SEMINAR IN PHYSIOLOGY (1). Prerequisite, permission of the director of graduate studies. Spring. Staff.

800 [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. Faculty.

824 [224] PAIN AND SOMATIC SENSATION (NBIO 824) (2). Prerequisites, PHYI 720 or equivalent and permission of the instructor. Consideration of peripheral and central neural mechanisms for somatic sensation with particular emphasis on pain. Spring. Perl.


PHYI 838 [239B] EXCITABLE MEMBRANES, RECEPTORS, CHANNELS AND SYNAPSES (1). Basic neurophysiology of excitable membranes, channels and synapse as the basis of neuronal communication. Spring. Rosenberg, Sealock.

PHYI 839 [239C] CENTRAL NERVOUS SYSTEM ORGANIZATION, INTEGRATION, AND PLASTICITY (1). Primary literature explores how the nervous system is organized, integrates information and adapts. Spring. Fare, Perl.

PHYI 840 [240] RENAL/CARDIOVASCULAR SYSTEMS (3). Prerequisites, PHYI 720 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. Arentzhofer, Faber, Goy, staff.

850 [290] SEMINAR IN NEUROBIOLOGY (BIOC 850) (NBIO 850) (PHCO 850) (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.

891 [211] SPECIAL TOPICS IN PHYSIOLOGY (NBIO 791) (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. Fall. Staff.

892 [212] SPECIAL TOPICS IN PHYSIOLOGY (NBIO 792) (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.

901 [301] RESEARCH IN PHYSIOLOGY (3-10). Fall. Staff.

902 [302] RESEARCH IN PHYSIOLOGY (3-10). Spring. Staff.

903 [303] RESEARCH IN PHYSIOLOGY (3-10). Summer. Staff.

993 [393] MASTER’S THESIS (3 or more). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

DEPARTMENT OF CHEMISTRY

H. Holden Thorp, Chair

Professors
Tomas Baer (1) Physical Chemistry
Max L. Berkowitz (30) Physical Chemistry
Maurice S. Brookhart (2) Organic and Organometallic Chemistry
Michael T. Grimm (39) Organic Chemistry
Joseph M. DeSimone (49) Synthetic Polymer 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. Knopp (26) Physical Chemistry
Susan T. Loid (50) Biological Chemistry
Thomas J. Meyer (23) Inorganic Chemistry
Royce W. Murray (25) Analytical Chemistry
Lee G. Pedersen (26) Physical Chemistry
Gary J. Pielak (46) Biological Chemistry
J. Michael Ramsey (62) Analytical Chemistry
Michael Rubinstein (43) Polymer Physical Chemistry
Edward T. Samulski (44) Polymer Physical Chemistry
Thomas N. Sorrell (35) Organic Chemistry
Linda L. Sprenulli (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. Wolfenden (65) Biological Chemistry

Associate Professors
Valerie Sheares Ashby (61) Polymer and Materials Chemistry
Dorothy A. Erke (11) Physical and Biological Chemistry
Michel R. Gagne (22) Inorganic, Organic, and Polymeric Chemistry
Wenbin Lin (60) Inorganic Chemistry
John M. Papanikolas (52) Physical Chemistry
Matthew Redinbo (55) Biological Chemistry
Cynthia K. Schafer (49) Inorganic Chemistry
Mark H. Schoenfeld (57) Analytical and Materials Chemistry
Sergei S. Shyro (59) Polymer and Materials Chemistry
Marcy Waters (56) Organic Chemistry
Kevin M. Weeks (53) Biological Chemistry

Assistant Professors
Todd L. Austell (70) Chemistry Education, Academic Advising, Lab Curriculum Development
Brian P. Hagan, Chemistry Education, Lab Curriculum Development
Jeffrey S. Johnson (58) Organic Chemistry
Research Interests

**Analytical.** Chemical separations: Development of instrumentation for ultra-high pressure capillary liquid chromatography, capillary electrophoresis, and combined two-dimensional separations. Applications include proteomics and measurement of peptide hormones in biological tissues. Mass spectrometry: of biological, environmental, organic, and polymeric compounds; tandem MS, ion activation, ion molecule reactions; instrument development. Electrochemistry: new methods for study of biological media, neurotransmitters small spaces, redox solids, chemically modified surfaces, nanoparticle chemistry, and quantum size effects including the analytical chemistry of nanoparticles. Chemical microsystems: Microfabricated fluidics technologies, or lab-on-a-chip devices, are being developed to address biological measurement problems such as protein expression, cell signaling and cancer diagnostics. Miniaturized mass spectrometers, in addition to microfluidics, are being developed for environmental monitoring. Nanoscale fluidics devices are being developed for single molecule DNA sequencing and chemical sensing. Biomaterials: synthesis and characterization of in vivo sensor membranes, medical device coatings, nanoparticle therapeutics, and their physiological impact; analysis of proteins and cells at surfaces.

**Biological.** Kinetics and mechanisms of complex biochemical processes; mechanism of protein biosynthesis; metabolic regulation; gene organization and regulation of gene expression; structural studies of macromolecules; protein structure and function using nuclear magnetic resonance spectroscopy, protein folding and site-directed mutagenesis; in-cell NMR; the thermodynamics of protein-protein interactions; characterization of protein/DNA complexes using scanning force microscopy and rapid mixing techniques; RNA structure in vivo, assembly of complex RNA-protein architectures, protein-activation of RNA catalysis; nucleic acid-based biosensors; chemical synthesis 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; cell migration on tailored surfaces; small molecule and protein microarray development; live cell fluorescence microscopy.

**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, photo-induced 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 carboxations, carbanions, carbenes 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; homogeneous and heterogeneous polymerizations in supercritical fluids; synthesis of engineering polymers; molecular recognition.


Molecular Spectroscopy: laser spectroscopy in cooled molecular beams of transient species, ions and molecular complexes, subdoppler infrared spectroscopy, ion photodissociation studies, development of spectroscopic techniques, double resonance spectroscopy, pulsed field gradient NMR and NMR imaging. Application of optical and mass spectroscopies to the study of atmospheric chemistry.


Polymer and Materials Chemistry. Many challenging problems in modern science and technology are related to the preparation, properties, and utilization of novel functional materials. The polymer chemistry, drug delivery, and 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; design of multifunctional monomers and polymers, 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 imprint lithography and nano-molding, and defined microstructures. Recent efforts funded by the National Cancer Institute and NIH for employing lithographic techniques from the electronics industry to make organic nano-particles for the detection, diagnosis, and treatment of diseases, especially cancer. 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 analytical as well as computational and numerical methods in polymers.

Biotechnology. The University has instigated 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, and the W. Lowry and Susan S. Caudill Laboratories, an exciting new facility of 71,000 square feet completed in 2006. The undergraduate laboratories are housed in the modern John Morehead Morehead Laboratories, completed in 1986. Included in the department are some major facilities managed by PhD-level staff scientists. The NMR laboratory includes 6 high-resolution FT-NMR spectrometers ranging from 300 to 600 MHz for liquids: 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 MS laboratory houses a Bruker BioTOF II Reflectron Time of Flight Mass Spectrometer (ESI/nESI), an Agilent HPLC Quadrupole Mass Spectrometer (ESI, APCl), and a Micromass Quattro II Triple Quadrupole Mass Spectrometer. The X-ray laboratory is equipped with a new Bruker AXS SMART APEX2 single crystal diffractometer and Rigaku Multiflex powder diffractometer.

Computing services are among the most important for modern research. The University computing resources that currently reside in Information Technology Services (ITS) include a SGI Altix 3700hx2 system with 128 Intel Itanium2 processors (1600MHz), a Dell cluster with 520 PowerEdge 1855 servers with dual Intel EM64T 3.6 GHZ processors (total 1040 processors), a Beowulf Linux cluster with 135 Dual processor servers, an IBM 690 (32 processors), and a variety of specialty machines that provide services for statistics, bioinformatics, and database applications. A number of the individual research laboratories in Chemistry own Silicon Graphics or Linux based workstations. Numerous software packages of interest to chemical, biochemical and materials researchers are maintained for use on central systems by the ITS Research Computing group (Accelrys, Gaussian, MolPro, NWChem, CPMD, AMBER, Gromacs, Felix, Sybyl, SAS, Stata, Mathematika, ECCE, Gaussview, etc.). The combined hardware and software resources are tailored to meet the needs of a broad range of chemists working on applications in quantum mechanics, molecular dynamics, NMR, X-RAY, structural biology, and bioinformatics.

To support the research programs, the department provides a number of services. Instrument, 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 is currently being housed in temporary quarters in the Wilson Library annex and is scheduled to move into "New Venable" upon its completion in 2009. During this temporary period the Chemistry Library is sharing space and combining some services with the Zoology Library. The entrance to the combined Chemistry/Zoology Library is on the south side of Wilson Library, across the street from the Bell Tower. Most Chemistry Library journal subscriptions and databases are available online for 24-hour access from campus workstations and other workstations that meet licensing requirements. The Chemistry collection also includes many print reference works and monographs that are available for checkout or use in the reading room when the library is open. Reference and instructional services are also available at the library service desk and by arrangement with library staff.

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 over 200 graduate students in the department. All are supported either as teaching assistants (27%), research assistants (65%), or as Fellows (8%) supported by The Graduate School, industry, or the United States government. The duties of the teaching assistants include the preparation for and supervision of laboratory classes in undergraduate courses and the grading of laboratory reports.

Applications for assistantships and fellowships should be made before the end of January, although applicants for assistantships are considered after that date. All applicants (international and domestic) must take the Graduate Record Examination (GRE). All international students whose native language is not English must take the Test of English as a Foreign Language (TOEFL) examination in addition to the Graduate Record Examination. However, international students who hold a degree from a university in the United States may be exempt. Both the TOEFL and the GRE should be taken as early as possible for full acceptance, preferably in October.

Application forms for admission/support, as well as information about the department, should be obtained from the Chemistry Department website, www.chem.unc.edu. Questions may be directed to: chimgs@unc.edu.

Courses for Graduates and Advanced Undergraduates

396 [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.

420 [120] INTRODUCTION TO POLYMER CHEMISTRY (APPL 420) (3). Prerequisite, CHEM 261 or 261H; prerequisites or corequisites, CHEM 262 or 262H, 262L or 263L. 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.


430 [130] INTRODUCTION TO BIOLOGICAL CHEMISTRY (3). Prerequisites, CHEM 262 or 262H, 262L or 263L, BIOL 101. 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.


432 [132] PROTEIN CHEMISTRY (3). Prerequisite, CHEM 430. Structural properties of proteins: active-site chemistry; chemical modification of proteins; metalloproteins; coenzyme-enzyme interactions; organization of enzyme systems. Fall. Biological Chemistry faculty.

433 [133] ENZYME MECHANISMS AND KINETICS (3). Prerequisite, CHEM 432. A detailed discussion of enzyme catalysis; principles of catalysis; enzyme kinetics; the active site of enzymes; allosteric interactions between subunits; the mechanism of coenzyme-catalyzed reactions. Spring. Biological Chemistry faculty.


436 [136] PROTEOME AND INTERACTOME (1). Prerequisites, CHEM 430 and permission of the instructor. Methods for and role of bioinformatics in proteomic analysis; proteomics in the analysis of development, differentiation and disease states; the interactome – definitions, analysis methods of protein-protein interactions in complex systems. Fall (first five weeks). Biological Chemistry faculty.

437 [137] MEMBRANE CHEMISTRY (3). Prerequisites, BIOL 101, CHEM 430; corequisite or prerequisite, CHEM 480 or 481. The structure and properties of synthetic membranes and of naturally occurring biological membranes. Spring. Biological Chemistry faculty.


439 [139] RNA PROCESSING (2). Prerequisites, CHEM 431 and permission of the instructor. RNA processing, structure, and therapies: in-depth exploration of examples from the contemporary literature. Topics include: RNA World hypothesis, RNA structure and catalysis, and nucleic acid-base sensors and drug design. Spring (last ten weeks). Biological Chemistry faculty.

441 [141] INTERMEDIATE ANALYTICAL CHEMISTRY (2). Prerequisites, CHEM 241 or 241H, 241L, or 245L, 262 or 262H, and 480 or 481. Spectroscopy, electroanalytical chemistry, chromatography, thermal methods of analysis and signal processing. Spring. Analytical Chemistry faculty.

One four-hour laboratory a week and a one-hour lecture each week. Spring. Analytical Chemistry faculty and staff. (Fee required.)

442 [142] ANALYTICAL RESEARCH TECHNIQUES (2). Prerequisite, CHEM 480 or 482. Introduction to chemical instrumentation including digital and analog electronics, computers, interfacing, and chemometric techniques. Two one-hour lectures a week. Fall. Analytical Chemistry faculty.

442L [142L] LABORATORY IN ANALYTICAL RESEARCH TECHNIQUES (3). Prerequisite, CHEM 480 or 482; corequisite, CHEM 442. 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.

444 [144] SEPARATIONS (2). Prerequisites, CHEM 441 and 480 or 481. 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.

445 [145] ELECTROANALYTICAL CHEMISTRY (3). Prerequisite, CHEM 480 or 481. Basic principles of electrochemical reactions, electroanalytical voltammetry as applied to analysis and the chemistry of heterogeneous electron transfer, analog electronics, and electrochemical instrumentation. Fall or spring. Analytical Chemistry faculty.

446 [146] ANALYTICAL SPECTROSCOPY I (3). Prerequisite, CHEM 480 or 482. 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.

447 [147] ANALYTICAL SPECTROSCOPY II (2). Prerequisite, CHEM 480 or 482. 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 rotary dispersion and circular dichroism, secondary emission methods. Fall or spring. Analytical Chemistry faculty.

448 [148] MASS SPECTROMETRY (2). Prerequisite, CHEM 480 or 481. Fundamental theory of gas and ion chemistry, instrumentation, combination with separation techniques, spectral interpretation for organic compounds, applications to biological and environmental chemistry. Fall or spring. Chemistry faculty.


451 [151] THEORETICAL INORGANIC CHEMISTRY (1-3). Prerequisites, CHEM 251, 262 or 262H. 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.

452 [152] ELECTRONIC STRUCTURE OF TRANSITION METAL COMPLEXES (3). Prerequisite, CHEM 451. 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.

453 [153] PHYSICAL METHODS IN INORGANIC CHEMISTRY (3). Prerequisite, CHEM 451. Introduction to the physical techniques used for the characterization and study of inorganic compounds. Topics typically include vibrational spectroscopy, nuclear diffraction, Mössbauer spectroscopy, X-ray photoelectron spectroscopy, and inorganic electrochemistry. Spring. Inorganic Chemistry faculty.

460 [160] INTERMEDIATE ORGANIC CHEMISTRY (3). Prerequisite, CHEM 262 or 262H. Modern topics in organic chemistry, reaction mechanisms and organic synthesis. Fall. Organic Chemistry faculty.

465 [175] MECHANISMS OF ORGANIC AND INORGANIC REACTIONS (4). Prerequisite, CHEM 450. 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.

466 [166] ADVANCED ORGANIC CHEMISTRY I (3). Prerequisite, CHEM 262 or 262H; prerequisites or corequisites, CHEM 450, 481. 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.

467 [167] ADVANCED ORGANIC CHEMISTRY II (2). Prerequisite, CHEM 466. Spectroscopic methods of analysis with emphasis on elucidation of the structure of organic molecules: IR, UV, NMR, infrared, ultraviolet, ORD-CD, mass and photo-electron spectroscopy. CHEM 446 and 467 may not both be taken for academic credit. Spring. Organic Chemistry faculty.


470 [190] FUNDAMENTALS OF MATERIALS SCIENCE (APPL 470) (3). Prerequisites, CHEM 482, or prerequisite, PHYS 128 and prerequisite or corequisite, PHYS 241. Crystal geometry, diffusion in solids; mechanical properties of solids, electrical conduction in solids; thermal properties of materials; phase equilibria. Fall. Irene.


472 [192] CHEMISTRY AND PHYSICS OF ELECTRONIC MATERIALS PROCESSING (PHYS 472) (APPL 472) (MTSC 472) (3). Prerequisite, CHEM 482, or PHYS 105 or 117, 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 micro lithography, characterization techniques, electrical and dielectric properties of materials. Spring. Chemistry and Physics faculty.

473 [193] CHEMISTRY AND PHYSICS OF SURFACES (APPL 473) (MTSC 473) (3). Prerequisite, CHEM 470. 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.

480 [180] INTRODUCTION TO BIOPHYSICAL CHEMISTRY (3). Prerequisites, CHEM 261 or 261H; PHYS 105, MATH 232. 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.

481 [181] PHYSICAL CHEMISTRY I (3). Prerequisites, CHEM 102 or 102H; PHYS 116, 117; and pre- or corequisite, MATH 383. Thermodynamics, kinetic theory, chemical kinetics. Fall. Physical Chemistry faculty.

481L [181L] PHYSICAL CHEMISTRY LABORATORY I (2). Prerequisite or corequisite, CHEM 481. Experiments in physical chemistry. One three-hour laboratory and a single one-hour lecture a week. Fall. Physical Chemistry faculty and staff.

482 [182] PHYSICAL CHEMISTRY II (3). Prerequisite, CHEM 481. Introduction to quantum mechanics, atomic and molecular structure, spectroscopy, statistical mechanics. Spring. Physical Chemistry faculty.
482L [182L] PHYSICAL CHEMISTRY LABORATORY II (2). Prerequisites, CHEM 481, 481L; prerequisite or corequisite, CHEM 182. Experiments in physical chemistry. One four-hour laboratory a week. Spring. Physical Chemistry faculty and staff.

484 [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.

485 [185] CHEMICAL DYNAMICS (3). Prerequisites. CHEM 181, 182. Experimental and theoretical aspects of atomic and molecular reaction dynamics. Fall or spring. Physical Chemistry faculty.

486 [186] INTRODUCTION TO QUANTUM CHEMISTRY (3). Prerequisites, CHEM 481, 482. Introduction to the principles of quantum mechanics. Approximation methods; angular momentum; simple atoms and molecules. Fall. Physical Chemistry faculty.

487 [187] INTRODUCTION TO MOLECULAR SPECTROSCOPY (3). Prerequisite, CHEM 486. 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.


520L [124L] POLYMER CHEMISTRY LABORATORY (APPL 520L) (2). Prerequisite or corequisite, CHEM 420 or 421. 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.

530L [131L] LABORATORY TECHNIQUES FOR BIOCHEMISTRY (3). Prerequisite, CHEM 430. 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 a one-hour lecture each week. Biological Chemistry faculty.

550L [170L] SYNTHETIC CHEMISTRY LABORATORY I (2). Prerequisites, CHEM 241L or 245L, 251, 262L or 263L. 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.

560L [160L] SYNTHETIC ORGANIC LAB (2). Prerequisites, CHEM 241L, 245L, 262L, 263L. An advanced synthesis laboratory focused on topics in organic chemistry. 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.

Courses for Graduates

721 [221] SEMINAR IN MATERIALS CHEMISTRY (2). Prerequisite, graduate standing. Fall and spring. Polymer/Materials Chemistry faculty.

731 [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.

733 [233] SPECIAL TOPICS IN BIOLOGICAL CHEMISTRY (1-3). Modern topics in biological chemistry. Fall and spring. Biological Chemistry faculty.

734 [234] SPECIAL TOPICS IN BIOLOGICAL CHEMISTRY: NMR (1-3). Introduction to practical solution NMR of proteins in solution. Fall and spring. Pelak.

735 [235] SPECIAL TOPICS IN BIOLOGICAL CHEMISTRY: MACROMOLECULAR INTERACTIONS (1-3). Fall and spring. Pelak.

736 [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.


744 [244], [245] SPECIAL TOPICS in ANALYTICAL CHEMISTRY (1-2). Modern topics in analytical chemistry, including advanced elemental analysis, advanced mass spectrometry, chemical instrumentation, and other subjects of recent significance. Two lecture hours a week. Fall and spring. Analytical Chemistry faculty.

752 [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.

754 [254] LITERATURE SEMINAR in INORGANIC CHEMISTRY (2). Prerequisite, graduate status. Fall and spring. Inorganic Chemistry faculty.

758 [258] X-RAY STRUCTURE DETERMINATION (3). Prerequisites, 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.

761 [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.

764 [264], [265] SPECIAL TOPICS in ORGANIC CHEMISTRY (1-3 each). Two lecture hours a week. Fall and spring. Organic Chemistry faculty.

767 [267] ORGANIC CHEMISTRY (2-6). Prerequisite, to be determined by consultation with professor in charge. Three to six hours a week. Fall and spring. Organic Chemistry faculty.

781 [281], [282] SEMINAR in PHYSICAL CHEMISTRY (2 each). Prerequisite, graduate standing. Two hours a week. Fall and spring. Physical Chemistry faculty.

783, 786 [283], [286] SPECIAL TOPICS in PHYSICAL CHEMISTRY (1-3 each). Prerequisite, permission of the instructor. Modern topics in physical chemistry, including topics in quantum mechanics, chemical physics, or biophysical chemistry. One or three lecture hours a week. Fall and spring. Physical Chemistry faculty.

788 [288], [289] PRINCIPLES OF CHEMICAL PHYSICS (PHYS 827) (3 each). Prerequisite, CHEM 281 or PHYS 321 or permission of the instructor. The quantum mechanics of molecules and their aggregates. Atomic orbitals, Hartree-Fock methods for atoms and molecules.

Research Courses

921 [321] RESEARCH METHODOLOGY AND SEMINAR in POLYMER/MATERIALS CHEMISTRY (1 or more). Seminar and directed study on research methods of polymer/materials chemistry. This course provides a foundation for master's thesis or doctoral dissertation research. Fall and spring. Polymer/Materials Chemistry faculty.

931 [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.
941 [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.

951 [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.

961 [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.

981 [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.

992 [392] MASTER’S (NONTHESIS) (Var).

993 [393] MASTER’S THESIS (Var). Prerequisites, 921, 931, 941, 951, 961, or 981. Fall and spring. Graduate faculty.

994 [394] DOCTORAL DISSERTATION (Var). Prerequisites, CHEM 921, 931, 941, 951, 961, or 981. Fall and spring. Graduate faculty.

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**DEPARTMENT OF CITY AND REGIONAL PLANNING**

EMIL MALIZIA, Chair

**Professors**

Richard N. L. Andrews (37) Environmental Policy (Joint Appointment with Public Policy)

Philip R. Berke (52) Environmental Planning, Land Use Policy, Natural Hazards Mitigation

Raymond J. Burby (40) Land Use, Hazard Mitigation, Environmental Planning

Harvey A. Goldstein (36), Planning Theory, Economic Development, Research Methods

Emil E. Malizia (12) Economic and Real Estate Development, Development Finance

David H. Moreau (10) Environmental Planning, Water Resources Planning, Systems Analysis

William M. Moore (22) Social Behavioral Aspects of Urban Development, Neighborhood Planning and Development

Dale Whittington (29) Environmental Planning, Public Investment Theory, International Planning

**Associate Professors**

Asad Khattak (54) Transportation, Quantitative Analysis

Roberto Quercia (57) Housing Finance, Housing Policy

**Assistant Professors**

Thomas Campinella (61) Urban Design Theory and Practice, History of the American Built Environment, Site Planning

Nichola Lowe (65) Economic Development

Mał Nguyen (64) Housing and Community Development

Daniel Rodriguez (60) Transportation, Spatial Structure

Yan Song (62) Geographic Information Systems, Urban Spatial Analysis, Land Use and Site Planning

Meenu Tewari (59) Microeconomics, International Planning

**Research Professors**

Richard E. Bilbrough, Developing Countries

David J. Brower (34) Growth Management, Coastal Planning, Hazard Mitigation

**Adjunct Professors**

Richard N. L. Andrews, Environmental Policy Analysis

Edward M. Bergman (14) Economic Development

Jonathan B. Howes (44) Planning and Government

Michael I. Luger (38) Urban and Regional Economics and Development, Public Policy Analysis, Infrastructure and Housing

David Owens (49) Land Use Law

Michael A. Stigman (60) Housing and Policy Development, Real Estate Development (Joint Appointment with the Kenan-Flagler Business School)

**Associated Faculty**

Brian A. Giochetti, Real Estate Development

Milton S. Heath Jr., Natural Resource Law

David J. Harrell, 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

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**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 the 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 of the primary engines driving the area's growth. The Raleigh-Durham metropolitan area, of which Research Triangle Park and Chapel Hill are part, has been identified as one of thirty metropolitan areas in the country that accounted for half the new jobs in the nation. 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 (DCRP) 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 bases 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, ways 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 horizons 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 (MRP) and the doctor of philosophy (PhD) 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 F. Stuart Chapin Jr. Research Library, which contains 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.

Mainframe and additional microcomputer facilities and a geographic information systems laboratory are available to students through the Odum Institute for Research in Social Science and through the UNC-Chapel Hill Computation Center.

**Students in the Department**

During the past sixty 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 also employed in the following areas: as private consultants; as 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 thirty 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 steadily 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 eighteen 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, the District of
Columbia, 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 Listserv 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 fellowships offered by The Graduate School and to ensure 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 (www.planning.unc.edu/program/admiss.htm) or by mail from the department upon request. Each applicant is required to pay a nonrefundable $70 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 office of most colleges and universities, or by writing to Graduate Record Examinations, CN 6000, Princeton, N.J. 08541-6000, or from their Web site, 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 UNC-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 nonplanning 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 UNC-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 City and Regional 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 704. The analytical methods requirement is met by completing PLAN 720. PLAN 714 fulfills the spatial theory requirement. The economics requirement is met by completing PLAN 710. Students select a planning workshop (PLAN 823) 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 redevelopment. It is closely coordinated with the real estate concentration in 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 addresses 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: The 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 advisers.

General Electives

Additional courses are required beyond the general required courses and courses in the area of specialization. General electives may be used to: (1) complement and support the area of specialization; (2) to specialize in another area of professional planning; (3) 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, or business); or (4) 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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<tr>
<th>Requirement</th>
<th>Total</th>
<th>Must Be in DCRP</th>
<th>May Be Outside of DCRP</th>
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<td>Planning Theory</td>
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<td>Electives/Supporting Courses</td>
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<td>Master’s Project</td>
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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 an additional 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 adviser. 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 to 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 provide 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 of the year 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 to 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 law school, and the student must make this choice at the time of admission. The second year is normally spent full-time in the program not selected in the first year. After the first two years, the student has an additional forty-three semester credits to complete in the law school and twelve semester credits to complete in planning.

To request an admission packet for the law school, please contact:
The University of North Carolina at Chapel Hill
Admissions Office
School of Law
Campus Box 3490
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3490

Program in Business and Planning

The Kenan-Flagler Business School and the Department of City and Regional Planning offer a dual-degree program leading to the MBA and MRP degrees, usually in three years. The program builds management and planning skills that enable graduates to pursue rewarding, flexible, and socially useful careers in the private, non-profit, or public sectors. Graduates work in real estate and economic development consulting, financial institutions, and entrepreneurial firms. Increasingly, applicants to the business and planning program want to pursue career paths that combine planning and management and seek the flexibility to move between jobs in the public and private sectors.

To enter this program, students must apply separately to both the Department of City and Regional Planning and the Kenan-Flagler Business School, 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, NJ.

To request an admission packet for the Kenan-Flagler Business School, please contact:
Director of MBA Admissions
The Kenan-Flagler Business School
Campus Box 3490, Carroll Hall
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3490
Web: 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 ensure 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:
Sharon Pickard
MPA Program Manager
Master of Public Administration Program
School of Government, UNC-Chapel Hill
CB # 3330 Knapp-Sanders Building
Chapel Hill NC 27599-3330
Phone: (919) 962-0425
Fax: (919) 962-8271
E-mail: mpastaff@sgmail.ing.unc.edu
Web: www.mpa.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: lwook@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 Master of Landscape Architecture (MLA), both of 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-Tabron
Department of Landscape Architecture
220 Brooks Hall, Box 7701
College of Design
North Carolina State University
Raleigh, NC 27695-7701
Phone: (919) 515-8398
E-mail: pamela_christie@ncsu.edu
Web: ncsudesign.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 minorin urban studies and planning.
Research Programs in Urban and Regional Studies

Through the Center for Urban and Regional Studies, the Odum Institute for Research in Social Science, the Water Resources Research Institute, the Institute for Environmental Studies, 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. The Center provides population research services to faculty doing research in the social, behavioral, and health sciences 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 the three major areas of the highway safety problem - the driver/occupant, the vehicle, and the roadway. HSRC produces monographs, techniques, 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.

RTI 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 of the U.S. Environmental Protection Agency (EPA), the largest field installation of the 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 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 (NHC) 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 NHC 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 major universities in the Triangle, 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 system campuses. Affiliated faculty and staff of ITRE are located on various campuses of the University system 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

499 [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.

526 PRINCIPLES OF PUBLIC FINANCE FOR PLANNING AND POLICY (PLCY 520) (1.5). Provides the foundation of state and local government finance necessary to understand new developments in the provision of infrastructure for economic development.

527 APPLIED PUBLIC FINANCE FOR INFRASTRUCTURE AND ECONOMIC DEVELOPMENT (PLCY 527) (1.5). Explores the role of infrastructure in economic development, including innovations in finance, management, and technology. Covers traditional and knowledge infrastructure. Addresses trade-off between environmental protection and economic growth.

636 [126] URBAN TRANSPORTATION PLANNING (3). Prerequisite, permission of the 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. Khattakk.

637 [127] PUBLIC TRANSPORTATION (3). Prerequisite, permission of the instructor required for undergraduates. Alternative public urban transportation systems including mass transit, innovative transit services, and paratransit, examined from economic, land use, social, technical, and policy perspectives. Spring. Rodriguez.

641 [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.

662 [142] GENDER ISSUES IN PLANNING AND DEVELOPMENT (WMST 662) (3). Prerequisite, permission of the instructor required for undergraduates. Examination of the experience of women in the urban environment and economic development process in the developing world. Fall. Faculty.


691 [099] HONORS SEMINAR IN URBAN AND REGIONAL STUDIES (3). Prerequisite, permission of instructor. An overview of the subject matter and methods of investigation for the study of cities and regions. Presentations of original papers prepared by students.

701 RESEARCH METHODS (1-6). Course combines material learned in other courses (theory/philosophy, methods, and their substantive area of interest). Familiarizes students with the skills necessary to conduct research and critically review and understand evaluation reports.


721 [230] ADVANCED PLANNING METHODS (3). Prerequisite, permission of the instructor required for undergraduates. More in-depth treatment of topics covered in PLAN 720. Particular emphasis on techniques of multiple regression analysis, forecasting, categorical data analysis, and spatial data analysis. Fall and spring. Faculty.

738 [128] TRANSPORTATION POLICY AND PLANNING (3). Prerequisite, PLAN 636 or permission of the 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. Rodriguez.

739 [129] TRANSPORTATION PLANNING MODELS (3). Prerequisite, permission of the 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.

Courses for Graduates

491 [246] GIS FOR PLANNERS (3). Stresses the spatial analysis and modeling of organizing data within a geographic information system. Spring. Faculty.


550 AMERICAN URBAN LANDSCAPE (3). Examines shaping the urban built environments of the U.S. from the colonial era to present day. Critically examines forces that shaped our cities, study values, ideas and motivations underlying efforts to plan and direct physical development of American cities. Spring. Campanella.

574 POLITICAL ECONOMY OF POVERTY AND INEQUALITY (3). Introduces students to the political economy of poverty alleviation programs. Uses comparative cases to explore what types of projects, tasks, and environments lead to effective and equitable outcomes, and why. Fall. Tewari.


591 [247] ADVANCED GEOGRAPHIC INFORMATION SYSTEM (3). Prerequisite, PLAN 491 or equivalent. Review of spatial analytical techniques through a combination of laboratory work, lectures, and hands-on experience with GIS software. Fall. Song, faculty.

685 [219] WATER POLICY IN LESSER DEVELOPED COUNTRIES (ENVR 685) (3). Multiobjective 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.

697 [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.

704 [264] 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 and spring. Goldstein, Berke, faculty.

710 [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.

714 [214] URBAN SPATIAL STRUCTURE (3). Theories and empirical evidence of the contemporary spatial development of metropolitan areas. Residential, commercial location; neighborhood change; the role of technological change and public policies; and normative perspectives. Fall. Rodriguez, Song.

724 [206] INTRODUCTION TO LAW FOR PLANNERS (3). Governmental institutions, real property, constitutional law, land use law, and environmental law. Fall. Faculty.

725 [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.


741 [241] LAND USE AND ENVIRONMENTAL PLANNING (3). Methods of land use planning, use of GIS and spreadsheets to analyze land suitability and
spatial needs. Preparation of land classification plans, land use design plans, and development management programs. Spring. Berke, Song.

744 [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. Burbly.

745 [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. Burbly.


751 URBAN DESIGN (3).

752 [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. Campaella, Song.


760 [251] REAL ESTATE INVESTMENT AND AFFORDABLE HOUSING (3). Fundamentals and techniques of real estate investment analysis, including cases 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. Quezada.

761 [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. Quezada.


764 [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 those issues, and formulating an implementation strategy. Fall. Rohde.

765 [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.

768 [258] SEMINAR IN COMMUNITY CAPITALISM (PLCY 768) (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.

770 [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.


781 [234] WATER RESOURCES PLANNING AND POLICY ANALYSIS (ENVR 781) (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.

784 [233] ENVIRONMENTAL LAW (ENVR 784) (3). An examination of the law of resource use and development, its administration, and underlying policies. Particular attention is given to water resources law, regulatory law, and natural resource administration. Fall. Heath.

785 [232] PUBLIC INVESTMENT THEORY (ENVR 785) (PLCY 785) (3). Prerequisite, PLAN 710; or equivalent. Basic theory, process, and techniques of public investment planning and decision making; synthesis of economic, political, and technological aspects. Theory underlying cost-benefit analysis, adaptation to a descriptive and normative model for planning public projects and programs. Spring. Whittington.

786 [236] ENVIRONMENTAL QUALITY MANAGEMENT (ENVR 786) (3). Planning and analysis of environmental systems with a focus on management of mass flows that affect the quality of the regional environment. Spring. Moreau.

788 [238] PUBLIC POLICY ECONOMICS I (PLCY 788) (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.

789 [289] PUBLIC POLICY ECONOMICS II (PLCY 789) (3). Prerequisite, PLAN 788. 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.

799 [310] PLANNING SEMINAR (Vsy.). Original research, fieldwork, readings, or discussion of selected planning issues under guidance of a member of the faculty. Fall or spring. Faculty.

801 [301] DESIGN OF POLICY-ORIENTED RESEARCH (PLCY 801) (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.

802 [302] ADVANCED SEMINAR IN RESEARCH DESIGN (PLCY 802) (3). Prerequisite, PLAN 801. Advanced treatment of topics introduced in PLAN 801. Spring. Faculty.

823 [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.

890, 891 [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.

892 [353] PHD SEMINAR IN ENVIRONMENTAL MANAGEMENT AND POLICY (ENVR 892) (PLCY 892) (3). 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, and summer. Andrews.

896 [315] INDEPENDENT STUDY (Vac.). 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.

911 [311] PHD RESEARCH SEMINAR (Var.). Original research, fieldwork, readings, or discussion of selected planning issues under guidance of a member of the faculty. Fall or spring. Faculty.

992 [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.

994 [394] DOCTORAL DISSERTATION (Var.). Faculty.

DEPARTMENT OF CLASSICS

JAMES J. O'HARA, Chair

Professors
Carolyn L. Connor (39) Byzantine Studies
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
Cecll W. Wootten (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
Nicola Terechko (6) Roman Archaeology and Art

Assistant Professors
Brooke Holmes, Greek Literature, Ancient Medicine
Maura Lafferty (3) Medieval and Classical Latin, Paleography
Werner Ries (8) Roman History, Latin Epigraphy, Latin Prose Authors
Monika Triemper, Hellenistic and Roman Art and Architecture

Adjunct Professors
Joel Magness, Classical and Near Eastern Archaeology
W. James McCoy (17) Greek History
C.D.C. Reeve (39) Ancient Philosophy, Moral Psychology, History of Philosophy
Mary C. Sturgeon (31) Greek Art
Richard J. A. Talbert (18) Roman History

Professors Emeriti
Edwin L. Brown
George W. Houson
Henry R. Immerwahr
Gerhard Koenig
Jerry Linder
Sara Mack
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 applicant. A brochure describing the various programs in greater detail is available from the department, and is also online on the Web page of The Graduate School.

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

409 [158] GREEK NEW TESTAMENT (RELI 409) (3). Prerequisite, GREEK 221. Offered on application by five students. Staff.

507 [107] GREEK COMPOSITION (3). Prerequisite, GREEK 221 or 222. Smith.

508 [108] READINGS IN EARLY GREEK POETRY (3). Prerequisite, GREEK 221 or 222. (Alternate years.) Staff.

509 [109] READINGS IN GREEK LITERATURE OF THE FIFTH CENTURY (3). Prerequisite, GREEK 221 or 222. (Alternate years.) Staff.

510 [110] READINGS IN GREEK LITERATURE OF THE FOURTH CENTURY (3). Prerequisite, GREEK 221 or 222. (Alternate years.) Wooten.

540 [140], 541 [141] PROBLEMS IN THE HISTORY OF CLASSICAL IDEAS (3). Prerequisite, permission of the department.

Courses for Graduates

NOTE: One or two Greek courses numbered in the 700s are offered each semester.

722 [201] GREEK EPIGRAPHY (3). Staff.

753 [211] GREEK LYRIC POETRY (3). Race.

755 [212] GREEK TRAGEDY (3). Smith, Race, Holmes.

759 [213] GREEK COMEDY (3). Staff.

761 [214] GREEK PHILOSOPHICAL LITERATURE (3). Smith.


763 [216] GREEK HISTORICAL LITERATURE (3). Staff.

771 [217] HELLENISTIC POETRY (3). Staff.

775 [218] LATER GREEK PROSE (3). Staff.

790 [251] HOMER (3). Smith, Race.

798 [252] SOPHOCLES (3). Race.

795 [253] THUCYDIDES (3). Staff.

769 [256] DEMOSTHENES (3). Wooten.

901 [301] GREEK SEMINARS (3). Topics vary from year to year. Staff.

891 [341] SPECIAL READING (3). Fall and spring. Staff.

993 [393] MASTER'S THESIS (3 or more). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

Latin

Courses for Graduates and Advanced Undergraduates

510 [110] INTRODUCTORY LATIN COMPOSITION (3). Prerequisite, LATN 222 or equivalent. Review of Latin grammar and idiom, exercises in composition, introduction to stylistics. (Alternate years.) Wooten.

511 [111] READINGS IN LATIN LITERATURE OF THE REPUBLIC (3). Prerequisite, LATN 221 or 222. (Alternate years.) Riess.

512 [112] READINGS IN LATIN LITERATURE OF THE AUGUSTAN AGE (3). Prerequisite, LATN 221 or 222. (Alternate years.) James.

513 [113] READINGS IN LATIN LITERATURE OF THE EMPIRE (3). Prerequisite, LATN 221 or 222. (Alternate years.) Wooten.

514 [114] READINGS IN LATIN LITERATURE OF LATER ANTIQUITY (3). Prerequisite, LATN 221 or 222. Lafferty.

530 [130] AN INTRODUCTION TO MEDIEVAL LATIN (3). Prerequisite, LATN 212 or 602. Lafferty.

540 [140], 541 [141] PROBLEMS IN THE HISTORY OF CLASSICAL IDEAS (3). Prerequisite, permission of the department.

601/602 [101/102] 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 602 certifies that the requirement has been satisfied. One semester each. Staff.

Courses for Graduates

NOTE: One or two Latin courses numbered in the 700s are offered each semester.

722 [202] LATIN EPIGRAPHY (3). Riess.

723 [203] LATIN PALEOGRAPHY (3). Lafferty.

725 [207] LATIN COMPOSITION AND PROSE STYLES (3). Wooten.

726 [210] HISTORY OF LATIN (3).

753 [221] FRAGMENTS OF EARLY LATIN POETRY (3). Staff.

762 [222] ROMAN HISTORICAL LITERATURE (3). Study of Sallust, Caesar, Suetonius, or the minor historians of the empire. Staff.

764 [224] ROMAN DRAMATIC LITERATURE (3). Study of the comedies of Plautus and Terence or the tragedies of Seneca. Staff.

765 [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. James.

766 [226] ROMAN SATIRE (3). Study of the development of satiric forms with special attention to Horace or Juvenal. Staff.

767 [227] OVID AND LITERARY THEORY (3). Introduction to literary theory through a study of Ovid and scholarly approaches to his poetry. James.

768 [228] HORACE AND CATULLUS (3).

770 [230] TOPICS IN MEDIEVAL LATIN LITERATURE (3). Reading in selected medieval Latin prose and verse authors. Lafferty.


772 [262] CICERO: LITERARY CAREER (3).

773 [263] LUCRETIUS (3). O'Hara.

774 [264] VIRGIL (3). O'Hara.

775 [265] LIVY (3). Staff.

776 [266] OVID (3). O'Hara, James.

780 [270] PETRONIUS (3). Wooten, Riess.

784 [274] TACITUS (3). Staff.

901 [301] LATIN SEMINARS (3 each). Topics vary from year to year. Staff.

911 [341] SPECIAL READING (3). Fall and spring. Staff.

993 [393] MASTER'S THESIS (3 or more). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.
Classical Archaeology

Courses for Graduates and Advanced Undergraduates
440 [140], 441 [141] PROBLEMS IN HISTORY OF CLASSICAL IDEAS (3). Prerequisite, permission of the department.

445 [148] ART IN THE AGE OF JUSTINIAN AND THEODORA (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.

448 [149] CONSTANTINOPLE: THE CITY AND ITS ART (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.

449 [149B] IN CONSTANTINOPLE (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.


461 [194] ARCHAIC GREEK SCULPTURE (ART 461) (3). (Alternate years.) Surgeon.


463 [196] HELLENISTIC GREEK SCULPTURE (ART 463) (3). (Alternate years.) Surgeon.

464 [190] GREEK ARCHITECTURE (3). (Alternate years.) Sams.


475 [192] ROME AND THE WESTERN PROVINCES (3). Survey of the materials remains of the western provinces of the Roman Empire, with attention to their historical context and significance. Fall. Terr. Detrato.


561 [182] MOSAICS: THE ART OF MOSAIC IN GREECE, ROME, AND BYZANTIUM (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.

650 [153] FIELD SCHOOL IN CLASSICAL ARCHAEOLOGY (6). This course is an introduction to archaeological field methods and excavation techniques. For a period of five and one-half weeks, the student will participate in all aspects of archaeological fieldwork. The purpose is to allow the student to work directly with field archaeologists and specialists in the field and to do the actual digging and data processing, while reflecting on the broader aim of archaeological research. Spring.

781 [198] AEGEAN CIVILIZATION AND NEAR EASTERN BACKGROUND (3). (Alternate years.) Haggis.

782 [199] THE ARCHAEOLOGY OF DARK AGE GREECE (3). Prerequisite, CLAR 243, 244, or 781 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
680 [256] ROMAN SCULPTURE (ART 680) (3). (Alternate years.) Truemp.

683 [299] ETRUSCAN ART (ART 683) (3). (Alternate years.) Staff.

GREG 722 [201] GREEK EPIGRAPHY (3). See courses in Greek.

LATN 722 [202] LATIN EPIGRAPHY (3). See courses in Latin.

790 [250] FIELD PRACTICUM IN ARCHAEOLOGY (3). Seminar in archaeological techniques to be conducted in the field. Previous excavation experience is expected. Summer or fall. Haggis, Sams, Terr. Detrato.

794 [294] GREEK TOPOGRAPHY (ART 794) (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.

797 [297] ROMAN PAINTING (ART 797) (3). (Alternate years.) Truemp.


841 [341] SPECIAL READING IN ARCHAEOLOGY (3). Fall and spring. Staff.

910 [310] SEMINAR IN ARCHAEOLOGY (3). Topics vary from year to year. Staff.

960 [358] SEMINAR IN ANCIENT ART (ART 960) (3). (Alternate years.) Sams.

993 [393] MASTER'S THESIS (3 or more). Both semesters. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Both semesters. Staff.

Classics in English

Courses Not Requiring 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 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
409 [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.

415 [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.

418 [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.

540 [140], 541 [141] PROBLEMS IN THE HISTORY OF CLASSICAL IDEAS (3).
547 [147] APPROACHES TO WOMEN IN ANTIQUITY (3).
812 [231] DIASPORA JUDAISM IN THE ROMAN WORLD (3).

**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.

Requirements for the graduate minor in Medieval Studies please are listed on the Web site of the Program in Medieval Studies: www.unc.edu/depts/medstud.

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**DEPARTMENT OF COMMUNICATION STUDIES**

DENNIS MUMBY, Chair

**Professors**

- Robert C. Allen (21) Film and Media History, Media Criticism, Cultural History, History of Popular Culture
- V. William Balchrop (1) Rhetorical Theory and Criticism, Cultural Studies, Argumentation
- Carole Blair (40) Rhetorical Theory and Criticism, Cultural Studies, Argumentation
- J. Robert Cox (2) Rhetorical Theory and Criticism, Environmental Advocacy
- Paul Ferguson (5) Performance of Literature, Directing, Adaptation and Script Writing
- Lawrence Grossberg (19) Cultural Studies, Popular Culture, Popular Music, Philosophy of Communication and Culture
- Gortha A. Kindem (10) Documentary Production, Film History, Media Aesthetics
- Dennis Mumbly (36) Organizational Communication
- Della Pollock (9) Performance of Literature, Performance Theory and Criticism, Cultural Studies
- Lawrence B. Rosendal (11) Interpersonal Communication, Family Communication, Empirical Research Methodology
- Julia T. Wood (12) Interpersonal Communication, Gender and Communication, Feminist Theory

**Associate Professors**

- Cori Daufer (2) Rhetoric and Public Address
- Ken Hillis (28) Communication Technology
- D. Sayims Madison (15) Theory and Ethnicity of Performance, African American and Third World Women's Texts
- Steven K. May (13) Organizational Communication, Cultural Studies
- Patricia S. Parker (31) Organizational Communication and Culture, Critical Studies in Gender, Race, Organizational Leadership
- Francesca Talenti (52) Media Studies
- Michael S. Walmann (14) Interpersonal Communication, Social Cognition

**Assistant Professors**

- Richard C. Came (33) Media and Cultural Studies
- Sarah Denney (60) Organizational Communication
- Kara Kesting (51) Media and Cultural Studies
- Edward Raskin (61) Media Studies
- Joyce Rudinsky (53) Media Studies, Electronic and Interactive Media

**Professors Emeriti**

- Elizabeth Czech-Beckerman
- Howard Dell
- Robert J. Gwyn

William M. Hardy
James W. Pence Jr.
Beverly Whittaker Long

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 700 and over.
2. Passing COMM 702, a course to prepare students to teach.
3. Passing COMM 700, an introductory course in intellectual history in communications and related fields, with a grade of P or higher; COMM 701, Research Colloquium, with a grade of P or higher.
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 of 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, The Graduate School, UNC-Chapel Hill, November 18, 1992). Each student is required to take courses appropriate for her or his 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 as 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 the Department 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.

Admission 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 Graduate Record Examination (GRE), with a 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 write effectively for a scholarly or professional audience.

International applicants must include Test of English as a Foreign Language (TOEFL) scores. They are also required to submit a financial certificate prior to being admitted into the program.

For more information, please contact the director of graduate studies, Department of Communication Studies, The University of North Carolina at Chapel Hill, 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.

275 HISTORY OF GERMAN CINEMA (GERM 275) (3) This course explores the major developments of German cinema. All films with English subtitles. Readings and discussions in English.

312 [112] PERSUASION (3). Prerequisites: COMM 120 or nonmajors by permission of the instructor. Examines contemporary theory and practice of influencing others' attitudes, beliefs, and actions. Focuses particularly on analyzing and developing persuasive messages.

410 [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.

411 [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.

431 [130] ADVANCED AUDIO PRODUCTION (3). Prerequisites: COMM 140, 230, or permission of the instructor. Advanced analysis and application of the principles and methods of audio production.

432 [131] TELEVISION DIRECTING (3). Prerequisite, COMM 140, 230, or permission of the 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.

433 [132] ADVANCED SCRIPTWRITING FOR TELEVISION, FILM, AND STAGE (3). Prerequisite, COMM 330 or permission of the instructor. A major writing project will be completed by each student (either dramatic or nonfiction) for radio, television, film, or stage.

434 [152] MINORITIES AND THE MEDIA (3). Prerequisite, COMM 140 or nonmajors by permission of the 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.

436 [117] GENDER, SCIENCE FICTION AND FILM (WMST 437) (3). Greater attention has been given to the role of gender in scientific fields, examining the role of subjectivity of the researcher and its impact on research questions and study outcomes, as well as the construction of gender identities through scientific research. Similarly, contemporary science fiction films also address these issues of gender identity. The course will combine these fields in an inquiry of the role and making of gender in and through science, science fiction, and film.

440 [140] MASS MEDIA CRITICISM AND THEORY (3). Prerequisite, COMM 140 or nonmajors by permission of the instructor. Examination and application of contemporary critical approaches to mass-mediated works; survey of current issues in aesthetic theory as related to mass media.

441 [141] AUDIO THEORY, CRITICISM, AND AESTHETICS (3). Prerequisite, COMM 140 or nonmajors by permission of the instructor. Examination of theories of aurality, psychoacoustics, and the development of the audio aesthetics. Course includes, but is limited to, audio in film, video, and multimedia.

442 CULTURAL STUDIES (3). This class will introduce students to the major theoretical and methodological commitments of cultural studies as a perspective on communication, culture and society.

450 [150] POPULAR CULTURE (3). Prerequisite, COMM 140 or for nonmajors, permission of the instructor. Examination of communication processes and cultural significance of popular film, television, and other electronic media.
451 SPECIAL TOPICS IN MEDIA AND POPULAR CULTURE (3). A special topics course on a selected aspect of media and cultural studies.

452 FILM NOIR (3). Course combines reading and viewing 1940s and 50s films combining narrative techniques of story-telling, novels, and the stage with purely filmic uses of spectacle, light, editing, and image.

464 [164] POETRY IN PERFORMANCE (3). Prerequisite, COMM 160 or permission of the instructor. Critical, aesthetic, and rhetorical approaches to performed poetry.

466 [166] NARRATIVE FICTION IN PERFORMANCE (3). Prerequisite, COMM 160 or permission of the instructor. Study of selected short stories and novels in performance, with an emphasis on narrative point of view.

470 [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.

521 [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.

522 [124] FAMILY COMMUNICATION (3). Prerequisite, COMM 120 or non-major by permission of the instructor. Analysis and exploration of personal experiences, family systems theory, and communication theory to describe, evaluate, and improve family communication patterns.

523 [125] COMMUNICATION AND LEADERSHIP (3). Prerequisite, COMM 120 or non-majors by permission of the instructor. Critical examination of alternative theories of leadership and trends in the study of leadership; focuses on the communicative dimensions of leaderships.

524 GENDER, COMMUNICATION, AND CULTURE (3). Course examines the speeches and other texts that announced and embodied the dreams and political strategies of multiple branches of three waves of feminist activism in the United States.

525 [123] COMMUNICATION IN ORGANIZATIONS (3). Prerequisites, COMM 120 and 325 or non-majors by permission of the instructor. Provides a critical exploration of organizational communication theory, research, and application, examining factors involved in the functioning and analysis of complex organizations.

526 [126] NONVERBAL COMMUNICATION (3). Prerequisite, COMM 120 or non-majors by permission of the 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; kinesics; nonverbal deception; the effects of environment; and personal space.

530 [127] INTRODUCTION TO PHONETICS (SPHS 530) (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.

532 [133] MEDIA ACTING AND PERFORMANCE (3). Study and practice in acting and performance for radio, television, and motion pictures.

534 [134] NARRATIVE PRODUCTION (3). Prerequisites, COMM 140, 230, or previous production experience. The course focuses on narrative, representational, and aesthetic strategies of narrative production.

540 [182] SPEECH SCIENCE (SPHS 540) (3). Introduction to the science of speech, including production, acoustics, and perception.

543 [143] HISTORY OF NATIONAL MEDIA IN THE WEST (3). Study of the development of the art and craft of the film through the examination of individual films and topics stressing the intersection of aesthetic considerations with sociocultural and institutional settings.

544 [144] COMMUNICATION AND INFORMATION TECHNOLOGIES (3). Prerequisite, COMM 140 or nonmajors by permission of the instructor. A survey of developing telecommunication systems and technologies and their impact on the traditional electronic media and society.

545 [138] PORNOGRAPHY AND CULTURE (3). Examines the social, cultural, political, legal, historical, and aesthetic implications of pornography.

546 [146] HISTORY OF FILM I - 1895 TO 1945 (3). Prerequisite, COMM 140. Study of the development of the art of film throughout World War II through the examination of individual films and filmmakers and the emergence of national cinemas through interaction among aesthetic, social, economic, and technological factors.

547 [147] HISTORY OF FILM II - 1945 TO PRESENT (3). Prerequisite, COMM 140. Study of the development of the art of film from the end of World War II to the present day through the examination of films, filmmakers, and the emergence of national cinemas through interaction among aesthetic, social, economic, and technological factors.

548 HUMOR AND CULTURE (3). Investigates how humor, comedy, and laughter function socially and culturally through close examination of selected U.S. popular media texts and the primary modern theoretical writings on these issues.

549 [137] SEXUALITY AND VISUAL CULTURE (3). Examines questions about sexuality and how it has changed over time, through various media of visual communication.

553 [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.

561 [160] PERFORMANCE OF LITERATURE BY WOMEN OF COLOR (WMST 561) (3). Prerequisite, COMM 160 or permission of the instructor. Explores through performance contemporary poetry, fiction, nonfiction, and feminist thought by women of color in the United States.

562 [161] ORAL HISTORY AND PERFORMANCE (FOLK 562) (WMST 562) (HIST 562) (3). This course combines readings and fieldwork in oral history with the study of performance as a means of interpreting and conveying oral history texts. Emphasis on women’s history.

563 [163] PERFORMANCE OF CHILDREN’S LITERATURE (3). Prerequisites, COMM 160 and permission of the 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.

565 [165] RITUAL, THEATRE, AND PERFORMANCE IN EVERYDAY LIFE (FOLK 565) (3). Prerequisite, COMM 160, ENGL 126, or permission of the instructor. This course will explore 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.


571 [171] RHETORICAL THEORY AND PRACTICE (3). Prerequisite, COMM 270 or nonmajors by permission of the instructor. Investigates contemporary theories of purposeful symbolic behavior; focus is on rational, psychological, and dramatistic explanations of human behavior.

572 [172] PUBLIC POLICY ARGUMENT (3). Prerequisite, COMM 270 or nonmajors by permission of the instructor. Analyzes arguments in a variety of
contexts with an emphasis on public policy and the exploration of tensions involved in addressing both expert and public audiences in the political sphere.

573 [173] THE AMERICAN EXPERIENCE IN RHETORIC (3). Prerequisite, COMM 270 or nonmajors by permission of the instructor. Examines public discourse from the colonial period to the present. Discourses, critical perspectives, and historical periods studied will vary.

574 [174] WAR AND CULTURE (FWAD 574) (3). Examines American cultural myths about war, specifically about the causes of war, enemies, weapons, and warriors and the way these myths constrain foreign and defense policy, military strategy, and procurement.


596 [191] ADVANCED INDEPENDENT STUDY/DIRECTED READING (1-3). Prerequisites, completion of at least one 400-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.

620 [120] INTERPERSONAL COMMUNICATION (3). Prerequisite, COMM 120 or nonmajors by permission of the 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.

629 [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.

635 [135] DOCUMENTARY PRODUCTION (3). Prerequisites, COMM 230 and corequisite, one of COMM 546, 547, 645. 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.

636 [136] INTERACTIVE MEDIA (ART 406) (3). Prerequisites, COMM 140, 230, or permission of the 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.

639 [139] SPECIAL TOPICS IN MEDIA PRODUCTION (3). Prerequisite, COMM 140. A special topics course on a selected aspect of media production or writing. May be repeated.

642 SPECIAL TOPICS IN CULTURAL STUDIES (3). This course will explore various specific topics, theories, and methodologies in cultural studies.

645 [142] THE DOCUMENTARY IDEA (3). Prerequisite, COMM 140 or nonmajors by permission of the instructor. Historical and theoretical examination of expressions of the documentary idea in different eras and various modes, including film, television, and radio.

646 [118] ANIMATION (3). This course is an introduction to the art and mechanics of two-dimensional digital animation.

649 [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.

651 [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.

652 MEDIA AND DIFFERENCE (3). This course examines critical and theoretical issues concerning the representation and study of various modes of difference, such as sexuality, race, and gender, in specific media texts.

656 [156] WOMEN AND FILM (WMSF 656) (3). This course examines the representations of women in contemporary American film. We also consider women as producers of film.

658 [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.

659 [159] SPECIAL TOPICS IN MEDIA STUDIES (3). Prerequisite, COMM 140 or nonmajors by permission of the 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.

660 [162] GROUP PERFORMANCE (4). Prerequisites, COMM 160, 260, one 400-level performance course, and permission of the instructor. Theory and practice in adaptation, direction, and group performance of texts.

662 [262] LITERATURE AND PERFORMANCE IN THE BLACK DIASPORA (3). Examination of Black diaspora studies - colonial, post-colonial, and critical race theory - as illuminated by Black artists and literary expressions, particularly in Africa, the Caribbean, the Americas, and Europe.

667 [167] POLITICS OF PERFORMANCE (3). Prerequisite, COMM 160, 162, or permission of the instructor. Course will address the relationship between performance and power, focusing on topics concerned with the potential for performance to contribute to social change.

669 [169] SPECIAL TOPICS IN PERFORMANCE STUDIES (3). Prerequisites, COMM 160 and one 400-level performance course or permission of the instructor. Advanced study of selected topics drawn from performance history, theory, and practice. May be repeated.

675 [175] ENVIRONMENTAL COMMUNICATION AND THE PUBLIC SPHERE (ENST 675) (3). Examines communication practices that accompany citizen participation in environmental decisions, including public education campaigns of nonprofits organizations, "risk communication," media representations, and mediation in environmental disputes.

679 [179] SPECIAL TOPICS IN RHETORIC AND CULTURAL STUDIES (3). Prerequisite, COMM 270 or nonmajors by permission of the instructor. A special topics course on a selected aspect of Rhetoric and Cultural Studies. May be repeated.

684 [184] INTRODUCTION TO COMMUNICATION DISORDERS (EDUC 617) (3). Explores the etiology, epidemiology, assessment, and educational implications of speech and language disorders.

693 [098] Honors (3). Departmental permission required. Individual projects designed by students and supervised by faculty member.

694 [099] Honors (3). Departmental permission required. Individual projects designed by students and supervised by faculty member.

700 [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.

701 [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.
702 [360] TEACHING IN COMMUNICATION STUDIES (3). 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.

712 [213] 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.

713 [213] PERFORMANCE CRITICISM (3). Prerequisite, COMM 464, 466, or 660. Deals with the key methods of describing and evaluating literature and literature in performance.

722 [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.

723 [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.

724 [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.

725 [222] INTERPRETIVE STUDIES IN ORGANIZATIONAL COMMUNICATION (3). Prerequisite, COMM 525 or permission of the instructor. Focuses on the theory and practice of interpretive organizational communication research, including organizational phenomena such as culture, metaphor, symbolism, ritual, and narrative. Fall.

726 [223] CRITICAL STUDIES IN ORGANIZATIONAL COMMUNICATION (3). Prerequisite, COMM 525 or permission of the instructor. Focuses on the theory and practice of critical organizational communication research, including organizational phenomena such as power, discourse, and culture. Spring.

738 [238] PRODUCTION STUDIES (3). Study the integration of audio/video/film theory and practice through lectures, readings, discussions, and production elements necessary to translate scripts into media products.

739 [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.

750 [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.

752 MEDIA AND SOCIAL CHANGE (3). This seminar inquires into the range of relationships between media and social life, with a particular emphasis on media's role in movements for social, economic, and/or cultural transformation.

753 [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.

754 [254] POLITICAL, INSTITUTIONAL, AND ECONOMIC CONTEXTS OF MEDIA AND CULTURE (3). Prerequisite, COMM 700. A detailed analysis of the relationships between government, policy making, corporate and business interests, and various theoretical approaches to their impact on media and culture. Fall.

755 [255] HISTORY OF CULTURAL STUDIES (3). This class introduces cultural studies through its British "origins," especially but not only the work of the Centre for Contemporary Cultural Studies and the Open University.

756 NATIONAL, INTERNATIONAL, TRANSNATIONAL, AND GLOBAL MOVIE.MEDIA HISTORY (3). Explores the economic, social, ideological, technological, and aesthetic development of film and television as international, transnational, transcultural, and global entities, questioning the viability of the concept of national cinema/media in the 21st Century.

758 [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.

760 [260] DIRECTING GROUP PERFORMANCE (3). Prerequisite, at least two performance courses at or over the 400-level. An in-depth examination of the theories and techniques of group performance.

761 [261] NARRATIVE THEORY (3). This seminar recognizes and applies narrative theory in understanding texts, lives, and cultural practice broadly.

769 [269] TOPICS IN PERFORMANCE STUDIES (3). Prerequisite, second-year graduate students and/or consent of the instructor. Special problems in performance studies.

772 [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.

773 [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, and interpretation. Fall.

792 [292] PHILOSOPHY OF COMMUNICATION AND CULTURE (3). Prerequisite, COMM 700. Studies the history of development and the philosophy of communication and culture, as well as the role these concepts have played in western philosophy. Spring.

798 [298] TOPICS IN RESEARCH METHODS (3). Advanced study of selected topics in research methods. Topics vary.

810 [210] RESEARCH IN INTERPERSONAL COMMUNICATION (3). Prerequisite, COMM 410. Special emphasis on survey research, content analysis, and experimental design. The designs and analysis of communication data gathered in lab and field settings are reviewed. The course emphasizes multivariate data analytic techniques and their interpretation.

811 [211] RHETORICAL CRITICISM (3). Prerequisite, COMM 571, or permission of the instructor. Investigates the function of rhetorical criticism, the critical method, and a variety of approaches to the performance of rhetorical criticism.

821 [226] COMMUNICATION IN CLOSE RELATIONSHIPS (3). Prerequisite, COMM 620. Examination of contemporary theory and research on communication in close relationships. Topics include communication in relational formation, change, and termination.

822 [322] SEMINAR IN FAMILY COMMUNICATION (3). This course is an advanced seminar in which students may study family communication and produce original research.

824 [323] SEMINAR IN FEMINIST STUDIES IN COMMUNICATION (3). Prerequisite, COMM 722. This course compares and critically evaluates the work of major feminist scholars in the field of communication. Spring.

825 [329] SEMINAR IN INTERPERSONAL AND ORGANIZATIONAL COMMUNICATION (3). A variable topic seminar that permits faculty and graduate students to explore significant historical and emerging issues in the field of communication. Spring.

841 [241] PERFORMANCE ETHNOGRAPHY (FOLK 841) (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.
842 [342] SEMINAR IN PERFORMANCE AND CULTURAL STUDIES
(FOLK 842) (3). This course focuses on performance-related issues in the emergent field of cultural studies.

843 [343] SEMINAR IN PROBLEMS IN CONTEMPORARY PERFORM-
ANCE THEORY (FOLK 843) (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.

844 [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.

845 [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.

849 [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.

850 [350] SEMINAR IN MEDIA STUDIES (3). Selected problems in media aesthetics. Exact topic to be covered is announced before classes begin.

851 [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.

852 [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.

853 [353] SEMINAR IN POPULAR CULTURE (3). This course will look at special topics in the study of popular culture. Designed for advanced graduate studies, it will consider critical responses to existing scholarship with original research.

854 SEMINAR IN MEDIA DIFFERENCE (3). This seminar explores critical theories of difference and puts them into dialogue with media representations of difference.

855 [355] SEMINAR IN CULTURAL STUDIES (3). Prerequisite, COMM 755 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.

856 [356] SEMINAR IN COMMUNICATION TECHNOLOGY (3).
Prerequisite, COMM 700. 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 technologies are received. May be repeated. Spring.

857 [357] SEMINAR IN CULTURAL STUDIES AND POPULAR CULTURE
(3). Prerequisite, COMM 700. 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.

858 [358] SEMINAR IN FEMINIST STUDIES OF FILM AND TELEVISION
(WMST 858) (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.

859 [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.

871 [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 tensions in the western philosophical/political ideals of the public sphere and the political subject as a discursive agent within such public spaces and venues.


879 [379] TOPICS IN RHETORICAL AND CULTURAL STUDIES (3).
Prerequisite, COMM 811. Special problems in rhetorical and cultural studies.

900 [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 advisor and by the departmental coordinator of internships. May be repeated once with approval of departmental faculty.

901 [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 permission of the departmental graduate faculty.

902 [392] RESEARCH PRACTICUM IN MEDIA AND CULTURAL STUDIES (3). Prerequisites, COMM 750, 851, and permission of the 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.

903 [399A] RESEARCH PRACTICUM IN COMMUNICATION STUDIES
(1-3). Individualized practical research. Fall and spring.

904 [399B] RESEARCH PRACTICUM IN COMMUNICATION STUDIES
(1-3). Individualized practical research. Fall and spring.

905 [399C] RESEARCH PRACTICUM IN COMMUNICATION STUDIES
(1-3). Individualized practical research. Fall and spring.

906 [399D] RESEARCH PRACTICUM IN COMMUNICATION STUDIES
(1-3). Individualized practical research. Fall and spring.

907 [399E] RESEARCH PRACTICUM IN COMMUNICATION STUDIES
(1-3). Individualized practical research. Fall and spring.

993 [393] MASTER'S THESIS (3 or 6). Fall and spring. Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (Var.).

CURRICULUM OF COMPARATIVE LITERATURE
The curriculum of comparative literature now forms part of the Department of English and Comparative Literature. For a discussion of the graduate program in comparative literature, and descriptions of courses in comparative literature, see the section of the Graduate Record dedicated to the Department of English and Comparative Literature.

DEPARTMENT OF COMPUTER SCIENCE
JAN E. PRINS, Chair
Professors
Frederick P. Brooks Jr. (79) 3D Interactive Computer Graphics, Human-Computer Interaction, Virtual Worlds, Computer Architecture, the Design Process
Praun Dewan (63) User Interfaces, Distributed Collaboration, Software Engineering Environments, Object-Oriented Databases, Mobile Computing
Henry Fuchs (71) 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
Ming C. Lin (72) Physically-Based and Geometric Modeling, Applied Computational Geometry, Robotics, Distributed Interactive Simulation, Virtual Environments, Algorithm Analysis
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. Piris (33) Parallel Algorithms, Languages, and Architectures; Computational Biology and Bioinformatics; High-Level Programming Languages; Compilers; Computer-Based Assistive Technologies
Daniel A. Reed (92) Design of Very High-Speed Computers, Providing New Computing Capabilities for Scholars in Science, Medicine, Engineering and the Humanities; Tools and Techniques for Capturing and Analyzing the Performance of Parallel Systems; Collaborative Virtual Environments for Real-Time Performance Analysis
Stephen F. Weiss (10) Information Storage and Retrieval, Natural Language Processing, Communications and Distributed Systems, Computer-Supported Cooperative Work

Assistant Professors
Jaleen 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
Marta Papadopoulo (86) Applications for Mobile, Wireless, Ad Hoc, and Sensor Networks; Pervasive Computing
Monick Singh (84) High-Performance and Low-Power Digital Systems, Asynchronous Circuits and Systems, System-on-a-Chip Design, VLSI CAD

Research Professors
Diane Pozeksky (93) Computer-Supported Cooperative Work, Distributed Systems, Mobile Computing, Networking, Software Engineering and Environments
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
Gregory F. Welch (71) Human-Machine Interaction, 3D Interactive Computer Graphics, Virtual/Augmented Environment Tracking Systems, Shared Virtual Environments and Telecollaboration
Mary C. Whitson (81) Virtual and Augmented Reality Systems for Data Visualization, Computer Graphics System Architectures

Research Assistant Professors
Naga Govindaraju (96) Computer Graphics, Computational Geometry, Scientific Computation, Hardware Architectures, Databases and Data Mining
Michael Rosenthal (95) Interventional Radiology, Medical Imaging, Augmented Reality
Martin Syner (94) Medical Image Analysis, 3D Object Shape Representation and Quantitative Shape Analysis, Image Processing

Lecturers
Timothy L. Quigg (83) Intellectual Property Rights, Industrial Relations, Contract Management, Research Administration
Leonard Vicci (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
Elizabeth Bullitt, Computer-Aided Surgery, Computer-Aided Diagnosis
M. Gail Jones, Science Education, Gender and Science, High-Stakes Assessment, Nanotechnology Education, Haptics and Learning
J. Stephen Marron, Smoothing Methods for Curve Estimation
Richard Superfine, Condensed Matter Physics, Biophysics, Microscopy
Sean Washburn, Condensed Matter Physics, Materials Science

Adjunct Associate Professors
Stephen R. Aybidar (73) Computer-Aided Diagnosis, Computer-Aided Surgical Planning, Statistical Pattern Recognition, Image Processing, Neural Networks
Siddhartha Chatterjee (68) High-Level Programming Languages, Compilation for Highly Parallel Machines, Object-Oriented Programming, Parallel Algorithms and Architectures
Bert Dempsey (76) Computer-Supported Cooperative Work, Computer Networks, Multimedia Communications, Digital Library Systems
Andrew B. Nobel, Statistical Analysis of Microarrays, Analysis of Internet Traffic, Non-Parametric Inference, Pattern Recognition: Clustering and Classification

Associate Professors
Kye S. Hedlund (22) Computer-Aided Design, Computer Architecture, Algorithm Design and Analysis, Parallel Processing
Angelino A. Lastra (52) Interactive 3D Computer Graphics, Hardware Architectures for Computer Graphics
Ketan Mayer-Patel (80) Multimedia Systems, Networking, Multicast Applications
Marc Pollefeys (89) Computer Vision, Image-Based Modeling and Rendering, Image and Video Analysis, Multi-View Geometry
David Stotts (59) Computer-Supported Cooperative Work, Hypermedia, Software Engineering and Formal Methods, Programming Languages and Concurrency, Interoperable Distributed Systems
Wei Wang (90) Data Mining, Database Systems, Bioinformatics
The Department of Computer Science at UNC-Chapel Hill, established in 1964, was one of the first independent computer science departments in the United States. Its primary missions are research and graduate and undergraduate teaching. Research particularly emphasizes:

- algorithms and complexity theory;
- bioinformatics and computational biology;
- computer architectures;
- computer graphics and image analysis;
- computer-supported cooperative work;
- computer vision;
- data bases and data mining;
- distributed systems;
- geometric modeling and computation;
- hardware systems and design;
- high-performance and parallel computing;
- human-machine interaction;
- hypermedia and digital libraries;
- mechanical theorem proving;
- Monte Carlo methods;
- multimedia systems;
- networking;
- physically-based modeling;
- real-time systems; and
- software engineering methods and environments.

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 150 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 participate in groundbreaking research, teach, attend research group meetings, and can serve on committees that affect all aspects of life in the department.

The Computer Science Student 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 maintains a rich and varied computing environment ranging from standard IBM and Dell PCs (running Windows XP, Linux, or FreeBSD), Macs (running OS/X), a few Suns (Solaris), and one big SGI (IRIX) to specialized research equipment. These are interconnected by a high-speed data network with gigabit switches. A full infrastructure (including desktop computers with 100Mb switched connections, AFS file system, and backups, in an office with fiber, voice, and video) is provided for all students. The department's open lab structure means that all specialized equipment is available to all students.

Sitterson Hall has wireless connectivity throughout the building, and holds the Campus Internet II connection. The network is connected to the North Carolina Research and Education Network (NC-REN), a statewide network that links research and educational institutions. All classrooms and many offices are equipped with projectors. A two-way video classroom and teleconference room allow connection to any institution served by the network, including all of the University of North Carolina system's sixteen campuses, Duke University, Wake Forest University, and other public and non-profit institutions.

Libraries

Students have access to the entire University library system, which includes a major academic affairs library and numerous satellite libraries containing more than five million books and periodicals, and access to libraries at North Carolina State and Duke universities with a unified online searching capability. The Brauer Library, located in adjacent Phillips 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 400 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 911; (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 523, 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 advisor, course instructors, and the graduate studies 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 (which also satisfies the technical writing requirement if written as part of COMP 911), 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**

A PhD student fulfills the distribution requirement by 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 651: Computational Geometry
  - COMP 662: Scientific Computation

- **Programming Languages**
  - COMP 724: Programming Languages
  - COMP 735: Distributed and Concurrent Algorithms
  - COMP 750: Algorithm Analysis

- **Systems**
  - COMP 631: Computer Networks
  - COMP 720: Compilers
  - COMP 723: Software Design and Implementation
  - COMP 730: Operating Systems
  - COMP 734: Distributed Systems

- **Diverse**
  - COMP 633: Parallel and Distributed Computing
  - COMP 665: Images, Graphics, and Vision
  - COMP 740: Computer Architecture and Implementation
  - COMP 741: 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 911, 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 solely 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 (GRE) 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 the Educational Testing Service (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, please 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 Test of English as a Foreign Language (TOEFL) scores. Applicants from Australia, the 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 of 233 on the Computer-based Test (equivalent to 575 on the Paper-based Test or 90 on the Internet-based Test). The department gives preference to applicants who score above 273 CBT (640 PBT; 111 IBT). Test scores, which can be no more than two years old, must be reported directly by ETS. 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, please contact the Educational Testing Service to request that your scores be sent to the department.

Personal Statement. Each applicant must submit a personal statement directly to the department. The statement, between a half page and two pages long, 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.

Recommendations. Three letters of recommendation must be submitted electronically. 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 at Chapel Hill 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 Byrum Hall, UNC-Chapel Hill, Chapel Hill, NC 27599-4010. Telephone: (919) 966-2611. Web: gradschool.unc.edu/students_prospective.html. The Graduate School’s Web site includes information on applying and online application forms. Domestic applicants (U.S. citizens and resident aliens) should check gradschool.unc.edu/applicant_dom.html. International applicants should refer to gradschool.unc.edu/applicant_intl.html.

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 2005-2006 will be $15,000 (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 2006 will be $790 per week (40 hours) for 10 to 12 weeks. Alternatively, students may gain professional experience through summer internships with companies in the Research Triangle area or in other parts of the country. The combined annual financial package for our graduate assistants is approximately $24,480, depending on the type of summer support. Students with assistantships qualify for a Graduate Student Tuition Grant and pay no tuition. They are, however, responsible for paying student fees of approximately $700 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 graduate 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 memberships. The department also awards a $1,500 supplement each semester to nonservice 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 academic progress.

Students are assigned to specific research projects just prior to the start of each semester, after faculty members and students have had an opportunity to meet and to discuss their interests.
487 [172] INFORMATION RETRIEVAL (INLS 509) (3). Prerequisite, INLS 261, COMP 110, or COMP 121. (See course listings for School of Information and Library Science.)


523 [145] SOFTWARE ENGINEERING LABORATORY (3). Prerequisites, COMP 410, 411. Organization and scheduling of software engineering projects, structured programming, and design. Each team designs, codes, and debugs a project component and synthesizes them into a tested, documented product project. Spring. Scotts.


541 [160] DIGITAL LOGIC AND COMPUTER DESIGN (4). Prerequisite, COMP 411. This course is an introduction to digital logic as well as the structure and electronic design of modern processors. Students will implement a working computer during the laboratory sessions. Spring. Lustra, Singh, McMillan, Bishop.


575 [136] INTRODUCTION TO COMPUTER GRAPHICS (3). Prerequisites, COMP 410, MATH 547. Hardware, software, and algorithms for computer graphics. Scan conversion, 2D and 3D transformations, object hierarchies, hidden surface removal, clipping, shading, and antialiasing. Not for graduate computer science credit. Fall. Staff.

590 [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.

631 [234] COMPUTER NETWORKS (3). Prerequisites, COMP 431, 530. Knowledge of probability and statistics (alternatively, STAT 435), or permission of the instructor. Traditional topics in computer networks, including link layer protocols, switching, IP, TCP, and congestion control. Additional topics may include peer-to-peer infrastructures, network security, and multimedia applications. Fall. Kaur, Jeffay, F. D. Smith, Mayer-Patel, Papadopoulos.


651 [281] COMPUTATIONAL GEOMETRY (3). Prerequisite, undergraduate analysis of algorithms course (e.g., COMP 550) or permission of the 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.) Strzezyn, Lin.
662 [250] SCIENTIFIC COMPUTATION (MATH 662) (ENVR 662) (3).


734 [243] DISTRIBUTED SYSTEMS (3). Prerequisite, COMP 431 or permission of the instructor. Design and implementation of distributed computing systems and services. Inter-process communication and protocols; naming and name resolution; security and authentication; scalability; high availability; replication; transactions; group communications; distributed storage systems. Fall. Dewan, Jeffay, F. D. Smith.


744 [268] VLSI SYSTEMS DESIGN (3). Prerequisites, COMP 740, knowledge of digital logic techniques. Introduction to the design, implementation and realization of very large-scale integrated systems. Each student designs a complete digital circuit that will be fabricated and returned for testing and use. Spring. Hedlund.


758 [288] INFORMATION THEORY (STAT 252) (3).

759 [289] ERROR CORRECTING CODES (STAT 253) (3).

761 [231] INTRODUCTORY COMPUTER GRAPHICS (1).

762 [233] DISCRETE EVENT SIMULATION (OR 762) (3). See course listings for the Department of Statistics and Operations Research.


766 [257] VISUAL SOLID SHAPE (3). Prerequisites, MATH 233, 416, 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.

767 [258] GEOMETRIC AND SOLID MODELING (3). Prerequisites, COMP 575 or 770, and MATH 661. 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.) Manocha.

768 [259] PHYSICALLY BASED MODELING AND SIMULATION (3). Prerequisites, COMP 665, or permission of the instructor. Geometric algorithms, computational methods, simulation techniques for modeling based on mechanics and its applications. (Alternate years.) Lin.

770 [236] COMPUTER GRAPHICS (3). Prerequisites, COMP 665, 761. Study of graphics hardware, software, and applications. Data structures, graphics, languages, curve and solid representations, mapping, ray tracing and radiosity. Spring. Bishop, Brooks, Fuchs, Lin, Manocha.


785 [273] NEURAL NETWORKS (PSYC 291) (3).

787 [277] VISUAL PERCEPTION (3). Prerequisites, COMP 665 (vision segment), PSYC 730, or equivalent. Surveys forms, 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.


790 290] 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.

822 [286] TOPICS IN DISCRETE OPTIMIZATION (OR 822) (3). See course listings for Department of Statistics and Operations Research.

824 [245] FUNCTIONAL PROGRAMMING (3). Prerequisite, COMP 524. Programming with functional or applicative languages. Lambda calculus; combinators; higher-order functions; infinite objects. Least fixed points, semantics, evaluation orders. Sequential and parallel execution models. (On demand.) Print, Plaisted.


831 [241] INTERNET ARCHITECTURE AND PERFORMANCE (3). Prerequisite, COMP 431 or permission of the instructor. Internet structure and architecture; major characteristics 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-Patel.


844 [269] ADVANCED DESIGN OF VLSI SYSTEMS (3). Prerequisite, COMP 744. Advanced topics in the design of digital MOS systems. Design and implementation of the large custom integrated circuit. Projects emphasize the use of advanced computer-aided design tools. (Alternate years.) Staff.


870 [238] ADVANCED IMAGE SYNTHESIS (3). Prerequisite, COMP 770. Advanced topics in rendering, including global illumination, surface models, shading, graphics hardware, image-based rendering, and real-time techniques. Topics from the current research literature. Fall. (Alternate years.) Labora.

872 [239] EXPLORING VIRTUAL WORLDS (3). Prerequisite, COMP 870. Project course, lecture, and seminar on real-time interactive 3D graphics systems in which the user is "immersed" and interacts with a simulated 3D environment. Hardware, modeling, applications, multi-user systems. (Alternate years.) Fuchs, Brooks.

875 [255] RECENT ADVANCES IN IMAGE ANALYSIS (3). Prerequisite, COMP 775. Lecture and seminar on recent advances in image segmentation, registration, pattern recognition, display, restoration, and enhancement. Spring. (Even-numbered years.) Pizer, Gerig.

892 [395] PRACTICUM (0.5). Prerequisite, permission of the 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.

910 [220] COMPUTER SCIENCE MODULE (Var.).


915 [321] TECHNICAL COMMUNICATION IN COMPUTER SCIENCE (1). Prerequisite, graduate major in computer science or permission of the instructor. Seminar on teaching, short oral presentations, and writing in computer science. Spring. Weiss, Brooks.

916 [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.) Brooks.

917 [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.

918 [310] RESEARCH ADMINISTRATION FOR SCIENTISTS (1). Prerequisite, graduate status. Introduction to grantsmanship, research grants and contracts, intellectual property, technology transfer, conflict of interest policies. Course project: grant application in NSF FastLane. Spring. Quigg.

920 [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, flexibility, dehumanization, dependence, quality of life. (On demand.) Staff.

990 [390] RESEARCH SEMINAR IN COMPUTER SCIENCE (5-3). Prerequisite, permission of the instructor. Seminars in various topics offered by members of the faculty. Fall and spring. Staff.

991 [391] READING AND RESEARCH (1-3). Prerequisite, permission of the instructor. Directed reading and research in selected advanced topics. Fall and spring. Staff.

993 [393] MASTER'S THESIS (Var.). Prerequisite, permission of staff. Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (Var.). Prerequisite, permission of staff. Fall and spring. Staff.
SCHOOL OF DENTISTRY

JOHN. N. WILLIAMS, Dean

Professors
Roland R. Arnold, Immunology, Host-Microbial Biology
James D. Beck, Oral Epidemiology
Greg Eslick, Dental Research Center
H. Garland Hesney, Orthodontics
Harald Heymann, Operative Dentistry, Biomaterials
Robert P. Kasy, Orthodontics, Biomaterials/Biomechanics
William Maxner, Neurobiology, Pain Perception and Modulation, Pain Management
Kenneth N. May Jr., Operative Dentistry
Frank T. McVey, Pediatric Dentistry
Valerie Murrah, Oral Carcinogenesis, Salivary Gland Malignancies
Steven Offenbacher, Inflammatory Mediators, Host Response, Periodontal, Systemic Diseases
Lauren Patron, Oral Medicine, Dental Ecology
Celt Phillips, Orthodontics
William Robert Proulx, Orthodontics
Theodore Roberson, Operative Dentistry
Michael Roberts, Pediatric Dentistry, Dental Lasers
Daniel A. Shugars, Health Services Research
David M. Simpson, Periodontology
John W. Sammons, Oral Epidemiology
Ronald P. Strauss, Medical Sociology and Health Promotion/Disease Prevention
Edward J. Swift, Dental Materials
Martin Trop, Endodontics
J. F. Camilla Tullloch, Orthodontics
Timothy Turvey, Consequences of Craniofacial and Maxillofacial Surgery
Donald A. Tydall, Oral and Maxillofacial Radiology
William F. Vann Jr., Pediatric Dentistry
Donald W. Warren, Craniofacial Development and Dysfunction
Raymond P. Whitley Jr., Oral Surgery Therapies
Aldridge Wilder, Clinical and Laboratory Dental Materials Research
Ray C. Williams, Periodontology, Clinical Trials
J. Tim Wright, Mineralization and Development, Genetic Disorders
Mitsu Yamauchi, Collagen Biochemistry, Physiology and Metabolism of Bone

Associate Professors
Daniel Caplan, Oral Epidemiology
Lyndon Cooper, Bone Cell Physiology, Implantology
Alice Curran, Oral Pathology
Diane H. Dilley, Pediatric Dentistry
EricEverett, Genetic Disorders
David A. Fletcher, Prosthodontics, Dental Implants, and Clinical Trials
Patrick Flood, Cellular Immunology, Immune Response and Regulation
Mary George, Dental Ecology
Lorne D. Koroluk, Pediatric Dentistry and Orthodontics
Mark Kucher, Oral Medicine
John Ludlow, Oral and Maxillofacial Radiology
Sally Mauriello, Radiology, Geriatric Dentistry
Douglas R. McArthur, Prosthodontics
Michael Minko, Pediatric Dentistry
Glenn E. Minsley, Prosthodontics
David W. Paquette, Periodontology, Clinical Trials
Eric Rivera, Endodontics
Diane Shugars, HIV and AIDS Pathogenesis, Virus-Host Cell Interactions
John Snauffer, Operative Dentistry
Carroll Ann Truwit, Orthodontics
E. Leland Webb, Prosthodontics
Rebecca S. Wider, Dental Hygiene

David Zajac, Craniofacial Disorders
Thomas Ziemiecki, Prosthodontics

Assistant Professors
Licia Cividanes, Orthodontics
Ingelbert DeDs, Prosthodontics
Anne P. Dodds, Pediatric Dentistry
Wagner Duarte, Periodontology, Extracellular Matrixes
Sylvia Frazier-Bowers, Orthodontics
James M. George, Computer Technologies
Jessica Lee, Pediatric Dentistry
Andre Mol, Oral and Maxillofacial Radiology
Salvatore Nante, Periodontology, Immunology
Patricia Pereira, Operative Dentistry
Andre Ritter, Operative Dentistry
Janet Southerland, Diabetes and Periodontal Disease
Jennifer Webster-Cyrique, Oral Medicine, Dental Ecology

Clinical Professor
Richard A. Beane, Orthodontics

Clinical Associate Professors
Carolyn Bentley, Oral Diagnosis
Charles F. Brantley, Advanced General Dentistry
Laura Howerton, Dental Ecology
Burrell E. Kanoy Jr., Prosthodontics
Charlotte Peterson, Dental Hygiene Education
Vickie P. Overman, Dental Hygiene
Enrique Platin, Oral and Maxillofacial Radiology
Allen Samudson, Dental Ecology

Clinical Assistant Professors
George H. Blakey, Oral and Maxillofacial Surgery, Anesthesia
Nadine Brodala, Periodontology, Dental Implants
Konstantina Dedis, Prosthodontics
Thomas W. Hummert, Prosthodontics
Anthony Molina, Prosthodontics
Rocio Quinonez, Pediatric Dentistry
Karen Tidwell, Urgent Care

Research Professor
James D. Bader, Health Services Research

Research Associate Professor
Luda Datschenko, Pain Genetics and Molecular Biology

Research Assistant Professors
Somphop Benchart, Prosthodontics
Catherine Champagne, Inflammation
Heather Jared, Dental Ecology
Yoshiyuki Machida, Bone Research
Sue Rennie, Dental Ecology

Professors Emeriti
James Bawden
Marvin Block
Kenn W. Healey
Phillip Hirsch
Malcolm Johnston
Charles Milane
Donald W. Warren
Roy Peach

Graduate instruction in the School of Dentistry is offered in endodontics, operative dentistry, oral biology, oral and maxillofacial pathology, oral and maxillofacial radiology, orthodontics, pediatric dentistry, periodontology,
prosthodontics, and dental hygiene education, and is designed to prepare dentists and dental hygienists for teaching, research, or specialty practice. All dental graduate programs leading to the master of science degree require the successful completion of oral and/or written comprehensive examinations, a research project, and a thesis. Consideration has been given to the requirements as set forth by the Commission on Dental Accreditation of the American Dental Association and the respective specialty boards. The Oral Biology Program leads to the PhD degree.

Graduates who possess an appropriate degree and who meet the requirements of The Graduate School are considered for admission. For some programs, scores on the Graduate Record Examination (GRE) must be submitted for an applicant to be considered for admission.

Enrollment for study in dental specialty programs requires a minimum period of residency of three years. The curricula have been designed to permit maximum flexibility in preparation for practice, teaching, or research, as well as to meet the educational requirements of the specialty boards. The Dental Hygiene Education Program is two years long. The Oral Biology PhD Program requires four or more years to complete.

In addition to the courses listed herein, an appreciable number of elective courses are offered. The degree requirements vary slightly with each program. Detailed curricula requirements may be obtained by visiting the School of Dentistry's Web site at www.dent.unc.edu.

Tuition and Fees

Semester tuition and fees for residents total $3,500. The summer rate is $620. Instruments, books, and laboratory fees are to be determined. Nonresident tuition and fees total $10,500 per semester and $2,250 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 the Office of Admissions, The University of North Carolina at Chapel Hill, School of Dentistry.

Core and Multiuse Courses Offered to Graduate Students in Dentistry

701 [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.

701ab [301ab] (DENG) INTERDISCIPLINARY CARE CONFERENCE I (1, 1).
For first-year dental graduate students. Review and discussion of the diagnoses, treatment plans, prognoses, and interdisciplinary care of selected patients. Fall and spring. Bramley, Levin.

702 [202] (DENG) BIOSTATISTICS (2).
Introduction of biostatistical concepts, sampling, descriptive statistics, hypothesis testing, comparisons of means and proportions, 2x2 and r x c tables, correlation and simple regression, sample size and power, analysis of variance, factorial ANOVA, multiple regression, and nonparametric tests. Spring. Phillips.

702ab [302ab] (DENG) INTERDISCIPLINARY CARE CONFERENCE II (1, 1).
For second-year dental graduate students. Review and discussion of the diagnoses, treatment plans, prognoses, and interdisciplinary care of selected patients. Fall and spring. Bramley, Levin.

703 [203] (DENG) APPLIED DENTAL RESEARCH METHODS (2).
Prerequisites, DENG 701 and DENG 702, 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.

706 [205] (ORAD) ADVANCED ORAL RADIOLOGY (2).
Radiographic selection criteria, efficacy of dental radiographs, panoramic radiology, extraradicular techniques, radiation risks and radiological hygiene in dental practice, principle of radiologic interpretation, radiology of cysts 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 craniofacial region. Spring. Tyndall.

707 [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 extracranial correlation with the oral cavity. Summer. Kernick.

710 [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.

713 [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 extrusion, molar uprighting, periodontal implications of orthodontic treatment, biology of tooth movement, incisor alignment, and integrated treatment. Fall. Beane.

720 [220] (OMSU) CLINICAL PHARMACOLOGY AND THERAPEUTICS (1).
Covers compliance, substance abuse, antibiotic considerations, cardiologic 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. Edel.

720 [320] (PERI) INTRODUCTION TO DENTAL IMPLANTS (1).
This graduate seminar traces the biology of osteointegration, surgical techniques in dental implant placement, and prosthetic restoration. The seminar includes didactic lectures, case presentations, and journal club components. Fall. Brodala.

721 [321] (PERI) CLINICAL IMPLANTOLOGY (1).
This graduate seminar continues themes introduced in PERI 720 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. Brodala.

733 [233] (OBO) DIRECTED STUDIES IN ORAL BIOLOGY (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.

734abcd [234abcd] (OBO) HOST ORAL PATHOGEN INTERACTIONS (2).
Topics include extra cellular matrices, immunology, inflammation, neurobiology, and pain management. Fall and spring. Yamashita, Arnold, Meauxer, Flood.

750 [250] (DENG) ORAL-FACIAL COMMUNICATIVE DISORDERS (1).
This course provides an overview of a multi-discipline approach to the clinical management of children with oral, facial, and communicative disorders. Spring. Dilley and Craniofacial Team.

751 [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 and blood therapy; airway management; venipuncture; pediatric anesthesia; and pre-op evaluation, orders, and rounds. Spring. Roberts.

762 [262] (ORPA) ORAL AND MAXILLOFACIAL PATHOLOGY SEMINAR (2).
Topics include developmental disturbances of soft and hard tissues, syndromes, inflammation, immunology, pulp and peripapilla 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. Fall and spring. Curran.


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: oral microbiology, 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. Curriculum requirements are based on training areas, with common core requirements for all students. Students begin an emphasis on basic science courses (biology and anatomy, microbiology, biochemistry) followed by examination of specific biological applications. Research interests and qualifications (such as a DDS or an MD) will also determine course requirements. Participation in research in progress is a key element of the program, and students start laboratory rotations during their first semester to allow maximum time for research involvement. Program participants will be involved early in their academic careers with certain 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.

Dual Degree Program in Oral Biology and Doctor of Dental Surgery (DDS)

There is an opportunity for students who have an interest in pursuing both a PhD degree in Oral Biology with The Graduate School to simultaneously pursue a Doctor of Dental Surgery (DDS) degree in the School of Dentistry. This special program is a seven-year program that allows the pursuit of both degrees simultaneously, and results in awarding of both the PhD and the DDS degree upon completion of the requirements for both programs.

Applying for this dual degree program is an option only when applying for either the Oral Biology Graduate Program or for the DDS Program in the School of Dentistry. The applicant must indicate an interest in pursuing the dual degree program at the time of application, and will be interviewed and accepted into the program as a dual degree student. The application deadline for this dual degree program is November 1 (the deadline for the DDS program). Students applying for the dual degree program must take either the Graduate Record Examination (GRE) or the Dental Aptitude Test (DAT), but are not required to take both exams. All other requirements for application to the dual degree program are identical to the application process for the Oral Biology Graduate Program. Students not chosen to enter the dual degree program would still be eligible for admittance into either the DDS Program or the Oral Biology Graduate Program through the regular application process.

Students accepted into the dual degree program will follow a specialized curriculum, which combines scientific and clinical training with research activities designed to promote a career in academic dentistry. The first three years of the program will consist of basic didactic courses from both programs coupled with laboratory experiences, followed by a fourth year period of dissertation research concurrent with comprehensive clinical care education. Students who successfully complete the program will then be awarded both the PhD and DDS degrees at the completion of the requirements for both degrees. Students who are not eligible or who choose not to complete both programs but rather pursue only the DDS degree must apply to the DDS program and be accepted through the regular application process.

The Faculty and Their Research

Orofacial Neurobiology: Greg Essick, somatosensory and motor research; Mark Hollins, somatosensory and motor research; William Maixner, neurobiology, pain perception; Aldo Rustioni, neurophysiology; Luda Diatchenko, genetic background for individual variation in pain sensitivity and development of chronic pain conditions.

Pathogenesis: Roland R. Arnold, immunology, host-microbial biology, secretory immunity; Steven L. Bachheimer, molecular pathology of herpes simplex virus; Miriam Braunstein, microbial genetics; Patrick M. Flood, cellular immunology, immune response and regulation; Robert E. Johnston, viral pathogenesis; Thomas Kawula, bacterial pathogenesis; Glenn Matsushima, neuroimmunology, Salvatore Nires, mucosal immunology; Steven Offenbacher, inflammatory mediators, host response, periodontal and systemic diseases; Nancy Raab-Traub, 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, neuroimmunology, gene regulation; Roland Tisch, immunology and diabetes; Jennifer Webster-Cyriac, oral manifestations of systemic disease, host-virus interactions.

Biological of Extracellular Matrices: Lydon Cooper, bone cell physiology, immunology; Wagner Duarte, physiology and metabolism of bone; Leslie Parise, integrin cytoplasmic domain binding proteins; Eric Everett, Genetics of acquired and congenital disorders of craniofacial development; Sylvia Frazier-Bowers, genetics; Patricia Pereira, biomaterials; Lola Reid, stem cell differentiation and extracellular matrix interactions; Kenneth Toner, application of mass spectrometry to protein characterization, determination of posttranslational modifications of proteins; John Timothy Wright.
mineralization and development, genetic disorders, extracellular matrices: Mitsuo 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 base for much of the basic science research in the 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, which includes an eight-patient operatory. 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 in the student's 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 admission to the fall session, and are preferred by January 31. Application requirements include the Graduate Record Examination (GRE) and, for foreign applicants, the Test of English as a Foreign Language (TOEFL), 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

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Graduate Courses in Oral Biology

710, 711, 712, 713 [208URED] (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 per week. Fall and spring. Flood.

720 [233] (OBIO) ADVANCED ORAL BIOLOGY (3, 2). 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. Cooper.

721, 722, 723, 724 [234ABCD] (OBIO) DIRECTED STUDIES IN ORAL BIOLOGY (2). Topics include extracellular matrices, immunology, inflammation, neurobiology, and pain management. Fall and spring. Arnold.

730, 731, 732 [249ABCD] (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 context of three areas of oral biology: biology of extracellular matrices, host-pathogen interactions, and oral facial neurobiology. Fall. Faculty on staff.

740 [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.

741 [260] (OBIO) THE MOLECULAR CONTROL OF BONE MASS (2). This course will examine bone formation and bone maintenance. Cellular and molecular determinants of osteogenesis and resorption will be explored. Course format will be faculty lecture and assigned student presentation of current literature. Cooper.


760 [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.

761, 762 [280AB] (OBIO) THE MOLECULAR AND CELLULAR PATHOGENESIS OF INFLAMMATORY DISEASES (6). Prerequisites: biochemistry and immunology, permission of the 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 immunopharmacology of inflammation. Lectures, seminars. Fall (a) and spring (b). Oral Biology faculty. (Course director: Offenbacher.)

770, 771, 772, 773 [259ABCD] (OBIO) SELECTED TOPICS IN ORAL BIOLOGY. (1) Review of current findings in selected areas of oral biology. Students will critique current literature dealing with the newest discoveries in neuroscience, inflammation, or pathogenesis in an interactive forum between students and faculty. Fall and spring. flooding.

780 [270] (OBIO) INTRODUCTION TO SCIENTIFIC WRITING (1). Seminar series that will give generic instructions covering grant writing skills and structure, as well as offer insight for scientific writing. Spring.

993 [393] (OBIO) MASTER'S THESIS (0-6). Prerequisite, permission of the staff. Faculty on staff.

994 [394] (OBIO) DOCTORAL DISSERTATION (0-6). Prerequisite, permission of the 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, acquire skills in the 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.

711, 721, 731 [212abc] (ORPA) SURGICAL ORAL PATHOLOGY SEMINAR I (1). This weekly seminar uses unknown cases as the 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). Murrah.

712, 722, 732 [232abc] (ORPA) CURRENT PERSPECTIVES ON ORAL AND MAXILLOFACIAL PATHOLOGY I (1). This seminar series will focus on current research in oral and maxillofacial pathology (OMP) 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.

713, 723, 733 [202abc] (ORPA) ADVANCED ORAL PATHOLOGY I (1). This lecture and clinico-pathologic 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.

750 (ORPA) SURGICAL PATHOLOGY IN THE HOSPITAL SETTING (1-3) Under the supervision of the hospital pathologist, the student will rotate in anatomic pathology, laboratory medicine, dermatopathology, hemato-pathology, molecular medicine, surgical specialties, and other elective areas to develop advanced concepts of disease as well as a working relationship with medical colleagues. (Second year.) Boudlin.

762 [262] (ORPA) ORAL AND MAXILLOFACIAL PATHOLOGY SEMINAR (2). This series of clinico-pathologic correlation conferences will provide an opportunity to apply basic principles of oral pathology in the clinical setting and to develop a broader understanding of disease processes through histopathologic evaluation. Emphasis will be on the development of differential diagnoses, management of oral lesions, and correlation of clinical findings and histopathologic features. Development of a working relationship between the oral pathologist and the specialist will also be emphasized. Fall. Curran.


812, 822, 832 [234abc] (ORPA) CURRENT PERSPECTIVES ON ORAL AND MAXILLOFACIAL PATHOLOGY III (1). Continuation of ORPA 732. Summer, fall, and spring (third year). Curran.


901 [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.

993 [393] (ORPA) MASTER'S THESIS (3).

713 [213] (PATH) MECHANISMS OF DISEASE (1).

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 a 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 appropriate committees review the application, transcripts, and other credentials.

Graduate Courses in Oral and Maxillofacial Surgery

707 [207] (OMSU) REGIONAL ANATOMY (2 or more). Lecture, laboratory. Montgomery.

712abc [212abc] (OMSU) ORAL AND MAXILLOFACIAL SURGERY - ADVANCED ORAL AND MAXILLOFACIAL SURGERY (12). Faculty on staff (Dental School and UNC Hospitals).

714abc [214abc] (OMSU) ORAL AND MAXILLOFACIAL SURGERY - GENERAL ANESTHESIA (6). (UNC Hospitals.) Faculty on staff.

715abc [215abc] (OMSU) ORAL AND MAXILLOFACIAL SURGERY - PHYSICAL DIAGNOSIS (12). (UNC Hospitals.) Faculty on staff.

720 [220] APPLIED PHARMACOLOGY (1).

730 [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.

740 [240] ORAL AND MAXILLOFACIAL RADIOLOGY (1).


760B [760B] ORAL AND MAXILLOFACIAL SURGERY II (1).

762 [262] (ORPA) ORAL PATHOLOGY AND HISTOPATHOLOGY I (1). Fall. Murrah.

763 [263] (ORPA) ORAL PATHOLOGY AND HISTOPATHOLOGY II (2). Spring. Murrah.
820 [320] (PERU) INTRODUCTION TO DENTAL IMPLANTS (1). Lectures and seminars on use of dental implants. Fall. Morarity.

901 [301] (OMSU) RESEARCH (6). To be arranged.

993 [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) general core 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. Admissions 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 Admissions Office, School of Dentistry, The University of North Carolina at Chapel Hill, 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

701a [201a] (OPER) OPERATIVE DENTISTRY SEMINAR I (1). This course is an intensive review of the basic principles of operative dentistry, cariology, and restoration planning; it provides a foundation for all other courses in operative dentistry. The core text for this review is Struven's Art and Science of Operative Dentistry.

701b [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. Students may be required to develop a case presentation for this seminar.

701c [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.

702abcd [202abcd] (OPER) OPERATIVE LITERATURE REVIEW I-I (1). This is a weekly seminar offering a forum for presentation and discussion of relevant scientific papers on various Operative Dentistry-related topics. Typically, a research or faculty member presents one or more relevant papers, which is followed by a critical analysis of the study and discussion of the topic.

703a [203a] (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.

704b [204b] (OPER) OPERATIVE CLINICAL SEMINAR B (1). Continuation of Operative Clinical Seminar A, involving a series of presentations where the student will present clinical cases resolved in the graduate clinic.

736A [236A] (OPER) GRADUATE DENTAL BIOMATERIALS I (3).

736B [236B] (OPER) GRADUATE DENTAL BIOMATERIALS II (3).

737 [237] (OPER) LAB RESEARCH METHODS (3).

738 [238] (OPER) CLINICAL RESEARCH METHODS (3).

790a [290a] (OPER) OPERATIVE DENTISTRY CLINIC I (1). Basic operative dentistry treatment planning and procedures.

790b [290b] (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 caries, and the use of advanced technologies to provide operative dentistry treatment.

790c [290c] (OPER) OPERATIVE DENTISTRY CLINIC III (4). Continuation of Operative Dentistry Clinic II.

790d [290d] (OPER) OPERATIVE DENTISTRY CLINIC IV (3). Continuation of Operative Dentistry Clinic III.

790e [290e] (OPER) OPERATIVE DENTISTRY CLINIC V (4). Continuation of Operative Dentistry Clinic IV.

790f [290f] (OPER) OPERATIVE DENTISTRY CLINIC VI (4). Continuation of Operative Dentistry Clinic V.

790g [290g] (OPER) OPERATIVE DENTISTRY CLINIC VII (3). Continuation of Operative Dentistry Clinic VI.

903a [203a] (OPER) OPERATIVE DENTISTRY RESEARCH I (1). (Thesis related.) This course is provided on an individual basis by the student and thesis mentor. The student will develop and write a detailed description of materials and methods used in his or her research project.

903b [203b] (OPER) OPERATIVE DENTISTRY RESEARCH II (2). (Thesis Materials and Methods.) Student will perform a research project and obtain data for the master's thesis.

993 [393] (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 on July 1 of each year 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, radiobiology and radiation protection, and offers teacher training preparation. Each student participates in an extensive research project for the thesis, as well as in 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

585 [085] (RADI) RADIOLOGICAL HEALTH PHYSICS (3). Spring, Plott.

662 [162] (RADI) RADIOGRAPHIC IMAGING (4). Fall, Burns.

702 [202] (ORAD) ADVANCED ORAL RADIOLOGIC TECHNOLOGY (4). Seminars, laboratory, and clinical sessions to provide experience in advanced radiologic procedures. Spring, Platin.
704 [204] (ORAD) ADVANCED RADIOLOGIC DIAGNOSIS II (3). Literature review, seminars, and clinical experience in advanced radiologic diagnosis. Summer. Ludlow.

705 [205] (ORAD) PRINCIPLES FOR ADVANCED DIAGNOSTIC AND THERAPEUTIC RADIOLOGY (4). Literature review and seminars in the application of radiologic procedures such as computed tomography, digital imaging, and magnetic resonance for diagnosis of oral and maxillofacial conditions. Fundamentals of radiation therapy are also included. Tyndall.

706 [206] (ORAD) ADVANCED ORAL RADIOLOGY (2). Lecture, seminars, and clinical demonstrations in advanced radiology topics. This is designed primarily for master's degree students in advanced dental education graduate and specialty programs. Spring. Tyndall.

707 [207] (ORAD) GRADUATE CLINICAL ORAL RADIOLOGY (3). Fall, spring, and summer (first year); summer, fall, and spring (second year). Tyndall.

802 [302] (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.

960 [360] (ORAD) ORAL RADIOLOGY RESEARCH (1-4). Arranged. Faculty on staff.

993 [393] (ORAD) MASTER'S THESIS (3).

Core Courses Required

701 [201] (DENG) RESEARCH METHODS (1). Fall. Wright.


703 [203] (DENG) APPLIED RESEARCH METHODS (2). Fall. Beck.


762 [262] (ORPA) HISTOLOGY AND HISTOPATHOLOGY (2). Fall. Curran.


Orthodontics

Admission for graduate study in orthodontics is made only after the department faculty and The Graduate School review and 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 in late 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 last specialty board certification. All students participate in research in the department and are expected to earn the master of science degree by completing 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

706 [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.

801 [201] (ORTH) ORTHODONTIC TECHNIQUE (4). Introduction to orthodontic technique and procedures for beginning orthodontic graduate students. Fall (first year). Tulloch, faculty on staff.

802ab [302ab] (ORTH) CURRENT TOPICS IN ORTHODONTICS (2, 2). Seminars on pertinent orthodontic literature for advanced orthodontic students. Fall and spring. Profit, Phillips.

803ab [303ab] (ORTH) ORTHODONTIC DIAGNOSIS (2, 2). Principles of orthodontic diagnosis and analysis of diagnostic records for orthodontic specialists. Fall and spring. Koroluk, faculty on staff.

805abcd [205abcd] (ORTH) ADVANCED CLINICAL ORTHODONTICS (5, 3, 7, 7). Fall, spring, and summer. Profit, faculty on staff.

806 [206] (ORTH) BIOMECHANICS (2). Mechanical principles in orthodontic force production and control; biological response to orthodontic force. Fall. Kusy, Hershey.

807 [207] (ORTH) ORTHODONTIC BIOMATERIALS (1-3). Introduction to orthodontic biomaterials and integration with the basic principles of engineering, science, and orthodontics. Spring. Kusy.

808 [208] (ORTH) GROWTH AND DEVELOPMENT (4). Principles of growth and development, emphasizing dentofacial development from an evolutionary and molecular biology perspective, as well as the traditional anatomical perspective. Spring. Frazer-Bowers, faculty on staff.

809 [209abcd] (ORTH) PREVENTATIVE ORTHODONTICS (3).

813 [213] (ORTH) PRINCIPLES OF ORTHODONTIC TREATMENT FOR ADULTS (2). Orthodontic treatment procedures for adults; for AEGD, periodontic, and prosthodontic graduate students. Fall. Beane.

815 [215] (ORTH) ORAL-PHARYNGEAL FUNCTION (1). Maturation of oral and pharyngeal function, including speech and its relation to dentofacial development. Fall. Trotman.


822 [222] (ORTH) ENVIRONMENT OF SPECIALTY PRACTICE (3). Trends in health care delivery; organization and management of orthodontic specialty practice. Fall. Beane, faculty on staff.

901abc [301abc] (ORTH) RESEARCH (2, 1, 2). Arranged. Profit, Phillips.

993 [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 MSG 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 the MS, MPH, or PhD degree. The minimum program length is thirty-six months, beginning July 1 of each year. 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, in the Dental Research Center, at a facility in nearby Research Triangle Park, or at a neighboring institution of higher learning. 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 externships at the local, state, and national levels.

Sponsors are available depending upon available resources.

**Graduate Courses in Pediatric Dentistry**

800abc [200abc] **MATERNAL AND CHILD HEALTH SEMINAR SERIES**
(1, 1, 1, 1). (One hour a 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.

801abcdedef [201abcd] **PEDIATRIC DIAGNOSIS AND TREATMENT PLANNING SEMINAR**
(1, 1, 1, 1, 1). (One hour a 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.

803abc [203abc] **PRINCIPLES OF PEDIATRIC DENTISTRY**
(Six hours a month for fall and spring semesters for twenty-four months.) This seminar covers the fundamentals of pediatric dentistry from behavior management to pulp therapy. The course relies on readings of classic and contemporary literature with seminars that include discussions and critiques of readings. Vann and Pediatric Dentistry faculty.

804abcd [204abcd] **ADVANCED CLINICAL PEDIATRIC DENTISTRY**
(Six to twelve hours a 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.

805 [205] **CONTEMPORARY PRACTICE MANAGEMENT**
(One hour monthly during the spring semester for three years.) This course provides an understanding of the design, implementation, and management of a modern pediatric dental practice. Most seminar leaders are private practitioners who are adjunct faculty in the department. Vann.

806abc [206abc] **TREATMENT OF PEDIATRIC DENTAL EMERGENCIES**
(One hour a 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. Endodontic faculty and residents also participate in this course. Vann.

901-904 [301] **RESEARCH**
(Minimum of one half-day a 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.

993 [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 academics and research. Sponsors 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, transcripts of prior academic work, letters of reference, and other credentials. All applications, transcripts, and letters of reference should be mailed to the Postdoctoral Application Support Service (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**

710, 711 [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.

720, 721, 722, 723 [268abde] (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.

730, 731 [270ab] (PERI) **SEMINAR IN PERIODONTOLOGY**
(6). In this first-year literature review course, graduate students present and evaluate the evidence on periodontal disease etiology, pathogenesis, risk factors and treatments including mechanical, surgical, and pharmacological approaches. Fall and spring. Paquette.

760, 761 [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.

820 [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. Mortarity.

821 [321] (PERI) **CLINICAL IMPLANTOLOGY**
(1). This graduate seminar continues themes introduced in PERI 820 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. Mortarity.

890, 891 [250ab] (PERI) **ADVANCED CLINICAL PERIODONTICS 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.

892, 893 [25]ab (PERI) ADVANCED CLINICAL PERIODONTICS AND CLINICAL PRACTICE (5). Within this second- and third-year specialty clinic, graduate students gain proficiency in managing patients with periodontal diseases, using both surgical and non-surgical approaches. Cases may involve interdisciplinary care, medical management, dental implants, and sedation procedures. Fall, spring, and summer. Department faculty.


993 [39] (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 the Postdoctoral Application Support Service (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.

Stipends are available at various levels throughout the entire course.

Graduate Courses in Prosthodontics

701, 702, 703 [230]abc (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 (second year). Director, faculty on staff.

704, 705, 706 [230]def (PROS) INTRODUCTION TO PROSTHODONTIC LITERATURE.

721-726 [231]abcdef (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.

731-736 [237]abcdef (PROS) PROSTHODONTIC DIAGNOSIS AND TREATMENT PLANNING (1, 1, 1, 1, 1, 1).

736a, 736b [236]ab (OPER) GRADUATE DENTAL MATERIALS (3). This is a foundation course for dental materials science and dental materials applications. Fall and spring. Bayne.

751-754 [233]abde (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). Minsley, faculty on staff.

801-808 [232]abcdef (PROS) ADVANCED CLINICAL FIXED AND REMOVABLE PROSTHODONTICS (1, 3, 3, 5, 5, 5). 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); summer, fall, and spring (third year). Director, faculty on staff.

851-854 [234]abcd (PROS) CLINICAL MAXILLOFACIAL PROSTHODON- TICS (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 school and hospital environment. Spring (first year); summer, fall, and spring (second year); summer, fall, and spring (third year). Minsley, faculty on staff.

901-906 [235]abcdef (PROS) RESEARCH (2, 3, 3, 3, 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.

993 [39] (PROS) MASTER'S 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 broad area of the endodontic specialty; review of classic and current literature in endodontics; teaching experience; research design and methodology; and the development and completion of a research project.

Enrollment is limited to two candidates each year. The course of study begins July 1 of each year.

Graduate Courses in Endodontics

710, 720, 730, 740, 750 [216]abcdef (ENDO) ADVANCED CLINICAL ENDODONDICS (29). 870 hours of clinical practice. Faculty on staff.

811, 812, 831, 841 [211]abcdef (ENDO) ENDODONTICS SEMINAR AND CASE ANALYSIS (15). 180 hours conference. Faculty on staff.

812, 822, 832, 842 [212]abcdef (ENDO) ENDODONTICS LITERATURE REVIEW SEMINAR (20). 270 hours. Faculty on staff.

920, 921, 922, 923 [220]abcdef (ENDO) RESEARCH (15). 675 hours of laboratory. Faculty on staff. Required each semester.

993 [39] THESIS (3 or more). Third year.
Core courses required of Graduate Students in Endodontics:
701 [201] (DENG) RESEARCH DESIGN (1). Please refer to the core and multi-use listing.
702 [202] (DENG) BIOSTATISTICS (2). Please refer to the core and multi-use listing.
703 [203] (DENG) APPLIED RESEARCH METHODOLOGY (2). Please refer to the core and multi-use listing.
706 [206] (ORAD) ADVANCED ORAL RADIOLOGY (2). Please refer to the core and multi-use listing.
707 [207] (OMSU) REGIONAL ANATOMY (3). Please refer to the core and multi-use listing.
720 [220] (OMSU) CLINICAL PHARMACOLOGY AND THERAPEUTICS (1). Please refer to the core and multi-use listing.
733 [233] (OBIO) DIRECTED STUDIES IN ORAL BIOLOGY (1, 1, 1, 1). Please refer to the core and multi-use listing.

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; and (4) define their own problems from the present body of knowledge in 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 the minor selected by the student. Thirty-nine 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 institution, 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 of each year. 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
701 [201] (DENG) RESEARCH DESIGN (1). Please refer to the core and multi-use listing. Fall. Wright.
703 [203] (DENG) APPLIED RESEARCH METHODOLOGY (2). Please refer to the core and multi-use listing. Fall. Beck.
715 [115] (DHED) CURRENT CONCEPTS IN CLINICAL SKILLS (2). This course reviews and updates students in current treatment and diagnostic modalities in dental allied education. Students who satisfactorily pass the evaluation will be exempt. Summer. Wilder.
720 [120] (DHED) EDUCATIONAL CONCEPTS (2). This course is designed to introduce the graduate student to various teaching philosophies and methodologies. A variety of educational concepts such as methods of presentation, testing, and measurement are explored. Emphasis is placed on the practical application of theory. Summer. Wilder.
730 [230] (DHED) ORGANIZATION AND ADMINISTRATION (3). Provides information and experience in leadership, administration, and accreditation for allied dental education programs. Spring. George.
736 [136] (DHED) CLINICAL/LABORATORY TEACHING PRACTICUM (2). This course provides students with the knowledge and skills to function as a competent clinical instructor. Psychomotor skill development and analysis and remediation of performance problems are two topics related to clinical teaching that are stressed. Fall. Peterson.
760b [160b] (DHED) SEMINAR IN EDUCATION AND RESEARCH (1). This course is designed to provide knowledge and stimulate discussion about pertinent topics in dental and allied dental education and research. Fall. Wilder.
837 [237] (DHED) INTERNSHIP (6-9). This full semester internship provides the student with the opportunity to student teach in an allied dental program. Spring. George.
860 [160b] (DHED) SEMINAR IN EDUCATION AND RESEARCH (1). Fall. Wilder.
993 [393] (DHED) THESIS (3). Fall and spring. Wilder.
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
753 [153] (DHED) ADVANCED INTRAORAL FUNCTIONS (3). Wilder.
754 [154] (DHED) ADVANCED INTRAORAL FUNCTIONS (PERIODON- TICS) (3). Wilder.
833 [233] (DHED) SEMINAR AND PRACTICUM IN DENTAL RADIOLOG- EY EDUCATION (4). Overman.
836 [236] (DHED) ADVANCED/CLINICAL TEACHING (3). George.

Dental Radiology
190 (ORAD) COMPREHENSIVE RADIATION BIOLOGY (Var.).
162 (RAED) RADIOGRAPHIC IMAGING I (4). Burns.

Management/Administration
774 [474e] (DHED) PERSONNEL MANAGEMENT SEMINAR (2). Wilder.
834 (DHED) DENTAL MANAGEMENT SEMINAR (4). Wilder.

ELECTIVE (3).

Oral Pathology
104 (DENT) MICROSCOPIC ANATOMY (4). Hadler.

127 (DENT) PATHOLOGY I (3). Bendley.

202 (DENT) PATHOLOGY II (2). Murrah.

DEPARTMENT OF DRAMATIC ART

McKay Coble, Chair

Professors
McKay Coble, Chair. Design
Raymond L. Dooley, Head of MFA Acting, Acting
David Hammond, Acting, Directing
Leon Kazi, David G. Ferry Distinguished Professor of Dramatic Art
Roberta A. Owen (2) Costume Design and History
Bonnie N. Ralph, Voice and Speech
Craig W. Turner, Head of Graduate Studies, Movement for the Actor
Adam N. Vesenyi, Dramaturgy

Associate Professor
Michael J. Roller, Head of Technical Production

Adjunct Professors
Judith L. Adamson, Head of Costume Production
Joan Darling
David Svanoe

Lecturer
Kristine Rapp, 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 Kenan 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 the calendar of the graduate program. This information is contained elsewhere in the Graduate 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 and laboratory supervisor responsibilities.

Master of Fine Arts

Purpose: Through disciplined classroom training and a progressive involvement in performance or production opportunities, students in the Master of Fine Arts (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 required for each area. All applicants 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 options to the individual, 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 each 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, P, 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

280 [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.

290 [192] SPECIAL STUDIES (5-3). Prerequisite, permission of the instructor and of the undergraduate advisor. Open only to juniors in the Department of Dramatic Art. 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. May be repeated for credit. Fall and spring. Staff.

331 [157] PLAYWRITING II (3). Prerequisite, at least one semester of DRAM 231. A practical course in the writing of the stage play. (Alternate years.) Svane.
395 [194] PROFESSIONAL THEATRE LABORATORY (3-12). 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 of other approved professional theatre organizations. Locally supervised. Open only to advanced students. (Offered as required.) Staff.


465 [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.

466 [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.

467 [167] COSTUME DESIGN I (3). Prerequisite, permission of the instructor. Studies and practical experience in planning and costumage for the stage. Instruction in techniques of planning and rendering costume design. Fall and spring. Owen.

468 [168] LIGHTING DESIGN I (3). Prerequisite, DRAM 800 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.


473 [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.


475 [171] COSTUME HISTORY AND STYLE: ASIA AND ARABIA (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.

480 [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.

488 U.S. LATINO/A THEATER (3). Prerequisite, DRAM 120. Investigation of U.S. Latino/a theater texts and performance practices as a discrete genre. US Latino/a theater will be distinguished from the dominant culture, and diversity of forms and styles discussed.

490 [190] THEATRE MANAGEMENT (3). Prerequisite, permission of the instructor. A historical survey of theatre management in America with emphasis on commercial and not-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. Staff.

491 [191] ISSUES IN ARTS MANAGEMENT (3). Arts management issues taught through analysis of case studies. Course includes management theories, organizational structures, and current issues. (Alternate years.) Staff.

495 [101] STAGE MANAGEMENT (3). A study of basic principles and practices of modern stage management. Fall and spring. Staff.

566 [176] ADVANCED SCENE DESIGN (3). Prerequisite, DRAM 466 or permission of the instructor. Advanced study of the principles and practice of designing scenery for the theatre. Fall. (Alternate years.) Coble.

567 [169] COSTUME DESIGN II (3). Prerequisite, DRAM 467 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.

595 [198] SEMINARS IN COSTUME PRACTICES (1-3). Prerequisite, DRAM 290, Technical Methods, Costume section, and permission of the 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.

597 COSTUME SEMINARS II: MILLINERY AND HAIR (1-3). Prerequisite, permission of the instructor. Advanced costume production techniques with an emphasis on millinery and hair design.

598 COSTUME SEMINARS III: MASKS AND ARMOR (1-3). Prerequisite, permission of the instructor. Advanced costume production techniques with an emphasis on creating masks and armor.

599 COSTUME SEMINARS IV: DECORATIVE ARTS (1-3). Prerequisite, permission of the instructor. Advanced costume production techniques with an emphasis on decorative arts.

650 [196] SPECIAL STUDIES: COSTUME PRODUCTION (.5-3). Prerequisite, permission of the instructor and DRAM 64, Technical Methods, Costume section. Advanced construction techniques in theatrical costuming. May be repeated for credit. Fall and spring. J. Adamson.

667 [245] ADVANCED COSTUME DESIGN I (Var.). Prerequisite, admission to the first year of the MFA program or permission of the instructor. Study of design for the production student. Spring. Staff.

Courses for Graduates

720 [220] ACTING I (3). Prerequisite, admission to the MFA Acting program. Intensive professional training for the actor. Must be taken fall and spring. Hammond.

721 [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.

722 [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.

723 [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. Turner.

724 [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.

725 [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.


727 [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.
728 [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.

750 SPECIAL STUDIES: COSTUME PRODUCTION II: ADVANCED COUTURE METHODS (5-3). Advanced construction techniques with an emphasis on advanced couture methods.

752 SPECIAL STUDIES: COSTUME PRODUCTION III: TAILORING (5-3). Prerequisite, Costume graduate. Advanced construction techniques with an emphasis on bodice development.


764 [244] COSTUME CONSTRUCTION V (1-3). Prerequisites, DRAM 473, 474, 760, 762. Using combination of pattern making and dress making techniques to achieve unusual shapes in theatrical costume. Fall or spring. Adamson.


770 [172] PERIOD PATTERN I; PRE-VICTORIAN (Var., 1-3). Prerequisite, permission of the instructor. Advanced study of historical pattern, costume crafts, or costume shop management through directed study. Fall and spring. May be repeated for credit. Adamson.

772 PERIOD PATTERN II; VICTORIAN (1-3). Prerequisite, Costume graduate. Study of historical pattern with an emphasis in Victorian era.

774 PERIOD PATTERN III: TWENTIETH CENTURY (1-3). Prerequisite, Costume graduate. Study of historical pattern with an emphasis in twentieth century.

776 PERIOD PATTERN IV: NINETEENTH AND TWENTIETH CENTURY MEN'S WEAR (1-3). Prerequisite, Costume graduate. Study of sartorial arts with an emphasis in nineteenth and twentieth centuries.

780 COSTUME MANAGEMENT I: SUPPLIES AND SUPPLIERS (1-3). Prerequisite, Costume graduate. Study of supplies and suppliers needed to produce theatrical costumes.

782 COSTUME MANAGEMENT II: BUDGET METHODS (1-3). Prerequisite, Costume graduate. Study of cost analysis for costume production.

784 COSTUME MANAGEMENT III: PERSONAL (1-3). Prerequisite, Costume graduate. Study of organization and personnel management for costume production.

790 [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.

791 [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.

792 COSTUME LABORATORY III (3). Prerequisite, Costume graduate. Continuation of practical work through production assignments.

793 COSTUME LABORATORY IV (3). Prerequisite, Costume graduate. Continuation of practical work through production assignments.

796 [247] COSTUME LABORATORY V (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.

797 COSTUME LABORATORY VI (1-3). Prerequisite, Costume graduate. Continuation of practical work through production assignments.

799 [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.

800 [100] TECHNICAL DIRECTION (3-6). Prerequisites, permission of the instructor, DRAM 401, 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. Pichard, Roller, staff.

801 TECHNICAL DIRECTION II (3-6). Prerequisite, Technical graduate. Additional study of technical and engineering problems in production.

802 [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. Roller.

803 [261] ADVANCED TECHNICAL DIRECTION II (1-6). Prerequisite, admission to the third 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. Roller.

805 [193] SPECIAL STUDIES: TECHNICAL PRODUCTION (5-12). Prerequisite, permission of the 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 and spring. Roller.


813 SPECIAL STUDIES: TECHNICAL PRODUCTION (1-6). Prerequisite, Technical graduate. Continuation of advanced scenic construction techniques with specific project or production responsibility in the area of scenic construction.

814 PROFESSIONAL THEATER LABORATORY: TECHNICAL PRODUCTION (5-12). Prerequisite, Technical graduate. Individual programs in scenic construction techniques.

821 [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.

830 [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. Must be repeated for credit. Pichard, Roller.

841 [251] DESIGN TECHNICAL THEATRE PRACTICUM I (3-6). Prerequisite, admission into the MFA Tech program. Practical work in scene shop. Must be taken fall and spring. Roller.

842 MFA/TECHNICAL THEATRE PRACTICUM II (1-6). Prerequisite, Technical graduate. Continuation of practical work in scene shop.
CURRICULUM IN ECOLOGY

ROBERT K. PEET, Chair

Professors
Richard N. Andrews (32) Environmental Policy and Planning, Management
Decision Making
Lawrence E. Band (6) Watershed Hydrology, Ecology, and Morphology
Larry K. Benninger (37) Low-Temperature Geochemistry
Philip R. Berke (23) Land Use and Environmental Planning
Joe Carter, Evolution and Ecology of Bivalvia, Paleontology
J. Robert Cox Jr. (1) Environmental Communication, Role of Discourse in Social Change
Douglas J. Crawford-Brown (43) Environmental Risk Assessment
Carole I. Crumley (22) Landscape and Historical Ecology, Archaeology, Ethnography, Global Environmental Change
Barbara Earp (48) Social Demography, Population and Environment
Patricia Genét, Paleobotany, Ecology and Geography of Paleozoic Plants
Joel G. Kingsolver (11) Environmental Physiology, Functional Morphology, Population Ecology and Evolution
Paul W. Leslie (40) Human Ecology, Demographic Anthropology, East Africa
Melinda S. Meade (36) Human Ecology, Ecology of Third World Development, Demography, and Health
Hans Paerl, Microbial Ecology, Estuarine and Coastal Ecology, Water Quality
Charles H. Peterson (29) Marine Ecology, Population and Community Processes
Frederic K. Pfrender (27) Microbial Ecology, Nutrient Exchanges in Rivers and Estuaries, Estuarine Pollution
David W. Pfennig (44) Evolutionary Ecology, Kin Selection
Peter J. Robinson (17) Climatology, Climate Change and Impacts
Stephen J. Walsh (2) Remote Sensing, Geographical Information Systems, Land Use, Spatial modeling
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 (55) Population Geography, Medical Geography
Charles E. Konrad (54) Climatology, Climate Change, Meteorology
Aaron Moody (12) Remote Sensing, Landscape Ecology, Biogeography, Geographical Information Systems
Andrea P. Teske (53) Microbial Ecology, Evolution and Systematics
Stephen C. Whalen (7) Nutrient Cycling, Greenhouse Gas Production and Dynamics
Thomas M. Whitmore (42) Cultural Ecology, Latin America, Human Populations

Assistant Professors
John F. Bruno (10) Ecology and Conservation of Marine Communities
Martin W. Doyle (45) Fluvial Geomorphology, Hydrology, Stream Ecology, Environmental Policy
Flora Lu Holt (46) Ecological Anthropology, Tropical Conservation
Charles Mitchell, Disease Ecology, Global Change, Biological Invasions
Karlin S. Pfennig (50) Behavioral Ecology and Evolution, Speciation, Host-Parasite Interactions
Michael Piéler, Coastal Ecosystem Ecology and Nutrient Dynamics
Maria Servedio, Evolutionary Ecology, Behavioral Ecology
Donna Surje (41) Paleoclimatology, Paleooceanography, Low-Temperature Geochemistry

Adjunct Professors
Robert Wyatt (8) Population Biology, Ecology and Evolution of Plant Reproduction, Biostatistics

Adjunct Assistant Professors
Cecil Frost, Fire Ecology, Plant Ecology, Landscape Ecology
Sam Pearsall, Conservation Planning, Adaptive Management, Riparian Landscapes
Johnny Randall, Conservation Biology, Restoration Ecology
Jack Weiss (49) Biostatistics and Quantitative Ecology
Alan Weakley (51) Plant Systematics, Floristics, Biogeography, Conservation Biology, Bioinformatics

The Curriculum in Ecology is a multidisciplinary, degree-granting program that seeks to foster an understanding and appreciation of ecological systems and to demonstrate the value of ecological approaches to the solution of current and future environmental problems. With the participation of faculty and students from many disciplines and departments, emphasis is placed on interdisciplinary activities that explicitly consider the complexity of the environment and integrated approaches to problem identification and solution. In particular, the Curriculum in Ecology seeks to foster an understanding and appreciation of ecological systems, human and non-human, and to demonstrate the value of ecological approaches to the solution of current and future environmental problems in North Carolina, the United States, and the world. Whereas degree programs with a strong ecology component may be arranged in other departments, the Curriculum - by combining many approaches and methods and by linking the social and natural sciences - explicitly considers the complexity of the environment and the need for integrated approaches to problem identification and solution.

Using the resources of many departments, the Curriculum in Ecology provides both broad and specialized training in ecology, human ecology, and the study of environmental systems. Degrees available in the Ecology Curriculum are the master of science, the master of arts, and the doctor of philosophy. Applications will be accepted from persons with varied backgrounds and goals, with the student's specific program of study and research tailored to the needs of the individual.
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, NC; the 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 faculties 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, or 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. Application for admission and graduate appointments accompanied by credentials and Graduate Record Examination (GRE) 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 567 and 569 sequence; and second, through the composition of the student's advisory committee.

Doctor of Philosophy

Each PhD student, in addition to taking ECOL 567 and ECOL 569, must register for ECOL 994 at least once for three hours credit. There are no other course requirements for the PhD except for those designated by the student's graduate advisory committee.

Owing to the diversity of research methods and approaches within the field of Ecology, the Curriculum has no explicit research skill course requirements for graduate degrees; the student's graduate advisory committee is responsible for seeing that the student has gained the proficiencies expected of a degree candidate in the student's selected area of expertise.

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. Master's students must request readmission for PhD work following completion of all requirements for the master's degree.

Master of Science: 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 567 and ECOL 569, and MS students must register for three hours in ECOL 993.

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 992) in place of a master's thesis (ECOL 993).

Courses in the Ecology Curriculum

563 [145] STATISTICAL ANALYSIS IN ECOLOGY AND EVOLUTION (BIOL 563) (ENST 563) (3). Prerequisites, BIOL 201 and STAT 151 or 155. 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.

567 [190] ECOLOGICAL ANALYSIS AND APPLICATIONS (ENST 567) (3). 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 ecologists. Fall. Holt.

569 [199] CURRENT ISSUES IN ECOLOGY (ENST 569) (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. Repeatable. Holt.

669 [255] SEMINAR IN ECOLOGY (BIOL 669) (2). Prerequisite, BIOL 201 or permission of the instructor. Repeatable. Perc. Reice, White, Bruno.

765 [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. Repeatable. Staff.

891 [250] SPECIAL TOPICS IN ECOLOGY (2-4). Prerequisite, permission of the instructor. Repeatable. Staff.

961 [380] RESEARCH IN ECOLOGY (2 or more). Staff.

992 [392] MASTER'S NON-THESIS (3-5). Staff.

993 [393] MASTER'S THESIS (3-6). Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Staff.

Ecological courses in other departments that are considered appropriate for graduate students in the Curriculum in Ecology:

Anthropology


Biology


467 [156] EVOLUTIONARY ECOLOGY (3). Spring. (Alternate years) Poodolsky
469 [151] BEHAVIORAL ECOLOGY (3). Fall. (Alternate years) K. Pfennig.
476L [114L] AVIAN BIOLOGY LAB (1). Spring. (Alternate years or on demand.) Wiley.
514 [133] EVOLUTION AND DEVELOPMENT (3). Fall. D. Pfennig, Goldstein.
561 [143] ECOLOGICAL PLANT GEOGRAPHY (GEOG 143, not listed) (3). Fall. (Alternate years.) Peet.
563 [145] STATISTICAL ANALYSIS IN ECOLOGY AND EVOLUTION (3). Fall or spring. Weiss.
567 [140] BIOLOGICAL OCEANOGRAPHY (ENVR 520) (MASC 504) (4). Summer. IMS staff.
661 [142] PLANT ECOLOGY (4). Fall. (Alternate years) Peet.
666L [186L] LAB IN COMMUNITY AND SYSTEMS ECOLOGY (BIOL 666) (1).
857 [259] SEMINAR IN COMPARATIVE ANIMAL BEHAVIOR (2). Fall or spring. Lohmann, Wiley.
859 [265] SEMINAR IN MARINE BIOLOGY (2). Fall or spring. Kier, Poodolsky.

**Biostatistics**
670 [170] DEMOGRAPHIC TECHNIQUES I (3). Fall. Suchindran, Billsborrow.

**City and Regional Planning**
685 [219] WATER POLICY IN LESSER DEVELOPED COUNTRIES (3). Whittington.
710 [210] INTRODUCTION TO LAND, ENVIRONMENT, AND RESOURCE ECONOMICS (1-3). Whittington.
744 [244] DEVELOPMENT AND ENVIRONMENTAL MANAGEMENT (3). Fall. Staff.
781 [224] WATER RESOURCES PLANNING AND POLICY ANALYSIS (ENVR 781) (3). Fall. Moreau.
784 [233] ENVIRONMENTAL LAW (ENVR 784) (3). Fall. Heath.

**Economics**

**Communication Studies**

**Economics**
454 [165] ECONOMICS OF POPULATION (3). Fall or spring. Turchi.

**Environmental Sciences and Engineering**
403 [110] ENVIRONMENTAL CHEMICAL PROCESSES (ENST 403) (3). Fall. Staff.
413 [113] LIMNOLOGY (3). Fall. Whalen.
415 [115] BIOGEOCHEMICAL PROCESSES (ENST 450) (GEOL 450) (MASC 450) (3). Fall. (Alternate years) Arnosti.
419 [119] CHEMICAL EQUILIBRIA IN NATURAL WATERS (2). Fall. Singer.
430 [130] HEALTH EFFECTS OF ENVIRONMENTAL AGENTS (3). Fall. Ball.
701 [216] ECOLOGY OF AQUATIC PLANTS AND WETLAND ECOSYSTEMS (3). Spring. (Even years.)
767 [279] MODELING FOR ENVIRONMENTAL RISK ANALYSIS (POLI 767) (PLCY 767) (3). Fall. Staff.
784 [290] ENVIRONMENTAL LAW (PLAN 784) (3). Fall. Heath.

**Environmental Science and Studies**
403 [110] ENVIRONMENTAL CHEMICAL PROCESSES (ENST 403) (3). Fall. Staff.
489 [103] ECOLOGICAL PROCESSES IN ENVIRONMENTAL SYSTEMS (3). Spring. Staff.
510 [183] POLICY ANALYSIS OF GLOBAL CLIMATE CHANGE (PLCY 510) (3). Webster.
529 [184] ENVIRONMENT AND DEVELOPMENT (PLCY 529) (INTS 520) (3). Rabindran.
585 [185] AMERICAN ENVIRONMENTAL POLICY (ENVR 585) (PLAN 585) (PLCY 585) (3). Fall. Andrews

Epidemiology
600 [160] PRINCIPLES OF EPIDEMIOLOGY (3). Fall and spring. Schonbach, Alexander.
785 [277] ENVIRONMENTAL EPIDEMIOLOGY (3). (On request.) Loomis.
786 [278] COMMUNITY-DRIVEN EPIDEMIOLOGY AND ENVIRONMENTAL JUSTICE (2). (On request.) Wing.

Geography
237 [137] NATURAL RESOURCES (3). Whitmore.
410 [110] FUNDAMENTAL CONCEPTS OF PHYSICAL GEOGRAPHY (3). Staff.
419 [119] FIELD METHODS IN PHYSICAL GEOGRAPHY (3). Doyle, staff.
420 [120] FUNDAMENTAL CONCEPTS OF HUMAN GEOGRAPHY (3). Florin.
440 [140] EARTH SURFACE PROCESSES (3). Band.
441 [141] INTRODUCTION TO WATERSHED SYSTEMS (3). Band.
442 [142] FLUVIAL GEOMORPHOLOGY (3). Doyle.
444 [144] LANDSCAPE BIOGEOGRAPHY (3). Moody.
450 [150] POPULATION GEOGRAPHY (3). Florin, Meade, Whitmore.
477 [177] INTRODUCTION TO REMOTE SENSING AND DIGITAL IMAGE PROCESSING (3). Fall. Moody, Song, Walsh.
491 [191] INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (3). Fall. Moody, Song, Walsh.
595 [195] ECOLOGICAL MODELING (3). Fall. Song.
705 [205] ADVANCED QUANTITATIVE METHODS IN GEOGRAPHY (3). Moody.
710 [210] ADVANCED PHYSICAL GEOGRAPHY - BIOGEOSCIENCE (3). Staff.
711 [211] ADVANCED PHYSICAL GEOGRAPHY - HYDROCLIMATOLOGY AND BIOCLIMATOLOGY (3). Staff.
790 [290] SPATIAL ANALYSIS AND COMPUTER MODELING (3). Staff.
801 [201] RESEARCH SEMINAR IN EARTH SYSTEM SCIENCE AND BIOPHYSICAL GEOGRAPHY (3). Staff.
802 [202] RESEARCH SEMINAR IN GEOGRAPHIC INFORMATION SCIENCES (3). Staff.
803 [303] RESEARCH SEMINAR IN NATURE-SOCIETY STUDIES AND HUMAN-ENVIRONMENT INTERACTIONS (3). Staff.
811 [311] SEMINAR/READINGS IN EARTH SYSTEM SCIENCE AND BIOPHYSICAL GEOGRAPHY (3). Staff.
812 [312] SEMINAR/READINGS IN GEOGRAPHIC INFORMATION SCIENCES (3). Staff.
813 [313] SEMINAR/READINGS IN NATURE-SOCIETY STUDIES AND HUMAN-ENVIRONMENT INTERACTIONS (3). Staff.

Marine Sciences
401 [101] OCEANOGRAPHY (BIOI 350) (ENVR 417) (GEOL 403) (3). Fall and spring. Staff.
430 [125] COASTAL SEDIMENTARY ENVIRONMENTS (GEOL 430) (3). Spring. (Alternate years.) Staff.
440 [146] MARINE ECOLOGY (BIOI 462) (3). Fall. (Alternate years.) Peterson.
449 [137] ECOLOGY OF WETLANDS (ENVR 414) (4). Fall. Staff.
450 [119] BIOGEOCHEMICAL PROCESSES (ENST 450) (ENVR 415) (GEOL 450) (3). Fall. (Alternate years.) Arnosti, Marrons.
741 [248] SEMINAR IN MARINE BIOLOGY (2). Fall. Saff.

Political Science

Public Policy
510 [183] POLICY ANALYSIS OF GLOBAL CLIMATE CHANGE (ENST 480) (3). Fall or spring. Webster.
520 [184] ENVIRONMENT AND DEVELOPMENT (ENST 520) (INTS 520) (3). Fall. Rubindran.

Sociology
830 [212] DEMOGRAPHY: THEORY, SUBSTANCE, TECHNIQUES, PART I (3). Rindfuss, Uhlenberg, Enwise, Harris.
831 [213] DEMOGRAPHY: THEORY, SUBSTANCE, TECHNIQUES, PART II (3). Rindfuss, Uhlenberg, Enwise, Mouw.
832 [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. Biglaister (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. Guillery (39) Econometrics
Claudio Mezzetti (71) Microeconomic Theory
Thomas A. Meza (68) Labor Economics
James L. Murphy (21) Econometrics
Eric Renault (90) Econometrics
Paul W. Rhode (69) Economic History
Steven S. Rosefelder (26) Comparative Economic Systems
Michael K. Saleni (38) Macroeconomics, Monetary Economics
John F. Stewart (36) Industrial Organization
Helen V. Tauchen (40) Applied Microeconomics

Associate Professors
Donna B. Gillies (81) Health Economics, Econometrics
William R. Patke (65) Econometrics
Koleman S. Strumpf (74) Public Finance
Boone A. Turchi (34) Demography

Assistant Professors
Sandra Campo (91) Applied Industrial Organization, Microeconomics
Neville Francis (52) Macroeconomics, Time Series
Thomas Geraghy (88) Economic History
Oksana Leuthina (57) Macroeconomics
Sergio Parreiras (89) Game Theory, Microeconomics
Xiaodong Wu (87) International Economics

Adjunct Professors
James J. Anton
Richard E. Bibberow
Ralph T. Byers
Peter A. Cochrane
Jennifer S. Conrad
Edward G. Norton
Barry M. Popkin
Frank A. Sloan

Adjunct Associate Professors
Scott A. Baker
Robert A. Connolly
Sally C. Stearns
Rachel A. Willis
Professors Emeriti
Dennis R. Appleby
Arthur Benavie
James W. Friedman
A. Ronald Gallant
James C. Ingram
David McFarland
Thomas J. Oraugh
Thomas W. Pauly
Vincent J. Tarascio
Roger Waal
James A. Wilde

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 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 degree requires ECON 710, 720, and 700, one course in econometrics (ECON 771 or 870), two courses in a major field, three electives, and a research course (ECON 992 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 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 994). 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 710, 711, 720, 721, 700, 770, 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.

Doctoral Exams and Dissertation. Students must pass qualifying exams in macroeconomics, microeconomics, and the major field. The faculty in each field determines 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 at 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 700 or higher.

700 [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, Mezzetti.

706 [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.)

710 [200] ADVANCED MICROECONOMIC THEORY I (3). Prerequisites or corequisites, ECON 410 and 700 or equivalent. Consumer and producer theory, expected utility, perfect competition and monopoly, introduction to general equilibrium and welfare economics. Fall, Tauchen.

711 [201] ADVANCED MICROECONOMIC THEORY II (3). Prerequisite, ECON 710 or equivalent. General equilibrium and welfare economics, game theory and oligopoly, information economics. Spring, Biglaiser, Mezzetti.

720 [202] ADVANCED MACROECONOMIC THEORY I (3). Prerequisite, ECON 420 or equivalent. Keynesian and classical equilibrium models; the neo-Keynesian synthesis; monetarist and other alternative analytic frameworks. Fall, Froyen, Salemi.

721 [203] ADVANCED MACROECONOMIC THEORY II (3). Prerequisite, ECON 720 or equivalent. Growth models, general equilibrium approach to monetary theory, input-output, disequilibrium theory; extensions of Keynesian and classical models. Spring, Salemi, Francis.


771 [272] ECONOMETRICS (3). Prerequisite, ECON 770 or equivalent. One semester coverage of basic econometrics. Topics include: regression under ideal and nonideal conditions; special models, including simultaneous equations models, and applications and econometric computer programs. Spring, Guilkey, Mox.

799 EXPERIMENTAL (1-3).

806 [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.

810 [221] GAME THEORY I (3). Prerequisite, ECON 710, 711, 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, Biglaiser, Mezzetti.

811 [225] GAME THEORY II (3). Prerequisite, ECON 810 or permission of the instructor. This course is a continuation of ECON 810. Topics covered will be chosen from those listed, but not covered in ECON 810. Fall and spring, Biglaiser, Mezzetti, Parreiras.

820 [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, Salerno.

821 [282] MONETARY POLICY (3). Prerequisite, ECON 720 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.)

831 [236] MODERN ECONOMIC HISTORY (3). Prerequisite, ECON 830 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.


841 [241] ADVANCED PUBLIC FINANCE: REVENUES (3). Prerequisite, ECON 840 or permission of the instructor. Criteria for judging tax structures, incidence and impact of taxation, user charges and debt finance, intergovernmental coordination, and macroeconomic effects. Fall. Strumpf.

845 [245] ADVANCED BUSINESS ORGANIZATION AND SOCIAL CONTROL (3). Prerequisite, permission of the instructor. Extensive readings in the literature are required. Emphasis is placed upon the role of economic analysis in dealing with problems in this field. (Not regularly offered.)

846 [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. Biglaiser.

850 [250] HEALTH ECONOMICS (3). Prerequisites, ECON 710 and 771 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.

851 [255] HEALTH ECONOMICS FOR DEVELOPING COUNTRIES (3). Prerequisites, ECON 710 and 771 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.

855 [265] ECONOMICS AND POPULATION (3). Prerequisite, graduate standing in economics or permission of the instructor. Analysis of economic-demographic interrelationships including: population and economic development; population, environmental decay, and zero population growth; models of fertility, migration, and spatial organization; population policy. Spring. Turchi.

860 [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, Wi.

861 [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.

865 [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, Darity, Field.

866 [264] SELECTED TOPICS IN ECONOMIC DEVELOPMENT AND DEVELOPMENT PLANNING (3). Prerequisite, ECON 865 or equivalent. Examination of various topics in economic progress of the less developed countries, with special emphasis on the role of international issues.

867 [267] COMPARATIVE ECONOMIC SYSTEMS (3). This course focuses on alternative theories of United States capitalism, French indicative planning, Yugoslavian worker-managed market socialism, Soviet central planning, and the Chinese worker-controlled decentralized planning model. (Not regularly offered.)

868 [253] SOCIALIST ECONOMIC THOUGHT IN HISTORICAL PERSPECTIVE (3).

870 [273] ADVANCED ECONOMETRICS (3). Prerequisites, ECON 770, ECON 771, and MATH 547. ECON 870 constitutes a one-semester treatment of the fundamental theory of econometrics. Topics covered include symmetric distribution theory, linear and nonlinear models, specification testing techniques, and simultaneous equations models. Fall. Campo, Guille, Park, Renault.

871 [274] TIME SERIES ECONOMETRICS (3). Prerequisite, ECON 870. 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. Ghysels, Park, Renault.


875 [386] INTRODUCTION TO EMPIRICAL FINANCE (BUSI 886) (3). Corequisite or prerequisite, ECON 771. This course provides an introduction to the econometric techniques commonly applied to empirical issues in finance. Fall or spring. Ghysels.

876 [388] ADVANCED TOPICS IN EMPIRICAL FINANCE (3). Corequisites or prerequisites, ECON/BUSI 875 and ECON 871. This course will cover a selected list of current empirical research topics in finance and related econometric methods. Fall or spring. Ghysels.

880 [291] LABOR ECONOMICS I (3). Prerequisite, ECON 710 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.

881 [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.

890 [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.

892 RESEARCH (1-3).

896 INDEPENDENT STUDY (1-3).

899 EXPERIMENTAL (1-3).

911 [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, Mezzetti, Parreiras.

920 [381] SEMINAR IN MONETARY ECONOMICS (3). Prerequisite, permission of the instructor. Advanced study of theoretical and applied topics in monetary economics. Fall or spring. Froyn, Salimi.
921 [301] SEMINAR IN MACROECONOMIC THEORY II (3). Graduate 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. Black. Froymen, Salem.

931 [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.

951 [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.

956 [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, Straump, Tauchen, Turcich.

958 [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.)

960 [361] SEMINAR IN INTERNATIONAL ECONOMICS (3). Prerequisites, ECON 850 and 851 or equivalent. A directed reading and research course. Fall or spring. Black, Conway, Wu.

966 [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, Darity, Field, Wu, Rosefield.

968 [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.)

971 [371] RESEARCH IN ECONOMETRICS (3). The course introduces students to theoretical and applied research topics in econometrics. May be repeated for credit. Fall or spring. Campo, Ghyysels, Guilkley, Mroz, Murphy, Parke.

981 [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.

985 [375] SEMINAR IN APPLIED MICROECONOMICS (3). Prerequisite, permission of the instructor. This course offers advanced graduate students the opportunity to develop independent research in applied microeconomic fields. Fall or spring. Staff.

990 SPECIAL TOPICS (1-3).

992 [392] MASTER'S PAPER (3). Fall and spring. Staff.

993 [393] MASTER'S THESIS (3). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (3). Fall and spring. Staff.

**SCHOOL OF EDUCATION**

THOMAS JAMES, Dean

**Professors**

Donald R. Bailey Jr. (002) Early Intervention, Family Support, Assessment
Duane Brown (014) School Counseling, Career Development and Counseling, Consultation
Frank Brown (019) Policy Studies, School Law, Organizational Behavior and Theory, Leadership and Administration
Gregory J. Cizek (176) Educational Assessment and Evaluation
Barbara D. Day (019) Early Childhood Education

Fenwick English (998) Educational Administration, Curriculum Inquiry and Leadership
Jill Fitzgerald (024) Literacy Issues (Early Childhood, Families)
Henry T. Frierson Jr. (026) Educational Psychology
Susan Friel (115) Mathematics Education
John F. Galassi Jr. (028) School Counseling
Madeleine R. Grumet (170) Culture, Curriculum, and Change
Audrey L. Heining-Boynton (037) Foreign Language Education, English as a Second Language
Thomas James, Culture, Curriculum, and Change
Catherine Marshall (105) Politics, Qualitative Inquiry, Gender, Race, and Class Issues
Judith L. Meese (055) Educational Psychology, Measurement and Evaluation, Elementary Education
George W. Noblit (057) Sociology of Education, Qualitative Research Methods, Critical Race Studies
Ran J. Simeonson (073) Child Development and Disability, Psychological Assessment, Primary Prevention
Lynda Stone (147) Philosophy of Education, Social Theory, Feminism
Gerald Unks (082) Culture, Curriculum, and Change
Lynne Vernon-Feagans, Early Childhood Intervention, Literacy
William B. Ware (085) Educational Psychology, Measurement and Evaluation, Research Design Analysis

**Associate Professors**

Harriet A. Boone (149) Early Intervention, Family Support and Ethics
Kathleen Brown (182) Educational Leadership
Regina Corrino, Cultural Studies
Thomas W. Farmer, Special Education
Joel Glazer, Teacher Education
Jill Ham, Adolescent Development
Wallace H. Hassert (034) Instructional Design, Theories of Instruction, Computer Applications
Ryuko Kubota (169) Foreign Language Education
Carol E. Mallo (157) Influence of Culture on Mathematical Problem-Solving, Gender and Equity Issues
William W. Mallo (130) Educational Leadership, Special Education, Special Populations
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 (140) Social Studies Education, Social Foundations of Education, Large Data-Set Research
Linda Tiltman, Educational Leadership

**Assistant Professors**

Patrick T. Akos, School Counseling
Cheryl Mason Bolick (029) Education Technology and Social Studies Education
Kathleen Gallagher, Child Development and Family Studies
Mary Stone Hanley, Aesthetic Education
Leigh Hall, Literacy Studies (Early Childhood, Families)
Steve Knott (001) School Psychology
David P. Levine (171) History of Education, Social Studies Education - Middle School and Secondary Grades
Sam Song, School Psychology
Ollie Steinhorsdottir (030) Math Education - Elementary
James Trice, English Education - Secondary
Kerry Villalba, English as a Second Language (K-12)

**Research Professors**

Donna Bryant, Special Education
Martha Cox, Early Childhood, Families, and Literacy
Donald Lollar, School Counseling
James Marshall, Philosophy of Education
Peter Ornstein, Early Childhood, Families, and Literacy
Steven Pinffer, School Psychology
Steven Resnick, Early Childhood, Families, and Literacy
Pamela J. Winton (092) Families, Early Intervention, Preservice and Inservice Training

Research Associate Professors
Virginia Buyse (159) Community-Based Programs for Young Children with Disabilities and Their Families
Deborah Hatton, Early Childhood, Families, and Literacy
Gloria Harbin, Special Education
Beth Kurz-Costes, Educational Psychology Measurement and Evaluation
Research Assistant Professors
Melissa DeRosier, School Psychology
Anita Scarborough, School Psychology
Lorraine Taylor, Early Childhood, Families, and Literacy

Clinical Professors
Suzanne A. Gullidge (033) Social Studies Education
Russell J. Rawlett (068) Mathematics Education

Clinical Associate Professors
Mary Ruth Coleman (144) Learning Disabilities and Gifted Education
Daniel M. Huff (102) Choral Music Education, Teacher Preparation, Teacher Socialization
Stanley Schänker, Educational Leadership: Systems Functions, School Management, Group Dynamics
Patricia Shane (135) Middle School Preparation, Elementary Science
Neil Shipman, Educational Leadership: School Inquiry and Reform
Pascal Trohanis, Early Childhood, Family, and Literacy Studies
Tovah M. Wax, School Psychology
Rhonda M. Wilkerson (117) Elementary Education

Clinical Assistant Professors
Lynette Aytch, School Psychology
Elise Baret, Middle School Language Arts, Literacy Education
J. Kelly Cohen, School Counseling
Elizabeth Contoy, School Counseling
Marcia Davis, Elementary Education
Deborah Eaker-Rich, Social Foundations
Sandra Evans, School Psychology, Psychoeducational Assessment
Timothy L. Hari, English as a Second Language
Jennifer Hemmeter, School Psychology
Cheryl Horrion, Science Education
Deborah Manzo, Educational Leadership
Kelly Maxwell, School Psychology
Janet Mintman, Research Triangle Schools Partnerships
Tammie D. Moore, School Counseling, Cross-Cultural Counseling
Edward M. Neal, Curriculum and Instruction
Mehnaz Negrere, Music Education (K-12)
Sharon Palsha, Child Development and Family Studies
Annette Penot, School Counseling
Craig Pohlman, School Psychology
Barbara Rhoades, Art Education
Jane Roberts, Child Development and Family Studies
Maybel Tyberg
James Veitch, Educational Leadership: Budget, Staff Development, Technology, Instructional Supervision
Lynn Williford (173) Educational Psychology
Susan Wynn, Educational Leadership

Clinical Instructors
Steven Amendt, Literacy
Elizabeth Barrow (091) Elementary Education
Thomas H. Cox, Technology
Marisa Ferrara, Literacy
Tracy Link
Howard Machtinger, Teaching Fellows
Kathy Sikes, Student Coalition for Action in Literacy Education (SCALE)
Sandra Swenberg (029) Elementary Education
Allen Murray, Special Education

Lecturers
Cheryl Goldstein
Thomas Metzger
Melissa Raley

Retired Fixed-Term Professor
John C. Brantley (009) Psychoeducational Assessment, Professional Decision-Making, School Psychology

Professors Emeriti
Hunter J. Ballew
Richard A. Biere
Linda Brooks
William L. Burke
Richard H. Cooper
James W. Cunningham
James J. Gallagher
R. Sterling Hennis Jr.
Samuel M. Holton
Paul B. Hounshell
Richard C. Hunter
Mary Turner Lane
David L. Lille
Bobbie B. Lubker
William S. Palmer
Richard C. Phillips
Walter Przywansky
William C. Self
Roy E. Sommerfield
Dixie Lee Spiegel
Donald J. Stedman
Gary B. Stuck
Alan Tom
Neal H. Tracy
Eugene R. Watson
Kinnard P. White
Ronald Westergren
Ralph E. Wieman Jr.

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 non-instructional 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, social 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 the 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 into course work.

The School of Education is headed by Dean Thomas James. He is assisted by the Associate Dean, Jill Fitzgerald.

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.

Degree Programs

Note: Additional information may be found on the School of Education's Web site at www.uwm.edu/dep/sed.

The School of Education 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 in school psychology; and (2) the doctor of education (EdD) in educational leadership and in curriculum and instruction. 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 and 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 flexible master of school administration (MSA Flex). The potential specialty areas for the MED program are: early childhood intervention and family support (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: literacy education (reading and writing).

The part-time, off-campus MSA Flex program is designed for working professionals and stresses the normal two-year program offered on campus over an extended period of two and a half academic years, beginning each January with a new cohort. 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 residence 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 684, EDUC 981, EDUC 841, and a 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 requirements of The Graduate School 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 studies 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 one of the following areas of specialized study: 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 three years of experience in reflecting upon their experiences and developing further skill and art as professional educators. It is a 31-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 4-7 p.m. Courses include the use of the Blackboard software suite of programs, as some portion of students' work is done online via computer.

The MEd in Early Childhood Intervention and Family Support prepares the experienced early childhood professional with leadership skills in developing and implementing inclusive programs for infants, toddlers, preschoolers, and kindergartners with and without developmental delays. It is a 34-to-36-hour program that is typically completed by part-time students in two to two and one-half years; and by full-time students in one and one-half calendar years. The program is designed to accommodate practicing professionals' schedules by offering courses in the late afternoon, evenings, and during the summer months.

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) 843-7821.

**Master of Education (MEd) in School Counseling**

The master's program in school counseling is a full-time, 14-month, 60-semester-credit-hour program that begins and ends with summer study. The program prepares students for successful practice in the elementary, middle, and senior high schools and is accredited by the Council for Accreditation of Counseling and Related Educational Programs. Upon completing the program, students are eligible for North Carolina Advanced Graduate licensure as school counselors.

The school counseling program is predicated on a developmental advocacy framework that asserts that the counselor's primary mission is to promote the optimal development of all students. The counselor is a school leader who works with students, teachers, administrators, parents, and other members of the community to build a supportive learning environment that not only nurtures the development of academic, career, and personal/social competence among students, but also fosters an appreciation of diversity and a commitment to social justice. While remediation of deficits and the removal of barriers play a role in this model, developmental advocates focus on proactive and preventive approaches to help students build skills and to enhance the asset-building capacity of the school environment. Traditionally, school counselors have relied upon four primary interventions—individual and small group counseling, consultation, classroom guidance, and coordination—to support student development. In recent years, two additional interventions—advocacy and collaboration—have played an increasingly important role in the school counselor's efforts to ensure social justice and to increase the likelihood of optimal development for all students. These last two interventions are especially important for those students who are disenfranchised due to socioeconomic, cultural, or lifestyle issues.

**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-hour course in life span human development (EDUC 681).
3. Six (6) hours of graduate-level electives, approved by the advisor.

**Semester One - Summer**

*First Summer Session*

- EDUC 605 Introduction to School Counseling (3 hours)
- EDUC 606 Theories of Counseling (3 hours)

*Second Summer Session*

- EDUC 608 Pre-Practicum in Counseling (3 hours)
- EDUC 681 Human Development

**Semester Two - Fall**

- EDUC 609 Tests and Measurements (3 hours)
- EDUC 610 Group Counseling Procedures (3 hours)
- EDUC 611+ Practicum in School Counseling (9 hours)
- EDUC 708 School Consultation Methods (3 hours)

**Semester Three - Spring**

- EDUC 607 Career Development and Counseling (3 hours)
- EDUC 705+ Internship in Counseling and Consultation (9 hours)
- EDUC 707 Cross-Cultural Counseling (3 hours)
- EDUC 709 Seminar in Applied Investigations (3 hours)

**Semester Four - Summer**

*First Summer Session*

- EDUC 705+ Internship in Counseling and Consultation (3 hours)
- EDUC 706 Organizing Guidance Services (3 hours)
Second Summer Session
Elective (3 hours)
Elective (3 hours)

+ 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 611 and 705 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 600 level or above at this university) and must be approved by the student’s advisor.

From Education:
EDUC 678 Seminar in Educational Studies: Spanish for Educators
EDUC 695 Introduction to Exceptional Children
EDUC 753 Introduction to Curriculum
EDUC 771 Social Foundations of Education
EDUC 782 Psychology of Learning in the School
EDUC 811 Problems in School Counseling

From Psychology:
PSYC 461 Cognitive Development
PSYC 462 Development of Language
PSYC 463 Development of Social Behavior and Personality
PSYC 465 Poverty and Development
PSYC 468 Family and Development
PSYC 500 Psychological Disorders of Childhood and Adolescence
PSYC 501 Advanced Personality

From Social Work:
SOWO 700 Substance Abuse and Dependency
SOWO 801 Psychopathology
SOWO 802 Family Stress: Coping and Social Support
SOWO 852 Social Work Practice with Couples
SOWO 853 Approaches to Brief Treatment
SOWO 862 Services for Persons in Grief

From Communication Studies:
COMM 312 Persuasion
COMM 620 Interpersonal Communication

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 coursework 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 personality theory, abnormal psychology, statistics, learning theories, history systems, and developmental psychology. Missing prerequisites are added to the program of study.

Assessment
EDUC 718 Psychoeducational Assessment I (3 hours)
EDUC 718 Psychoeducational Assessment II (3 hours)
EDUC 718 Psychoeducational Assessment III (3 hours)

Intervention
EDUC 719 Behavioral Intervention I (3 hours)
EDUC 719 Behavioral Intervention II (3 hours)
EDUC 719 Behavioral Intervention III (3 hours)

Consultation
EDUC 708 School Consultation Methods I (3 hours)

Research and Evaluation
EDUC 684 Statistical Analysis of Educational Data I (3 hours)
EDUC 709 Applied Investigations (3 hours)
EDUC 784 Statistical Analysis of Ed. Data II (3 hours)
EDUC 992 Project, Semester I (for MEd students) (4 hours)
EDUC 992 Project, Semester II (for MEd students) (4 hours)
EDUC 993 Thesis, Semester I (**for MA students) (4 hours)
EDUC 993 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 720 Professional Seminar (3 hour)
EDUC 721 Externship, Semester I (3 hours)
EDUC 721 Externship, Semester II (3 hours)
EDUC 721 Externship, Semester III (3 hours)
EDUC 721 Externship, Semester IV (3 hours)
EDUC 722 Internship, Semester I (3 hours)
EDUC 722 Internship, Semester II (3 hours)
Psychological Foundations
EDUC 707 Cross-Cultural Counseling (Social Aspects of Behavior) (3 hours)
EDUC 718 Psychoeducational Assessment (3 hours)
EDUC 719 Behavioral Intervention in Counseling and School Psychology (3 hours)
EDUC 763 Neuropsychology (Biological Bases of Behavior) (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 12-month, full-time program that requires forty-plus semester hours of course work (forty if a science is taken).

**Summer I (Second Session of UNC-Chapel Hill Summer School)**
- Introduction to Teaching (3 hours)
- Introduction to Schools (3 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)

Note: 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)**
- Total Hours: Forty-plus (for English, Mathematics, and Social Studies)
- The science program may have forty hours, if a 4-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 advisors.
- 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 on-campus and MSA FLEX programs prepare individuals to lead schools and other educational organizations for the schools of North Carolina and the nation. It includes three dimensions: (1) Awareness (i.e., acquiring concepts, information, definitions, and procedures); (2) Understanding (i.e., interpreting knowledge to school environments, integrating concepts with practice, and using knowledge and skills in context); and (3) Capability (i.e., applying knowledge and skills to specific problems of practice). While most of those who complete this program move into administrative positions at the school-site level, some assume roles within state, regional, or national organizations that focus on educational professional development, research, or policy-making. The completion of this program leads to eligibility for licensure from the North Carolina State Department of Public Instruction and qualifies one for administrative certification in most states. The MSA programs are 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 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 seminar, a school-wide research methods seminar, a specialty seminar, and a one-hour supervised research experience. In the second semester, all PhD in education students enroll in a “Foundations of Research” course. 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. Also, a minimum of six credit hours must be taken outside of the School of Education. 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.

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Note: EDUC 684 (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 718 Psychoeducational Assessment I (3 hours)  
EDUC 718 Psychoeducational Assessment II (3 hours)  
EDUC 718 Psychoeducational Assessment III (3 hours)

**III. Intervention**

EDUC 719 Behavioral Intervention I (3 hours)  
EDUC 719 Behavioral Intervention II (3 hours)  
EDUC 719 Behavioral Intervention III (3 hours)

**IV. Consultation**

EDUC 708 School Consultation Methods I (3 hours)  
EDUC 708 School Consultation Methods II (3 hours)

**V. Research and Evaluation**

EDUC 684 Statistical Analysis of Educational Data I (3 hours)  
EDUC 709 Applied Investigations (3 hours)  
EDUC 783 Measurement (3 hours)  
EDUC 784 Statistical Analysis of Educational Data II (3 hours)  
EDUC 785 or approved course - Policy and Program Evaluation (3 hours)  
EDUC 884 Statistical Analysis of Educational Data III (3 hours)  
EDUC 994 Dissertation (3 hours)

**VI. Externship/Internship**

EDUC 721 Externship, Semester I (3 hours)  
EDUC 721 Externship, Semester II (3 hours)  
EDUC 721 Externship, Semester III (3 hours)  
EDUC 721 Externship, Semester IV (3 hours)  
EDUC 721 Externship, Semester V (3 hours)  
EDUC 721 Externship, Semester VI (3 hours)  
EDUC 721 Externship (Optional) (3 hours)  
EDUC 821 Internship, Semester I (3 hours)  
EDUC 821 Internship, Semester II (3 hours)

**VII. Foundations - Professional Standards and Ethics**

EDUC 720 Professional Seminar I (3 hours)  
EDUC 820 Professional Seminar II (3 hours)

**VII. Foundations - Biological Aspects of Behavior**

EDUC 763 Biological Bases of Children's Development (3 hours)

**VII. Foundations - Social and Cultural Aspects of Behavior**

EDUC 707 Cross-Cultural Counseling (3 hours)

**VII. Foundations - Individual Differences in Behavior**

X Covered by EDUC 718 and 719 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 approved teacher education programs to the North Carolina State Department of Public Instruction for licensure as teachers, administrators, school counselors, school psychologists, and curriculum and instruction specialists. 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 in the Division of Speech and Hearing Sciences.

The Master of Arts in Teaching and Master of Education in School Counseling prepare students for their initial professional license at the master's and advanced specialist level. The Master's for Experienced Teachers provides the opportunity for practicing teachers to achieve the advanced competencies of master's level licensure in a variety of specialty areas. School administrators are eligible for licensure at the master's and doctoral levels. School psychologists are eligible for licensure at the advanced specialist and doctoral levels. Curriculum and instruction specialists may earn the add-on license at the master's level or complete an EdD for doctoral-level licensure.

Course Offerings

EDUC 302 [193] STUDY GROUP RESEARCH I (2). Prerequisites, EDUC 600, enrollment in the MEd 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. Stone.

EDUC 496 [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 567 [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 569 [250] INDEPENDENT STUDY MASTER'S LEVEL (1-12). Prerequisite, permission of the instructor. Fall, spring, and summer. Staff.

EDUC 600 [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 MEd for Experienced Teachers Program. As demand warrants. Stone, Grennet.

EDUC 603 [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 theory, research, and methodology in the field of education technology and design a proposed education technology research study. (Alternate years.) Bolick.

EDUC 605 [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 606 [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. Galassi.

EDUC 607 [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 608 [208] PRE-PRACTICUM IN COUNSELING (3). Prerequisites, EDUC 722 (may be taken concurrently), permission of the instructor. Develops interviewing techniques, as specified levels of competence, through role playing and video and audio feedback. Summer. Staff.

EDUC 609 [209] TESTS AND MEASUREMENTS (3). Prerequisite, EDUC 605. 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 610 [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 611 [211] PRACTICUM IN SCHOOL COUNSELING (3-9). Prerequisites, EDUC 606, 608, 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 612 [118] SOCIAL STUDIES AND ARTS (1-9).

EDUC 613 [173] CULTURALLY RESPONSIVE TEACHING (2). This course initiates thoughtful discussion of race and culture in our schools by exploring history, identity, and issues in academic achievement.

EDUX 614 [174] TEACHING AND DIFFERENTIATION (3). Prerequisites, enrollment in the MEd 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 617 [128] INTRODUCTION TO COMMUNICATION DISORDERS (COMM 617) (3). Explores the etiology, epidemiology, assessment, and educational implications of speech and language disorders. As demand warrants. Staff.

EDUC 620 [122] INTRODUCTION TO SCHOOL PSYCHOLOGY (3). Introduces the student to concepts and methods involved in school psychology. As demand warrants. Staff.

EDUC 621 [115G] EXPLORATIONS IN LITERACY (3). Explores what it means to be a reader and writer, the nature of development of literacy. Fall. Hall. Ferrara.

EDUC 622 [126] CONTENT-AREA READING AND WRITING (3). Focuses on current theory, research, and issues in the teaching and use of reading and writing in the content areas. Spring. Hall.

EDUC 626 [106E] 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 English. Spring. Heining-Boynton.

EDUX 626 [EDUC 121] REVISITING REAL NUMBERS (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 627 [107] PEDAGOGICAL LINGUISTICS FOR ESL TEACHERS (3). Provides future ESL teachers with advanced concepts in linguistics and comparative linguistics. Topics such as phonology and morphology will be covered. Spring. Hart. Heining-Boynton.


EDUC 631 [131] PROGRAM DEVELOPMENT FOR SPECIAL POPULATIONS (3). Prerequisite, permission of the instructor. Reviews 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. W. Malloy.

EDUC 632 [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.) Vitek.

EDUC 633 [234] THE SOCIAL CONTEXT OF EDUCATIONAL LEADERSHIP (4). Provides retrospective, contemporary, and prospective examinations of the social, cultural, political, and philosophical contexts from which the current issues that affect schools and schooling have evolved. Fall. K. Brown.

EDUC 634 [139] CURRICULUM LEADERSHIP (3). Examines 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; and curriculum audits and classroom curriculum "walk-throughs." Fall and spring. English.

EDUC 635 [336] PROBLEMS IN EDUCATIONAL ADMINISTRATION (3). Prerequisite, permission of the instructor. Provides an opportunity for advanced students to do independent study under supervision. May be repeated for credit. Fall and spring. Schaniker.


EDUC 637 [133] PERSONNEL ADMINISTRATION AND LAW (3). Examines quantitative and qualitative research methodologies appropriate to school settings: evaluation of research and its application to schools. Spring. Staff.

EDUC 638 [238] MANAGING SCHOOLS WITHIN A DISTRICT CONTEXT (3). Prerequisites, EDUC 834, 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 and spring. Schaniker.

EDUC 641 [141] INTRODUCTION TO TEACHING (3). Prerequisite, admission to the MAT program. Introduces the principles of effective teaching, with emphasis on the first year of teaching. Summer. Staff.

EDUC 642 [142] INTRODUCTION TO SCHOOLS (3). Prerequisite, admission to the MAT program. Provides an examination and overall view of schools that introduces topics such as the cultures of schools, professionalism, connections with other communities, multiculturalism, and special populations. Summer. Staff.

EDUC 644 [144] LEARNER AND LEARNING I (3). Prerequisites, EDUC 641, 642. Provides prospective teachers a conceptual understanding of child/adolescent development in order to enable them to interpret student behavior in a valid manner. Fall. Hanam.

EDUC 645 [145] CONTEXTS OF EDUCATION I (3). Prerequisites, EDUC 641, 642, permission of the instructor. Focuses on: the social contexts of schools; conditions of teaching; relations between students, teachers, and administrators; equitable educational opportunity; and educational philosophies. This course is part one of a two-course sequence. Fall. Stone, Levine.

EDUC 646 [146] PRACTICA STUDENT INTERNSHIP (3). Prerequisites, EDUC 641, 642. Provides students the opportunity to observe and become involved with all aspects of teaching and schools within their content area. Fall. Staff.

EDUC 647 [147] METHODS AND MATERIALS FOR TEACHING SECONDARY/K-12 SUBJECTS I (3). Prerequisites, EDUC 641, 642. 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 student teaching during the spring semester. Fall. Trier, Rong, Heining-Boynton, Huff, Kubota, C. Malloy, Villalva.

EDUC 648 [148] METHODS AND MATERIALS FOR TEACHING ELEMENTARY MUSIC I (2). Prerequisites, EDUC 641, 642. Equips students with the resources and experiences needed to facilitate entry as a specialist in the elementary music classroom. Fall. Reiley.

EDUC 652 [151] PRINCIPLES OF INSTRUCTIONAL DESIGN (3). 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 657 [EDUC 115E] SOCIAL STUDIES/HUMANITIES (1-9).

EDUC 658 [EDUC 195C] DIVERSITY GLOBAL EDUCATION (1-9).

EDUC 662 [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 typically and atypically developing children. Literacy resources and programs are explored. Fall. Ferrara.

EDUC 664 [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 665 [165] EARLY CHILDHOOD ASSESSMENT STRATEGIES (3). Provides an overview and application of strategies for developmental screenings, normative evaluations, curriculum, and play-based assessments for young children ages birth through five. Open to graduate students only. Fall. Boone, Gallagher.

EDUC 666 [166] PRESCHOOL/KINDERGARTEN CURRICULUM AND LEARNING ENVIRONMENTS (3). Focuses on individually, 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 668 [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, and summer. Staff.

EDUC 672 [178] SEMINAR IN EDUCATIONAL STUDIES (3). Focuses on educational issues involving culture, curriculum, and change. Issues addressed will vary. Fall. Staff.

EDUC 675 [EDUC 209B] SEMINAR IN SCIENCE EDUCATION (3).

EDUC 676 [274B] TRANSFORMATIONAL EDUCATION (3).
EDUX 676 [EDUC 115D] SCIENCE EDUCATION: PHYSICAL SCIENCE (3).

EDUX 678 [278] SEMINAR IN EDUCATIONAL STUDIES (3). Focuses on educational issues and theories involving culture, curriculum, and change. Issues and theories addressed will vary. Fall and spring. Staff.


EDUX 681 [181] PSYCHOLOGY OF CHILDHOOD AND ADOLESCENCE (3). Emphasizes theories of child and adolescent development plus research findings that aid in understanding of human behavior and development. Open only to majors in the School of Education. As demand warrants. Meets.

EDUX 682 [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.

EDUX 683 [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. Czek.

EDUX 684 [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, summer. Czek, Ware.


EDUX 687 [191A] READING AND WRITING METHODS FOR STUDENTS WITH LEARNING DISABILITIES (4). Explores the characteristics of students with learning disabilities in the areas of reading and writing. Students will also learn assessment techniques and instructional methods specific to addressing these characteristics. Fall. Staff.

EDUX 688 [191B] MATH AND CONTENT AREAS FOR STUDENTS WITH LEARNING DISABILITIES (4). Explores the 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. Farmer.

EDUX 695 [127] INTRODUCTION TO EXCEPTIONAL CHILDREN (3). Surveys both giftedness and various disabling conditions in children: mental retardation, emotional disturbance, learning disabilities, speech impairment, hearing impairment, visual impairment, orthopedic impairment, and neurological impairment. Fall, spring, and summer. Staff.

EDUX 695 [EDUC 294D] PROBLEM MATH TASKS (1-3). As demand warrants. Staff.


EDUX 700 [EDUC 292] TEACHER RESEARCHER II (1-3).

EDUX 701 [120] LITERACY REFLECTION (3).

EDUX 701 [EDUC 295] TEACHER LEADERSHIP AND DEMOCRATIC SCHOOLING (3).

EDUX 703 [EDUC 294A] REVISITING LITERACY (3). Explores literacy topics as capstone course for master’s or licensure program in literacy. Spring. Ferrara.

EDUX 705 [212] INTERNSHIP IN SCHOOL COUNSELING AND CONSULTATION (3-9). Prerequisites: EDUC 605, 608, 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.

EDUX 706 [213] ISSUES IN ORGANIZING GUIDANCE SERVICES (3). Prerequisites: 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.

EDUX 707 [214] CROSS-CULTURAL COUNSELING (3-6). Prerequisite, permission of the instructor. Explores the cognitive and affective considerations of counseling in culturally different social systems. This includes ways to incorporate specific socio-cultural dimensions into the counseling process. Spring. Moore.

EDUX 708 [215] SCHOOL CONSULTATION METHODS (3-12). Examines various models of consultation and the role of the consultative model in the schools and related agencies: uses role playing and experience in the school. May be repeated for credit. Spring. D. Brown, Knotek.

EDUX 709 [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, Simeonson, Wasik.

EDUX 710 [217] PSYCHOLOGY OF CAREER DEVELOPMENT (3). Reviews theory 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.

EDUX 718 [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. Brantley, Simeonson.

EDUX 719 [222] BEHAVIORAL INTERVENTION IN COUNSELING AND SCHOOL PSYCHOLOGY (3). Prerequisite, permission of the instructor. Covers behavior management and therapy as well as 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. Knotek, Simeonson, Wasik.

EDUX 720 [223] SEMINAR IN PROFESSIONAL SCHOOL PSYCHOLOGY (1-3). 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. Brantley.

EDUX 721 [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, Simeonson, Wasik.

EDUX 722 [226] MASTER’S INTERNSHIP IN SCHOOL PSYCHOLOGY (1-6). Prerequisites, EDUX 721 and permission of the instructor. Provides supervised full-time field experience for master’s students in school psychology in a school setting. Fall, spring, and summer. Brantley, Wasik.

EDUX 722 [EDUC 201] ADVANCED REFLECTIVE LITERACY TEACHING (3).

EDUX 723 [227] ADVANCED ASSESSMENT AND INTERVENTION APPROACHES FOR STUDENTS WITH TRAUMATIC BRAIN INJURY (3).

EDUX 726 [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 the instructor. Fall. Heining-Boynton, Kubota, Villabra.
EDUC 727 [117] TOPICS IN ALGEBRA (3).

EDUC 728 [241] PRACTICUM IN ESL/FOREIGN LANGUAGES (3).
Provides an internship to teach ESL/FL under the supervision of an experienced ESL teacher. Spring. Heining-Boynton, Kubota, Villalva.

EDUC 729 [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. Kubota, Villalva.

EDUC 731 [337] PROBLEMS IN SUPERVISION (3). Prerequisite, permission of the instructor. Emphasizes school improvement planning, school-based budgeting, professional development, and technology. Fall and spring. Veitch.

EDUC 732 [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. Schanikter.

EDUC 734 [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 735 [134] INTERNSHIP SEMINAR ON INSTRUCTIONAL LEADERSHIP AND SUPERVISION (3). Relates internship experiences and applications of instructional design techniques of teaching/learning, evaluation of the learning process, and ways in which school-based leaders can support excellence in education. Fall. Veitch. Schanikter.

EDUC 736 [137] SEMINAR AND SUPERVISED INTERNSHIP IN EDUCATIONAL ADMINISTRATION I (3-6). Provides supervised internship in school administration to facilitate the student's progress toward certification in the principalship. May be repeated for credit. Fall. Staff.

EDUC 737 [135] INTERNSHIP SEMINAR ON SCHOOL BUILDING MANAGEMENT (3). Prerequisites, six semester hours in educational administration, including EDUC 834, and permission of the instructor. Relates internship experiences and applications of school building management practices (transportation, food services, plant planning, etc.) to schools. Spring. Veitch. Schanikter.

EDUC 738 [138] SEMINAR AND SUPERVISED INTERNSHIP IN EDUCATIONAL ADMINISTRATION II (3-6). Provides supervised internship in school administration to facilitate the student's progress toward certification in the principalship. May be repeated for credit. Prerequisites, six semester hours in educational administration, including EDUC 834, and permission of the instructor. Spring. Staff.

EDUC 739 [273] EDUCATIONAL POLICY STUDIES (3).

EDUC 743 [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. Staff.

EDUC 744 [242] LEARNER AND LEARNING II (2). Prerequisites, EDUC 644. Provides basic psychological principles upon which prospective teachers can design effective instructional programs and validate these programs of instruction. Spring. Hamm.

EDUC 745 [243] CONTEXTS OF EDUCATION II (2). Prerequisite, EDUC 645. 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 746 [244] PRACTICA STUDENT INTERNSHIP (9). 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 the instructor. Spring. Staff.

EDUC 747 [245] METHODS AND MATERIALS FOR TEACHING SECONDARY/K-12 SUBJECTS II (2). 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, Tri, C. Malley, Heining-Boynton, Huff, Kubota, Villalva.

EDUC 748 [247] ADVANCED PEDAGOGY (3). Prerequisite, admission into the MAT program. "Advanced Pedagogy" is the first course of a two-course module that completes that MAT year-long program of study. The module emphasizes advanced licensure preparation. Summer. Staff.

EDUC 749 [249] CURRICULUM LEADERSHIP (3). Prerequisite, admission into the MAT program. "Curriculum Leadership" is the second course of the summer capstone experience for MAT students that is taken concurrently with Advanced Pedagogy. The module emphasizes advanced licensure preparation. Summer. Staff.

EDUC 752 [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 753 [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. Grumet.

EDUC 754 [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. Rogers, Glazier.

EDUC 756 [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 757 [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 757 [198A] SOCIAL STUDIES PEDAGOGY A (1-9).

EDUC 758 [258] IMMIGRATION AND EDUCATION (3). Investigates social (including political, economic, legal, and demographic) and cultural impacts on immigration and education. Spring. Rong.


EDUC 759 [195B] CONTEMPORARY RESEARCH FOR SOCIAL STUDIES TEACHING (1-9).

EDUC 760 [294C] INTEGRATED LEARNING (3).

EDUC 761 [261] PROFESSIONAL DEVELOPMENT AND LEADERSHIP IN EARLY CHILDHOOD INTERVENTION (3). Prerequisites, EDUC 664, 665, and 666. Focuses on leadership skills in mentoring, supervision, staff development, resource gathering, and applied research related to early childhood settings. Spring. Boone, staff.

EDUC 762 [169] CHILD DEVELOPMENT AND DISABILITY (3). Emphasizes typical development and developmental deviation exhibited by children in cognitive, language, social, and affective areas. Spring. Sinnott, staff.
EDUC 763 [263] BIOLOGICAL BASES OF CHILDREN'S DEVELOPMENT
(3). Focuses on the theory and research related to the biomedical and psychological aspects of exceptionality. Fall. Simeonsson.

EDUC 764 [282] CURRENT ISSUES IN LITERACY (3).

EDUC 768 [268] EDUCATION IN LATIN AMERICA (LTAM 768) (3). Introduction to education and social issues in Latin America. Explores the relationship between national development and education. The course will include case studies of individual nations as well as issues embracing the region as a whole. Fall. Cortina.


EDUC 770 [270] MULTICULTURAL WAYS OF KNOWING (3).

EDUC 771 [171] SEMINAR IN SOCIAL FOUNDATIONS OF EDUCATION
(1). Explores topics in the social and philosophical context of American public education. Spring. Staff.


EDUC 773 [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. As demand warrants. Staff.

EDUC 774 [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. Spring. Levine.

EDUC 775 [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. Stone.

EDUC 776 [276] GENDER, RACE, AND CLASS ISSUES IN EDUCATION (WMST 776) (3). Provides an understanding of (and remedies for) the racism, sexism, and class divisions that schools can perpetuate. Examines curriculum, counseling, and interaction in classrooms; structure and leadership; and fundamental assumptions. As demand warrants. Staff.

EDUC 777 [277] GENDER, POLICY, AND LEADERSHIP IN EDUCATION (WMST 777) (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 778 [EDUC 293A] SCIENCE EDUCATION: EARTH/SPACE/ENVIRONMENT (3).

EDUC 779 [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 779 [EDUC 119B] BIG IDEAS IN SCIENCE EDUCATION (3).

EDUC 781 [281] THEORIES AND RESEARCH IN HUMAN DEVELOPMENT (3). Prerequisite, permission of the instructor. Covers the basic theories and the research bases for instructional decisions. This is an advanced-level course in human development. Spring. Hamm, Meece.

EDUC 782 [182] PSYCHOLOGY OF LEARNING IN THE SCHOOL (3). Studies learning in the school setting, with emphasis on fundamental concepts, issues, and evaluation of materials and experiences. Fall and spring. Meece.

EDUC 783 [283] APPLIED MEASUREMENT THEORY FOR EDUCATION
(3). 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 784 [284] STATISTICAL ANALYSIS OF EDUCATIONAL DATA II
(4). Prerequisite, EDUC 684 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, summer. Ware.

EDUC 785 [282] PROGRAM EVALUATION IN EDUCATION (3). Prerequisites, EDUC 684 and 871. An examination of major approaches to program evaluation with emphasis on differences between evaluation and research. Fall and spring. Frieson.

EDUC 786 [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. Cizek, Frieson, Hamm, Meece.

EDUC 787 [290] PROBLEMS IN EDUCATIONAL MEASUREMENT (3). Prerequisites, EDUC 684, 783, 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, Frieson, Ware.

EDUC 792 [286] EMERGING TECHNOLOGIES (3).

EDUC 794 [EDUC 115A] DEVELOPING MATHEMATICAL KNOWLEDGE (1-3).

EDUC 795 [155] SEMINAR IN LEARNING DISABILITIES EDUCATION (3). Prerequisites, EDUC 687, EDUC 688 (may be taken concurrently with EDUC 687). 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 the Individuals with Disabilities Education Act (IDEA) and case law, particularly those pertaining to learning disabilities. Students will also learn the basics of measurement concepts (reliability, validity, error, etc.). Fall. Farmer.

EDUC 796 [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 796 [EDUC 197B] PROBLEM-BASED LEARNING IN MATHEMATICS (1-3).

EDUC 797 [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. Farmer.

EDUC 798 [160] MASTER'S INTERNSHIP IN LEARNING DISABILITIES EDUCATION (3). Prerequisites, EDUC 795, EDUC 687, EDUC 688 (may be taken concurrently with EDUC 687). 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. Staff.

EDUC 801 [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. Meece, Vernon-Frengang.
EDUC 802 [302] FOUNDATIONS 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 it makes. Spring. Stone.

EDUC 803 [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 classrooms and schools. Fall. Noblit.

EDUC 804 [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. Staff.

EDUC 805 [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 811 [311] PROBLEMS IN SCHOOL COUNSELING (1-21).

EDUC 812 [312] DOCTORAL PRACTICUM IN SCHOOL COUNSELING (1-21).

EDUC 813 [313] DOCTORAL INTERNSHIP IN SCHOOL COUNSELING (1).

EDUC 814 [814] SUPERVISION AND TEACHING IN SCHOOL COUNSELING (3).

EDUC 815 [315] DOCTORAL SEMINAR IN SCHOOL COUNSELING (3).

EDUC 820 [225] DOCTORAL SEMINAR IN PROFESSIONAL SCHOOL PSYCHOLOGY (3). Prerequisite, 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. Brandon.

EDUC 821 [321] 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 831 [231] SCHOOL LAW, JUSTICE AND EQUITY (3). Prerequisite, six semester hours of graduate school work in school administration. 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 832 [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 833 [236] LEADING SYSTEM FUNCTIONS (3). Prerequisites, EDUC 839, EDUC 842, 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. Staff.

EDUC 834 [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 835 [239] INSTRUCTIONAL LEADERSHIP FOR SUPERVISION, CURRICULUM, AND TECHNOLOGY (3). Provides fundamental knowledge of instructional design, techniques of teaching/learning, evaluation of the teaching/learning process, and ways in which school-based leaders can support excellence in classroom instruction. Fall and spring. English.

EDUC 836 [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 the interrelationships of educational, economic, and political decisions. May be repeated for credit. Fall and spring. F. Brown.

EDUC 838 [232] SCHOOL GOVERNANCE (3). Prerequisite, permission of the instructor. Focuses on governance and policy at the school building level and how districts-wide governance, state educational policy, federal involvement in education, and educational special interest groups impact school-sized governance. Fall and spring. Staff.

EDUC 839 [331] THE EXCELLENT SCHOOL SEMINAR I (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 840 [333] ADVANCED LEADERSHIP THEORIES (3). Prerequisites, EDUC 633, 832, 834, and 638. Requires students to integrate previous studies to focus on management applications, dilemmas, and conflicts. Spring. English.

EDUC 841 [334] THE DEVELOPMENT OF A RESEARCH PROPOSAL (3). Prerequisites, EDUC 633, 832, and 834. Requires students to integrate previous studies to focus on theory, inquiry, and organizational practice. Spring. English.

EDUC 842 [332] THE EXCELLENT SCHOOL SEMINAR II (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 844 [335] ADVANCED SEMINAR AND SUPERVISED INTERNSHIP IN EDUCATIONAL ADMINISTRATION (1-6). Prerequisites, EDUC 633, 832, 834, 638, 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 851 [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. Grumet.

EDUC 852 [253] INSTRUCTIONAL SYSTEMS DEVELOPMENT (3). Delineates strategies for developing instructional systems, including needs assessment, job analysis, goal setting, use of criterion tests, delivery systems, project management, and evaluation of learners and programs. As demand warrants. Hannum.

EDUC 853 [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. Day.

EDUC 854 [351] RESEARCH IN CURRICULUM AND INSTRUCTION (3). Prerequisites, EDUC 753, 515, 851, 752, 784, 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 855 [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 of study. (Sections include early childhood, intermediate, secondary subjects, media, literacy, and general.) Fall and spring. Staff.

EDUC 856 [356] 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 861 [361] SEMINAR IN SPECIAL EDUCATION (3). Emphasis on developmental deviation exhibited by exceptional children in cognitive, language, social, and affective development. Spring. Simonsen.

EDUC 862 [365] TEACHING AND PERSONNEL DEVELOPMENT (SPHS 862) (3).

EDUC 863 [363] SUPERVISED POST-MASTER'S 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 selected professional at the internship site. Fall and spring. Staff.

EDUC 864 [364] FAMILIES (3).

EDUC 871 [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.) Staff.

EDUC 872 [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 873 [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 779 or equivalent. As demand warrants. Stone.

EDUC 874 [374] PROBLEMS IN THE SOCIOLOGICAL FOUNDATIONS OF EDUCATION (3 or more). Prerequisite, EDUC 772 or equivalent. Provides an opportunity for advanced doctoral students to do independent study under supervision. Fall and spring. Noblit.

EDUC 876 [376] PROBLEMS IN THE HISTORY OF EDUCATION (3 or more). Prerequisite, EDUC 774 or equivalent. Provides an opportunity for advanced doctoral students to do independent study under supervision. As demand warrants. Unks.

EDUC 877 [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 878 [387] 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 881 [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. Meese.

EDUC 882 [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 883 [383] CASE STUDY METHODS (3).

EDUC 884 [384] STATISTICAL ANALYSIS OF EDUCATIONAL DATA III (3). Prerequisites, EDUC 684, 784. An extension of the general linear model to analysis of educational data with multiple dependent variables, with computer applications. Fall, summer. Ware.

EDUC 885 [385] SECONDARY DATA ANALYSIS (3).

EDUC 888 [388] INTRODUCTION TO STRUCTURAL MODELING (3).

EDUC 891 [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 981 [275] FIELD TECHNIQUES IN EDUCATIONAL RESEARCH (3). Prerequisite, EDUC 684. Introduces students to field research methods and analysis of qualitative data that focuses on the application of these techniques in evaluation and policy research. Fall and spring. Marshall, Noblit, Ezzer-Rich.

EDUC 982 [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 and representation. Fall, Noblit.

EDUC 990 [307] SUPERVISED RESEARCH (1). 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 and spring. Staff.

EDUC 991 [391] INDEPENDENT PROJECTS (1). Provides enrollment for students taking the master's exam but not registered for any course.

EDUC 992 [392] MASTER'S PROJECT (3). Focuses on the development of a master's project or a major paper other than a thesis.

EDUC 993 [393] MASTER'S THESIS (3).

EDUC 994 [394] DOCTORAL DISSERTATION (3).

DEPARTMENT OF ENGLISH AND COMPARATIVE LITERATURE

JAMES P. THOMPSON, Chair

English Program

Professors

William L. Andrews (101) African American, American
Christopher M. Armitage (1) Renaissance, Poetry
A. Reid Barbour (83) Renaissance, Renaissance Studies
James W. Coleman (89) American, African American, Twentieth-Century American, Southern
Pan Durban (114) Creative Writing
Connie C. Eble (9) English Language, Medieval
Joseph M. Flores (13) American, Twentieth-Century American and British, Southern Dyrill J., Gless (63) Renaissance
Philip Guru (78) American, American Studies
Minnove Gwin (123) Southern, Twentieth-Century American
William R. Harmon (17) Twentieth-Century American and British, Poetry, Comparative Literature, Southern
Trudier Harris (60) Twentieth-Century American, African American, American, Southern, Novel, Poetry
Mac Henderson (102) African American, Twentieth-Century American, Critical Theory
Fred Holson (84) American, Southern, Twentieth-Century American, American Studies
Joy Kason (90) American, American Studies
Edward Donald Kennedy (22) Medieval, Medieval Studies, Comparative Literature, Medieval Drama
Laurie Langbauer (97) Nineteenth-Century British, Critical Theory
George S. Lensing Jr. (26) Twentieth-Century American and British, Poetry  
Erica C. Lindemann (63) Rhetoric, Composition and Literary  
Michael A. McFee (99) Creative Writing  
John P. McGowan (92) Critical Theory, Nineteenth-Century British, Comparative  
Literature, Cultural Studies, Novel, Women’s Studies  
Jeanne Maskal (77) Nineteenth-Century British, Critical Theory, Women’s Studies  
Patrick P. O’Neill (66) Medieval, English Language, Celtic, Medieval Studies  
Ruth Salvaggio (124) Eighteenth Century, Critical Theory  
James Seay (87) Creative Writing  
Alan R. Shapiro (96) Twentieth-Century American, Creative Writing  
Beverly W. Taylor (70) Nineteenth-Century British, Novel, Women’s Studies  
James P. Thompson (72) Eighteenth-Century British, Critical Theory, Novel  
Joseph S. Visconi (76) Nineteenth-Century British  
Linda Wagner-Martin (80) American, Twentieth-Century American, Southern,  
Comparative Literature, Novel, Poetry, Women’s Studies  
Joseph S. Winig (51) Medieval, English Language

Associate Professors

Daniel R. Anderson (104) Rhetoric, Composition and Literary  
Erin Carlson (108) Twentieth-Century British and American, Comparative  
Literature, Cultural Studies, Women’s Studies  
Pamela Cooper (88) Twentieth-Century British, Cultural Studies, Novel, Women’s  
Studies  
Jane M. Danielewicz (98) English Language, Rhetoric, Composition and Literary  
Marla DeGuzmán (110) Latino/Latina Studies, Twentieth-Century American,  
Critical Theory  
Mary Floyd-Wilson (116) Renaissance  
Marianne Gingerich (111) Creative Writing  
Randall Kenan (119) Creative Writing  
Ritchie D. Kendall (64) Renaissance, Drama, Renaissance Studies  
Theodore H. Leinbaugh (65) Medieval, Medieval Studies, Comparative Literature  
Allan R. Life (55) Nineteenth-Century British  
Megan Machinske (94) Renaissance, Cultural Studies, Renaissance Studies,  
Women’s Studies  
Thomas Reinert (103) Eighteenth-Century British, Novel, Poetry  
Bland Simpson (100) Creative Writing  
Todd W. Taylor (105) Rhetoric, Composition and Literary  
Jessica Wolfe (106) Renaissance

Assistant Professors

Nicholas Allen (117) Irish Literature, Twentieth-Century British  
Tyler Cartain (109) Critical Theory, Cultural Studies, Novel  
Gregory Flaxman (118) Film Studies, Twentieth-Century British  
Jennifer Ho (121) Contemporary Literature, Asian American Literature, American  
Studies  
Jordan Jack (122) Rhetoric and Composition  
Eliza Richards (120) American  
Rebecca Fisher Rutledge, African American Literature, Caribbean Literature,  
Theory and Criticism, Cultural Studies, American Studies, Metaphor,  
Poststructuralism, Black Nationalism  
Jane Thrailkill (112) American, Twentieth-Century American

Professors Emeriti

Laurence G. Avery  
Doris W. Beetz  
Allen Deussen  
Charles E. Edge  
Johnny Lee Greene  
Howard M. Harper Jr.  
J. Kimball King  
C. Townsend Ludington Jr.  
William A. McQueen  
Margaret A. O’Connor

Daniel W. Patterson  
Julius R. Raper III  
Richard D. Rust  
Louis D. Rubin Jr.  
Thomas A. Stumpf  
Weldon E. Thornton  
David Whisnant  
Charles G. Zug III

Comparative Literature Program

Professors

Dino Cervigni (44) Medieval and Renaissance Italian Literature  
Manya S. Collins (42) Modern Peninsular Literature, Golden Age Spanish  
Literature  
Eric S. Downing (4) Eighteenth- and Nineteenth-Century Literature, Literary  
Theory, Classics  
Lilian R. Furst (1) Nineteenth-Century Narrative, Problems and Methods  
William R. Harmon (17) Twentieth-Century American and British Poetry,  
Comparative Literature  
Edward Donald Kennedy (3) Medieval, Medieval Studies, Comparative Literature,  
Medieval Drama  
Clayton Koeb (4) Modern Literature, Literary Theory, Philosophy and Aesthetics,  
Comparative Literature  
Alice A. Kuzniar (5) Romanticism, Cinema Studies, Gender and Sexuality Studies  
John P. McGowan (92) Critical Theory, Cultural Studies, Novel, Women’s Studies  
James L. Peacock (11) Anthropology, Symbolic Systems

Associate Professors

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. Brodie (5) 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

Lecturer

John A. (Tony) Day, Southeast Asian Literature and History

Professors Emeriti

Paul DeBreceny  
Lilian R. Furst  
S. K. Henninger Jr.  
George A. Kennedy  
G. Mallory Masters  
Richard A. Smyth  
Philip A. Stadler

The Department of English and Comparative Literature offers an MA and  
PhD in Comparative Literature and an MA and PhD in English. Each  
program is described in detail below.  
The English program 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, Latin/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.

Candidates for the MA in English must complete nine courses, demonstrate a reading knowledge of a foreign language, write a thesis (ENGL 993) or fulfill a thesis option (ENGL 992), and pass an oral defense of their thesis or thesis option. The courses elected by an MA student must include one course in the English language, chosen from among the following: ENGL 719 (Old English); ENGL 814 (History of the English Language); ENGL 613 (Modern English Language); ENGL 720 (Old English Literature: Beowulf, prerequisite ENGL 719); 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 606); four ProSeminar courses that introduce the student to professional work in designated periods; and three additional courses in areas of interest. 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.

Graduate School requirements for the doctor of philosophy degree in English are set forth under the heading "Graduate Degrees and Degree Requirements." A PhD student must fulfill the following course requirements: ENGL 606: 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 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 three semester hours of ENGL 994) 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.

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 700; 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 program; 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; five courses (counting those taken for the MA) in a second and third national literature (ordinarily distributed 3/2); and ten courses (counting those taken for the MA) from offerings in the program. 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 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 discussion of the prospectus for a dissertation.

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, Literature or related field, 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 (GRE) 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 English program. Students who complete an MA in the Department of English and Comparative Literature 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 Department of English and Comparative Literature 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.

Foreign Language Proficiency

The Department of English and Comparative Literature 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 languages. 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. 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 all Autobiography Studies are edited by English department faculty members and have their editorial offices in the English department building.
629 [264] MILTON (3). A study of all of Milton’s prose and poetry in the extraordinary context of seventeenth-century philosophy, politics, religion, science, and poetry, and against the backdrop of the English Civil War.

630 [358] SHAKESPEARE AND HIS CONTEMPORARIES (3). This course will examine drama written and performed in England from 1570-1640, situating Shakespeare’s plays in relation to others in his generation.

631 [166] EIGHTEENTH-CENTURY LITERATURE (3). Studies in a variety of British writers from Rochester to Cooper.

637 [172] CHIEF BRITISH ROMANTIC WRITERS (3). A survey of the major British Romantic writers, including Blake, Wordsworth, Coleridge, Byron, Percy, Mary Shelley, and Keats, with an introduction to the chief scholarly and critical problems of this period.

639 [174] VICTORIAN LITERATURE (3). A survey of the major Victorian writers, such as Tennyson, the Brownings, Arnold, Dickens, the Brontes, G. Eliot, Mill, Ruskin.

643 INTRODUCTION TO AMERICAN LITERATURE TO 1860. A graduate-level survey of American literature from the European settlement of the New World through 1860. Consideration of authors in their aesthetic, historical, and contemporary contexts.

644 INTRODUCTION TO AMERICAN LITERATURE, 1860-1900. A graduate-level introduction to the range of American writing from the Civil War through 1900. Attention given to major critical concerns, e.g., the cultural force of realism, the literary construction of race and gender.


660 [196D] WAR IN SHAKESPEARE’S PLAYS (PWAD 660) (3).

661 [140] INTRODUCTION TO LITERARY THEORY (3). Examines contemporary theoretical issues and critical approaches relevant to the study of literature.

662 [240] HISTORY OF LITERARY CRITICISM (3). A history of literary criticism from the Greeks to the mid-twentieth century, focusing on recurrent concerns and classic texts which are indispensable for understanding the practice of literary criticism today.

663 POSTCOLONIAL THEORY (3). This course covers major works of and topics in postcolonial theory.

664 [190Q] THE CHALLENGE OF QUEER THEORY TO LITERARY STUDIES, CULTURAL STUDIES, AND THE HUMANITIES. An advanced-level investigation of queer theory’s challenges to literary criticism, cultural studies, and questions of critical methodology in the humanities. Cutting-edge research and just published articles will be used.

665 [155] QUEER LATIN/O LITERATURE, PERFORMANCE, AND VISUAL ART (WMST 665) (3). This course explores literature, performance, art, film, and photography by Latinas and Latinos whose works may be described as “queer” and that question terms and norms of cultural dominance.

666 [180] QUEER LATIN/O PHOTOGRAPHY AND LITERATURE (WMST 666) (3). This course explores Latin/o literature about photography in relation to photography by queer Latin/o artists and through this double focus, poses certain questions about identity, subjectivity, and culture.


680 FILM THEORY (3). This course offers a rigorous introduction to the various theories (aesthetic, narratological, historiographic, ideological, feminist, post-structural) inspired by the cinema.

684 [185] WOMEN IN FOLKLORE AND LITERATURE (FOLK 684) (WMST 684) (3). An exploration of representations of women in oral traditions as well as in literature based on oral traditions.

685 [179] LITERATURE OF THE AMERICAS (CMPL 685) (AMST 685) (3). Multidisciplinary examination of texts and other media of the Americas, in English and Spanish, from a variety of genres. Prerequisite: two years of college-level Spanish or the equivalent.

686 READINGS IN LITERATURE AND ENVIRONMENT (3). Readings course selects an author, genre, or method as a means of deepening awareness of the politics, poetics, and paradoxes in the field of literature and environment.

687 [191] CANADIAN LITERATURE IN ENGLISH. A study of Canadian literature in English, with emphasis on writing since 1940, particularly the novels by (for example) Margaret Laurence, Robertson Davies, Mordecai Richler, and Margaret Atwood.

Courses for Graduates

701 [201] INTRODUCTION TO MEDIEVAL STUDIES (3). Introduction to Medieval Studies for graduate students in any department. Intended to expose students to research problems, tools, and techniques in fields other than their own.

719 [237A] OLD ENGLISH GRAMMAR AND READINGS (3). An introduction to Old English language and literature that also attempts to refute that language to Modern English and to the larger context of the history of the English language.

720 [250] OLD ENGLISH POETRY (3). The translation and interpretation of Old English poetry including works such as The Wanderer, The Seafarer, The Dream of the Rood, and Beowulf. Course prerequisite, a working knowledge of Old English.

721 [251] EARLY MIDDLE ENGLISH LITERATURE (3). An introduction to Early Middle English, its varieties and genres from c. 1150 (The Peterborough Chronicle) to c. 1330 (the Harley lyrics).

722 MIDDLE ENGLISH ALLITERATIVE POETRY (3). An exploration of the Middle English Poetry of the fourteenth-century Alliterative "Revival," including the works of the Gawain/Pearl poet of the Langland. Prerequisite, a working knowledge of Middle English.

723 LATER MIDDLE ENGLISH LITERATURE (3). English literature of the late fourteenth- and fifteenth-centuries, including Gower, the English and Scottish Chaucerians, and Sir Thomas Malory.

724 [252] CHAUCER (3). A study of Chaucer’s major poetry, including Troilus and Criseyde, at least some of the “dream” poems such as Parliament of Fowls, and most of The Canterbury Tales.

747 [283] STUDIES IN THE AMERICAN NOVEL (3). A wide-ranging, graduate-level survey of the American novel from the late eighteenth century through the twentieth century.

748 STUDIES IN AMERICAN POETRY (3). A wide-ranging, graduate-level survey of American poetry from the late eighteenth century through the twentieth century.

762 [241] SPECIAL TOPICS IN CULTURAL STUDIES (3). An introduction to myriad texts, topics, controversies, institutions, and personalities that make up the ongoing knowledge projects that are loosely affiliated under the rubric “Cultural Studies.”
776 OLD IRISH I (3). The main emphasis of the course will be on mastering the basic grammar of the language. There will be some readings from selected Old Irish glosses and from "Aislinge Oengusso."

777 OLD IRISH II (3). Prerequisite, ENGL 776. Readings in a variety of genres of Old Irish literature: Stories from the Táin, Crith Gablach, Cambrai Homily, Early Irish Lyrics, Scél Óg na Meic Datho.

778 MEDIEVAL WELSH I (3). An introduction to Medieval Welsh language and literature.

779 MEDIEVAL WELSH II (3). Prerequisite, ENGL 778. Readings in Old and Middle Welsh Literature.

780 [211] PROSEMINAR IN BRITISH LITERATURE, 800-1500 (3).

781 [212] PROSEMINAR IN BRITISH LITERATURE, 1500-1660 (3).

782 [213] PROSEMINAR IN BRITISH LITERATURE, 1660-1770 (3).

783 [214] PROSEMINAR IN BRITISH LITERATURE, 1770-1870 (3).

784 [215] PROSEMINAR IN AMERICAN LITERATURE, PRIOR TO THE CIVIL WAR (3).

785 [216] PROSEMINAR IN LITERATURE AFTER 1870 (3).

800 [231] TECHNOLOGY AND THE HUMANITIES (3). Course explores the impacts of information technology on teaching and scholarship in the humanities. Students critique and learn to integrate emerging technologies into their pedagogy and research interests.

801 [299] RESEARCH METHODS IN COMPOSITION AND RHETORIC. Course introduces graduate students to methodologies of research in the field of Rhetoric and Composition. Emphasis is on theoretical and practical concerns that improve teaching and help develop research agendas.

805 [300] STUDIES IN RHETORIC AND COMPOSITION (1-4). Focus varies by semester, but generally investigates intersections of literacy, pedagogy, and rhetorical theory. Courses range from explorations of technology and literacy to investigations of forms of writing and pedagogy.

814 [238] HISTORY OF THE ENGLISH LANGUAGE (LING 814) (3). Study of English from its Proto-Indo-European origins through the 18th century focusing on historic events and the major changes to the structure and usage of English they occasioned.

819 [350] SEMINAR IN OLD ENGLISH LANGUAGE AND LITERATURE (3). Topics in Old English poetry and prose that vary with each seminar and instructor.

821 [351] SEMINAR IN MIDDLE ENGLISH LITERATURE (3). Intensive study of major Middle English authors or genres or of medieval cultural influences. Topics have included Malory, Piers Plowman and its tradition, drama, and intellectual backgrounds of medieval literature.

824 SEMINAR IN CHAUCER (3). Advanced graduate seminar on Chaucer.

825 RENAISSANCE LITERATURE IN CONTEXT (3). A study of select works of Renaissance literature, both dramatic and nondramatic, in its intellectual, social, political, or religious contexts.

826 STUDIES IN RENAISSANCE GENRES (3). This course traces the historical trajectory of renaissance literary genres. Each offering focuses on a generic kind or set of kinds. (Topics may include pastoral, epic, satire, etc.)

827 STUDIES IN RENAISSANCE AUTHORS (3). Concentrated studies of single authors, groups of authors thematically linked, or authors in their families or coteries.

828 PERSPECTIVES ON RENAISSANCE LITERATURE AND CULTURE (3). Students will study Renaissance literature while assessing the usefulness and status of a theoretical approach, such as feminist theory, queer theory, cultural materialism, new historicism, or psychoanalytic theory.

829 [261] STUDIES IN RENAISSANCE LITERATURE: DRAMA (3). A study of Renaissance drama linked thematically, or framed by select cultural practices and historical issues.

830 [354] STUDIES IN RENAISSANCE LITERATURE: PRIMARILY NONDRAMATIC (3). A focused examination of an aesthetic, historical, or theoretical problem in the study of Renaissance literature.


833 [266] STUDIES IN ENGLISH LITERATURE, 1660-1740 (3). Studies in Restoration and Augustan Writers from Dryden to Haywood.


836 STUDIES IN EIGHTEENTH-CENTURY WOMEN WRITERS. Behn, Haywood, Manley, Montague, Burney, Wollstonecraft, and Austen.

837 [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.

838 [244] NINETEENTH-CENTURY BRITISH NOVEL (3). Examination of important nineteenth-century British novels, such as those by Austen, Scott, Dickens, the Brontes, sensation novelists, Gaskell, Carroll, Thackeray, Eliot, Trollope, Doyle, Hardy, Meredith.

839 [275] VICTORIAN NON-FICTIONAL PROSE (3). Examination of Victorian critics, travel writers, feminists, scientists, and historians in relation to the controversy of the period.

840 [274] STUDIES IN VICTORIAN LITERATURE: POETRY (3). Study of Victorian poets, focused on a group or a topic, including figures such as Tennyson, the Brownings, Arnold, and the Pre-Raphaelites.

841 [372] SEMINAR IN NINETEENTH-CENTURY ROMANTICISM IN ENGLAND (3). Topics concerning major authors and issues of the Romantic period.

842 [373] SEMINAR IN VICTORIAN LITERATURE (3). Topics concerning major authors and issues of the Victorian period.


844 [382] SEMINAR IN AMERICAN LITERATURE, 1860-1900 (3). In-depth exploration for doctoral students of selected topics or authors in American Literature from 1860 to 1900.

847 [383] SEMINAR IN THE AMERICAN NOVEL (3). Doctoral-level seminar in the selected topics or authors.

848 SEMINAR IN AMERICAN POETRY (3). Selected topics of authors.

851 [25] 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 Stoppard.

852 [395] SEMINAR IN MODERN DRAMA (3).

857 [290] STUDIES IN TWENTIETH-CENTURY ENGLISH AND AMERICAN LITERATURE (3). Studies in special modern and/or contemporary topics; e.g., the Irish literary renaissance, Latin/American Studies, Asian American Studies, cultural, visual culture, postcolonial, gender, and/or ethnic studies and British and/or American Literature.

858 [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.

860 [390] SEMINAR IN TWENTIETH-CENTURY LITERATURE, ENGLISH AND AMERICAN (3).

861 [391] SEMINAR IN LITERARY AND CULTURAL THEORY (3). Seminar with varying topics, focusing on recent developments in literary and cultural theory, including narratology, feminism, psychoanalysis, and postcolonial and materialist theory.

862 [341] SEMINAR IN CULTURAL STUDIES (3). Advanced exploration of myriad texts, topics, controversies, institutions, and personalities that make up the ongoing knowledge projects that are loosely affiliated under the rubric "Cultural Studies."

863 [390C] SEMINAR IN POSTCOLONIAL LITERATURE (3). Course examines the shifting meanings of postcoloniality in twentieth- and twenty-first-century literature from formerly colonized countries.


867 [284] AFRICAN AMERICAN AND AFRICAN DIASPORA LITERATURE TO 1930 (3). Representative writers and literary and cultural traditions from the beginning of African American literature to 1930.

868 AFRICAN AMERICAN AND AFRICAN DIASPORA LITERATURE, 1930–1970 (3). Key writers within the context of selected literary, cultural, and critical traditions from 1930 to 1970.

869 AFRICAN AMERICAN AND AFRICAN DIASPORA LITERATURE, 1970 TO THE PRESENT (3). Representative writers and literary, cultural, and critical traditions from 1970 to the present.

871 [384] SEMINAR IN AFRICAN AMERICAN LITERATURE (3). An intensive study of a major writer or text, a group of writers or texts, or an important trend, tradition, or literary period.

872 STUDIES IN AFRICAN AMERICAN AND AFRICAN DIASPORA LITERATURE (3). An intensive study of a particular aspect of African American literature, such as speculative fiction, subject formation, comparative diaspora literatures, gender issues theoretical and critical approaches, or formal innovations.


874 [388] LITERATURE OF THE U.S. SOUTH: SPECIAL TOPICS (3). An in-depth treatment of selected topics (e.g., the Southern Renaissance, postmodern southern fiction, the racial conversion narrative) in Southern literature.

876 INTRODUCTION TO MODERN IRISH I (3). An introduction to modern Irish grammar. 

877 INTRODUCTION TO MODERN IRISH II (3). Prerequisite, ENGL 876. Readings in Modern Irish Literature.

878 CRITICAL IRELAND (3). This course explores the creation of Irish culture in literature and history through the medium of twentieth-century critical texts.

879 WRITING THE NORTHERN IRISH TROUBLES (3). This course examines literature's response to "the troubles" in Northern Ireland, that outbreak of civil violence which has taken place, most recently, since 1968.

880 [294] IRELAND IN MODERNITY (3). This course will examine the relationships between Irish writing, culture, and modernism, in the context of international developments in literature and art.

881 STUDIES IN CINEMA (3). This course offers graduate students the opportunity to investigate, in a seminar setting, a particular subject within the domain of film studies.

886 SEMINAR IN ECOLOGICAL THEORY AND PRACTICE (3). In-depth evaluation of ecological theory, eco-critical pedagogy, and literary criticism.

990 [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.

992 [392] NON-THESIS OPTION (3).

993 [393] MASTER'S THESIS (3-6).

994 [394] DOCTORAL DISSERTATION (3-9).

Comparative Literature

Courses for Graduates and Advanced Undergraduates

A. Period Courses
CMPL 450 [150] MAJOR WORKS OF TWENTIETH-CENTURY LITERARY THEORY (3). Comparative study of representative works on literary and cultural theory or applied criticism. Specific content to be announced in advance. Koelb, McGowan, Leonard.

CMPL 452 [170] THE MIDDLE AGES (3). Study of selected examples of Western medieval literature in translation, with particular attention to the development of artistic style and in various genres and at different periods. Kennedy.

CMPL 454 [172] LITERATURE OF THE CONTINENTAL RENAISSANCE IN TRANSLATION (3). Discussion of the major works of Petrarch, Boccaccio, Machiavelli, Castiglione, Ariosto, Tasso, Rabelais, Ronsard, Montaigne, Cervantes, and Erasmus. Wolfe.

CMPL 456 [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.


CMPL 460 [175] ROMANTICISM (3). An exploration of the period concept of romanticism using manifesto and critical writings of the time, modern studies on the subject, and selected literary works. Furst.

CMPL 462 [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. Furst.
CMPL 464 [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. Fourst.

CMPL 466 [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.

CMPL 468 [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, and Sonag. Downing.

CMPL 496 [140] READING COURSE (Var.). Staff.

B. Genre Courses

CMPL 470 [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.

CMPL 472 [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

CMPL 481 [182] RHETORIC OF SILENCE: CROSS-CULTURAL THEME AND TECHNIQUE (ASIA 481) (3). The uses of literary silence for purposes such as protest, civility, joy, oppression, nihilism, awe, or crisis of representation. Authors include Sterne, Goethe, Auster, Kawabata, Soseki, Oe, Tson, Camus, and Mann. Brodey.

CMPL 483 [183] CROSS-CURRENTS IN EAST-WEST LITERATURE (ASIA 483) (3). The study of the influence of Western texts upon Japanese authors and the influence of conceptions of "the East" upon Western writers. Goldsmith, Voltaire, Soseki, Sterne, Anzhiina, Ibsen, Yoshimoto, and Ishiguro. Brodey.


CMPL 487 [190] LITERATURE AND THE ARTS OF LOVE (3). Love and sexuality in literary works from various historical periods and genres. Authors include Sappho, Plato, Canullas, Propertius, Ovid, Dante, Petrarch, Shakespeare, LaClos, Goethe, Nabokov, and Roland Barthes. Downing.

CMPL 490 [195] SPECIAL TOPICS IN COMPARATIVE LITERATURE (Var.). Staff.


Courses for Graduates

CMPL 700 [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.

CMPL 737 [202] TOPICS IN CONTEMPORARY LITERARY AND CULTURAL THEORY (SPAN 737) (3). Selected critical topics in poststructuralist thought, chosen by the instructor and announced in advance. Polo de Bernabé.

CMPL 796 [240] READING COURSE (Var.). Staff.

CMPL 821 [221] READING IRRONIES (3). Study of processes of recognizing and constructing ironies in texts, with consideration of both theoretical issues and practical readings.


CMPL 843 [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.

CMPL 844 MODERN WOMEN WRITERS (3).

CMPL 890 [295] SPECIAL TOPICS IN COMPARATIVE LITERATURE (3). Fall or spring. Staff.


CMPL 894 [310] SEMINAR (3). Topic announced annually in advance. Staff.

CMPL 900 [395] RESEARCH. Staff.

CMPL 993 [393] MASTER'S THESIS (Var.). Fall and spring. Staff.

CMPL 994 [394] DOCTORAL DISSERTATION (Var.). Fall and spring. Staff.

Cross-Listed Courses


CMPL 482 [142] PHILOSOPHY IN LITERATURE (PHIL 482) (3).

CMPL 535 BOCACCIO AND NARRATIVE (ITAL 536) (3).


CMPL 621 [153] ARTHURIAN ROMANCE (ENGL 621) (3). Kennedy.


CMPL 741 SPANISH AMERICAN ESSAYS AND SHORT STORIES (SPAN 741) (3).

CMPL 745 VANGUARDS (SPAN 745) (3).

CMPL 747 CONTEMPORARY NOVEL (SPAN 747) (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 Comparative Literature program 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 COML 892, 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 COML 892).

COML 892 (Seminar in Renaissance Studies) serves as a nucleus for the minor, affording students the opportunity to bring together seemingly divergent strains 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 Comparative Literature program 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 Pardo, Jaroslav Folda

English: Christopher Armitage, Reid Barbour, Alan Desen,

Mary Floyd-Wilson, Richie Kendall, Darryl Gless, Megan Matchinak, Jessica Wolfe

History: Melissa M. Bullard, Barbara Harris, Michael McVaugh, Jay Smith

Music: John Nadas, Thomas Warburton

Religious Studies: Peter Kaufman

Romance Languages: Lucia Binotti, Dino Cervigni, Mansha Collins, Frank Dominguez, Carmen Hu, Hassan Melehy, Ennio I. Rao, Frederick Vogler

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DEPARTMENT OF EXERCISE AND SPORT SCIENCE

KEVIN M. GUSKIEWICZ, Chair

Professors

Kevin M. Guskiewicz (24) Sports Medicine, Anatomy

Anthony C. Hackney (21) Exercise Physiology, Metabolism and Endocrinology

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

Claudio L. Battaglini (32) Clinical Exercise Physiology, Exercise Assessment and Prescription

Diane G. Groff (34) Recreation and Leisure Studies

Darwin A. Padua (22) Anatomy, Biomechanics, Sports Medicine

Nathan E. Tomasini (31) Economics and Finance in Sport, Sport Marketing

Adjunct Professors

Robert Carru, Neurosurgery

Michael T. Gross, Biomechanics

Timothy Taff, Sports Medicine

Adjunct Associate Professor

William T. Generous, Physical Education

Adjunct Assistant Professors

Elizabeth Hedgepeth (30) Sport Psychology

Daniel Hooker, Sports Medicine

Spero Karas, Sports Medicine

Laurence M. Karr, Emergency Medicine

Professors Emeriti

M. Deborah Bialtchik

John E. Billing

Kara A. Henderson

Frank Pleamato Jr.

H. Douglas Sesoms

Mission

The mission of the Department of Exercise and Sport Science (EXSS) is to discover, create, and promote knowledge of human movement to improve the quality of life of individuals and society. We prepare individuals to function as scientists, educators, and practitioners. Our program offers an MA in each of three specialization areas: athletic training, exercise physiology, or sport administration. We seek to provide our students focused, in-depth knowledge and skills, and an understanding of the challenges facing the areas of athletic training, exercise physiology, and sport administration (as well as a global understanding of exercise and sport).

In pursuit of maximum fulfillment of our mission, we also offer quality practical experiences to our students. EXSS has an association with numerous other campus and local area units such as athletics, emergency medicine, orthopaedics, the Lineberger Comprehensive Cancer Center, HEELS for Health, the Orange Cardiovascular Foundation, Campus Health Services, Carolina Adventures, Campus Recreation, the North Carolina...
High School Athletic Association, and local public parks and recreation departments. Supervised assistantships and internships outside the department help students develop practical skills in the specific fields of study. Furthermore, the thesis, a required research experience, is an integral part of every student’s program of study. Additional research experience opportunities are numerous, and it is an expectation of the department that graduate students will become actively involved in conducting research while studying at UNC-Chapel Hill.

Additional information regarding the Department of Exercise and Sport Science can be found at www.unc.edu/depts/exercise.

Specialization Descriptions

Athletic Training

The mission of the athletic training specialization is to develop outstanding athletic training clinicians, teachers, and researchers. This specialization is one of only thirteen programs in the United States accredited by the National Athletic Trainers’ Association (NATA). We recruit graduate students who are NATA Board of Certification certified athletic trainers or who have completed requirements for certification by NATA. We provide the means for each graduate student to gain advanced knowledge and experience in a 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 clinical practice. All students admitted to this program serve as graduate assistant athletic trainers in the UNC-Chapel Hill Department of Athletics. Strong research and practical experience in the prevention, evaluation, management, and rehabilitation of athletic-related injuries are provided to all students. Thirty-four hours of graduate coursework are required, including a minimum of twenty-two hours specific to athletic training/sports medicine: EXSS 730, 732, 733, 735, 736, 739, and HMSC 79.*

Go to www.unc.edu/depts/exercise/sport_administration.htm for additional information.

Exercise Physiology

The mission of the exercise physiology specialization is to prepare individuals for careers in the wellness industry, including hospital and corporate fitness centers as well as clinical settings, or to pursue research careers in exercise physiology related fields. Students seeking a focus in fitness/wellness are provided the background, knowledge, testing skills, and practical experience to prescribe safe fitness/wellness programs in a variety of settings, as well as the knowledge to act as a liaison between the medical community and the layperson regarding the health implications of exercise. Students preparing for further advanced study in a PhD program are provided in-depth understanding of how physiological constructs are applied to exercise and the environment, as well as an understanding of the research process. Concomitantly, the student develops laboratory techniques and skills. Many graduate students present their thesis research findings at national and regional meetings of the American College of Sports Medicine, and at other professional meetings or conferences. Thirty-one hours of graduate coursework are required, including a minimum of twenty-one hours specific to exercise physiology: EXSS 410, 410L, 780, 781, 782, 783, 785, and 789.*

Go to www.unc.edu/depts/exercise/exercise_physiology.htm for additional information.

Sport Administration

The mission of the sport administration specialization is to prepare students for leadership positions in collegiate-level athletic administration. This program combines formal coursework and practical experiences with a full-time, one-year internship in an administrative capacity with the UNC-Chapel Hill Athletics Department. Thirty-two hours of graduate coursework are required, including a minimum of twenty hours specific to sport administration: EXSS 740, 744, 746, 748, 749, and 755.*

Go to www.unc.edu/depts/exercise/sport_administration.htm for additional information.

Law and Sport Administration Dual Degree Program (JD/MA)

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 athletic compliance and enforcement at a university, conference office, or national governing body such as the National Collegiate Athletic Association (NCAA). Legal positions in athletic departments, fundraising and development, and at law firms that represent colleges and conferences are also likely. Students must apply and be accepted by both the School of Law and the Department of Exercise and Sport Science, and the student will be responsible for paying tuition and fees separately to each program.

* Departmental Requirements

In addition to specialization course requirements (see above), statistics and research methods (EXSS 700, 705, or RECR 950, 951, and EXSS 993, RECR 992) 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, as well as statistics and research methods; 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 non-degree seeking students. Candidates should check with the department for admission information pertaining to their specific area of specialization.

Go to www.unc.edu/depts/exercise for additional information.

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/hmse 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 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 410 [110] EXERCISE PRESCRIPTION AND TESTING IN A HEALTHY POPULATION (3). Prerequisites: EXSS 175, 276, 376, (C or better) required. EXSS 181, 188, 300, 360, 380, 385 are recommended, or permission of the instructor. 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. Battaglini, Marks, McMurray.

EXSS 410L [110L] LABORATORY FOR EXERCISE PRESCRIPTION AND TESTING (0). Available to upper-level undergraduate and graduate students who have completed EXSS 175, 276, 376. EXSS 410L is a laboratory course that accompanies EXSS 410. Spring. Battaglini, Marks, McMurray.

EXSS 476 [114] THEORY AND APPLICATION OF STRENGTH TRAINING AND CONDITIONING FOR FITNESS PROFESSIONALS (3). Prerequisites: EXSS 175, EXSS 276, and PHYA 243. This is an intermediate- to upper-level course designed to provide students with theoretical and practical knowledge of the physiological, biomechanical, functional, and administrative aspects of designing and supervising conditioning programs for various populations. Fall and spring. Graduate faculty.

EXSS 478 [116] PERFORMANCE ENHANCEMENT FOR HEALTH PROFESSIONALS (3). The Performance Enhancement Specialist (PES) course is designed for students in the allied health professions interested in creating individualized, integrated training programs. Spring and summer. Graduate faculty.

EXSS 700 [220] APPLIED STATISTICS AND RESEARCH METHODS IN EXERCISE AND SPORT SCIENCE (3). Prerequisite: undergraduate statistics course. Applied statistical analysis and interpretation of data from the field of exercise and sport science. Selected statistical techniques and methods, with emphasis on choosing proper method of analysis, using statistics software to create data sets, run analyses, and produce proper output. Major topics include experimental and non-experimental research design, sampling, hypothesis formulation and testing, power calculation, t-tests, ANOVA, correlation, simple and multiple regression, and chi square within the context of moving, conducting, writing, and reporting of research in the field of EXSS. Fall and spring. Shields.


EXSS 730 [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 732 [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. Guskiewicz.

EXSS 733 [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. Hedgeth.

EXSS 735 [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 739 [239] PRACTICUM IN ATHLETIC TRAINING (3). Prerequisite, graduate standing in exercise and sport science or permission of the instructor. The implementation of techniques and practices in a professional setting under the direction of a competent practitioner. Spring. Prentice.


EXSS 742 [255] 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 744 [248] 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. Tomasiini.

EXSS 746 [246] 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. Tomasiini.

EXSS 748 [244] 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 749 [249] PRACTICUM IN SPORT ADMINISTRATION (3). Prerequisite, EXSS 740. The implementation of theories and practices in a professional setting under the direction of a competent practitioner. Spring. Osborne.

EXSS 770 [270] MOTOR LEARNING (3). Prerequisite, EXSS 380 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. Graduate faculty.

EXSS 780 [280] PHYSIOLOGY OF EXERCISE (4). Prerequisite, EXSS 276, 376 or equivalent. The study of the physical, 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 781 [281] CLINICAL EXERCISE PRESCRIPTION AND TESTING (3). Prerequisite, EXSS 376, 410 or permission of the instructor; pass EXSS 410 with B or equivalent. This course concentrates on the knowledge and skills necessary for providing exercise testing and prescription in the clinical setting, emphasizing cardiac rehabilitation. Fall. Battaglini, Marks, McMurray.

EXSS 782 [282] NUTRITIONAL ASPECTS OF EXERCISE (3). Prerequisite, graduate standing in physical education or permission of the instructor. Emphasis 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 783 [283] ASSESSMENT OF PHYSIOLOGICAL FUNCTIONS IN EXERCISE (3). Prerequisite: EXSS 780 or equivalent, 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 785 [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 cardiorespiratory physiology, with student presentations on selected topics. Fall. Hackney. McMurray.

EXSS 789 [289] PRACTICUM IN EXERCISE PHYSIOLOGY (3). Prerequisites, EXSS 410, 780, or EXSS 781, or permission of the instructor. Implementation of techniques and practices of fitness or cardiac rehabilitation in a professional setting under the direction of an experienced practitioner. Fall and spring. Battaglini, Hackney, Marks, McMurray.

EXSS 890 [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 instructor in the field. Fall and spring. Graduate faculty.

EXSS 990 [320] RESEARCH IN EXERCISE AND SPORT SCIENCE (1-3). Prerequisite, graduate standing in exercise and sport science or permission of the instructor. Individualized research projects conducted by students under the direction of a graduate faculty member. Fall and spring. Graduate faculty.

EXSS 993 [393] MASTER'S THESIS (3-6). Fall, spring, and summer. Graduate faculty.

Graduate Recreation Degree Coursework

RECR 710 [210] LEISURE AND ORGANIZED RECREATION IN THE UNITED STATES (3). An analysis of the scope of leisure research, recreation services, the evolution of leisure, and the of individual recreation behavior.

RECR 770 [270] ADMINISTRATION OF THERAPEUTIC RECREATION SERVICES (3). Emphasis on information specific to the administration of therapeutic recreation such as fiscal management, quality assurance, evaluation, marketing of therapeutic recreation, and other general administrative topics.

RECR 775 [275] PRINCIPLES AND PROCEDURES IN THERAPEUTIC RECREATION (3). A study of the existing practices and principles of therapeutic recreation. An in-depth treatment of assessment/evaluation, goal setting and individualized planning, documentation, leisure counseling, and clinical skills.

RECR 790 [290] INDEPENDENT FIELD STUDY (3). Permission of faculty required. May be repeated for credit.

RECR 830 [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.

RECR 865 [365] ISSUES AND TRENDS IN RECREATION MANAGEMENT (3). A seminar to involve graduate recreation students in in-depth analyses of selected topics, issues, and problems relevant to the recreation management in public and not-for-profit leisure service organizations.

RECR 876 [376] ISSUES AND TRENDS IN THERAPEUTIC RECREATION (3). An analysis of selected issues, problems, and concerns in the provision of therapeutic recreation and inclusive recreation services.

RECR 880 [280] INTERNSHIP IN RECREATION ADMINISTRATION (2).

RECR 881 [281] INTERNSHIP IN RECREATION ADMINISTRATION (2).

RECR 890 [310] SEMINAR IN LEISURE STUDIES (3). A survey of contemporary views of society and their structures and functions, as they relate to concepts of leisure and recreation behaviors.

RECR 950 [250] RECREATION RESEARCH DESIGN AND METHODS I (3). An appraisal of current recreation and leisure research design using both quantitative and qualitative data. Students complete and deliver a formal research proposal.

RECR 951 [251] RECREATION RESEARCH AND DESIGN AND METHODS II (3). Prerequisite, RECR 950 and a statistics course. Students analyze quantitative and qualitative data and apply their work to theory and practice. Students complete the research proposed in RECR 950.

RECR 992 [393] MASTER'S THESIS (3-6). Fall, spring, and summer. Graduate faculty.

Other RECR courses that may be useful and of interest to graduate students:

RECR 310 [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 475 [175] DISABILITY, CULTURE, AND THERAPEUTIC RECREATION (3). An examination of disability from a cultural perspective with the application of theoretical and scientific knowledge to provide recreation interventions that facilitate participation in leisure by individuals with disabilities.

RECR 790 [290] INDEPENDENT FIELD STUDY (3). Permission of faculty required. May be repeated for credit.

RECR 830 [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.

RECR 880 [280], 881 [281] INTERNSHIP IN RECREATION ADMINISTRATION (2 each).

CURRICULUM IN FOLKLORE

GLENN HINSON, Chair

Professors
Bob Cannwell (26) Culture and Human Rights, Vernacular Music, Folklore Theory, Sexual Consent, Jane Addams, Pragmatism and the Progressive Era
Carole L. Crumley (22) Archaeology, Complex Societies, Europe
Terence Evans (27) Social Anthropology, Social Theory, Phenomenology, Ethics, Philosophical Anthropology, Collectivist Settlements
*William R. Ferria (65) Southern Music and Literature, Documentary Studies, American South
Kaja Finkler (32) Medical Anthropology, Latin America
Jacquelyn Hall (18) American History, Southern Oral History
*Trudier Harris (5) African American Folklore and Literature
Norris B. Johnson (25) Cultural Anthropology, Art and Literature
Edward Donald Kennedy (6) Medieval Romances, Arthurian Literature
H. Craig Melchor (23) Indo-European Linguistics
Patrick P. O'Neill (30) Medieval Literature, Celtic Languages and Culture
James L. Peacock (11) Culture Change, Symbolic Systems, Southeast Asia
Della Pollock (9) Performance of Literature, Performance Theory and Criticism, Cultural Studies
Ruel W. Tyson Jr. (15) Philosophy and Anthropology of Religion

Associate Professors
Robert Edward Daniels (4) Social Anthropology, Culture and Personality, Africa
John W. Florin (16) Population Geography, Medical Geography, and Historical Anglo-America
*Glenn D. Hinson (36) Ethnography of Communication, African American Expressive Culture, Belief Systems, Public Folklore
*Patricia E. Sawin (1) Feminist Theory, Ethnography of Speaking, Performance, Southwest Louisiana

Assistant Professors
Marcie Ferris (25) Southern Jewish History, American Foodways, Women's Studies, Folklore, Material Culture
Matthew Hull (69) Semiotics, Bureaucracy and Governance, Information Technology, Urban Planning, Material Culture, Science and Technology, South Asia
Valerie Lambert (59) American Indians, Ethnography, Political and Legal Anthropology, Sovereignty, Identity, Race and Racism, Elites, United States
Joel Nelson (7) Twentieth-Century Theory, Popular Music
Christopher Nelson (64) History and Memory, Everyday Life, Ethnography, Critical Theory, Storytelling, Ritual and Performance, Japan and Okinawa
Karla Scoom (56) Global/Local Studies, Social Movements, Agency, Development, Gender, Applying Anthropology, Caribbean

Professors Emeriti
Daniel W. Paterson, Ballads, American Folksong, Religious Folklore, Gravestones; American South
Charles Gordon Zieg, Pottery, Material Culture, Narrative, Maritime Folklore; Folk Art; American South
* core faculty

Structurally, the curriculum is an interdisciplinary program. Faculty are based in various home departments (American Studies, Anthropology, English, Geography, History, Linguistics, and Religious Studies). Each core faculty member holds a half-time appointment in Folklore (although most of their courses in other departments are also relevant to folklore study).

The University of North Carolina at Chapel Hill offers a fitting home for the Curriculum in Folklore. Its libraries have extensive holdings of books, manuscripts, periodicals, images, and sound recordings relating to folklore. Holdings of folklore materials are especially strong for the American South and the British Isles. Particularly notable among these collections are the Archie Green Occupational Folklore Collection, the Don Yoder Collection of American religious tune books, the John Edwards Memorial Collection of early Southern commercially recorded folk and popular music, and the Southern Folklife Collection of field and commercial recordings.

Degree Requirements: The MA program in folklore stresses flexibility, inviting students to craft a course plan to meet their particular needs. Master's students must complete ten courses (thirty hours); of these, only two - Introduction to Folklore Theory (FOLK 850) and The Art of Ethnography (FOLK 860) - are required. Other courses must demonstrate a rough balance between genre, theory, area studies, and practice. In addition to classes in the core curriculum, students traditionally take courses from a variety of associated graduate programs, including Anthropology, Communications Studies, English, History, and Music. Students pursuing an MA must demonstrate reading proficiency in a foreign language.

Students may also opt for a folklore minor in another PhD program. Students pursuing the minor must complete only six courses.

Courses for Graduates and Advanced Undergraduates

130 [133] ANTHROPOLOGY OF THE CARIBBEAN (ANTH 130) (3). Theories and examples of how Caribbean peoples live, act, and see themselves within various cultural, social, economic, and political contexts across time. Attention to North American views of the Caribbean. Spring, Scoom.

230 [130] AMERICAN INDIAN SOCIETIES (ANTH 230) (3). Broad survey of contemporary American Indian societies and cultures in the U.S. Explores socio-cultural and historical diversity of tribes through film, autobiography, literature, current issues, guest speakers, archaeology, and history. Lambert.

323 [125] MAGIC, RITUAL, AND BELIEF (ANTH 323) (3). Starting with the late 19th century evolutionists, this course discusses, intensively, major anthropological theories of magico-religious thought and practice, then offers an approach of its own. Admission by permission of the instructor. Spring, Evens.


375 [176] FOOD IN AMERICAN CULTURE (AMST 375). This course will examine the history and meaning of food in American culture and will explore the ways in which food shapes national, regional, and personal identity. M. Ferris.

428 [142] RELIGION AND ANTHROPOLOGY (ANTH 428) (REL 428). Religion studied anthropologically as a cultural, social, and psychological phenomenon in the works of classical and contemporary social thought. Spring, Peacock and Tyson.

435 [135] CONSCIOUSNESS AND SYMBOLS (ANTH 435) (CMPL 435) (3). This course explores consciousness through symbols. Symbols from religion, art, politics, and self are studied in social, psychological, historical, and ecological context to ascertain meanings in experience and behavior. Fall. Peacock.

454 [154] HISTORICAL GEOGRAPHY OF THE UNITED STATES (GEOG 454) (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.

455 [155] ETHNOHISTORY (ANTH 455) (3). Integration of data from ethnographic and archaeological research with pertinent historical information. Familiarization with a wide range of sources of ethnological data and practice in obtaining and evaluating information. Pertinent theoretical concepts are explored. Fall. (Alternate years.) Crumley.

470 [171] MEDICINE AND ANTHROPOLOGY (ANTH 470) (3). This course examines cultural understandings of health, illness, and medical systems from an anthropological perspective with a special focus on western medicine. Finkler.

473 [173] ANTHROPOLOGY OF THE BODY AND THE SUBJECT (ANTH 473) (3). Anthropological and historical studies of cultural constructions of bodily experience and subjectivity are reviewed, with emphasis on the genesis of the modern individual and cultural approaches to gender and sexuality.

484 [184] DISCOURSE AND DIALOGUE (ANTH 484) (LING 484) (3). Study of cultural variation in styles of speaking applied to collection of ethnographic data. Talk as responsive social action and its role in the constitution of ethnic and gender identities. Sawin.

485 [185] INTRODUCTION TO FOLKLORE (ANTH 485) (ENGL 485) (3). An introduction to the study of creativity and aesthetic expression in everyday life, considering both traditional genres and contemporary innovations in the material, verbal, and musical arts.

487 [186] FOLK NARRATIVE (ENGL 487) (3). The study of three genres of folk narrative (fairytale, personal narrative, and legend) and their distinctive roles in contemporary life.

490 [195] TOPICS IN FOLKLORE (3). Fall and spring. Staff.

495 [198] FIELD RESEARCH (3). Fall and spring. Staff.

496 [199] DIRECTED READING IN FOLKLORE (3). Fall and spring. Staff.


537 [137] GENDER AND PERFORMANCE (ANTH 537) (WMST 438) (3). A study of the ways in which individuals constitute themselves as gendered subjects in the contemporary context of economic and cultural globalization. Spring. Sawin.

550 [148] TRADITIONAL CRAFTSMANSHIP (3). An introduction to material folk culture, exploring the meanings that people bring to traditional arts and the artful creations with which they surround themselves (e.g., architecture, clothing, altars, tools, food).

560 [160] 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. W. Ferris.

562 [161] ORAL HISTORY AND PERFORMANCE (COMM 562) (HIST 562) (WMST 562) (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.

565 [165] RITUAL, THEATRE, AND PERFORMANCE IN EVERYDAY LIFE (COMM 565) (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 drama of cultural aesthetics.

571 [150] SOUTHERN MUSIC (HIST 571) (3). Explores the history of music in the American South from its roots to twentieth century musical forms, revealing how music serves as a window on the region's history and culture. Fall. W. Ferris.

585 [147] BRITISH AND AMERICAN FOLKSONG (ENGL 585) (3). Explores the forms, functions, and relationships of British and American folksongs, charting the emergence of Anglo- and African American vernacular musics and the dynamic processes of tradition, creation, innovation, and revival.

587 [187] FOLKLORE IN THE SOUTH (ENGL 587) (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.

589 [189] AFRICAN AMERICAN FOLKLORE (ENGL 589) (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, jazz, and folk beliefs. Fall. Harris.

610 [190] VERNACULAR TRADITIONS IN AFRICAN AMERICAN MUSIC (AFAM 610) (3). Explores performance traditions in African American music, tracing the music's development from African song through blues, jazz, gospel, and contemporary vernacular expression. Focuses on the ways in which musical traditions have been transmitted and adapted within African American communities. (Alternate years.) Fall. Hinman.

670 [174] INTRODUCTION TO ORAL HISTORY (HIST 670) (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 fieldwork. Fall.

675 [175] ETHNOGRAPHIC METHOD (ANTH 675) (3). Intensive study and practice of the core research methods of cultural and social anthropology. Staff.

684 [185] WOMEN IN FOLKLORE AND LITERATURE (ENGL 684) (WMST 684) (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.

Courses for Graduates

688 [288] OBSERVATION AND INTERPRETATION OF RELIGIOUS ACTION (ANTH 688) (RELI 688) (3). Prerequisite, permission of the instructor. Exercises (including field work) in learning to read the primary modes of public action in religious traditions e.g. sermons, testimonies, rituals, and prayers. Spring. Peacock.

690 [295] STUDIES IN FOLKLORE (3). Fall and spring. Staff.

790 [290] PUBLIC FOLKLORE (3). A graduate seminar addressing theory and practice in public sector cultural work. Focusing on public folklore, this course explores broad issues of representation, cultural politics, and cultural tourism. (Alternate years.) Fall. Hinman.

841 [241] PERFORMANCE ETHNOGRAPHY (COMM 841) (3). This seminar focuses on methods of ethnography and fieldwork among the Republic of Africa and practice informs methodological inquiries as well as the analysis of specific ethnographic texts and case studies.
842 [342] SEMINAR IN PERFORMANCE AND CULTURAL STUDIES
(COMM 842) (3). This course focuses on performance-related issues in the emergent field of cultural studies.

843 [343] SEMINAR IN PROBLEMS IN CONTEMPORARY PERFORMANCE THEORY (COMM 843) (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. Pollock, Long, Madison.

850 [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, and ideology. Fall. Sawin.


890 [390] SEMINAR IN SELECTED TOPICS. An irregularly offered graduate seminar exploring selected topics in the theory and practice of folklore.

891 [196] TOPICS IN FOLKLORE (3). An irregularly offered graduate seminar exploring selected topics in the theory and practice of folklore.

895 [395] SEMINAR IN FOLKLORE. An irregularly offered graduate seminar exploring selected topics in the theory and practice of folklore. Staff.

993 [393] MASTER'S THESIS (3-6). Research in a special field under the direction of staff members. Fall and spring.

CURRICULUM IN GENETICS AND MOLECULAR BIOLOGY

ROBERT DURONIO, Director

Professors
Steven L. Buchenheimer, Alterations to Cell-Cycle and Signal Transduction Pathways following Herpes Simplex Virus Infection
Albert B. Baldwin, Regulation of Gene Expression; Control of Oncogenesis and Apoptosis
Victoria Baurch, Molecular Genetics of Blood Vessel Formation in Mouse Models
Kerry S. Bloom, Mechanisms of Chromosome Segregation in Yeast; Chromosome and Spindle Dynamics
Janne G. Cannon, Bacterial Pathogenesis; Antigenic Variation in Pathogenic Bacteria
Stephen H. Clarke, Molecular Immunology; B-cell Differentiation and Tolerance; Autoimmunity
Adrienne D. Cox, Ras Family Oncogenes and Signaling; Cellular Radiation Response; Lipid Modification and Drug Development
Stephen T. Crews, Neurogenetics and Developmental Neuroscience; Cell Migration and Fusion; Brain Development and Behavior
Jeffery D. Dang, Plant Disease Resistance and Cell Death Control; Plant Genomics; Bacterial Pathogenesis and Genomics; Type III Secretion Systems
Channing J. D. Den, Oncogenes; Ras Superfamily Protein; Signal Transduction Beverley J. Eirede, Yeast Molecular Genetics; MAP-Kinase Activation Pathways; Regulation of Cell Differentiation
Rusann A. Farber, Cancer Genetics; Human Molecular Genetics; Somatic-Cell Genetics; Microsatellite Instability
Jeffrey A. Frehinger, Molecular Immunogenetics; Function of the Major Histocompatibility Complex in Virus Infection
Jack D. Griffith, HIV; Transcription; Electron Microscopy
Alan Jones, Arabidopsis; Hormone Perception; Regulation of Growth and Development; Programmed Cell Death

Ryszard Kofl, Antisense Oligonucleotides as Chemotherapeutic Agents; RNA Processing; RNA-Protein Interactions
Anthony LaMantia, Control of Gene Expression in the Developing and Adult Central Nervous System
Susan T. Lord, Fibrinogen Structure-Function Analysis; Fibrinogen in Vascular Disease; Modeling Cardiovascular Disease in Mice
Nobuyo Maeda, Genetics Modeling of Atherosclerosis in Mice
Terry Magnuson, Mammalian Genetics; Epigenetics; Genomics
Mark W Majesky, Molecular Basis of Coronary Vessel Development
William F. Marriott, Regulation of RNA Metabolism in Animal Cells
Steven W. Matson, Biochemistry and Genetics of DNA Helicases from E. coli and Yeast
Ann C. Marthayse, Genetics of Bacterial Adhesion to Plant Surfaces; Genetics and Biochemistry of Cellulose Synthesis
Deborah O'Brien, Molecular Regulation of Mammalian Spermatogenesis and Fertilization
Joseph S. Pagano, Infectious Diseases and Cancer; Regulation of Latency and Replication Genes of the Epstein-Barr Virus; Mechanisms of Antiviral Agents
Leslie V. Parse, Adhesion Receptors and Signaling in Platelets, Sickle Cells and Cancer
Mark Pfeifer, Cell Adhesion; Signal Transduction and Cancer
Daniel Pomp, Genetic Architecture of Complex Trait; Prediosition
Kathleen W. Rao, Human Cytogenetics; Somatic-Cell Genetics
R. Jude Samulski, Development of Virus-Based Delivery Systems for Use in Human Gene Therapy
Aziz Sancar, Structure and Function of DNA Repair Enzymes; Biological Clock
Gwendolyn B. Sancar, Regulation of DNA Damage; Stress-Inducible Genes in Eukaryotes
Oliver Smithies, Targeted Modification of Genes for Use in Gene Therapy
Patrick Sullivan, Complexity Traits in Humans; Psychiatric Genetics
Pharmacogenetics; Twin Studies; Schizophrenia; Major Depression; Nicotine Dependence
Ronald J. Swanstrom, Retroviruses; Molecular Biology of the AIDS Virus
Jenny H. Ting, Transcriptional Regulation of Eukaryotic Genes; Discovery of New Genes in Inflammation and Apoptosis; Functional Genomics and Application to Immunological and Neurological Diseases; Chemotherapy; Signal Transduction and Cell Death
Terry S. Van Dyke, Regulation of Cell Growth Control
Yue Xiong, Cancer Biology; Mammalian Cell Cycle; Tumor Suppressor Genes
Bernard E. Weissman, Tumor Suppressor Genes; Cancer Genetics

Associate Professors
Robert B. Bourret, Molecular Mechanisms of Signal Transduction in Bacteria
Dirk P. Dietzsch, Anti-Lymphoma Therapies
Bob Duronio, Genetics of Cell-Cycle Control during Drosophila Development
Bob Goldstein, Generation of Cell Diversity in Early Development of C. elegans
Sarah R. Grant, Plant-Pathogen Interactions
Joseph Keber, Molecular Genetic Analysis of Hormone Signaling in Arabidopsis
Beverly H. Koller, Generating Animal Models of Human Diseases
Patricia J. Pulkka, Molecular Mechanisms of Chromosome Pairing and Meiosis
Lilie L. Searls, RNA Processing Control in Drosophila; Developmental Genetics
Jeff J. Schelby, Genetics of Genome Instability in Drosophila
Jason W. Reed, Plant Development; Auxin signaling; Light Responses
Lishan Sui, Cell cycles during Normal and Pathogenic Hematopoiesis
David THREADGILL, Disease Susceptibility; Metagenes; Colon Cancer; Genetic Engineering; Microarrays; Gut Flora
Ellen R. Weiss, Regulation of G-Protein-Coupled Receptor Signal Transduction Pathways
Brent W. Weston, Molecular Genetics of Glycosyltransferases; Tumor Cell and Leukocyte Adhesion
Kirk Willhalm, Genetic Mapping; Neurodegenerative Diseases
Yi Zhang, Chromatin Dynamics; Gene Expression; Cancer
Assistant Professors
Shawn Ahmed, Telomere Replication and Germline Immortality in C. elegans
Miriam Braunstein, Microbial Genomics; Pathogenesis of Mycobacterium Tuberculosis, Protein Export
Jay Brennan, Neuronal Dendrite Development using Drosophila Genetics
Christina Butts, Experimental Evolution in Microorganisms
Kathleen Caron, Genetically Engineered Animal Models in the Study of Human Disease
Frank L. Conlon, Mesodermal Patterning and Heart Development, T-box Genes
Jeanette Gwen Cook, Regulation of DNA Replication in Mammalian Cells
Gregory P. Copenhagen, Regulation of Meiotic Recombination in Higher Eukaryotes
Blossom Damania, Viral Oncogenes and Transcription Factors Encoded by Kaposis Sarcoma-associated Herpesvirus
Eric T. Everett, Genetics of Acquired and Congenital Disorders of Craniofacial Development
Morgan Giddings, Computational Proteomics and Systems Biology
Mark Heise, Genetics of Arbovirus Virulence and Immune Evasion
Corbin D. Jones, Population Genetics and Evolution in Drosophila
Tal Kafri, HIV-1 Vectors for Gene Therapy and Functional Genomic Applications
Jason Lieb, Exploring Specificity and Function in Protein-Genome Interactions using DNA Microarrays
Sarah Liljebra, Cell Separation during Arabidopsis Flower Development
Karen L. Mohlke, Human Genetics and Genomics; Diabetes, Complex Diseases
Fernando Paredes-Manoel de Villela, Meiotic Drive; Chromosome Segregation: Non-Mendelian Genetics
Charles Pescovitz, Genomic and Molecular Classification of Human Tumors
Larsa Penny, Transcriptional Mechanisms that Maintain Neural Stem/Progenitor Cell Fate
Dale Rasmussen, V(D)J Recombination, DNA Double Strand Break Repair
W. Kimryn Rathmell, Genetics of Renal Cell Carcinoma
Steve Rogers, Cytoskeletal Dynamics and Function
Norman E. Sharpless, Tumor Suppressor Genes; Genetics of Cancer and Aging
Brian Strahl, Histone Modifications and Gene Regulation
Joan Taylor, Signaling Mechanisms that Regulate Growth and Development in the Cardiovascular System
Todd Vision, Genome Evolution and the Architecture of Complex Traits
Yanping Zhang, Genetics and Mechanisms of Cancer Cell Growth and Division

Adjunct Associate Professor
Michael A. Remick (40) Roles of Various DNA Repair in Meiosis

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 approaches to solving 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 thirteen departments in the School of Medicine, the School of Dentistry, and the College of Arts and Sciences. The faculty represent diverse research interests that use the tools of genetics, molecular biology, and biochemistry to address fundamental questions in the areas of cell cycle regulation, chromosome structure, development and disease models, DNA repair and recombination, genome stability, evolutionary genetics, genomics, human genetics, neurobiology, pathogens and immunity, signal transduction, transcription and gene regulation, and virology. 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 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 the Curriculum in Genetics and Molecular Biology through the Graduate School. The application consists of Graduate Record Examination (GRE) scores, transcripts of records, three letters of recommendation, and a statement of purpose, all submitted through the Web-based application system of the Graduate School. 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 Doctoral Dissertation; a written preliminary examination; an oral examination; and a dissertation), students in the Curriculum in Genetics and Molecular Biology must meet the following requirements: complete four didactic courses (three of which are required: GNET 621, GNET 631, and GNET 641, and one selected from the following: GNET 632, GNET 622, GNET 624, and one bioinformatics module), 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 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 and the Carolina Center for Genome Sciences. Students are required to rotate through at least three laboratories before choosing a thesis advisor. It is strongly recommended that students attend national meetings in order to better understand how their research fits with progress in their field.

Financial Aid

Stipends for predoctoral students are available from an NIH predoctoral training grant and from the University. Tuition, student fees, and graduate student health insurance are also covered by the training grant and the University.

Courses for Graduates and Advanced Undergraduates


505 [105] MOLECULAR BIOLOGY (BIOL 505) (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, Mannluff.
621 [112] PRINCIPLES OF GENETIC ANALYSIS I (BIOL 161) (4).
Prerequisite for undergraduates, BIOL 202; for graduate students, an undergraduate genetics course or permission of the instructor. This course covers basic genetic principles and how genetic analyses are used to address basic questions regarding the structure and function of cells and organisms. Fall. Duronio.

622 [113] PRINCIPLES OF GENETIC ANALYSIS IN MAMMALS (BIOL 622). (4). Prerequisite, GNET 621. This course emphasizes genetic processes that are unique to mammals and that are relevant to human health. Spring. Pardo-Manuel de Villena.

624 [160] DEVELOPMENTAL GENETICS (BIOL 624) (3). Prerequisites, BIOL 202 and 205, and permission of the instructor required for undergraduates. Genetic and molecular control of plant and animal development. Extensive reading from primary literature. Fall. Bautch, Reed.

631 [110] ADVANCED MOLECULAR BIOLOGY I (BIOL 631) (MCRO 631) (PHCO 631) (BIOL 631) (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. Griffiths, Ramsden, A. Sancar.

632 [111] ADVANCED MOLECULAR BIOLOGY II (BIOL 632) (MCRO 632) (PHCO 632) (BIOL 632) (3). Prerequisites for undergraduates, at least one undergraduate course in both biochemistry and genetics. The purpose of this course is to provide historical, basic, and current information about the flow and regulation of genetic information from DNA to RNA in a variety of biological systems. Three lecture hours a week. Spring. Baldwin, Srirah, Marzluff.

635 [125] CLINICAL AND COUNSELING ASPECTS OF HUMAN GENETICS (BIOL 429) (3). Prerequisites, BIOL 425 or GNET 654 and permission of the 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 is expected. Spring. Roche.

636 [150] ELEMENTS OF PROBABILITY AND STATISTICAL INFERENCE (BIOS 550) (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. Biostatistics Staff.

Courses for Graduates

623 [161] DEVELOPMENTAL GENETICS SEMINAR (1). Prerequisite, permission of the instructor. Presentations of current research or relevant papers from the literature on development by students will be followed by open forum discussion of relevant points, and critique of presentation skills. Two hours per week. Fall and spring. Bautch.

625 [270] SEMINAR IN GENETICS (BIOL 270) (2). Prerequisite, permission of the instructor. Two seminar hours per week. Fall and spring. Bautch, Maroni, Peifer, Pulkkinen, Searle, Sokolsky.

680 [280] MODELING HUMAN DISEASES IN MICE (1). Prerequisite, permission of the instructor. This course will provide an overview of the use of the mouse as an experimental model for determining factors, both genetic and environmental, that contribute to human diseases. One seminar hour a week. Spring. Keller.

701/702 [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 research of notables in the field of genetics. Fall and spring. Staff and invited guest lecturers.

703 [275] GENETICS SYSTEMS (BIOL 822) (1). Required of all candidates for the degree in genetics. A course to provide public lecture experience to advanced genetics students. Students present personal research seminars based on their indi-

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DEPARTMENT OF GEOGRAPHY

LAWRENCE E. BAND, Chair

Professors

Lawrence E. Band (21) Voit Gilmore Distinguished Professor. Geographic Information Systems, Hydroecology, Geomorphology

Stephen S. Birdsell (5) Cultural Landscapes, North America

Melinda S. Meade (10) Medical Geography, Population, and Southeast Asia


Peter J. Robison (9) Climatology, Climatic Impacts, Hydroclimatology

Stephen J. Walch (12) Remote Sensing, Geographic Information Systems, Physical Geography

Associate Professors

Altha J. Cravey (17) Latin America, Social

Martin Doyle (27) Hydro-Ecology, Geomorphology, and Environmental Policy

Michael Ersh (29) Medical Geography, Spatial Epidemiology, Health and Environment, Geographic Information Systems (GIS), Remote Sensing

John W. Florin (8) Population, Medical, Historical Anglo-America

Charles E. Konrad (16) Synoptic Climatology and Meteorology

Scott L. Kirsch (23) Historical and Political Geography; Science, Technology, and Environment

Aron Moody (18) GIS, Biogeography

Thomas M. Whitmore (13) Cultural Ecology, Latin America, Population

Assistant Professors

Basu Gokaraju (28) Urban, Cultural, and Feminist Geography; Social Theory, Globalization and Modernity; the Middle East and Southeast Asia

Conghe Song (24) GIS, Remote Sensing, Earth Systems Science

Wendy Wolford (25) Latin America, Social Movements

Adjunct Faculty

Richard Bilsborrow (Biostatistics), Demography, Development and the Environment, Environment and Society, Research Methods

Barbara Enwezor (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 Hills (Communication Studies), Place, Space and Landscape, Virtual Geographies; Space and Social and Political Identities
Kevin Hewison (Carolina Asia Center), Globalization and Social Change in
Southeast Asia
James H. Johnson Jr. (Kenan-Flagler Business School), Urban and Metropolitan
Competitiveness; Business Demographics; Sustainable Economic and
Community Development
Helena Mitasova (North Carolina State University), Geoinformation Science,
Modeling and Monitoring Landscape Processes, Sustainable Land Use
Management, Dynamic Cartography
Ronald Rindfuss (Sociology), Population and Environment, Family, Fertility
Michael J. Welch (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. Basle
Clyde E. Browning
John D. Eyre
Wilbert M. Gesler
Richard J. Kopec

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 on 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
cohesive foci—yet not mutually exclusive territories. Indeed, many students
and faculty work on projects that span more than one area. 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 Systems 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
is 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 anti-globalization 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 campus-wide 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. Many students also take advantage of the
government and private research facilities in Research Triangle Park.

Incoming graduate students are required to complete three core courses
(GEOG 702, 703, and 704) 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 occupies the top two floors of 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 geo-
graphic 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

404 [104] ATMOSPHERIC PROCESSES IN ENVIRONMENTAL SYSTEMS
(ENST 490) (4). Prerequisites, MATH 231; CHEM 102; PHYS 105 or PHYS
117; GEOG 253; or permission of the instructor. Principles of analysis of the
atmosphere are applied to the analysis of environmental phenomena. The link
between the atmosphere and other environmental compartments is explored
through case studies of environmental issues. Three lecture hours and one lab
hours a week. Robinson, Konrad.

410 [110] MODELING ENVIRONMENTAL SYSTEMS (3). Prerequisite,
GEOG 110 or equivalent. Use of systems theory and computer modeling to un-
derstand general issues in climate, vegetation, geomorphology, soils, and
hydrology crossing time and space scales and for linear and dynamic systems. Staff.
412 [112] SYNOPSIS METEOROLOGY (3). Prerequisite, GEOG 110 or 111. An analysis of synoptic weather patterns and the processes responsible for them. Climatological aspects of these weather patterns are emphasized. Konrad, Robinson.

414 [114] PHYSICAL CLIMATOLOGY (3). Prerequisite, GEOG 110 or 111. 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.

416 [116] APPLIED CLIMATOLOGY (3). Prerequisites, GEOG 412 or 414. Students investigate the ways climatic 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.


420 [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.

423 [123] SOCIAL GEOGRAPHY (3). A study of spatial components of current social problems such as poverty, race relations, environmental deterioration and pollution, and crime. Craven, Staff.

428 [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.


435 [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.

440 [140] EARTH SURFACE PROCESSES (GEOG 502) (3). Prerequisite, GEOG 110 or GEOG 111. 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.

441 [141] INTRODUCTION TO WATERSHED SYSTEMS (3). Prerequisite, GEOG 110. 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.

442 [142] FLUVIAL GEOMORPHOLOGY (3). An introduction to landforms and processes associated with flowing water at the earth’s surface. Course includes hydrology, sedimentology, theories of channel formation, and drainage basin evolution. Doyle.

444 [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. It includes local and extra-regional case studies. Moody.

445 [145] MEDICAL GEOGRAPHY (3). The human ecology of health is studied by analyzing the cultural/environmental interactions that lie behind world patterns of disease distribution, diffusion, and treatment, and the ways these patterns are being altered by development. Meade.

446 [146] GEOGRAPHY OF HEALTH CARE DELIVERY (3). This course covers basics, including personnel and facility distributions, accessibility, regionalization, and location/allocation modeling. Spatial analysis and GIS; and the cultural geography of health care, including humanist and political economic perspectives. Staff.


448 [148] TRANSLATIONAL GEOGRAPHIES OF MUSLIM SOCIETIES (INTS 448) (3). Examines new Muslim geographies that are created by transnational flows, connections, and imaginaries that cross national and regional boundaries across the Middle East, Southwest Asia, and beyond. Gökarıkçel.

450 [150] POPULATION GEOGRAPHY (3). A study of the spatial dimensions of population growth, density, and movement, and of the shifts in these patterns as they relate to changes in selected socioeconomic environmental and cultural phenomena. Florin, Meade, Whitmore.

452 [152] MOBILE GEOGRAPHIES: THE POLITICAL ECONOMY OF MIGRATION (3). This course explores the contemporary experience of migrants. Various theoretical approaches are introduced, with the emphasis on a political economy approach. Craven.

453 [153] POLITICAL GEOGRAPHY (PWAD 453) (3). The geography of politics is explored at the global, the nation-state, and the local scale in separate units, but the interconnections between these geographical scales are emphasized throughout. Kirsch, Craven.

454 [154] HISTORICAL GEOGRAPHY OF THE UNITED STATES (FOLK 454) (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.

457 [157] RURAL LATIN AMERICA: AGRICULTURE, ENVIRONMENT, AND NATURAL RESOURCES (3). Prerequisite, GEOG 259 or permission of the instructor. Explores a systems and cultural-ecological view of agriculture, environment, natural resource, and rural development issues in Latin America. Whitmore.

458 [158] URBAN LATIN AMERICA: POLITICS, ECONOMY, AND SOCIETY (3). Prerequisite, GEOG 259 or permission of the instructor. Examines contemporary issues in urban Latin America, including geographical concepts, political trajectories of individual countries, and urban-based activist social movements. Craven.

460 [160] GEOGRAPHIES OF ECONOMIC CHANGE (3). This course is designed to explore changing geographies of production and consumption in theory and practice. Wolford.

464 [164] EUROPE TODAY: TRANSNATIONALISM, GLOBALISMS, AND THE GEOGRAPHIES OF PAN-EUROPE (INTS 464) (3). A survey by topic and country of Europe west of Russia. Those features that made Europe a distinctive and important region today are emphasized. Pickles.

477 [177] INTRODUCTION TO REMOTE SENSING AND DIGITAL IMAGE PROCESSING (3). Prerequisite, GEOG 370 or equivalent. Emphasizes methods of data analysis that offer an automated approach to spatial and non-spatial data synthesis which combines a system of data capture, storage, management, retrieval, analysis, and display. Full. Moody, Song, Walsh.

491 [191] INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS (PLAN 491) (3). Prerequisite, GEOG 370 or equivalent. Emphasizes the spatial analysis and modeling capabilities of organizing data within a geographic information system. Moody, Song, Walsh.
577 [178] ADVANCED REMOTE SENSING (3). Prerequisite, GEOG 370, 477, or equivalent. Acquisition, processing, and analysis of satellite digital data for the mapping and characterization of land cover types. Moody, Song, Walsh.

591 [192] APPLIED GEOGRAPHIC INFORMATION SYSTEMS (PLAN 591) (3). Prerequisite, GEOG 477, 491, or equivalent. Applied issues in the use of geographic information systems in terrain analysis, medical geography, biophysical analysis, and population geography. Walsh, Moody, staff.

593 [193] GEOGRAPHIC INFORMATION SCIENCE PROGRAMMING (3). Prerequisites, GEOG 370 or GEOG 491. This course will teach students the elements of GIS software development using major GIS platforms. Students will modularly build a series of applications through the term, culminating in an integrated GIS applications program. Band, Walsh, Song, Liang.

594 [194] GLOBAL POSITIONING SYSTEMS AND APPLICATIONS (3). Prerequisite, GEOG 370. Global positioning systems (GPS) fundamental theory, application design, post processing, integration of GPS data into GIS and GPS application examples (such as public health, business, etc.) will be introduced. Band, Liang, staff.

595 [195] ECOLOGICAL MODELING (3). Prerequisites: STAT 101 and BIOL 561 or equivalents, permission of the instructor. This course focuses on modeling terrestrial forest ecosystem processes, including population dynamics, energy, water, nutrients, and carbon flow through the ecosystem. Song.

Courses for Graduates


703 [203] 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.

704 [204] COMMUNICATING GEOGRAPHY (1). This informal seminar introduces new students to departmental faculty and resources outside the department. Whitmore.


710 [210] ADVANCED PHYSICAL GEOGRAPHY - BIOGEOSCIENCE (3). Examination of the major processes controlling environmental cycling of material 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.

711 [211] ADVANCED PHYSICAL GEOGRAPHY - HYDROCLIMATOLOGY AND BIOClimATOLOGY (3). Examination of topics focused on the atmospheric and the 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.

715 [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 landuse/landcover dynamics and spatial digital technologies for linking landscape form and function. Walsh.

720 [220] CULTURAL AND POLITICAL ECOLOGY (3). This course examines the foundations and current literature on cultural and political ecology. Focus is given to: the appropriation of "Nature"; degradation and deforestation; conservation; famine; post-colonial peasants; resistance; Indigeneity, and property, land distribution, and governmentality. Wolford.

760 [260] GEOGRAPHIES OF ECONOMIC CHANGE (3). This course is designed to explore changing geographies of production and consumption in theory and practice. Wolford.

790 [290] SPATIAL ANALYSIS AND COMPUTER MODELING (3). This course introduces students to spatial analysis techniques involving points, lines, areas, surfaces, and non-metric spaces, as well as programming basic geographic models on microcomputers. Staff.

Seminars for Graduates

801 [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.

802 [302] RESEARCH SEMINAR IN GEOGRAPHIC INFORMATION SCIENCES (3). An in-depth seminar devoted to contemporary faculty research topics in geographic information sciences. Topics and instructors vary. Staff.

803 [303] RESEARCH SEMINAR IN NATURE-SOCIETY STUDIES AND HUMAN-EVIRONMENT 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.

804 [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.

805 [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.

811 [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.

812 [312] SEMINAR/READINGS IN GEOGRAPHIC INFORMATION SCIENCES (3). An in-depth seminar devoted to contemporary readings in geographic information sciences. Topics and instructors vary. Staff.


814 [314] SEMINAR/READINGS IN SOCIAL GEOGRAPHY (3). An in-depth seminar devoted to contemporary readings in social geography. Topics and instructors vary. Staff.

815 [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.

Special Work, Theses, and Dissertations

900 [299] SPECIAL WORK IN GEOGRAPHY (2 or more). Prerequisites, two courses in the one hundred bracket, or permission of the instructor. (On demand.) Staff.

993 [393] MASTER'S THESIS (3 or more). Fall or spring. Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Members of the graduate faculty.
DEPARTMENT OF GEOLOGICAL SCIENCES

LARRY K. BENNINGER, Chair

Professors
John M. Baer Jr. (24) Physical Oceanography
Larry K. Benninger (17) Low-Temperature Geochemistry
Joseph G. Carter (15) Paleoecology, Invertebrate Paleontology
Paul D. Fulkner (4) Isotope Geochemistry
Allen F. Glazer (20) Igneous Petrology, Tectonics
Christopher S. Martin (7) Chemical Oceanography
Jose A. Rial (26) Geophysics, Seismology

Associate Professors
Louis R. Bartek (36) Sedimentology, Stratigraphy, Marine Geology
Drew S. Coleman (38) Isotope Geochemistry, Geochronology
Jonathan M. Lees (37) Seismology, Geophysical Inverse Theory
Kevin G. Stewert (27) Structural Geology

Assistant Professors
Stephen R. Meyers (1) Paleoclimate, Sedimentary Geochemistry, Stratigraphy,
Geostatistics
Michael E. Oskin (40) Process Geomorphology, Neotectonics
Donna M. Surje (41) Paleoclimatology, Paleoecology, Low-Temperature Geochemistry

Adjunct Appointments
Dennis LaPoint (1) Economic Geology

Professors Emeriti
John M. Dennison
A. Conrad Neumann
John J. W. Rogers
Joseph St. Jean Jr.
Daniel A. Tettori

The Department of Geological Sciences offers programs leading to the MS and PhD degrees in geological sciences. A broad background is offered in most major areas of geoscience, with particular emphasis on isotope geochemistry, geochronology, seismicity, volcanology, igneous petrology, marine geology, low-temperature geochemistry, paleoecology, paleoclimatology, paleoceanography, paleontology, paleoecology, sequence stratigraphy, structural geology, and tectonics.

Admission and General Degree Requirements

Students admitted to pursue a graduate degree in the Department of Geological Sciences normally are expected to have an undergraduate degree in traditional geology, geochemistry, geophysics, biology, chemistry, mathematics, physics, or other related interdisciplinary fields. All applicants must take the Graduate Record Examination (GRE). All foreign students whose native language is not English also must take the Test of English as a Foreign Language (TOEFL) examination.

Course requirements for incoming students will be determined by individual graduate committees, often in consultation with the director of graduate studies. Specific requirements are varied to meet the needs and career objectives of the individual.

Master of Science

Requirements for the Master of Science degree are: thirty semester hours (six of which may be credit for thesis); a written comprehensive examination taken after most of the course work has been completed; a thesis; and a final oral examination in defense of the thesis.

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-isotope ratio mass spectrometer; ICP mass spectrometer and electron microprobe (at Duke University); chip sonar and side-scan sonar imaging systems; Landmark Graphics Geological Interpretation System; seismic reflection system; grain-size analysis equipment; core x-radiograph; microsampling system with epifluorescence capabilities. The department utilizes a variety of computing resources, including networked Windows, Macintosh, LINUX, and UNIX workstations. Campus-wide supercomputer clusters are available through the North Carolina Supercomputing Center. UNC-Chapel Hill and Duke University jointly operate the R/V Cape Hatteras, 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 $12,000-$13,500 per academic year (2005-2006 stipends) are available to graduate students. In addition, all graduate students in good standing receive a summer research fellowship ($5,000-$6,000 in 2005-2006) from a departmental endowment.

The department nominates one or two students to be considered by The Graduate School for non-service fellowships; no additional application 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


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 103. Fall, spring. Staff.
410 [111] EARTH PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 410) (MAC 410) (4). Prerequisites, MATH 231, CHEM 102, PHYS 105 or 117, GEOL 111 or 213, 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 two lab hours a week. (On demand.) Bennigsen, Band.

411 [112] OCEANIC PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 411) (MAC 411) (4). Prerequisites, MATH 231, BIOL 101, CHEM 102, PHYS 105 or 117, ENST 222, or permission of the instructor. Principles of analysis of the ocean, 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.

413 [137] FIELD PALEONTOLOGY (4). Prerequisites, GEOL 101, 159, 109 or 111 and GEOL 402 or 478, 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 hours and two laboratory hours a week. Fall or spring. (Alternate years) Carter.

415 [116] ENVIRONMENTAL SYSTEMS MODELING (ENVR 461) (ENST 415) (MAC 415) (3) Prerequisites, MATH 383, PHYS 105 or 117 (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, Fall. Werner.

417 [138] GEOMORPHOLOGY (3). Prerequisite, GEOL 101 or 111, MATH 231, or permission of the instructor. Introduction to process geomorphology with emphasis on quantitative interpretation of weathering, hillslope, fluvial, glacial, and eolian processes from topography and landscapes. The origin of landforms. Includes those formed by weathering, mass wasting, streams, dissolution of limestone, coastal processes, glaciation, and wind. Fall. (Alternate years.) Oskin.

421 [102] ARCHAEOLOGICAL GEOLOGY (ANTH 421) (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.


430 [125] COASTAL SEDIMENTARY ENVIRONMENTS (MAC 430) (3). Prerequisite, GEOL 402. 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. (On demand.) Fall. Staff.

431 [133] MICROPALOEONTOLOGY (MAC 431) (4). Prerequisite, GEOL 478, MAC 440, or permission of instructor. An in-depth study of the biostratigraphy, paleoecology, and taxonomy of various microfossil groups (i.e., Foraminifera, ostracodes, conodonts, coelocarps, Radiolaria, diatoms, acritarchs, dinoflagellates, etc.) dependent upon individual student objectives. Three lecture and three laboratory hours a week.

432 [134] PALEOClimATOLOGY (3). Prerequisite, GEOL 402 or permission of the instructor. Introduction to mechanisms that drive climate. Examination of past climate reconstructions using ecological and geochemical proxies. Utility of computer models to reconstruct past climates and predict future climate change. Emphasis placed on the late Quaternary. Fall. (Alternate years) Meyer, Suage.

433 [117] PALEOCEANOGRAPHY (3). Prerequisite, GEOL 402 or 503, or permission of the instructor. Origin and distribution of pelagic sediments. Review of the major Mesozoic and Cenozoic events in the world's oceans. Glacial/interglacial changes in the ocean/atmosphere system. Spring (alternate years), fall. Meyer, Suage.

434 [123] MARINE CARBONATE ENVIRONMENTS (MAC 123) (4). Prerequisites, permission of instructor. Chemical and biological origins of calcium carbonate, skeletal structure, and chemo-mineralogy; 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, the Bahamas, or Bermuda. Lab exercises; research report. Spring. (Alternate years.) Staff.

436 [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. Staff.

440 [113] PRINCIPLES OF SEISMOLOGY (3). Prerequisites, GEOL 101, 213, 401; MATH 231, or permission of instructor. Descriptive account of global seismology, earthquake distribution, and focal mechanics. Principles of geometrical optics and applications to imaging the Earth's interior. Principles of seismic prospecting of hydrocarbon and geothermal reservoirs.

450 [115] BIOGEOCHEMICAL PROCESSES (ENST 450) (4). Prerequisites, MATH 231, BIOL 101, CHEM 251 or 261, PHYS 105 or 117, GEOL 111 or 213, 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 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. Staff.

456 [157] PROBLEMS IN VERTEBRATE EVOLUTION (BIOL 456) (3). Prerequisite, BIOL 276 or permission of 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.

478 [132] INVERTEBRATE PALEONTOLOGY (BIOL 478) (4-5). Prerequisite, GEOL 159 or BIOL 101, or permission of the instructor. Study of major invertebrate phyla in the geologic record. Introduction to principles, methods of analysis, and major controversies within paleontology. Examination of the fossil record and its application to problems in evolutionary biology, paleoecology, palaeoclimatology, and general Earth history. 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. Spring (alternate years), fall. Catter, Suage.

480 [141] MODELING OF MARINE AND EARTH SYSTEMS (ENVR 480) (MAC 480) (1-3). Prerequisites, MATH 232 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, Rial.

483 [119] GEOLOGICAL AND OCEANOGRAPHIC APPLICATIONS OF GEOGRAPHICAL INFORMATION SYSTEMS (MAC 483) (4). Prerequisites, four natural science courses or permission of the instructor. Focus is on applying
GIS concepts and techniques to mining and petroleum geology, resource assessment, hydrogeology, coastal and marine geology, physical oceanography, engineering geology, and a geological perspective on land use. Spring. Staff.

501 [118] GEOLOGICAL RESEARCH TECHNIQUES (2). Prerequisite, permission of the instructor. An introduction to methods of obtaining, analyzing, and presenting geological, geochemical, geophysical, and/or paleontological data. Fall or spring. Staff.

502 [147] EARTH SURFACE PROCESSES (GEOG 440) (3). Prerequisite, GEOG 110 or GEOG 101. 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.

503 [188] GEOLOGICAL OCEANOGRAPHY (MASC 503) (4). Prerequisites, GEOG 101 or 111, or permission of the instructor. Ocean basin origin, 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. Staff.

504 [173] TOPICS IN PETROLOGY (4). Prerequisite, GEOG 404. 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.

505 [105] CHEMICAL OCEANOGRAPHY (ENV R 505) (MASC 505) (4). Prerequisites, one semester of physical chemistry or ENV R 419 or CHEM 480, 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, Arnosti, Alperin.

506 [106] PHYSICAL OCEANOGRAPHY (MASC 506) (4). Prerequisites, MATH 231, 232, PHYS 104, 105, 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.

508 [163] APPLIED HYDROLOGY (3). Prerequisites, GEOG 101 or 111, MATH 231, PHYS 105, 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. (On demand) Staff.

509 [165] GROUNDWATER (3). Prerequisites, GEOG 101, 105, 109, or 111, MATH 102, MATH 231, PHYS 104, 116, or permission of the instructor. Introduction to physics, chemistry, and geology of groundwater. Fall. (Alternate years) Benninger.

510 [164] GEOCHEMISTRY OF NATURAL WATERS (3). Prerequisites, GEOG 101, 105, 109, or 111, MATH 102, MATH 231, or permission of the instructor. Survey of processes affecting the compositions of streams, lakes, the ocean, and shallow groundwaters. Spring. (Alternate years) Benninger.

511 [166] STABLE ISOTOPEs IN THE ENVIRONMENT (ENST 513) (1). Prerequisite, CHEM 102. Introduction to the theory, methods, and applications of stable isotopes to environmental problems. Primary focus will be on the origin, natural abundance, and fractionation of carbon, hydrogen, oxygen, and nitrogen isotopes. Fall. (Alternate years) Surge.

512 [145] GEOCHEMISTRY (MASC 553) (3). Prerequisites, GEOG 101 or 111, CHEM 102, or permission of the instructor. Introduction to the application of chemical principles to geological problems, with emphasis on isotopic methods. Spring. (Alternate years) Benninger.

514 [139] RIVER SYSTEMS OF EAST COAST NORTH AMERICA (3). Prerequisites, GEOG 101 or 111; GEOG 211 or 417, 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, geologic development, hydrology, utilization history, ecology, and planning.

515 [142] INTRODUCTION TO GEOPHYSICS (3). Introduction to the fundamentals of global geophysics: gravity, seismology, magnetics, heat and plate tectonics. Both shallow and deep processes are considered. Emphasis is aimed at problem solving by applying concepts. Fall. (Alternate years) Lees, Rial.


517 [136] SEQUENCE AND SEISMIC STRATIGRAPHY (3). Prerequisite, GEOG 402. 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. Barteck.

518 [151] GEODYNAMICS (3). Prerequisites, GEOG 101 or 111, MATH 232, PHYS 104, CHEM 102. Interior of the earth deduced from seismology, gravity, heat flow, magnetics; geophysics of continents and ocean basins; age of earth. Spring. (Alternate years) Staff.

519 [150] HISTORY OF THE EARTH (3). Prerequisites, GEOG 101, 105, 109, or 111 and 301, 404, 406, 407, or 410, 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. (Alternate years) Staff.

520 [152] DATA ANALYSIS IN THE EARTH SCIENCES (3). Prerequisites, an introductory geological science course, Calculus I and II, or permission of the 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.

522 [154] PHYSICAL VOLCANOLOGY (3). Prerequisites, introductory courses in geology and physics. Course is aimed at understanding the physical properties and processes controlling volcanism and magma transport. Topics covered include volcanic processes from the formation of magma in the upper mantle to violent eruption at the surface. Emphasis is placed on dynamic processes and underlying mechanisms.

550 [140] BIOGEOCHEMICAL CYCLING (MASC 550) (3). Prerequisites, GEOG 512, 555, or 510, or ENV R 421 or MASC 505 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. Martens, Alperin, Arnosti.

552 [144] ORGANIC GEOCHEMISTRY (MASC 552) (ENV R 552) (3). Prerequisites, MASC 505 or CHEM 261 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.

555 [197] PALEOBOTANY (BIOL 555) (3). Prerequisites, BIOL 101-101L 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). Genzel.

560 [181] FLUID DYNAMICS (ENV R 452) (MASC 560) (PHYS 660) (3). Prerequisite. PHYS 301 or permission of the instructor. The physical properties of
fluids, kinematics, governing equations, viscous incompressible flow, vorricity dynamics, boundary layers, irrotational incompressible flow. Fall. Shay.

563 [143] DESCRIPTIVE PHYSICAL OCEANOGRAPHY (MASC 563) (3). Prerequisites, MASC 505 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.) Staff.

601 [128], 602 [129] SUMMER FIELD COURSES IN GEOLOGY (6). Prerequisites, GEOL 301, 404, 402, 401. 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.

608 [182] ADVANCED STRUCTURAL GEOLOGY (ENST 608) (3). Prerequisites, GEOL 401, PHYS 104 or 116. Theoretical and experimental methods in structural geology; strain analysis; mechanical behavior of rocks. Spring. (Alternate years.) Stewart.

609 [164] ADVANCED FIELD SEMINAR IN GEOLOGY (1-4). Prerequisites, GEOL 601 and 602 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, Coleman, Stewart, Osokin.

655 [146] PHYSICAL GEOCHEMISTRY (4). Prerequisites, CHEM 102, MATH 232, 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. (On demand.) Fall. (Alternate years.) Benninger.

Courses for Graduates

700 [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.

701 [301] SEMINAR (1 or more). (Offered as needed.) Staff.

703 [202] SEDIMENTARY GEOLOGY I (3). Prerequisites, GEOL 402 or equivalent, or permission of the instructor. Stratigraphic, sedi­men­tology, geochemical, petrologic, and paleontologic principles will be summarized. Emphasis is placed on both the techniques used in sedimentary geology and on the characteristics and processes that distinguish sedimentary environments. (On demand.) Fall. Staff.

704 [203] SEDIMENTARY GEOLOGY II (3). Prerequisite, GEOL 703. Continuation of GEOL 703. Spring. Staff.


709 [225] CLASTIC DEPOSITIONAL SYSTEMS: PROCESSES AND PRODUCTS (3). Prerequisite, GEOL 402. 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. Bartek.

711 [246] ADVANCED MINERALOGY (3).


804 [264] ADVANCED IGNEOUS PETROLOGY (4).

805 [266] IGNEOUS GEOCHEMISTRY (4).

806 [265] METAMORPHIC PETROLOGY (4).


809 [280] TECTONOPHYSICS (3). Prerequisites, MATH 83, PHYS 201, 211, or permission of the instructor. Fundamental physical processes necessary for an understanding of plate tectonics: stress and strain in solids; elasticity and Bureaux; heat transfer; gravity; mantle rheology and convection. Fall. (Alternate years.) Lees, Rial.

851 [302] SEMINAR IN STRATIGRAPHY (1 or more). Offered as needed. Staff.

852 [306] SEMINAR IN PALEOECOLOGY (1 or more). Offered as needed. Staff.

853 [310] SEMINAR IN PALEONTOLOGY (1 or more). Offered as needed. Staff.

854 [318] SEMINAR IN CONTINENTAL MARGINS (1 or more). Offered as needed. Staff.

855 [320] SEMINAR IN SEDIMENTOLOGY (1 or more). Offered as needed. Staff.

856 [357] SEMINAR IN ISOTOPE GEOLOGY (1 or more). Offered as needed. Staff.

857 [345] SEMINAR IN GEOCHEMISTRY (1 or more). Offered as needed. Staff.

858 [360] SEMINAR IN PETROLOGY (1 or more). Offered as needed. Staff.

859 [372] SEMINAR IN ECONOMIC GEOLOGY (1 or more). Offered as needed. Staff.

860 [376] SEMINAR IN VOLCANOLOGY (3). All aspects of volcanism will be covered including seismology, geochemistry, deep structure, volcanic products and hazards. Readings of original papers will be stressed. Spring. Lees.

861 [380] SEMINAR IN GEOPHYSICS (1 or more). Offered as needed. Rial.

862 [381] SEMINAR IN SEISMOLOGY (1 or more). Offered as needed. Rial.

863 [382] SEMINAR IN STRUCTURAL GEOLOGY (1 or more). Offered as needed. Stewart.

864 [383] SEMINAR IN TECTONICS (1 or more). Offered as needed. Staff.

Research Courses

900 [392] RESEARCH IN GEOLOGY (3 or more).

992 [393] MASTER’S THESIS (Var.; minimum 3).

994 [394] DOCTORAL DISSERTATION (Var.; minimum 3).
DEPARTMENT OF GERMANIC LANGUAGES
AND LITERATURES

CLAYTON KOELB, Chair

Professors
Jonathan Hess (3) Eighteenth-Century Studies, German-Jewish Cultural History, Aesthetics and Literary Theory, Philosophy and Literature
Clayton Knebl (4) Modern Literature (Thomas Mann, Franz Kafka), Literary Theory, Philosophy and Aesthetics, Comparative Literature
Alice A. Kunzlar (5) Romanticism, Cinema Studies, Gender and Sexuality Studies, Comparative Literature
Siegfried Mews (7) Nineteenth- and Twentieth-Century Literature (Bertolt Brecht, Günter Grass, etc.), Literature and Politics, Comparative Literature
David Pike (8) Twentieth-Century Literature, East German and Soviet Culture and Politics
Paul T. Robge (9) Historical Linguistics, Older Germanic Dialects, Comparative Germanic Grammar, Pidgins and Creoles, Afrikaans, Language, Ethnicity, and Politics

Associate Professor
Kathryn Starkey (10) Medieval Literature, Visuality and Textuality, Gender and Sexuality, Historical Linguistics, Older Germanic Dialects

Assistant Professor
Richard Langston (6) Postwar and Contemporary Literature, Avant-Garde Studies, Popular Culture and Literature, Literary and Cultural Theory

Associated Faculty
Helga Bister (2) Dialectology, Contact and Sociolinguistics, Applied Linguistics
Tanya Kastell (15)
Dai Thorntou (17) Postwar German and Austrian Literature, Expressionism, Neue Sachlichkeit, Golden Age and Twentieth-Century Dutch Literature, Holocaust Studies, Jewish Literature in the Diaspora

Professors Emeriti
Walter K. Francke
Richard H. Lawson
Christoph E. Schweitzer
Sidney R. Smith
Peter W. Tax

The Department of Germanic Languages and Literatures 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, Linguistics, and Communication Studies). Students regularly take advantage of courses taught in literary and cultural theory in other departments, and the faculty also encourages students to take courses at nearby Duke University. 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 700).

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 and Literatures

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 700 and 993 (MA thesis credit), as well as GERM 501 (Structure of German) and GERM 502 (Middle High German). Either 501 or 502 will be offered every year, on a rotating basis. (In special circumstances, where scheduling makes it difficult for both of these courses to be taken in the MA curriculum, students may, in consultation with the director of graduate studies, either substitute another course for 501 or 502 or take either 501 or 502 during the first year of PhD coursework.) Ordinarily it is expected that MA students will write a minimum of three course papers during the first year.

Students concentrating in German literature and culture are also required to take GERM 615 and 616 and 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 615-616 reading lists as the student and advisor deem suitable. The GERM 615-616 syllabi are included in the "Guide to Graduate Studies in German."

Courses numbered at the 400 level may count toward the MA degree only with special approval of the director of graduate studies.

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 and Literatures

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) with an additional six hours of dissertation credit (GERM 994). For the most part, PhD students pursue individualized programs of study.

Students concentrating in German literature and culture elect courses in consultation with their advisor 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 and culture. 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.

Courses numbered at the 400 level may count toward the MA degree only with special approval of the director of graduate studies.

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 700 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 another language. Students normally take the PhD examination at the end of the second year of doctoral studies. 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 a 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 (e.g., 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 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 Janta Collection of Baroque Literature and German-American). 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

601, 602 [101X, 102X] ELEMENTARY GERMAN FOR GRADUATE STUDENTS (3 each). Designed as preparation for the reading knowledge examination for higher degrees. Passing of the examination at the end of 602 certifies that this requirement has been satisfied, although the course does not count as graduate credit. Three hours a week. (NOTE: 601 or permission of instructor is required as a prerequisite to 602.) Fall and spring.

500 [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.

501 [165] THE STRUCTURE OF MODERN GERMAN (3). Introduction to the formal analysis of German grammar (phonology, morphophonemics, prosodies, morphology, syntax) within the framework of generative grammar.

502 [171] MIDDLE HIGH GERMAN (3). Introduction to medieval German language and literature.

505 [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.)

508 [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.)

511 [275] OLD SAXON (3). Reading and linguistic study of biblical texts (Heiland, Genesis) in Old Saxon, with study of phonology, morphology, and syntax; comparison with Old English, Old High German, and other Germanic dialects. (On demand.)

514 [260] OLD NORSE I (OLD ICELANDIC) I (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.)

515 [261] OLD NORSE II (OLD ICELANDIC) II (3). Continuation of Old Norse I. (On demand.)

517 [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.)


521 [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).

542 [172] PIDGINS AND CREOLES (ANTH 542) (LING 542) (3). LING 101 or 101H or equivalent, or permission of instructor. Examination of the linguistic features of pidgin and creole languages, the sociolinguistic context of their development, and their import for current theoretical issues (acquisition, universals, language change).

Courses with Credit for Graduate Students

545 [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.

549 [285] TOPICS IN GERMANIC LINGUISTICS (3). Prerequisites, GER 301, 302, and 303, or equivalent or permission of instructor.

605 [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.

Courses in Dutch for Graduates and Advanced Undergraduates

DTC 402 [105] ELEMENTARY DUTCH (3). Rapid introduction to modern Dutch with emphasis on all fundamental components of communication.
DTCH 403 [106] INTERMEDIATE DUTCH (3). Focuses on increased skills in speaking, listening, reading, global comprehension and communication. Emphasis on reading and discussion of longer texts.

DTCH 404 [107] ADVANCED INTERMEDIATE DUTCH (3). Aims to increase proficiency in language skills (reading, speaking, and writing) and is constructed around a series of themes meant to introduce students to Dutch society, culture, and history.

Literature and Culture Courses for Graduates and Advanced Undergraduates

*A Courses numbered 620-689 may be taken for three credit hours (final examination required) or six credit hours if taken on a pass/fail basis. *B Required of all teaching assistants.

615 [111] HISTORY OF GERMAN LITERATURE I (3). 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.

616 [112] HISTORY OF GERMAN LITERATURE II (3). 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.

625 [115] EARLY MODERN LITERATURE (3). German literature of the fifteenth, sixteenth, and seventeenth centuries. Close readings, lectures, and discussions of representative texts.

630 [120] EIGHTEENTH-CENTURY LITERATURE (3). German literature in the Age of Enlightenment. Close readings, lectures, and discussions of representative texts.

640 [125] EARLY NINETEENTH-CENTURY LITERATURE (3). German literature of the Romantic Period. Close readings, lectures, and discussions of representative texts.

645 [130] LATER NINETEENTH-CENTURY LITERATURE (3). The literature of Realism, Naturalism, and related movements. Close readings, lectures, and discussions of representative texts.

650 [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.

655 [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.

Courses for Graduates

700 [205] TEACHING METHODS AND MATERIALS (3). For prospective teachers of German. Required of all teaching assistants. Fall.

703 [206] ADVANCED TOPICS IN FOREIGN LANGUAGE PEDAGOGY (3). Prerequisite, GERM 700. This seminar 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.

705 [115] ESSAY COURSE (1). Corequisite, German Department course numbered 620-689. Courses numbered 620-689 may be taken in conjunction with GERM 705 for one additional credit hour. Requires a term paper. Available to German Department graduate students only. Fall or spring.

820 [210] TOPICS IN MEDIEVAL LITERATURE (3).

825 [215] TOPICS IN EARLY MODERN LITERATURE (3).

830 [220] TOPICS IN EIGHTEENTH-CENTURY LITERATURE (3).

840 [225] TOPICS IN EARLY NINETEENTH-CENTURY LITERATURE (3).

845 [230] TOPICS IN LATER NINETEENTH-CENTURY LITERATURE (3).

850 [235] TOPICS IN EARLY TWENTIETH-CENTURY LITERATURE (3).

855 [240] TOPICS IN LATER TWENTIETH-CENTURY LITERATURE (3).

860 [250] TOPICS IN AESTHETICS AND CRITICISM (3).

865 [245] TOPICS IN GERMAN CULTURAL STUDIES (3).

870 [246] TOPICS IN GENDER STUDIES (3).

875 [247] TOPICS IN GERMAN JEWISH STUDIES (3).

880 [248] TOPICS IN GERMAN CINEMA (3).

896 [299] INDEPENDENT READINGS (Var). Prerequisite, permission of the instructor and the director of graduate studies. Special readings and research in a selected field or topic outside the scope of current course offerings.

980 [345] SEMINAR IN GERMAN LITERATURE (3).

985 [361] SEMINAR IN GERMANIC LINGUISTICS (3).

993 [393] MASTER'S THESIS (Var).

994 [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. Ammon, 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. Dellinget, Legal Issues in Health Care
Robert L. Farb, Criminal Law and Procedure
Joseph S. Ferrer, Property Tax Law; Secretary of the Faculty
Milton S. Hecht Jr., Environmental Law
Robert P. Joyce, Education Law
Ben F. Leeb Jr., Criminal Law
Laurie L. Mestrov, 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. Thordarson, Associate Dean for Programs
A. John Vogt, Governmental Finance and Accounting
Gordon P. Whisner, Public Administration
Serve as city and county managers, budget and finance directors, personnel directors, other department heads, and professional staff. In state governments, 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 on the Web 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;
• good verbal and quantitative scores on the Graduate Record Examination (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;
• an oral interview with the MPA Admissions Committee.

All admissions decisions are made during the spring for fall semester matriculation. Applicants are encouraged to meet the application deadlines of The Graduate School. However, the MPA program continues to accept applications through February 1. After a preliminary screening of applications, notifications are made concerning the required 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 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 Not-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

Government (GOVT)

660 [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.

661 [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.

662 [162] INFORMATION TECHNOLOGY PROJECT MANAGEMENT AND LEADERSHIP (3). Examines the public sector environment as it relates to information technology development. Special attention focused on the complex environment and its influence on information technology based solutions. Fall/Spring. Brown.

663 [163] PUBLIC EXECUTIVE LEADERSHIP ACADEMY (6). The Public Executive Leadership Academy is designed for North Carolina city and county managers to understand oneself as a leader and to prepare the organization to work with others in improving the quality of life within the community. Fall. Stenberg.

664 [164] CHIEF INFORMATION OFFICER CERTIFICATION PROGRAM (5). The CIO Certification Program is designed for chief information officers of local governments in North Carolina. The course lays the foundation for addressing the most critical issues facing IT leadership in local government and equips leaders with tools to manage and improve their organizational assets. Fall. Scheln.

Public Administration (PUBA)

710 [210] PUBLIC ORGANIZATION THEORY AND BEHAVIOR (3). Exposition, comparison, and case-based application(s) of basic models of organizations, with emphasis on public sector entities. Fall. Whitaker.

711 [211] PUBLIC MANAGEMENT AND LEADERSHIP (3). Prerequisite, PUBA 710. Development of administrators' skills in working with others to accomplish organization goals. Conceptual and experiential models of learning used to examine a variety of administrative behaviors. Spring. Whitaker.

719 [212] INTRODUCTORY POLICY EVALUATION METHODS (3). The application of statistical methods to problems of evaluation of public programs and problems facing public managers. Theory and basic techniques up to an introduction of linear regression analysis. Fall. Staff.

720 [237] METHODS FOR POLICY ANALYSIS AND EVALUATION (POLI 725) (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. Unich.

721 [234] PROFESSIONAL COMMUNICATIONS (3). Grounds students in the fundamental techniques of writing and oral presentation in a range of formats suited to public service. Fall. Bizzell, Williams.

722 [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.

723 [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.


731 [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. Rivenbark.

740 [205] PUBLIC POLICY ANALYSIS (POLI 718) (3). The role of expertise in public discourse; the place of values in policy analysis; summarizing preferences, benefits and costs; policy models; policy expertise and democratic political systems. Fall. Whisman.


745 [217] MPA PROFESSIONAL DEVELOPMENT SEMINAR I (2). Integration of learnings from MPA students' professional field experience ("internship") through site visits, conferences, and seminars. Fall. Ammons.

746 [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.

749 [213] MANAGING PUBLIC POLICY (POLI 720) (3). Prerequisites, POLI 210, 211, 212, 214, 226. The role(s), function(s), and strategy of public administrators in formulating, 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.

751 [225] CITY AND COUNTY MANAGEMENT (3). Nature of city or county manager's job: expectations of elected body, staff, public and professional peers. Examines contemporary issues in departmental operations that have significant effect on how manager's performance is perceived. Fall. Ammons, Horton.

752 [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.

756 [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.

757 [702] FINANCIAL MANAGEMENT OF NONPROFIT ORGANIZATIONS (SOWO 885) (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.
758 [227] NAVIGATING NONPROFIT-LOCAL GOVERNMENT RELATIONSHIPS (1-3). This course is designed for graduate students who are seeking professional positions in local government or nonprofits. The overall objectives are to exchange information about issues of mutual concern to both nonprofits and governments. Spring. Henderson.

760 [238] LAW FOR PUBLIC ADMINISTRATION (3). An introduction to law for students in public administration or related disciplines. Topics include sources of law and legal resources, personnel law, administrative law, and selected topics in constitutional law relevant to public administration. Fall. Bluestein.

761 [216] LOCAL GOVERNMENT LAW (1.5). Overview of key legal concepts affecting local government operations. Topics include relationship to state/local government, local government, legal structures, finance and regulatory powers, plus introduction to the legal system and analysis. Spring. Bluestein.

762 [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.


770 [220] POLITICS OF COMMUNITY ECONOMIC DEVELOPMENT: STRATEGIES AND CHOICES (POLI 770) (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.

771 [231] MANAGING ECONOMIC DEVELOPMENT (3). Emphasizes the practical application and implementation of various approaches to economic development. Students will apply tools and strategies by doing case studies and small group projects based on real-world scenarios faced by local practitioners. Fall. Morgan.

775 [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.

776 [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.

778 [238] INTERGOVERNMENTAL RELATIONS (POLI 726) (3). Examines conflict 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. Fall. Wright.

780 [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.

781 [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.

900 [395] RESEARCH IN PUBLIC ADMINISTRATION (POLI 802) (0-6). Fall, spring, and summer. Staff.
Assistant Professors
Chad Bryant (66) Twentieth-Century Eastern European History
Kathleen DuVal (67) Early America, Early American Women
Crystal N. Feinman (100) Nineteenth- and Twentieth Century U.S. History, African American History
Christopher J. Lee (58) Colonial and Modern Africa
John Sweet (68) Early American History
Brett E. Whalen (41) Medieval History
Heather Williams (94) Nineteenth-Century U.S. History, African American History

Joint Appointments
Robert C. Allen (73) American Studies
Michael D. Green (74) Native American History
Larry Griffin (70) Social Relations and Historical Sociology
Reginald F. Hildebrand (75) African and African American Studies
I. Peter Kaufman (43) Christian Tradition from Late Antiquity to Reformation

Professors Emeriti
Josef Andeke
Samuel H. Baron
Stephen B. Baxter
Frederick O. Behrends
Judith Bennett
Herbert L. Bodman Jr.
Henry C. Boren
John M. Headley
Lawrence D. Kessler
Frank W. Klingberg
William E. Leuchtenburg
Donald G. Mathews
John K. Nelson
William S. Powell
Richard W. Pfaff
Frank W. Ryan Jr.
George V. Taylor
George B. Tindall
Peter E. Walker
Gerhard I. Weinberg
Joel R. Williamson

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/regs.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 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 700) and an introductory seminar (HIST 900), 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 (900-level course); three hours of thesis credit (HIST 993); 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 993) may be credited toward the doctoral program. If 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): a research seminar; two courses in a second field of study; research design (HIST 905); and dissertation credit (HIST 994). 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, A.B.D. 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.ncdhc.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 (TISSt) 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

421 [101] ALEXANDER (3). The rise of Macedonia; the career 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.

422 [102A] ANCIENT GREEK WARFARE (PWAD 422) (3). War and the warrior in the archaic and classical Greek world, seventh through fourth centuries B.C. Spring. McCoy.


424 [102C] ANCIENT ATHENS (3). The life and times of the ancient Athenians from the 6th to 4th centuries B.C. History 225 strongly recommended. Fall. McCoy.

425 [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. Taubert.


433 [133] ENGLISH SOCIETY, 1200-1700 (3). This course examines critical issues in the development of English society and economy in the centuries before industrialization.


435 [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-grown and student-master relationships. McVaugh.

451 [111] WOMEN AND MEN IN THE RENAISSANCE (3). Gender roles and relationships in Europe, 1350-1550: Renaissance state and domestic parliarchy, marriage, sexuality, and religious change; new ideas about sex and gender, economic change and domestic roles.


453 [113] MEDITERRANEAN SOCIETIES AND ECONOMICS IN THE RENAISSANCE WORLD (3). A picture of Mediterranean social and economic life 1300-1600, with special focus on rural and urban society, family structure, patronage, work and wages, public and private finance. Bullard.


456 [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.

457 [117] THE FRENCH REVOLUTION, 1787-1815 (3). France's rejection of traditional society 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.

458 [119] EUROPE SINCE 1918 (3). The main currents in European history since the first half of the twentieth century. Browning.

459 [120A] FRANCE: FROM JOAN OF ARC TO LOUIS XIV (3). This course covers the social, political, and cultural history of France from the late Middle Ages to 1715. Smith.

460 [120B] FRANCE FROM 1789 TO 1870 (3). The French people from the era of the Revolution to the Communards: cultural and social sources of political instability, the revolutionary tradition, liberal and conservative movements, and industrialization. Reid.

461 [121] FRANCE SINCE 1870 (3). French society and culture from the Paris Commune of 1871 to the student revolts of May 1968. Reid.

462 [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. Jarasch.


465 [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.

466 [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, Tocqueville, Mill, Flaubert, Nietzsche, and Freud. Kramer.

467 [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.
468 [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.

469 [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.

470 [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.

471 [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.

472 [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.

473 [135] TUDOR AND STUART ENGLAND, 1485-1660 (3). A lecture course, open to juniors, seniors, and graduate students. Harris.

474 [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.

475 [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.

476 [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.

477 [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.


479 [1079] HISTORY OF FEMALE SEXUALITIES IN THE WEST (WMST 479) (3). Spanning the ancient, medieval, and modern West, this course explores normative and non-normative female sexualities, ideas about female bodies, and the regulation of female sexuality by families, religions, and states.

480 [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.

481 [190] EASTERN EUROPE SINCE WWII (3). An examination of the countries of Eastern Europe, their origins and development since World War II, their cohesion and conflict.

490 [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).

513 [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.

514 [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.

515 [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.

530 [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.

531 [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.

532 [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.

533 [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. Chastain.

534 [180] THE AFRICAN DIASPORA (3). A comparative examination of the movements, experiences, and contributions of Africans and people of African descent from the period of the Atlantic slave trade to the present. Lindsay.

535 [182] WOMEN AND GENDER IN AFRICAN HISTORY (AFRI 182) (3). An analysis of historical transformations in Africa and their effects on women's lives and gender relations. Particular themes include precocious societies, colonialism, religious change, urban labor, nationalism, and sexuality. Lindsay.

536 [196] REVOLUTION IN THE MODERN MIDDLE EAST (ASIA 536) (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.

537 [195A] WOMEN IN THE MIDDLE EAST (ASIA 537) (WMST 537) (3). This course explores the lives of women in the Middle East and how they have changed over time. Focus changes each year. Shields.

538 [197] MIDDLE EAST AND THE WEST (ASIA 538) (3). This course explores 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.

539 [192] THE ECONOMIC HISTORY OF SOUTHEAST ASIA (ASIA 539) (3). This course is intended as a broad overview of Southeast Asian economic history from "pre-modern" times to the present day. Coadenis.

560 [160] WOMEN AND RELIGION IN U.S. HISTORY (WMST 160) (3). Prerequisites, introductory courses in religious or 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.

561 [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. Higgenbotham.
562 [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.

563 [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.

564 [146] REVOLUTION AND NATION-MAKING IN AMERICA, 1763-1815 (PWAD 146) (3). Major topics: constitutional conflict in the British empire; independence and war; Confederation and Constitution; growth of political parties and nationalism in a period of domestic change and international conflict. Higginbotham.


566 [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. Sweet.

568 [168] WOMEN IN THE SOUTH (WMST 568) (3). An exploration of the distinctive themes in southern women's lives, using the evidence of history and literature. Hall.

569 [159] AFRICAN AMERICAN WOMEN'S HISTORY (WMST 569) (APAM 569) (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.

570 [153A] THE VIETNAM WAR (PWAD 117) (ASIA 153) (3). A wide-ranging exploration of America's longest war - from nineteenth-century origins to 1990s legacies, from village battlefields to the Cold War context, from national leadership to popular participation and impact. Hunt.

571 [142] SOUTHERN MUSIC (FOLK 571) (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.

573 [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.

574 [144] SPANISH BORDERLANDS IN NORTH AMERICA (3). The history of the Spanish colonial experience north of Mexico, to 1820.


577 [152] U.S. FOREIGN RELATIONS IN THE TWENTIETH CENTURY (PWAD 577) (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.

578 [155] U.S. INTELLECTUAL AND CULTURAL HISTORY II.

579 [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. Kasdan.

579H [156H] POPULAR CULTURE AND AMERICAN HISTORY (3).

580 [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. Filerne.

581 [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. Seminole.

582 [158] AMERICAN CONSTITUTIONAL HISTORY SINCE 1876 (3). Utilizing a classroom environment similar to HIST 581, constitutional adjustments and change are related to psychological, political, social, and economic factors and to Supreme Court members. Seminole.


586 [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.

587 [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.

588 [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.

589 [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.

621 [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. HIST 21 or 22 or RELI 29 recommended.

622 [172] MEDICINE AND SOCIETY IN AMERICA (3). A survey of major developments in the history of American medicine. Emphasis is placed upon setting the practice of medicine as well as the experience of health and disease into broad social, cultural, and political contexts.


625 [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 de-personalization. Kasdan.

670 [170] INTRODUCTION TO ORAL HISTORY (FOLK 670) (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.

Courses for Graduates

700 [200] INTRODUCTION TO HISTORICAL METHODS AND RESEARCH (3). Introduction to research. Required for all first-year students. Fall.

701 [201] INTRODUCTION TO MEDIEVAL STUDIES (3). This is an interdisciplinary course to introduce graduate students to the sources, methods, and approaches of Medieval Studies.
702 [202] INTRODUCTION TO HISTORICAL EDUCATION (3). Provides an introduction to teaching history. Topics include the history of historical education, planning a course, the role of the teacher, goals and methods, using new technologies, and evaluating students. Spring. Filene, Shields.

703 [211] TEACHING PRACTICUM.

705 [283] CULTURAL THEORY AND HISTORICAL METHODS (3). Introduction to theoretical and methodological issues that have influenced historical studies in the 1980s and 1990s. Works considered are from anthropology, literary studies, colonial and post-colonial studies, and post-structuralism.

711 [203A] INTRODUCTORY COLLOQUIUM ON EARLY MODERN EUROPE (3). Directed readings on early European history, from Britain through European Russia. Fall. (Alternate every year.)

712 [203B] INTRODUCTORY COLLOQUIUM ON MODERN EUROPE (3). Directed readings on modern European history, from Britain through European Russia. Spring.

713 [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.


715 [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.

716 [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.

717 [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.

718 [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.

721 [205A] READINGS IN EUROPEAN EXPANSION AND GLOBAL INTERACTION, 1400-1800 (3). Examines the dynamic role of cross-cultural contacts and exchange between Europe and other civilizations in the context of a growing global interconnectedness. Spring. (Alternate years.)

722 [205B] READINGS IN CONTEMPORARY GLOBAL HISTORY (3). Focus on the nineteenth and twentieth centuries. Mixing theory, case studies, and comparisons, the readings reflect disciplinary diversity. Fall.

725 [222] SELECTED READINGS IN THE COMPARATIVE OR GLOBAL HISTORY OF WOMEN (WMST 725) (3). Directed readings on selected topics in the comparative or global history of women. (Alternate Spring.) Staff.

730 [228] FEMINIST THEORY FOR HISTORIANS (WMST 730) (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.)

735 [218] READINGS IN THE HISTORY OF GENDER AND SEXUALITY (WMST 735) (3). Readings on the historical study of gender and sexuality and on definitions of femininity and masculinity in different historical contexts. Fall and spring. Hoffman.

741 [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. McVaug.


751 [206] PROBLEMS IN GREEK HISTORY, 600-323 B.C. (3). Prerequisite, consent of the instructor. McCoy.


756 [239] MEDIEVAL ENGLAND (3). Prerequisite, HIST 137 or equivalent. Pfaff.

757 [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.


761 [227] READINGS IN EARLY MODERN EUROPEAN HISTORY (3). Bullard.


763 [230] EARLY MODERN GERMANY (3). A topical survey of the political, social, and economic history of early modern Germany. McIntosh.


770 [220] READINGS IN MODERN EUROPEAN WOMEN'S HISTORY (WMST 220) (3). A readings course in the history of women in Europe since 1500. Harris.


773 [235] READINGS IN EUROPEAN SOCIAL HISTORY (3). Reid.

774 [236] READINGS IN MODERN EUROPEAN HISTORY, 1918-1945 (3). Browning.

775 [240] STUDIES IN MODERN ENGLISH HISTORY (3). Directed readings in nineteenth- and twentieth-century English history. Topics vary from year to year. Soloway.

776 [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.

780 [204A] READINGS IN RUSSIAN HISTORY BEFORE 1796 (3). Griffiths.

781 [204B] READINGS IN RUSSIAN HISTORY, 1796-1917 (3). Brooks.

782 [204C] READINGS IN SOVIET HISTORY (3). Raleigh.
783 [204D] SPECIAL TOPICS IN RUSSIAN AND EAST EUROPEAN HISTORY (3).
784 [210] READINGS IN EAST EUROPEAN HISTORY (3). Directed readings on modern East European history.
820 [270] PROBLEMS IN LATIN AMERICAN HISTORY (3). Burns, Chasteen, Pérez.
831 [249] READINGS IN EARLY AMERICAN HISTORY (3).
833 [251] THE UNITED STATES IN THE FEDERAL PERIOD, 1789-1820 (3). Readings, discussion, and book lists designed to give familiarity with the historical problems, research opportunities, and bibliography of the period. Higginbotham.
834 [252] THE UNITED STATES IN THE MIDDLE PERIOD, 1815-1860 (3). An analysis of the material and ideological transformations within the antebellum republic, which dimmed in the sectional crisis of the 1850s. Barney.
841 [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. Latouche.
842 [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.
850 [256] RECENT AND CONTEMPORARY UNITED STATES (3).
860 [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.
863 [217] READINGS IN URBAN HISTORY (3). A readings course to introduce students to the main topics in urban history. Lochnan.
865 [221] READINGS IN AMERICAN WOMEN'S HISTORY (WMST 865) (3). A readings course on the history of women in the United States. Hall.
870 [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.
875 [269] TOPICS IN AMERICAN CULTURAL HISTORY (3). Kassam.
878 [248] READINGS IN NATIVE AMERICAN HISTORY (AMST 878) (3). Readings in and discussions of the major works in Native American history. Perdue, Green.
880 [282] AMERICAN FILM AND MEDIA HISTORY (AMST 880) (3).
890 [290] TOPICS IN HISTORY FOR GRADUATES (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).
899 [299] INDEPENDENT STUDY FOR GRADUATE STUDENTS (3). Independent reading programs for graduate students whose needs are covered by no course immediately available. Consent of the instructor required. For students resident in Chapel Hill or vicinity.
900 [300] GRADUATE STUDIES IN HISTORY: SECOND COURSE (3). Application of research skills to historical investigation. Required for all first-year students. Spring.
901 [391] MA RESEARCH SEMINAR (3). A seminar for those preparing the MA thesis. Pursuing original research in primary sources, students prepare full drafts of their theses. Fall.
902 [392] PHD RESEARCH SEMINAR (3). A research seminar for students beyond the MA but not yet A.B.D. Spring.
905 [399] HISTORICAL EXPLANATION AND RESEARCH DESIGN (3). Required of all doctoral candidates in the last semester of course work, this practicum helps students refine a dissertation topic and produce a prospectus. Fall.
906 [394B] DISSERTATION SEMINAR (3). A seminar for A.B.D. students, offered as demand and resources permit. Fall.
910 [301] ANCIENT HISTORY (3).
911 [311] MEDIEVAL HISTORY (3).
919 [319] SEMINAR IN EARLY MODERN EUROPEAN HISTORY (3).
924 [324] SEMINAR IN MODERN EUROPEAN HISTORY (3).
925 [325] SEMINAR IN RUSSIAN AND EAST EUROPEAN HISTORY (3).
930 [330] SEMINAR IN U.S. HISTORY (3).
942 [342] SEMINAR IN AFRICAN AMERICAN HISTORY (3).
948 [348] RESEARCH IN NATIVE AMERICAN HISTORY (AMST 348) (3).
950 [350] SEMINAR IN THE HISTORY OF SCIENCE (3).
951 [361A] INTRODUCTORY SEMINAR IN MILITARY HISTORY (3).
952 [361B] ADVANCED SEMINAR IN MILITARY HISTORY (3).
971 [371] SEMINAR IN LATIN AMERICAN HISTORY (3).
975 [387] SEMINAR ON WOMEN'S HISTORY (WMST 387) (3).
990 [390] SEMINAR IN HISTORY (3). Given on demand and as resources permit, this seminar allows faculty to respond to student interest in particular topics. Fall.
993 [393] MASTER'S THESIS (3 or more). Individual work on the MA thesis, pursued under the supervision of the MA advisor.
994 [394A] DOCTORAL DISSERTATION (3 or more). Individual work on the doctoral dissertation, pursued under the supervision of the PhD advisor.

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
Edward Grant, Robotics, Biomedical Systems, Neural Networks, Biomedical Sensors, and Medical Devices
Michael T. Gross (29) Biomechanics, Sports Medicine, Orthopedics, Orthotics
Kevin M. Guskiewicz (24) Athletic Training, Anatomy
Anthony C. Hackney (21) Exercise Physiology, Metabolism, Endocrinology
Henry S. Hsiao (03) Medical Instrumentation, Interfacing Microprocessors to Physiological Transducers, Telemedicine
Michael Y. Lee (04) Neurological Rehabilitation, Clinical Neurophysiology, Acupuncture
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
William E. Prentice (15) Athletic Training, Sports Medicine
Richard Segal (48) Role of Spinal Circuits and Supraspinal Systems during Upper Limb Movement and Walking, Neuro Plasticity of Spinal Circuits
Darkne K. Sekera (25) Pediatrics, Health Policy, Research Utilization
Jan Busby-Whitehead (08) Geriatric Medicine

Associate Professors
Bonita Marks (26) Exercise Physiology, Aging, Physical Activity and Health
Steve Marshall (199) Injury Epidemiology, Occupational Epidemiology, Methodology
Karen McCulloch (39) Balance Control in Neurologic Populations, Intervention in Stroke and Brain Injury, Cognitive Processes
Vicki S. Mercer (40) Motor Control, Motor Learning, Posture and Balance across the Lifespan, Stroke Recovery
Miriam Morey, Exercise Physiology, Epidemiology, Aging and Exercise, Physical Activity and Health
Marty A. Reilly (35) Early Human Behavior and Development, Behavioral Motor Control, Developmental Disabilities
Paul S. Weinhold (02) Biomechanics of Repetitive Motion Injury, Tissue Engineering
Philip L. Witt (22) Ergonomics Intervention, Research Design, Orthopedics, Spinal Dysfunction
Bing Yu (43) Biomechanics, Rehabilitation, Movement Analysis, Biomechanical Modeling

Assistant Professors
Claudio Barzaghi (032) Management of Cancer Treatment-Related Symptoms, Prescriptive Exercise Intervention
Janet K. Freburger (45) Health Sciences Research, Research Design, Biomechanics, Orthopedics
Thelma Mielke (44) Orthopedics, Epidemiology, Arthritis
Darin Padua (22) Biomechanics and Sports Medicine
Jama L. Purser, Epidemiology, Aging and Function
Angela Rosenberg (47) Pediatrics and Community Resources
Debbie E. Thorpe (46) Pediatrics, Motor Learning, Developmental Disabilities, Aquatics

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/divisions at UNC-Chapel Hill: 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:

1. Biomechanics of human movement, including musculoskeletal mechanics and external mechanical constraints;
2. Physiology of human movement, including exercise response and training in non-disabled and special populations;
3. Motor control and motor learning, including neuromuscular control and behavioral analyses of human movement.

(All Division of Physical Therapy retired the MS in Human Movement Science degree, so applicants are no longer being accepted for the MS as a terminal degree. Bachelor’s level applicants will be considered, given appropriate background and experience in movement science research.)

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 700A, 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 B or better in the last two years of the student’s undergraduate program.
3. Graduate Record Examination (GRE) test with minimum scores in the 50th percentile for both the verbal and quantitative sections, and Test of English as a Foreign Language (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 410 [106] SIGNALS AND SYSTEMS.
BMME 430 [121] DIGITAL SIGNAL PROCESSING.
BMME 450 [132] LINEAR CONTROL THEORY.
BMME 465 [111] INTRODUCTION TO BIOMEDICAL INSTRUMENTATION.
BMME 480 [120] REAL-TIME COMPUTER.
BMME 510 [112] BIOMATERIALS/BIOCOMPATIBILITY.
BMME 520 [160] FUNDAMENTALS OF MATERIALS ENGINEERING.
BMME 705 [260] MATERIALS ENGINEERING.
BMME 750 [232] DIGITAL CONTROL THEORY.

**Exercise and Sport Science**
EXSS 730 [230] MANAGEMENT OF ATHLETIC INJURIES.
EXSS 732 [232] GROSS ANATOMY FOR ATHLETIC TRAINERS.
EXSS 735 [235] SPORTS MEDICINE ANALYSIS: SPECIAL PROBLEMS RELATED TO SPORTS MEDICINE.
EXSS 739 [239] PRACTICUM IN ATHLETIC TRAINING.
EXSS 742 [255] SOCIAL ISSUES IN PHYSICAL EDUCATION AND SPORT.
EXSS 780 [280] PHYSIOLOGY OF EXERCISE.
EXSS 781 [281] ADULT FITNESS/CARDIAC REHABILITATION.
EXSS 782 [282] NUTRITIONAL ASPECTS OF EXERCISE.
EXSS 783 [283] ASSESSMENT OF PHYSIOLOGICAL FUNCTION IN EXERCISE.
EXSS 785 [285] SEMINAR IN EXERCISE PHYSIOLOGY.
EXSS 890 [300] SPECIAL TOPICS IN EXERCISE AND SPORT SCIENCE.
EXSS 990 [320] RESEARCH IN EXERCISE AND SPORT SCIENCE.

**Human Movement**
HMSC 700 [200A] SCIENTIFIC BASIS OF HUMAN MOTION.
HMSC 701 [200B] SCIENTIFIC BASIS OF HUMAN MOTION.
HMSC 702 [200C] PHYSIOLOGY OF EXERCISE.
HMSC 710 [210] MUSCLE MECHANICS AND ELECTROMYOGRAPHIC KINESIOLOGY.
HMSC 743 [243] TOPICS IN MOTOR CONTROL AND MOTOR LEARNING; THERAPEUTIC IMPLICATIONS.
HMSC 770 [170] ELECTRONICS FOR HUMAN MOVEMENT SCIENCE.
HMSC 780 [280] INTRODUCTION TO OUTCOMES RESEARCH IN HEALTH CARE.
HMSC 782 [282] INFANT AND FAMILY ASSESSMENT.
HMSC 782L [282L] LABORATORY IN INFANT AND FAMILY ASSESSMENT.
HMSC 790 [290] ADVANCED KINESIOLOGY AND BIOMECHANICS.
HMSC 791 [291] ANALYSIS OF HUMAN MOTION.
HMSC 801 [301] SEMINAR IN HUMAN MOVEMENT SCIENCE.
HMSC 803 [303] PROBLEMS IN HUMAN MOVEMENT SCIENCE.
HMSC 811 [311] BASIC ASPECTS OF AGING (MEDI 486) (DECO 486).
HMSC 877 [377] INDEPENDENT STUDY IN HUMAN MOVEMENT SCIENCE.
HMSC 879 [379] RESEARCH IN HUMAN MOVEMENT SCIENCE.
HMSC 881 [381] THE NEURAL BASIS OF MOTOR CONTROL.
HMSC 886 [386] UNDERSTANDING RESEARCH.
HMSC 887 [387] DEVELOPMENTAL MOTOR CONTROL.
HMSC 911I [611] MOVEMENT AND BALANCE IN AGING.

**Interdisciplinary Human Movement Science**
IHMS 850 [350] ISSUES IN MOTOR CONTROL AND MOTOR LEARNING.
IHMS 870 [370] DOCTORAL DEVELOPMENT SEMINAR.
IHMS 994 [394] DOCTORAL DISSERTATION.

**SCHOOL OF INFORMATION AND LIBRARY SCIENCE**

**JOSÉ-MARIE GRIFFITHS**, Dean
Paul Solomon, Associate Dean
Claudia J. Gollop, Associate Dean

**Professors**

Evelyn H. Daniel (36) Information Resources Management, Organization Theory, Special Librarianship, School Librarianship, Distance Education, Management, Marketing, User Education
José-Marie Griffiths (142) Information Retrieval; Information System and Service Evaluation; Economics of Information; Information Technology Use in Higher Education; Scientific and Technical Communication; Diffusion of Information; and Information and Library Science 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 (90) 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
Sarah C. Michalak (143) Academic Librarianship, Administration and Organization, Scholarly Communications, Digital Libraries
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 Services
Barbara M. Wierneth (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. Sturm (87) Storytelling and Folklore, Children's and Young Adults' Literature and Public Library Services, Children and Technology, Bibliotherapy
Mark Winston (164) Leadership, Management, Reference and Knowledge Structures

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
Bradley M. Hermsinger (109) Medical and Bio-Informatics, Computer-Human Interfaces, Computer-Supported Collaborative Work and Information Visualization
Diane Kelly (123) User Modeling, Personalization, Information Seeking Behavior, Research Methods
Diane Kelly (123) User Modeling, Relevance Feedback, Personalization, Information-Seeking Behavior, Experimental Design and Analysis, Research Methods
Christopher Lee (141) Archives, Digital Preservation, Electronic Records Management
Jeffrey Pomerantz (121) Integration of Digital Reference Services into Digital and Physical Libraries, Automation of Library Services, Classification, Information Retrieval

Instructors
Krisin Chaffin (110) Database Management, Web Databases
Paul Jones (74) Director of iiblio.org; Internet Issues and Applications (Digital Libraries, Electronic Publishing, Online News, Virtual Communities, Legal and Social Issues Relating to Networked Information and Access)

Adjunct Faculty
Todd Barlowe, Human Computer Interaction
Mark Bernstein, Law Librarianship
Paul Conway, Archives
Beth Doyle, Preservation
David A. Fenstermacher, Bioinformatics
Alan Forrest, Distributed Systems Administration
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 Durgom Larmour, Serials Librarianship
Charles B. McNamara, Rare Book Librarianship
Sachi Mohanty, User Instruction, Reference Services
Anne L. Morisseau, E-learning, Online Searching
Susan Wolf Neislon, Business Information
Lisa Norberg, User Instruction, Reference Services
Pam Pease, Children's Literature
David Rankin, Networking
Coonie Schardt, Health Science Librarianship
Eric Schnell, Health Science Librarianship
Gerry Solomon, School Library Media, Instructional Materials Evaluation
Michael Van Fossen, Government Documents
B. Lynn Whitener, Health Information Resources
Mary C. Whitten, Collaborative Information Technologies

Distinguished Research Professor
Frederick Kilgour (48) Use of "Known-Item" Books for Information Retrieval

Professors Emeriti
Robert Brodus
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 an 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 program of studies 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 MLS 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 e-mail) 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 461), 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 780). 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:

- the 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 the Duke University 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 (GRE). 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 on the Web at sils.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 courses include a year-long seminar on Research Issues and Questions (INLS 881/882) 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 93,000 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 also available in the ITRC.

Those interested in any of the SILS degree programs should see the SILS Web page (sils.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@sils.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 400, they will not receive credit toward a graduate degree for those courses.

Courses for Graduates and Advanced Undergraduates

461 [102] INFORMATION TOOLS (3). Tools and concepts for information use, information literacy, microcomputer software use and maintenance, microcomputer applications, and networked information systems. Pomerantz.


490 [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. Staff.

500 [180] HUMAN INFORMATION INTERACTIONS (3). The behavioral and cognitive activities of those who interact with information, with emphasis on the role of information mediators. How information needs are recognized and resolved; use and dissemination of information. Barreau, Marchionini.


509 [172] INFORMATION RETRIEVAL (COMP 487) (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. Loese.

512 [170] APPLICATIONS OF NATURAL LANGUAGE PROCESSING (COMP 486) (3). Prerequisite, COMP 110, 116, or 121, 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.

513 [153] RESOURCE SELECTION AND EVALUATION (3). Identification, provision, and evaluation of resources to meet primary needs of clientele in different institutional environments. Carr.

520 [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. Greenberg, Solomon.


523 [156] INTRODUCTION TO DATABASE (3). Prerequisite or corequisite, INLS 261 or 461. Design and implementation of basic database systems: Semantic modeling, relational database theory, including normalization, indexing, and query construction, SQL, Blake.

525 [165] RECORDS MANAGEMENT (3). Explores relationships between new information and communication technologies and organizational efforts to define, identify, control, manage, and preserve records. Considers the importance of organizational, institutional and technological factors in determining appropriate record-keeping strategies. Lee.

530 [122] YOUNG ADULT LITERATURE AND RELATED MATERIALS (3). A survey of print and nonprint library materials particularly suited to the needs of adolescents. Sturm.

532 [123] CHILDREN'S LITERATURE AND RELATED MATERIALS (3). Survey of literature and related materials for children, with an emphasis on twentieth-century authors and illustrators. Sturm.


551 [169] 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.

554 [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.

556 [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.

558 [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.

560 [161] NON-NUMERIC PROGRAMMING FOR INFORMATION SYSTEMS APPLICATIONS (3). An introduction to computer programming for library operations and information retrieval applications. Loese.


572 [181] INTERNET APPLICATIONS (3). Prerequisite, INLS 461. Introduction to Internet concepts, applications, and services. Includes the TCP/IP protocol suite along with clients and servers for Internet communication, browsing, and navigation. Examines policy, management, and implementation issues. Kelly.

574 [182] INTRODUCTION TO LOCAL AREA NETWORKS (3). Prerequisite, INLS 461. Introduction to local area network hardware, topologies, operating systems, and applications. Also discusses LAN management and the role of the network administrator. Staff.

576 [183] DISTRIBUTED SYSTEMS AND ADMINISTRATION (3). Prerequisite, INLS 572 or INLS 574. Distributed and client/server-based computing. Includes operating system basics, security concerns, and issues and trends in network administration. Hays.

578 [184] PROTOCOLS AND NETWORK MANAGEMENT (3). Prerequisite, INLS 572 or INLS 574. Network protocols and protocol stacks. Includes discussions of protocol classes, packet filtering, address filtering, network management, and hardware such as protocol analyzers, repeaters, routers, and bridges. Staff.

582 [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, Wildermuth.
584 [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). Willenmuth.

585 [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.

623 [157] DATABASE I (3). Prerequisite, INLS 382 or 582, and INLS 523 or proof of equivalency. Intermediate-level design and implementation of database systems, building on topics studied in INLS 523. Additional topics include MySQL, non-text databases, and data warehouses. Haas, Hemminger.

668 [191] ADVANCED INTERNET APPLICATIONS (3). Prerequisite: INLS 566. 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. Staff.

691 [099] HONORS THESIS (3).

696 [300] STUDY IN INFORMATION AND LIBRARY SCIENCE (1-3, repeatable). Prerequisite, permission of the instructor. Study by an individual student on a special topic under the direction of a specific faculty member. Six credit maximum for master’s students. Graduate faculty.

697 [092] EMERGING TOPICS (3).

Courses for Graduates

701 [211] INFORMATION RETRIEVAL SEARCH STRATEGIES (3). Prerequisite, INLS 501 or INLS 509. 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.

703 [222] SCIENCE INFORMATION (3). Prerequisite, INLS 501. 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.

704 [224] HUMANITIES AND SOCIAL SCIENCES INFORMATION (3). Prerequisite, INLS 501. 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.

705 [225] HEALTH SCIENCES INFORMATION (3). Prerequisite, INLS 501. A survey of information used in the health sciences disciplines and professions: The organization of sources, current techniques, and tools for its control, including online databases. Gollop.

706 [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.


708 [229] LAW LIBRARIES AND LEGAL INFORMATION (3). Prerequisite, INLS 501. 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. Kleinfeffer, Bernstein.


714 [226] MANAGING SERIALS IN AN ELECTRONIC AGE (3) Prerequisites, INLS 501 and INLS 521. 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. Lamoreaux.

715 [213] USER PERSPECTIVES IN INFORMATION SYSTEMS AND SERVICES (3). Explores the roles 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, Willenmuth.

718 [257] USER INTERFACE DESIGN (3). Prerequisite, INLS 582. Basic principles for designing the human interface to information systems, emphasizing computer-assisted systems. Major topics: user conceptual models of systems, human information processing capabilities, styles of interfaces, evaluation methods. Willenmuth.

720 [252] METADATA ARCHITECTURES AND APPLICATIONS (3). Prerequisite, INLS 520, 521, or 509. 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.


723 [258] DATABASE SYSTEMS II (3). Prerequisite, INLS 623. Advanced study of database systems. Topics include database design, administration, current issues in development and use, object databases, and distributed databases. Chaffin, Haas.


723 [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. Suaram.

739 [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.

740 [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.


746 [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.


752 [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.

753 [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.

756 [245] ADVANCED ISSUES AND PRACTICES IN ARCHIVES AND MANUSCRIPTS ADMINISTRATION (3). Prerequisite, INLS 556 or equivalent. Examines issues in the administration of archival, manuscripts, and records programs. Explores how theory relates to professional practice. Students process a collection from appraisal through creation of an electronic finding aid. Tibbo.


760 [259] WEB DATABASES (3). Prerequisites, INLS 572 or equivalent, INLS 623 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.

762 [281] INTERNET ISSUES AND FUTURE INITIATIVES (3). Prerequisite, INLS 572 or equivalent. Members of this seminar discuss emerging Internet policy issues such as copyright, intellectual property, privacy, and security. Participants will also explore emerging Internet tools and applications. Jones.

780 [201] RESEARCH METHODS (3). Prerequisites, completion of INLS 500 and either INLS 501 or INLS 509. An introduction to research methods used in library and information science. Includes the writing of a research proposal. Kelly, Looser, Solomon.

782 [203] INFORMATION SYSTEMS EFFECTIVENESS (3). Prerequisite, INLS 780 recommended. Addresses issues of performance measurement and methodology in the evaluation of information systems and services. The roles of objectives, performance measures, data collection approaches, and analytical approaches will be considered. Wildemuth.

785 [234] HUMAN RESOURCES MANAGEMENT (3). Prerequisite, INLS 585. 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.

786 [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.

788 [214] USER EDUCATION (3). Prerequisite, INLS 501, INLS 505, or permission of the 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.

795 [299] SUPERVISED FIELD EXPERIENCE (3). Prerequisites, completion of twenty-one semester hours and permission of advisi. Supervised observation and practice in an information service agency or library. The student will work a 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.

802 [372] SEMINAR IN INFORMATION RETRIEVAL (3). Prerequisites, INLS 509 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.

818 [357] SEMINAR IN HUMAN-COMPUTER INTERACTION (3). Prerequisite, INLS 718 or permission of the 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.

841 [342] SEMINAR IN ACADEMIC LIBRARIES (3). Prerequisite, INLS 585. 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.

842 [326] SEMINAR IN POPULAR MATERIALS IN LIBRARIES (3). Selected topics relating to the roles of various types of libraries in the provision of preservation of popular materials (flight romances, science fiction, comic books, etc.) existing in various forms (print, recorded sound, etc.). Moran.

843 [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. Gollop.


859 [327] SEMINAR IN INFORMATION AND CULTURE (3). Explorations of scholarship and observations about information and its social appearances in contemporary culture. Reading, literacy, and cultural values will be emphasized. Carr.

881 [301] RESEARCH ISSUES AND QUESTIONS I (3). Prerequisite, doctoral status or permission of the 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 882 in spring. Full Graduate faculty.

882 [302] RESEARCH ISSUES AND QUESTIONS II (3). Prerequisite, doctoral status or permission of the instructor. Intensive and systematic investigation of the fundamental ideas in information and library science. Exploration and discussion in seminar format. Must be taken in the spring semester immediately after INLS 881 (offered fall only). Spring, Graduate faculty.

883 [303] RESEARCH COLLOQUIUM. Prerequisite: doctoral student status. Presentation and discussion of research issues, questions, methods, analytical approaches by students, faculty, or visitors. (1)

885 [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.

887 [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.

888 [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 LIS educational programs. Explores changing curricula and discusses ethics, rewards, and problems of academic life. Staff.

889 [309] SEMINAR IN TEACHING PRACTICE (1). Prerequisites or corequisites: doctoral student status. INLS 888. For doctoral students currently involved in teaching activities, these regular seminar meetings are designed to discuss relevant literature and aspects of the teaching experience. Staff.

890 [210, 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.

988 [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.

992 [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.

994 [394] DOCTORAL DISSERTATION (3 or more). Staff.

INTERDISCIPLINARY BIOMEDICAL SCIENCES (IBMS) PROGRAM

SHARON L. MILGRAM, Director

Professors
James Anderson, Cellular Signaling, Mechanisms of the Tight Junction
William Arndt, Function of Renal Vascular Smooth Muscle Cells: Receptors and Signal Transduction Pathways
Steven Bachenheimer, Molecular Pathology of Herpes 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
Vyra Bankaitis, Signal Transduction, Genetic Models for Neurodegenerative Disease in Mice, 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
Janine Cannon, Molecular Genetics of Bacterial Pathogens; Bacterial Cell Surfaces; Pathogenesis of Neisseria Gonorrhoeae and Francisella Tularensis; Antigenic Variation and DNA Repair in Pathogenic Bacteria
Charles Carter Jr., Protein Crystallography, Structural Polymorphism and Function
Stephen Chaney, DNA Repair; Drug Resistance; Cancer Chemotherapy; Mutagenesis
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
Maria Cordeiro-Stone, DNA Replication in Mammalian Cells and Mechanisms of Chemical Carcinogenesis
Joe Costello, Membrane Biophysics, Intracellular Functions, 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 Protein; Signal Transduction
James Faber, Receptor Signal Transduction by Vascular Smooth Muscle Cells
Rosalind Farber, Cancer Genetics; Human Molecular Genetics; Somatic-Cell Genetics; Microsatellite Instability
Paul Farrel, Neural Development and Reproduction
Jeffrey Frelinger, 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. Johnston, GTP-Binding Proteins, MEK Kinases
Alan Jones, Arachidonic Acid, 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
Hemming Ke, X-Ray Protein Crystallography and Structures of Cyclophilin, Calcineurin, HIV Gag Protein
Jean Lauder, Developmental Neurobiology; Roles of Neurotransmitters, Growth Factors and Hormones in Brain Development, Neuronal-Glial 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 Multiphoton Microscopy of Living Cells; Mechanisms of Kupffer Cell Activation; Mitochondrial Calcium Homeostasis
Barry Lenz, 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. Land, Molecular Biology of Growth Factors and the Gastrointestinal Tract; Transcriptional Mechanisms of Aging-Induced Memory Loss
 Nobuyo Maeda, Genetics Modeling of Atherosclerosis in Mice
Terry Magnuson, Mammalian Genetics; Epigenetics; Genomics
Paul Manis, Cellular Basis of Information Processing in the Auditory System
William Marzluff, Regulation of RNA Metabolism in Animal Cells
Steve Matson, Biochemistry and Genetics of DNA Helicases from E. Coli and Yeast
Ann Marthure, Genetics of Bacterial Adhesion to Plant Surfaces; Genetics and Biochemistry of Cellulose Synthesis
Ken McCarthy, Glial Cells in Brain Function
D. Lee Mellman, Chemistry of Spinal Motoneurons
Gerhard Meissner, 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 Persaud, Neurobiology, Neuroendocrinology, Reproductive Biology
Edward Perl, Specificity in Neural Functioning
Tom Peters, Analysis of Recombination, Chromosome Structure, and Genome Stability in Yeast
Gary Pietak, Protein Biophysics in Vivo and in Vivo
Robert Rosenberg, Regulation of Ion Channels
Aldo Rusiniak, Neuroanatomy/Neuropathology
Ted Salmon, Micronucleus Assembly, Micronucleus Motors, and the Mechanism of Chromosome Movement
Jude Samulski, Development of Virus-Based Delivery Systems for Use in Human Gene Therapy
Gwen Saner, Regulation of DNA Damage and Stress-Inducible Genes in Eukaryotes
Robert Sealock, Cell Biology of the Neuromuscular Junction and of Dyzyrophia-Associated Proteins
William Snider, Developmental Regulation by Neuronal Growth Factors
Patric Sullivan, Complex Traits in Humans: Psychiatric Genetics; Pharmacogenetics; Twin Studies; Schizophrenia; Major Depression; Nicotine Dependence
Ronald Swanstrom, 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
Terry 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, Ultramicroelectrodes, 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
Manzoor Bhat, Axon Glial Interactions, Blood-Brain Barrier Formation, Signal Transduction
Bob Bouret, Molecular Mechanisms of Signal Transduction in Bacteria (including Protein Phosphorylation)
Patrick Brennan, Cell Polarity, Tumor Suppressor, Cell Transport, Exocytosis, Rho GTPases
Sharon Campbell, Structural Biology: Regulator Molecules Involved in Cellular Growth Control and Cell Adhesion
Regina Carrelli, Neurophysiological and Neurochemical Investigation of Brain Reward Processing
Richard Chene, Motor Proteins, Cytoskeleton, and Cell Motility
Edward J. Collins, Molecular Recognition by Immune Molecules
Adrienne Cox, Ras Family Oncogenes and Signaling, Cellular Radiation Response; Lipid Modification and Drug Development
Douglas Cyn, Cystic Fibrosis, Organelle Biogenesis, Protein Folding, Molecular Chaperones, the ubiquitin-Proteasome Pathway
Henrik Dolmahn, Regulators 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
Cyde Hodge, Neurobiological Systems
L. Fredrik Jarik, Neuropathology
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 Knudsen, Electrophysiology, Biophotonics, Basic Mechanisms of Electrical Defibrillation
Andony Lamanitri, 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, Scaffolding 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 Norton, Molecular Regulation of Mammalian Spermatogenesis and Fertilization
Jason Reed, Plant Development, Auxin Signaling, Light Responses
Mike Schaller, the Integrins, Protein Tyrosine Kinases and Signaling, Lillie Searle, RNA Processing Control in Drosophila, Developmental Genetics
Jonathan Serody, Transplantation and Tumor Immunology; Program in Bone Marrow Transplantation
Lishan 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 Troshka, Computer-Assisted Drug Design, Combinatorial Chemistry
Yue Xiong, Cancer Biology, Mammalian Cell Cycle, Tumor Suppressor Genes

Assistant Professors
Shawn Ahmed, Translational 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 Carson, Genetically 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 Conlon, Heart Development, Mesodermal Patterning, T Box Genes
Gregory Copenhaver, Regulation of Mesodermic Recombination in Higher Eukaryotes, Blossom Damania, Viral Oncogenes and Transcription Factors Encoded by Kaposi’s Sarcoma-Associated Herpesvirus and I.t. Skin Relaive (Rhesus Monkey Rhadinovirus)
Mohandas Deshmukh, Mechanisms of Neuronal Programmed Cell Death
Aravinda de Silva, Microbial Pathogenesis; Anthropod Vector-Borne Infectious Diseases; Control of Infectious Diseases in Developing Countries
Nikolay Dolchyan, Computational Structural Biology
Michael Giddings, Bioinformatics; Proteomics; Post-Genomic Complexity; Cellular Modeling; Bacterial Pathogenesis
Bob Goldstein, Generation of Cell Diversity in Early Development of C. elegans
Scott Hammond, RNA Interference
Mack Heise, 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 Kuhlman, 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 Cardiovascular Disease: Transcription and Cell Signaling Pathways that Regulate Smooth Muscle Cell Differentiation
Carol Ouy, Mechanisms of Cell Motility and Adhesion
Fernando Pardo-Manuel de Villena, Mesencephalon, Chromosome Segregation, Non-Mendelian Genetics
Charles Perez, Genomic and Molecular Classification of Human Tumors to Guide Therapy
Larysa Pevny, Neural Induction, Neurogenesis, SOX Proteins
Frank Poulev, Signaling Pathways in the Mammalian Cerebral Cortex
Dale Ramsden, V(D)J Recombination, DNA Double-Stranded Break Repair
Scott Randell, Airways 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
Ed Sharples, Tumor Suppressor Genes, Genetics of Cancer and Aging
David Sidriovski, Regulators of G-Protein Signaling (RGS) Family of Proteins
John Bond, X-Ray Crystallography and Transmembrane Signaling
Brian Stahl, Histone Modifications and Gene Regulation
Joan Taylor, Dissecting 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; Mutagenesis; Colon Cancer; Genetic Engineering, Microarrays, Gut Flora
Joan Tieje, Biology of Protein-Activated Receptors
Barbara Vilen, B Cell Receptor Signal Transduction; B Cell Tolerance and Autoimmune Disease; B Cell Malignancies
Tod Vierstra, Genome Evolution and the Architecture of Complex Traits
Da-Zhi Wang, Genetic Pathways for the Development of Cardiac and Vascular Smooth Muscle Cells
Jennifer Webster-Cyriaque, Oral Manifestations of Systemic Disease; Host-Virus Interactions; Viral Oncogenesis; Viral Pathogenesis during Immunosuppression; Signal Transduction; Cellular Biology; Gene Expression
Herbert Whim, Hemostasis and Thrombosis; Biochemistry and Molecular Biology of Blood Coagulation; Protein Structure-Function
Yi Zhang, Chromatin Dynamics, Gene Expression, and Cancer

Research Associate Professors
Chris Elkins, Bacterial Pathogenesis, Iron Acquisition
Richard Weinberg, Quantitative Immunocytochemistry, Organization of Gliomatase Receptors and Second Messengers, Nitric Oxide Synthase

Research Assistant Professors
Jeffery MacDonald, Tissue Engineering
Lawrence Ostrowski, Regulation of Ciliated Cell Differentiation and Gene Expression; Identification of Novel Ciliary Proteins by both Molecular Biology and Proteomics Approaches; Regulation of Ciliary Bead Frequency; Gene Therapy Approaches for Cystic Fibrosis and Primary Ciliary Dyskinesia; 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 seven departments in the School of Medicine (including Biochemistry and Biophysics, Biomedical 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, Neurobiology, and Toxicology). The theme uniting members of these 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 related to problems 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 adviser who will provide guidance for his or her dissertation research training. The student will then become a graduate student within that adviser's department or curriculum and will complete coursework requirements during the second year.

All students enrolled in the IBMS program receive an annual stipend ($23,000 in 2006), full tuition, health insurance, and fees.

Courses for Graduates

901 (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.

902 (302) SEMINAR IN INTERDISCIPLINARY BIOMEDICAL SCIENCES (2). Prerequisite, enrollment in IBMS program. This course consists of seminars designed to acquaint the student with 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

JEAN FOLKERTS, Dean

Professors
Harry Amana (39) News-Editorial Journalism, Black Press, Minorities and Communication
Richard J. Beckman (40) Visual Communication
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
Anne M. Johnston (50) Media Effects, Women and Media, Political Communication
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
John Sweeney (40) Advertising, Sports Marketing
Ruth Walden (33) Associate Dean for Graduate Studies, First Amendment Theory, Media Law and Ethics
Jan Yopp (42) Senior Associate Dean, News-Editorial Journalism, Public Relations
Xindu Zhao (47) Advertising and Political Communication in the United States and China

Associate Professors
Debashis Aikat (55) Media Technology
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
Cathy Packer (37) Mass Communication Law
Dulce Straughan (36) Associate Dean for Undergraduate Studies, Public Relations
Charles A. Tuggle (59) Broadcast Journalism
Lucila Vargas (53) International/Development Communication, Women and Media, Qualitative Methods

Clinical Associate Professor
Paul Jones (74) Director of iLibs.org, Internet Issues and Applications (Digital Libraries, Electronic Publishing, Online News, Virtual Communities, Legal and Social Issues Relating to Networked Information and Access)

Assistant Professors
Andy Bechtel (77) News-Editorial Journalism, Media Ethics
Lois Boynton (61) Public Relations, Ethics
Napoleon Byars (78) News-Editorial Journalism, Public Relations
Alberto Cairo (79) Visual Communication
Francesca Carpenetier (80) Broadcast Journalism
David Cupp (81) Broadcast Journalism
Patrick Davidson (62) Visual Communication
Elizabeth Dougall (69) Public Relations
Frank Fee (60) Public Journalism, Newspapers, Media History, Media Management
Barbara Friedman (71) News-Editorial Journalism, Media History
Joe Hester (64) Advertising
Sriram Kalyanaraman (66) New Media and Media Effects
Tom Kelleher (72) Public Relations, Ethics
LARRY LAMB (65) Public Relations
Chris Roush (67) News-Editorial Journalism, Business Reporting
Laura Ruel (73) Visual Communication
Janis Sinclair (74) Advertising

Lecturers
Ferrel Guillory, 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
Thomas A. Bowes
A. Richard Elam
Raleigh Mann
James J. Mullen
Carol Reuss
Chuck Store

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).
• A recognized master's degree, in addition, if applying for the PhD program.
• An undergraduate cumulative GPA of at least 3.0 (A = 4.0).
• 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 not committed to researching this problem if accepted into the program, but the School of Journalism wants to know their research interests.

In addition, international applicants must submit Test of English as a Foreign Language (TOEFL) scores and the financial certificate as required by The Graduate School.

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 eight 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 $19,500, and master's stu-
dents receive a $12,000 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 assign-
ments 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 pro-
gram 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 two Science Learning
Graduate Assistantships, one awarded each year to a master's student with
an interest in science writing or multimedia. The School also offers the
William F. Clingman Award ($4,000-$8,000) for the study of ethics to
continuing students, and the $1,000 Tom Wicker Scholarship to continu-
ing master's students interested in news-editorial careers. In addition, limit-
ated 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. L 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 examina-
tion 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 gradu-
ates 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 it 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 400 and
above both inside and outside the school. Students in the professional
sequence take at least one 800-level seminar, and those in the mass commu-
nication 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 posi-
tions in advertising may choose courses in advertising management and
planning, research, new technologies, sales, or some other area. Courses
from business, psychology, sociology, and information and library science
are suggested as outside courses.
• For careers in writing and editing for the print media, students choose
courses that teach the relevant skills. Students also learn the theory and
analytical skills needed to eventually hold leadership positions in their
chosen fields.
• Public relations students prepare for careers leading to management posi-
tions 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, organiza-
tional and speech communication, and health communication.
• Other fields for which professional paths can be designed include visual
communication, electronic communication, online journalism, and multi-
imedia.
• Paths in the mass communication sequence can be just as diverse.
Students learn the theory and research methods that 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 com-
munication 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 sec-
tors. Students in this sequence do not take professional skills courses such
as news writing and editing.

Requirements

Master's students must earn at least thirty graduate-level credits (ten
courses numbered 400 or above) including three credits for a thesis or non-
traditional thesis option. Course requirements are divided into three cat-
categories: basic competencies, core courses, and path courses. At least six
courses (including the thesis or thesis option) must be numbered 700 or
above. This includes a research methods course, generally JOMC 703
or 704, appropriate to the thesis or nontraditional 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 must also demonstrate competency in basic skills related to their chosen paths. For example, students interested in careers in print media must take Reporting and Writing News (JOMC 733) as one of their competency courses, plus two other courses in related areas, such as editing, graphic design, or feature writing. Students interested in public relations careers must take Public Relations Foundations (JOMC 730) as one of their competency courses, plus two other related courses. Regardless of sequence, three competency courses are required, and no credit is given toward the degree. Competency courses can be at any level, including undergraduate (300 and below).

**Core Courses:** All master's students must take Mass Communication Research Methods (JOMC 701) and Mass Communication Law (JOMC 740). Master's students in the mass communication sequence must also take Theories of Mass Communication (JOMC 705). 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.

**Path courses:** The master's program is designed to allow students, under the direction of their advisers, 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 or 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 those outside the school. Those courses must be appropriate to the thesis or nontraditional thesis option. Students planning to write a series of articles as their thesis option must take Specialized Reporting (JOMC 754) as a path course.

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 993) or project (JOMC 992). 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 993, or Nontraditional Thesis Option, JOMC 992, for three credits as they do the thesis, articles, or project. A maximum of three thesis credits can be counted toward the thirty 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 advisor, 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 400 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 journal- ism 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. All medical journalism students must take Medical Journalism (JOMC 560) as one of their competency courses. Students interested in careers in print media must take Reporting and Writing News (JOMC 733) as a competency course, plus one other course in a related area, such as editing or feature writing. Those interested in broadcast careers must demonstrate competency in broadcast writing, generally by taking Writing for the Electronic Media (JOMC 121), plus two other relevant areas, such as video production and editing, electronic journalism, or television news production. Three competency courses are required, and no credit is given toward the degree. Competency courses can be at any level, including undergraduate (300 and below).

**Core Medical Journalism Courses:** Either Medical Reporting for the Electronic Media (JOMC 561) or Medical Journalism for the Print Media, and Reporting and Science Documentary Television (JOMC 562).
Related Public Health and Other Pertinent Courses: EPID 600, Principles of Epidemiology; HPAA 564, Evolution, Organization, and Financing of the U.S. Health System; and a third 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 701, Mass Communication Research Methods, and JOMC 740, Mass Communication Law. 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 JOMC 800-level seminar and one more JOMC 400-level or above course. Students planning to write a series of articles as their thesis option must take Specialized Reporting (JOMC 754) to fulfill the additional 400-level or above JOMC course requirement.

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 993) or doing a nontraditional thesis project (JOMC 992). 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 advisor, the committee acts as a resource as well as a 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 twelve 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 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 701), Readings in Mass Communication History (JOMC 742), Theories of Mass Communication (JOMC 705), and Mass Communication Law (JOMC 740). 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.

Fifty-eight graduate credits (400-level and above courses), in addition to at least six dissertation credits, are required for the PhD. Those 48 hours must be arrayed into three groups of courses: two substantive areas of specialization, a major area consisting of at least fifteen credits and a minor area consisting of at least nine credits; and research methods, consisting of at least four courses. Major and minor substantive areas should be selected from the list of approved research streams set by the program. The research methods that a student chooses to study must be appropriate to the student's areas of specialization and dissertation topic.

Other requirements include:

- At least eight courses, totaling at least twenty-four credits, of 700-, 800- and 900-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;
- Satisfactory performance on written and oral comprehensive exams;
- Students must take both written and oral exams at the end of their PhD coursework;
- 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.

Doctrinal 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

421 [121] ELECTRONIC JOURNALISM (3). Prerequisites, JOMC 120, 121, and permission of the 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. Cisp, Tuggle.

422 [122] PRODUCING TELEVISION NEWS (3). Prerequisites, JOMC 120, 421, and permission of the instructor. Students work under faculty guidance to produce "Carolina Week," a television news program, and are responsible for all production tasks: producing, anchoring, directing, and graphics. Tuggle.

423 [123] TELEVISION NEWS AND PRODUCTION MANAGEMENT (3). Students participate in a collaborative learning environment to hone skills learned in earlier courses and to help less-experienced students achieve to the broadcast news experience within the School. By invitation only. Tuggle.

424 [124] ELECTRONIC MEDIA REGULATION AND POLICY (3). Survey of the history of communication technology from the telegraph to the Internet, with an emphasis on the regulatory framework that surrounded each medium and policy implications for the future. Carpenter.

434 [134] PUBLIC RELATIONS CAMPAIGNS (3). Prerequisite, JOMC 730. 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. Curtin, Dougall, Kelleher, Lamb, Straughan.

441 [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. Aman.

442 [115] WOMEN AND MASS COMMUNICATION (WMST 415) (3). An examination of women as media producers, subjects, and audiences with a focus on current practices and possibilities for change. Johnston, Vargas.

445 [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, Kalyanaraman.

446 [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.

448 [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. Staff.


453 [154] ADVANCED REPORTING (3). Prerequisite, JOMC 753. 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 (i.e., the Carolina Poll). Meyer, Tuggle.

456 [156] MAGAZINE WRITING AND EDITING (3). Prerequisites, JOMC 753 and 256. Instruction and practice in planning, writing, and editing copy for magazines. Staff.

457 [157] ADVANCED EDITING (3). Prerequisite, JOMC 157. Concentration on the editing and display of complex news and feature stories and other print media content, with a significant emphasis on newspaper design and graphics. Beshuel, Cloud, Fee.


471 [176] ADVANCED ADVERTISING WRITING (3). Prerequisites, JOMC 753, 170 or equivalent, 271 and permission of the instructor. Rigorous, in-depth instruction and critiques of student advertising writing. Sweeney.

473 [173] ADVERTISING CAMPAIGNS (3). Prerequisites, JOMC 753 and 271 or 272. Planning and execution of advertising campaigns, types and methods of advertising research, and the economic function of advertising in society. Lauternborn.

475 [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. Lauternborn.

476 [118] ETHICAL ISSUES AND SPORTS COMMUNICATION (3). Examines ethical dilemmas and decisions in the commercialization and coverage of modern sports. Topics include the influence of television, pressure to change sports traditions and standards for money, and negative influence on athletes from commercialization, as well as a range of social controversies.

478 [178] MEDIA MARKETING (3). Prerequisites, JOMC 753 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. Bower.

480 [180] ADVANCED PHOTOJOURNALISM (3). Prerequisites, JOMC 180 and 753, or take 753 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.

481 [181] DOCUMENTARY PHOTOJOURNALISM (3). Prerequisites, JOMC 480 and permission of the instructor. Students study and produce work on the documentary tradition of photojournalism. Beckman, Davison.

485 [185] PUBLICATION DESIGN (3). Prerequisites, JOMC 185 and 753 (or take 753 concurrently), and permission of the instructor. Detailed study and application of graphic design techniques in magazines, newspapers, advertising, and corporate communication. Cairo.

486 [186] PROMOTION DESIGN (3). Prerequisites, JOMC 185 and permission of the 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. Staff.

487 [187] INFORMATION GRAPHICS (3). Prerequisite, JOMC 185. Detailed study and application of graphic design and information-gathering techniques to
creating charts, tables, diagrams, icons, and maps. Practice with visually presenting information with clarity and originality. Cairo.

488 [188] INTERACTIVE MULTIMEDIA NARRATIVES (3). Prerequisites, JOMC 188 and permission of the instructor. Issues and applications in cybercasting and cybepublishing. Class will create, cybepublish, and cybercast projects on the Internet while exploring the effective use of Internet technologies and current issues. Beckman.

489 [189] MULTIMEDIA AND COMPACT DISC PRODUCTION (3). Prerequisites, JOMC 188 and permission of the 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.

490 [191] PROSEMINAR IN MASS COMMUNICATION (1-3). Small classes on various aspects of journalism and mass communication with subjects and instructors varying each semester. Staff.

491 [192] SPECIAL SKILLS IN MASS COMMUNICATION. Special topic courses about varying skills for mass communication professions with subjects and instructors varying each semester. May be repeated for credit if topics are different. Staff.

560 [195] MEDICAL JOURNALISM (HBHE 560) (HPAA 550) (3). Prerequisite, JOMC 753. 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.

561 [196] MEDICAL REPORTING FOR THE ELECTRONIC MEDIA (HBHE 561) (HPAA 551) (3). Prerequisite, JOMC 560 or permission of the 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.

562 [197] SCIENCE DOCUMENTARY TELEVISION (HBHE 562) (HPAA 552) (3). Students learn skills needed to produce a science documentary for broadcast on television, including research and script writing. Linden.

580 [081] INTERMEDIATE PHOTOJOURNALISM (3). Prerequisites, JOMC 180 and permission of the instructor. Students expand their personal photographic vision and professional portfolio by honing their knowledge and skills of photographic composition, studio fashion, and artificial lighting techniques. Davison.

602 [102] MASS COMMUNICATION EDUCATION IN THE SECONDARY SCHOOL (3). Degree-seeking students must have permission of the instructor. Readings, discussion, and projects fostering excellence in teaching journalism/mass communication in the high school, from philosophy and practice to professional skills. Hill.

603 [103] MASS COMMUNICATION LAW IN THE SECONDARY SCHOOL (3). Degree-seeking students must have permission of the 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.

604 [104] MASS COMMUNICATION WRITING AND EDITING IN THE SECONDARY SCHOOL (3). Degree-seeking students must have permission of the instructor. High school journalism teachers and advisers learn to teach the skills that journalists need to communicate. Emphasis on the writing and thinking skills necessary to convert information into clear messages. Hill.

605 [105] DESIGN AND PRODUCTION OF SECONDARY SCHOOL PUBLICATIONS (3). Degree-seeking students must have permission of the instructor. High school journalism teachers and advisers learn to teach the skills that journalists need to produce publications. Designed for persons with no background in design. (Note: Degree-seeking students may not use both JOMC 185 and 605 to complete degree requirements.) Hill.

679 [193] SPECIAL TOPICS IN ADVERTISING. Special topic courses about various advertising topics, with subjects and instructors varying each semester. May be repeated for credit if topics are different. Staff.

Courses for Graduates

701 [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 course for all graduate students. Curtin, Meyer.

702 [202] MASS COMMUNICATION PEDAGOGY (3). Investigation of college teaching and academic life, including course planning, syllabus preparation, interpersonal skills, presentational modes, evaluation, and ways of balancing teaching with other expectations. Bowers, Walden.

703 [210] QUALITATIVE METHODS FOR MASS COMMUNICATION RESEARCH (3). Prerequisite, JOMC 701. Survey of naturalistic methods applied to mass communication research, including ethnography, in-depth interviews, life histories, and text-based analysis. Curtin, Vargas.

704 [211] STATISTICS FOR MASS COMMUNICATION RESEARCH (3). Prerequisite, JOMC 701. Statistics with emphasis on application to studies in mass communication. Prior knowledge of statistics and familiarity with computer software are NOT assumed. Stevenson, Zhao.

705 [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 master's students in the mass communication sequence. Brown, Curtin, Fee, Gibson, Shaw.

730 [230] PUBLIC RELATIONS FOUNDATIONS (3). Introduction to the growing field of public relations practice: its history, legal and ethical issues, types and areas of practice, and construction of public relations campaigns. Must be used as a basic competency class by master's students. This course cannot be counted toward a program of study for doctoral students. Dougall.

740 [264] MASS COMMUNICATION LAW (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 restraint. Required of all graduate students. Hoefges, Packer, Walden.

742 [242] READINGS IN MASS COMMUNICATION HISTORY (3). Directed readings in mass communication history. Required course for PhD students. Fee.


753 [253] REPORTING AND WRITING NEWS (6). Provides study and practice of the primary activities of a print journalist: gathering the news and writing about it for publication. Must be used as a basic competency class by master's students. This course cannot be counted toward a program of study for doctoral students. Fee.

754 [254] SPECIALIZED REPORTING (3). Prerequisite, JOMC 753 or permission of the instructor. Reporting of complicated topics, using in-depth background, 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. Friedman, Yopp.

801 [301] SEMINAR IN MASS COMMUNICATION RESEARCH METHODS (3). Prerequisites, JOMC 701 or equivalent, and permission of the instructor. Advanced work in quantitative data analysis and research preparation. Stevenson, Zhao.
830 [330] SEMINAR IN PUBLIC RELATIONS (3). Readings, discussions, and research in public relations. Boynton, Curtin, Straughan.

840 [346] SEMINAR IN MASS COMMUNICATION LAW (3). Prerequisite, JOMC 740 or permission of the 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. Hoefges, Packer, Walden.

841 [340] SEMINAR IN MASS COMMUNICATION AND SOCIETY PERSPECTIVES (3). Readings, discussion, and papers on the roles and responsibilities of mass communication in society. Johnston.

842 [342] SEMINAR IN MASS COMMUNICATION HISTORY (3). Readings, discussion, and projects in mass communication history. Shaw.

846 [346] SEMINAR IN INTERNATIONAL COMMUNICATION (POLI 846) (3). Prerequisite, JOMC 446 or permission of the 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 the influence of technology. Stevenson, Vargas

847 [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 developing nations. Vargas

870 [376] 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.

879 [379] SEMINAR IN ADVERTISING RESEARCH (3). Readings and discussion examining theories underlying advertising and the testing of those theories through research projects. Zhao.

890 [391] SEMINAR IN SPECIAL TOPICS IN MASS COMMUNICATION (3). Seminar on various aspects of mass communication, with consent and instructors varying each semester. Staff.

900 [390] READING AND RESEARCH (3). Prerequisite, permission of the instructor. Advanced reading or research in a selected field. Staff.

992 [392] NONTRADITIONAL THESIS OPTION (3). Staff.

993 [393] MASTER'S THESIS (3). Staff.

994 [394] DOCTORAL DISSERTATION (at least 6 credits needed). Staff.

DEPARTMENT OF LINGUISTICS

H. CRAIG MELCHERT, 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

Associate Professors
Misha Becker (12) Language Acquisition, Psycholinguistics, Cognitive Science
David Mora-Marín (15) Historical Linguistics, Mayan Linguistics, Linguistic Anthropology
Elliot Moreton (8) Phonetics, Phonology
Jennifer L. Smith (7) Phonology, Psycholinguistics, Japanese
J. Michael Terry (9) Semantics

Associated Faculty
Connie Eble, English Linguistics
Lawrence Feinberg, Slavic Linguistics
Peter C. Gordon, Psychology of Language
Larry D. King, Spanish and Portuguese Linguistics
William Lycan, Philosophy of Language
Catherine Malley, 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, sociolinguistics, language acquisition) or in the application of linguistics to a closely related discipline (e.g., anthropology, the 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

Course Requirements. LING 400 (Introduction to General Linguistics), 520 (Linguistic Phonetics), 523 (Phonological Theory I), 530 (Syntactic Theory I), one course from among 525 (Historical Linguistics), 528 (Language Acquisition), and 537 (Semantic Theory I), plus four elective courses in linguistics or related areas, as approved by the student's adviser, plus three hours of thesis credit, for a total of 30 hours. Note: Students are expected to complete their non-elective courses during their first year. This schedule qualifies students to take their comprehensive exam and to be considered for a linguistics teaching assistantship by their third semester. Deviations from it are therefore strongly discouraged.

Foreign Language Requirement. Reading knowledge of one foreign language (for students in historical linguistics, this must be German or French). This requirement may be met in one of three ways:

1. By passing the Graduate Student Foreign Language Test, given each November and April by The Graduate School. For precise dates, call or e-mail Ms. Leslie Van Meter, (919) 962-8145, lvameter@unc.edu. For a registration form, go directly to gradschool.unc.edu/gflpa.html.

2. Where available, by passing the reading courses for graduate students numbered 661 and 662 (these courses do not earn graduate credit).

Note: Students with some prior experience may find it feasible to meet the requirement by enrolling directly in and passing 662, bypassing 661.
3. Where neither option (1) nor option (2) is available, students may arrange to have their competence certified by a qualified faculty member, usually through an informal examination.

**Comprehensive Examination.** During the semester following completion of the non-elective courses (which should be the fall term of the second year), students must take a three-part written exam covering: (1) phonetics/phonology, (2) syntax, and (3) one area from among historical linguistics, language acquisition, and semantics. The exam is based on the respective courses and a short reading list for each section, available from the department secretary. Previous exams are available for inspection in the department office. The exam is normally given in the second or third week of the fall semester as three separate take-home exams.

**Thesis.** The master's thesis (normally 50-100 pages in length) must be approved by a committee of the thesis director plus two other faculty members. Students form their thesis committee with the advice of their advisor, who may (but need not) be the thesis director. There is no preliminary oral exam for the MA, but the department does require that students submit a prospectus of the thesis. The prospectus should state clearly what problem is to be investigated, how the investigation is to be carried out (written research, fieldwork, experiment, etc.), and a preliminary bibliography. The prospectus should first be discussed with the thesis director. Students should then submit a clear version to all three committee members and set up a meeting where the prospectus may be informally discussed and approved (perhaps with modifications). Students are also expected to consult their thesis director regularly during the actual writing of the thesis. Formal requirements regarding the format and submission of the MA thesis are found in the *Guide to the Preparation of Theses*, available from The Graduate School (this is essential reading).

**Final Oral Examination.** This exam, administered by the thesis committee, focuses on a defense of the thesis, but the faculty reserves the right to question students on other relevant topics. Students should avoid scheduling a thesis defense during the summer, since faculty members often are not available. If it is absolutely unavoidable, students should consult committee members well in advance.

**Important Degree Deadlines.** Each year The Graduate School sets deadlines for graduation in a given term (fall, spring, summer). There are two sets of dates to watch out for:

1. Students wishing to graduate must obtain an Application for Admission to Candidacy (AAC) from the department secretary, fill it out and have it signed, then take it to The Graduate School, where a Degree Card will also be filled out. These must be submitted in January for May graduation, June for August graduation, and September for December graduation. There is no penalty for failure to complete requirements for a requested graduation date, but one cannot graduate without having submitted the AAC and the Degree Card. Therefore students should submit these forms in time for any semester in which they feel they may graduate.

2. Three copies of the finished thesis must be submitted to The Graduate School (by April for May graduation, by July for August graduation, by November for December graduation). The exact dates for (1) and (2) are given in the *Graduate School Record* and are also posted by the department secretary. Students are warned to keep track of these dates. The dates for a given semester may be found online at regweb.ox.unc.edu/calendars/index.php. Click on the relevant semester under "University Registrar's Calendars."

**PhD Requirements**

**Admission.** Students are admitted to the PhD program after completion of the MA either at UNC-Chapel Hill or at another institution. Those who complete the MA in the department are not automatically eligible for the PhD program, nor may they continue to take courses in anticipation of working toward the PhD. Upon finishing the MA, students may apply for admission to the PhD program. Admission is based on evaluation of the student's overall performance and potential, including course work, comprehensive exam, thesis, and work as a teaching assistant. Outstanding students may request to skip the MA thesis and proceed directly to the PhD, but approval of such a request is not given lightly and should not be counted upon.

Students from other institutions are normally admitted directly to the PhD program only if their MA degree is in linguistics. Such students are, upon completion of one semester of coursework, required to take a diagnostic exam (similar in content to the MA comprehensive exam described above). This exam is intended to assure that PhD students from elsewhere have the same basic knowledge contained in our courses required for the MA. If the faculty finds a student's performance on the exam unsatisfactory in some area, it may require various steps to correct the deficiency (such as assigning a specific course or reading).

Students whose MA degree is in a field other than linguistics are generally admitted to the MA program in linguistics (the core course requirements are the same for both the MA and PhD, so this does not delay a student's progress). These students have the same possibility for skipping the MA thesis and admission to the PhD program as other MA students mentioned above.

**Course Requirements.** Fifty-one credit hours, of which three hours will be dissertation credit. Required are the courses stipulated for the MA plus any of the three courses - 525 (Historical Linguistics), 528 (Language Acquisition), and 537 (Semantic Theory II) - not already taken. Students must also take either linguistic field work (LING 739) or an approved philology course (consult with the director of graduate studies), plus at least one course from among 522 (Experimental Phonetics and Laboratory Phonology), 524 (Phonological Theory II), 529 (Language Acquisition II), 533 (Syntactic Theory II), and 538 (Semantic Theory II). Students in historical linguistics should take one year of a classical language such as Latin, Greek, or Sanskrit. Note: If circumstances do not permit offering a required course during the time needed by a given student, the department will waive the specific requirement.

**Foreign Language Requirements.** (a) All students must complete one year of a non-Indo-European language or one semester in the structure of a non-Indo-European language; (b) students in historical linguistics must demonstrate a reading knowledge of French and German.

**Written Comprehensive Examination.** The PhD written comprehensive examination will consist of three essays: one each from the areas of phonetics/phonology and syntax, and one from either historical linguistics, language acquisition, or semantics. While each of these essays may present original research, it is expected that at least one of these papers will be a substantial research paper demonstrating the candidate's ability to conduct original research. Students may write the other two essays on questions chosen from an approved list available in the department. The topics of all other essays (including the research paper) will be approved by the faculty in the relevant area of specialization in consultation with the director of graduate studies. The essays may be submitted at any time between the passing of the diagnostic examination and the completion of course work. Details concerning the essays may be obtained from the director of graduate studies.
Oral Examination/Dissertation Proposal. This focuses on the dissertation proposal, but the examining committee may also question the student on other relevant topics. Toward the end of course work, students should seek out an appropriate faculty member as a dissertation director, with whom a dissertation proposal should be worked out (on the form and submission of the proposal, see remarks on the MA thesis prospectus).

Sometimes two co-directors are appropriate. The dissertation proposal is presented at the oral examination to a committee of five faculty members who approve the topic. During the actual writing of the dissertation, students are expected to consult regularly with the director and at least two other members of the committee. Any radical change in the topic or plan requires reconvening of the entire dissertation committee and reapproval of the topic. The student should at an early date obtain from The Graduate School the Guide to Preparation of Theses and read it carefully.

Final Oral Examination. This exam centers on defense of the dissertation, but the committee reserves the right to question the student on other relevant topics. Students should never schedule a dissertation defense during the summer, since it is virtually impossible to arrange for the presence of all five committee members.

Important Degree Deadlines. Each year The Graduate School sets deadlines for graduation in a given term (fall, spring, summer). There are two sets of dates to watch out for:

1. Students wishing to graduate must obtain an Application for Admission to Candidacy (AAC) from the department secretary, fill it out and have it signed, then take it to The Graduate School, where a Degree Card will also be filled out. These documents must be submitted in January for May graduation, June for August graduation, and September for December graduation. There is no penalty for failure to complete requirements for a requested graduation date, but one cannot graduate without having submitted the AAC and Degree Card. Therefore, students should submit these forms in time for any semester in which they feel they may graduate.

2. Three copies of the finished thesis must be submitted to The Graduate School (by April for May graduation, by August for August graduation, by December for December graduation). The exact dates for (1) and (2) are given in the Graduate School Record and are also posted by the department secretary. Students are warned to keep track of these. The dates for a given semester may be found online at regweb.unc.edu/calendars/index.php. Click on the relevant semester under “University Registrar’s Calendars.”

Courses for Graduates and Advanced Undergraduates

409 [100] INTRODUCTION TO GENERAL LINGUISTICS (ANTH 400) (3).
An introduction to the scientific study of language. The nature of language structure. How languages are alike and how they differ. Fall. Melchert.

409 [109] COGNITIVE LINGUISTICS (See SLAV 409) (3).

415 [115] TOPICS IN LINGUISTICS (3). Directed readings on linguistic topics not covered in specific courses. Fall and spring. Staff.

445 [110] PHILOSOPHY OF LANGUAGE (See PHIL 445) (3).

455 [104] SYMBOLIC LOGIC (See PHIL 455) (3).

484 [184] LANGUAGE AND CULTURE (ANTH 484) (3).

520 [120] LINGUISTIC PHONETICS (ANTH 520) (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.


527 [127] MORPHOLOGY (3). Prerequisite, LING 101, 400, 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.)

528 LANGUAGE ACQUISITION (3). Prerequisite, LING 101, 400, or permission of the instructor. Child language from a theoretical perspective. Topics include segmentation problems, acquisition of phonology, morphology and syntax, lexical acquisition, language development in blind and deaf children and in bilinguals. Spring. Becker.

530 [130] SYNTAX I (3). Prerequisite, LING 400 or permission 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.

533 [133] SYNTAX II (3). Prerequisite, LING 530 or equivalent. Methods and theory of grammatical analysis, with special reference to transformational grammar. Spring. Hendrick.

537 [137] SEMANTICS (3). Prerequisite, LING 101, 400, or permission of the instructor. Semantics as a part of linguistic theory: co- and disjoint reference among nominal, "crossover" phenomena, quantifier scope, lexical semantics, Montague Grammar and compositional semantics, and explanatory universals in semantic theory. (On demand.) Terry.

539 [139] THE LANGUAGE OF TIME (3). Prerequisite, LING 101, 400, or permission of the instructor. The representation of time and temporal relations in natural languages. Crosslinguistic study of tense and aspect distinctions, modality, temporal adverbials, temporal anaphora, and sequences of tenses. (On demand.) Terry.

540 [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 grammars. No previous mathematics assumed. (On demand.) Staff.

541 [170] SOCIOLINGUISTICS (ANTH 541) (3). Prerequisite, LING 101, 400, or permission of the instructor. Introduction to the study of language in relation to society: variation and its correlates with socioeconomic status, region, gender, the social motivation of change; language and equality; language maintenance, planning, shift. Spring. Roberge. Mora-Marin.

542 [172] PIDGINS AND CREOLES (GERM 542) (ANTH 542) (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, universals, language change). (On demand.) Roberge.

543 [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 is given to other national context as well. (On demand.) Roberge. Hendrick.

545 [145] LANGUAGE AND MIND/LINGUISTICS AND THE BRAIN (3).
Prerequisite, LING 101, LING 400, PHIL 145, ENGL 313, 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.) Becker, Hendrick.
547 [147] LANGUAGE DEFICITS AND COGNITION (3). Prerequisite, LING 101 or permission of the 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.) Terry.

550 [150] INTRODUCTION TO INDO-EUROPEAN PHONOLOGY (3). Survey of the phonological systems of the major Indo-European languages and their development from Proto-Indo-European. Fall. (Alternate years.) Melchert.

551 [151] INTRODUCTION TO INDO-EUROPEAN MORPHOLOGY (3). Prerequisite, LING 550 or permission of the instructor. Introduction to the major morphological categories in the Indo-European languages and their development from the proto-language. Spring. (Alternate years.) Melchert.

561 [161] NATIVE LANGUAGES OF THE AMERICAS (3). Prerequisite, LING 101, 400, 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.)

564 [164] HISTORY OF THE FRENCH LANGUAGE (See FREN 526) (3).
565 [165] FRENCH PHONETICS AND PHONOLOGY (See FREN 545) (3).
566 [166] STRUCTURE OF MODERN FRENCH (See FREN 546) (3).

583 [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.)

Courses for Graduates

704 [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.)


716 [216] ADVANCED METHODS IN SYNTAX (3). Prerequisite, LING 533 or permission of the instructor. Examination of recent developments in the theory and methods of syntactic analysis. Fall. Hendrick.

723 [223] SEMINAR IN ANTHROPOLOGICAL LINGUISTICS (ANTH 723) (3).

730 [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. Melchert.

790 [250] DIALECTOLOGY (ANTH 790) (3). Principles and methods of areal linguistics and social dialectology. (On demand.)

793 [293] LINGUISTIC FIELD WORK (ANTH 793) (3). Analysis and description of a language unknown to the class from data solicited from a native informant. (Alternate years.)

794 [294] LINGUISTIC FIELD WORK II (ANTH 794) (3).

810 [310] LINGUISTICS AND PHILOSOPHY (PHIL 810) (3).

814 [238] HISTORY OF THE ENGLISH LANGUAGE (ENGL 814) (3). Prerequisite, ENGL 719 or permission of the instructor.

860 [360] SEMINAR (3). Topics vary to include specialized areas of linguistics study.

861 [361] SEMINAR (3). Seminar in phonological theory.

862 [362] SEMINAR (3). Seminar in grammatical theory.

893 [283] CURRENT PROBLEMS IN LINGUISTICS (3). This course explores relations of linguistics with neighboring fields and theoretical problems of current relevance within the discipline. Some attention to pedagogical methodology. Fall and spring. Staff.

897 [297] SPECIAL READINGS (2). Readings in linguistic topics that are not covered in the existing courses. Fall and spring. Staff.

992 [393] MASTER'S THESIS (3 or more). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

Sanskrit

411 [111] ELEMENTARY SANSKRIT (3). Grammar and readings from the epic and didactic literature. Fall. (On demand.) Melchert.


413 [201] ADVANCED SANSKRIT (3). Extensive reading from the Dhammapada, the Sutras, Brahmanas, and the Vedas. (On demand.) Staff.

414 [202] ADVANCED SANSKRIT (3). Continuation of SANS 413. (On demand.) Staff.

For Irish and Welsh, see under English; for Hebrew, see under Religious Studies; for Arabic, Chinese and Japanese, see under Asian Studies in the Undergraduate Bulletin.

DEPARTMENT OF MARINE SCIENCES

FRANCISCO E. WERNER, Chair

Professors

John M. Bane Jr. (27) Physical Oceanography, Gulf Stream Dynamics, Ocean-Air Atmosphere Interactions
Larry K. Benninger (41) Sedimentary Geochemistry
Joseph G. Carter (34) Marine Paleocology, Molluscan Systematics
Niels Lindquist (53) Chemical Ecology, Natural Products
Richard A. Luetich (48) Coastal Water Dynamics and Quality
Christopher S. Martens (10) Marine Geochemistry
Hans W. Paerl (59) Microbial Ecology
Charles H. Peterson (31) Ecology, Population Interactions
Frederic K. Pfrender (13) Microbiology
Francisco E. Werner (8) Physical Oceanography, Coupled Physical and Biological Processes

Associate Professors

Marc J. Alperin (51) Chemical Oceanography, Biogeochemistry
Carol Arnot (46) Marine Organic Geochemistry
Harvey E. Selim (66) Observational Physical Oceanography, Coastal and Estuarine Dynamics
Andreia Teske (69) Microbial Systematics and Evolution; Microbial Ecology; Microbiology of Hydrothermal Vents and the Marine Subsurface

Assistant Professors

Rachel Noble (18) Dynamics of Marine Microbial Food Webs
Mike Pfeffer, Coastal Ecosystems and Estuarine Ecology
Robert Podolsky (94) Ecology and Evolution
Anthony Rodriguez, Sedimentology, Marine and Coastal Geology
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 Anaerobic Systems
Brian O. Blanton, Coastal Ocean Modeling and Prediction, Tidal Dynamics in the Coastal Region, Storm-Surge Modeling and Grid-Type Distributed Computation
Barbara MacGregor, Microbial Ecology
Thomas J. Shay (50) Gulf Stream Dynamics, Air-Sea Interaction, Turbulence

Faculty Emeriti
A. Conrad Neumann
Jan J. Kohlmeyer

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 (East Carolina University, Geology), Marine and Coastal Geology, Sedimentology, Stratigraphy, Economic Geology
John J. W. Rogers (Geology), Geochronology, Crustal Evolution
Stephen A. Skraba (UNC-Wilmington, Chemistry), Trace Metal Geochemistry in Natural Waters
Mark D. Sovich (Environmental Sciences), Environmental Health Microbiology
Robert H. Stavn (UNC-Greensboro, Biology), Ocean Optics
Joan D. Willey (UNC-Wilmington, Chemistry), Chemical Composition of Rainwater, Silica Geochemistry

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, North Carolina. 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, geologic 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 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 503, 504, 505, and 506, 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 706), and to have taken a written comprehensive exam in his or her subdiscipline. Further information on degree requirements may be found on the Web at: www.marine.unc.edu.

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 members 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 the one-hour credit course 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.marine.unc.edu).

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.marine.unc.edu).

Marine Sciences Core Courses
503 [103] GEOLGICAL OCEANOGRAPHY (GEOL 503) (4). Prerequisite, GEOL 101 or 111, or permission of the instructor. 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.
504 [104] BIOLOGICAL OCEANOGRAPHY (BIOL 657) (ENVR 520) (4). Prerequisite, BIOL 201 or 475, or permission of the instructor. Physical, chemical, and biological factors characterizing estuarine and marine environments with emphasis on factors controlling animal and plant populations, including experimental approaches and methods of analysis, sampling, and identification. Spring. Staff.

505 [105] CHEMICAL OCEANOGRAPHY (ENVR 418) (GEOL 505) (4). Prerequisite, one semester of physical chemistry or ENVR 512 or CHEM 480, or permission of the instructor. Chemical, physical, and biological processes contributing to their distribution; problems of dispersion of conservative and nonconservative substances. Three lecture and two recitation hours a week. Fall. Alperin, Arnosti, Mattens.

506 [106] PHYSICAL OCEANOGRAPHY (GEOL 500) (4). Prerequisite, MATH 231, 232, PHYS 104, 105, 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, Seim.

Other Marine Sciences Courses

101 [12] THE MARINE ENVIRONMENT (GEOL 103) (3). Introduction to natural science emphasizing physical, chemical, biological, and geological phenomena in oceanic and coastal environments. Human use of, and impact on, marine resources. (Science majors see MASC 401) Fall and spring. Staff.

223 [123] MARINE CARBONATE ENVIRONMENTS (4). Prerequisite, permission of the instructor. Chemical and biological origins of calcium carbonate, skeletal structure and chemomicrography, breakdown, preservation, sedimentation, and early diagenesis are studied in a variety of deep and shallow environmental settings, with emphasis on understanding skeletal, limeenose origin, and carbonate facies variability. Field trip to Florida, the Bahamas, or Bermuda. Lab exercises; research report. Three lecture and two laboratory hours a week. Spring. (Alternate years.)

401 [101] OCEANOGRAPHY (BIOL 350) (ENVR 417) (GEOL 403) (3). Prerequisites, major in a natural science or at least two college-level courses in natural sciences. Introduction to 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 103. Three lecture hours a week. Fall and spring. Staff.

410 [111] EARTH PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 410) (GEOL 410) (4). Prerequisites, MATH 231, CHEM 102, PHYS 105 or PHYS 117, 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 biosphere and other environmental compartments is explored through case studies of environmental issues. Three lecture hours and one lab hour a week. Fall. Bennsinger, Band.

411 [112] OCEANIC PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 411) (GEOL 411) (4). Prerequisites, MATH 231, BIOL 101, CHEM 397, PHYS 105 or PHYS 117, or permission of the instructor. Principles of ocean, coast 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 and one lab hour a week. Spring. Shay.

415 [116] ENVIRONMENTAL SYSTEMS MODELING (ENST 415) (ENVR 461) (GEOL 415) (3). Prerequisites, MATH 383, PHYS 105 or PHYS 117 (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 analysis, mathematical methods, computational issues, and visualization techniques. Two lecture hours and one computer lab hour a week. Spring. Staff. Eisleb, Scorti, Werner.

430 [125] COASTAL SEDIMENTARY ENVIRONMENTS (GEOL 430) (3). Prerequisite, GEOL 402. An introduction to modern shallow-water sedimentary environments and their sediments, emphasizing barrier islands, deltas, estuaries, wetlands, and tidal flats. Includes local field trips and discussion application of field techniques. Spring. (Alternate years.) Staff.

431 [133] MICROPALEONTOLOGY (GEOL 431) (4). Prerequisite, GEOL 419, or MASC 440, or permission of the instructor. An in-depth study of the biostatigraphy, paleoecology, and taxonomy of various microfossil groups (e.g., Foraminifera, ostracodes, conodonts, coccoliths, Radiolarians, diatoms, acritarchs, dinoflagellates, etc.) depending on individual student objectives. Three lecture and three laboratory hours a week. (On demand.)

436 [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 lecture per week and two coastal field trips.

440 [146] MARINE ECOLOGY (BIOL 462) (3). Prerequisite, BIOL 201, BIOL 475, or MASC 442, 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.

442 [148] MARINE BIOLOGY (BIOL 457) (3). A survey of plants and animals that live in the sea: characteristics of marine habitats, organisms, and the ecosystems that are formed. Marine environment, the organisms involved, and the ecological systems that sustain them. Fall. Staff.

445 [150] MARINE INVERTEBRATE BIOLOGY (BIOL 475) (4). Prerequisites, BIOL 101, BIOL 101L, and one additional course in biology. An introduction to the major animal phyla emphasizing form, function, behavior, ecology, evolution, and classification of marine invertebrates. Three lecture and three laboratory hours per week.

448 [155] COASTAL ECOLOGY (ENST 472) (4). Prerequisites, MATH 231, CHEM 102. A field intensive study of the ecology of marine organisms and their interactions with their environment, including commercially important organisms. Lab/field work is included and contributes two credit hours to the course.

449 [137] ECOLOGY OF WETLANDS (ENVR 449) (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.

450 [119] BIOGEOCHEMICAL PROCESSES IN ENVIRONMENTAL SYSTEMS (ENST 450) (ENVR 415) (GEOL 450) (3). Prerequisites, MATH 231, BIOL 101, CHEM 251 or 261, PHYS 105 or 117, GEOL 111 or GEOL 213, 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. (Alternate years.) Arnosti, Mattens.

470 [154] ESTUARINE AND COASTAL MARINE SCIENCE (ENST 222) (4). Prerequisites, MATH 231 and either PHYS 104 or CHEM 101. Introduction to estuarine and coastal environments: 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 recitation. Fall. Alperin.

480 [152] MODELING OF MARINE AND EARTH SYSTEMS (ENVR 480) (GEOL 480) (1-3). Prerequisite, MATH 232 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.

483 [129] GEOLOGICAL AND OCEANOGRAPHIC APPLICATIONS OF GEOGRAPHICAL INFORMATION SYSTEMS (GEOL 483) (4). Prerequisites, four natural science courses or permission of the 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.

490 SPECIAL TOPICS IN MARINE SCIENCES (2-4).

499 EXPERIMENTAL COURSE FOR GRADUATES (2-4).

503 [103] GEOLOGICAL OCEANOGRAPHY (GEOL 503) (4).

504 [104] BIOLOGICAL OCEANOGRAPHY (BIOL 657) (ENVR 520) (4).

505 [105] CHEMICAL OCEANOGRAPHY (ENVR 505) (GEOL 505) (4).


550 [140] BIOGEOCHEMICAL CYCLING (GEOL 550) (3). Prerequisite, MASC 553, GEOL 512 or 655 or GEOL 510, or ENVR 421, or MASC 505, 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. Fall and spring. Martens, Anosy, Teske.

551 [143] BIOGEOCHEMICAL TECHNIQUES (2). Prerequisite or corequisite, MASC 505. 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. Alber.

552 [144] ORGANIC GEOCHEMISTRY (ENVR 552) (GEOL 552) (3). Prerequisite, MASC 505 or CHEM 261, 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.) Anosy.

553 [145] GEOCHEMISTRY (GEOL 512) (3). Prerequisites, GEOL 101 or 111, CHEM 102, or permission of the instructor. Introduction to the application of chemical principles to geological problems, with emphasis on isotopic methods. Spring. Benninger.

560 [151] FLUID DYNAMICS (ENVR 452) (GEOL 560) (PHYS 660) (3). Prerequisite, PHYS 301 or permission of the instructor. 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.


563 [156] DESCRIPTIVE PHYSICAL OCEANOGRAPHY (GEOL 563) (3). Prerequisite, MASC 506 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. Three lecture hours a week. Spring. (Alternate years.) Bane, Sein.

706 [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.

741 [248] SEMINAR IN MARINE BIOLOGY (2). Discussion of selected literature in the field of marine biology, ecology, and evolution. Fall, spring, or summer. Bruno.

742 [147] MOLECULAR POPULATION BIOLOGY (BIOL 758) (4). Prerequisites, BIOL 471 and permission of the instructor. Hands-on training, experience, and discussion of the application of molecular genetic tools to questions of ecology, evolution, systematics, and conservation.

750 [250] MODELING DIAGENETIC PROCESSES (3). Prerequisite, MASC 480 or permission of the instructor. An introduction to the theory and application of modeling biogeochemical processes in sediments. Diagnostic theory, numerical techniques, and examples of recently developed sediment models. Three lecture hours a week. Spring. (Alternate years.) Alperin.

761 [251] GEOPHYSICAL FLUID DYNAMICS (3). Prerequisite, MASC 560, MATH 528, or permission of the instructor. Momentum equations in a rotating reference frame, vorticity, potential vorticity, circulation, the shallow water model, Rossby and Kelvin waves, the Ekman layer. Three lecture hours a week. Spring. (Alternate years.) Bane, Sein, Scotti.

762 [252] OCEAN CIRCULATION THEORY (3). Prerequisite, MASC 506, MASC 560, MATH 529, or permission of the instructor. Theories, models of large-scale dynamics of ocean circulation. Potential vorticity, quasi-geostrophy, instabilities. Fall. (Alternate years.) Bane, Sein, Scotti, Werner.

763 [253] COASTAL CIRCULATION (3). Prerequisite, MASC 560, MASC 560, MATH 529, or permission of the 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, Sein.

764 [254] OCEAN CIRCULATION MODELING (3). Prerequisite, MASC 506, MATH 529, or permission of the instructor. Computational methods used in modeling oceanic circulation. Numerical solution of equations governing mass, momentum, and energy equations. Spring. (Alternate years.) Werner.


781 [221] NUMERICAL ODE/PDE I (MATH 761) (ENVR 761) (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. Staff.

782 [222] NUMERICAL ODE/PDE II (MATH 762) (ENVR 762) (3). Elliptic equation methods (finite differences, elements, integral equations); hyperbolic
conservation law methods (Lax-Friedrich, characteristics, entropy condition, shock tracking/capturing); spectral, pseudo-spectral methods; particle methods, fast summation, fast multipole/vortex methods. Spring. Staff.

783 [228] MATHEMATICAL MODELING I (MATH 768) (ENVR 763) (3).
Nondimensionalization and identification of 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. Staff.

784 [229] MATHEMATICAL MODELING II (MATH 769) (ENVR 764) (3).
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). Spring. Staff.

940 [300] RESEARCH IN MARINE SCIENCES (2 or more).

992 [393] MASTER'S THESIS (3 or more).

994 [394] DOCTORAL DISSERTATION (3 or more).

Courses in other departments that are considered appropriate for a graduate major in marine sciences
Biol. 475 Invertebrate Zoology. Lohman.
Biol. 451 Comparative Physiology. Kier.
Biol. 451L Comparative Physiology Laboratory. Kier.
Biol. 478 Invertebrate Paleontology. Carter.
Biol. 551 Comparative Biomechanics. Kier.
Biol. 666L Community and Systems Ecology Laboratory. Rice.
Envr. 421 Sources, Transport, and Fate of Environmentally Important Materials. Spring.
Envr. 422 Environmental Microbiology. Pfender.
Envr. 442 Limnology and Water Pollution. Staff.
Envr. 522 Chemical Equilibrium in Natural Waters. Johnson, Singer.
Envr. 524 Environmental Analytical Chemistry. Charles.
Geol. 509 Groundwater. Benninger.
Geol. 510 Geochemistry of Natural Waters. Benninger.
Geol. 518 Geodynamics. Rogers.
Geol. 519 History of the Earth. Rogers.
Geol. 655 Physical Geochemistry. Benninger.
Geol. 707 Stratigraphic Paleontology: Cenozoic Cretaceous Nannofossils.

Geol. 708 Stratigraphic Paleontology: Cenozoic Cretaceous Nannofossils.
Math. 528 Mathematical Models for the Physical Sciences I.

Department of Mathematics

Patrick Eberlein, Chair

Professors
Idris Assani (57) Dynamical Systems, Ergodic Theory of Operators
Thomas H. Brylawski (22) Combinatorics
Roberto A. Camassa (16) Mathematical Modeling, Nonlinear Waves, Propagation, Dynamical Systems
Ivan V. Cherednik (48) Representation Theory, Mathematical Physics, Algebraic Combinatorics
Joseph A. Cima (4) Complex Analysis, Functional Analysis
James N. Damon (14) Singularity Theory, Differential Topology
Patrick B. Eberlein (6) Differential Geometry
M. Gregory Forest (7) Nonlinear Waves, Solitons, Fiber Flows of Complex Liquids
Ladnor D. Geissinger (5) Combinatorics, Group Characters
Susan E. Goodman (3) Topology, Dynamical Systems
Jane M. Hawkins (38) Ergodic Theory, Dynamical Systems
Norbert Kerzman (32) Several Complex Variables, Partial Differential Equations
Parvuy Kumar (46) Representation Theory, Geometry of Flag Varieties
Richard McLaughlin (50) Fluid Dynamics and Turbulent Transport
Michael L. Minion (11) Scientific Computation, Computational Fluid Dynamics, Adaptive Mesh Refinement
Karl E. Petersen (20) Ergodic Theory
John A. Pflaum (22) Complex Analysis
Joseph F. Plante (23) Foliations, Dynamical Systems
Robert A. Proctor (43) Combinatorics, Representation Theory
William W. Smith (25) Commutative Algebra
Michael E. Taylor (40) Partial Differential Equations, Harmonic Analysis, Operator Theory
Alexandre N. Varchenko (47) Geometry, Mathematical Physics
Jonathan M. Wahl (28) Algebraic Geometry
Mark Williams (36) Partial Differential Equations
Warren R. Wogen (29) Operator Theory

Associate Professors
David Adalsteinsson (1) Applied Mathematics and Scientific Computation
Jingfang Huang (51) Integral Equation Methods and Fast Algorithms
Lev Rozansky (52) Three-Dimensional Topology

Assistant Professors
Prakash Belkale (57) Algebraic Geometry
Sorin Mitran (58) Computational Methods for Partial Differential Equations, Continuum–Kinetic Methods, Fluid Dynamics, Biological Fluid Dynamics and Mechanics
Peter Mucha (60), Fluid Dynamics, Suspensions, Sedimentation, Granular Flows
Rheology, Computer-Generated Animation, Networks
Richard Rimanyi (59), Topology, Geometry, Singularities

Profs. Emeriti
Robert L. Davis
William H. Graves
Robert G. Heyneman
Annel C. Mewborn
Michael Schlessinger
Johann Sonner
James Sashoff
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 advisor in an allied discipline. The MAT degree is also available with a minor 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 departments 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 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 600 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 (676, 677), analysis (653, 656), geometry-topology (680, 681), scientific computation (661, 662), and methods of applied mathematics (668, 669). The PhD comprehensive exams are based on the content of the first-year sequences. These exams are offered in January and August of 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 600 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 700 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 3:1 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 advisor. 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

401 [101] MATHEMATICAL CONCEPTS IN ART (3). 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.) Bylicki.

406 [106] MATHEMATICAL METHODS IN BIOSTATISTICS (3). Prerequisite: MATH 232 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.
411 [111] DEVELOPING MATHEMATICAL CONCEPTS (3). Prerequisite, consent of the instructor. An investigation of various ways 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.


418 [118] BASIC CONCEPTS OF ANALYSIS (3). Prerequisites, MATH 232 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.

435 [126] INTRO TO PROBABIL (STAT 435) (3). Prerequisite, MATH 233. An introduction to the mathematical theory of probability, covering random variables; moments; binomial, Poisson, normal, and related distribution; generating functions; sums and sequences of random variables; combinatorial and statistical applications. Fall and spring.

452 [107] MATHEMATICAL BIOLOGY (BIOL 452) (4).

515 [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.

521 [121] ADVANCED CALCULUS I (3). Prerequisites, MATH 233 and 381. The real numbers; continuity and differentiability of functions of one variable; infinite series; integration. Fall and spring.

522 [122] ADVANCED CALCULUS II (3). Prerequisite, MATH 521. Functions of several variables; derivative as linear transformation; inverse and implicit function theorems; multiple integration. Spring.

523 [123] FUNCTIONS OF A COMPLEX VARIABLE WITH APPLICATIONS (3). Prerequisite, MATH 383. The algebra of complex numbers, elementary functions and their mapping properties, complex lines, power series, analytic functions; contour integrals. Cauchy's theorem and formulae, Laurent series and residue calculus, elementary conformal mapping and boundary value problems. Poisson integral formula for the disk and the half plane. Spring.

524 [124] ELEMENTARY DIFFERENTIAL EQUATIONS (3). Prerequisite, MATH 383. Linear differential systems, power series solutions, Laplace transforms, numerical methods. Fall and spring.

528 [128] MATHEMATICAL METHODS FOR THE PHYSICAL SCIENCES I (3). Prerequisites, MATH 383 and PHYS 104-105, or equivalent. Theory and applications of Fourier series and transform. Laplace transform; Sturm-Liouville problems. Students are expected to do some numerical calculations with a programmable calculator or a computer. Fall.

529 [129] MATHEMATICAL METHODS FOR THE PHYSICAL SCIENCES II (3). Prerequisites, PHYS 104-105, and one of MATH 521, 524, or 528 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.

533 [133] ELEMENTARY THEORY OF NUMBERS (3). Prerequisites, MATH 232 and 381. Divisibility, Euclidean algorithm, congruences, residue classes, Euler's function, primitive roots, Chinese remainder theorem, quadratic residues, number theoretic functions. Farey and continued fractions, Gaussian integers. Fall and spring.

534 [134] ELEMENTS OF MODERN ALGEBRA (3). Prerequisite, MATH 381. Sets and functions, rings, ordered integral domains, integers, fields and rational numbers, real and complex numbers, polynomials, groups. Fall and spring.

547 [147] LINEAR ALGEBRA FOR APPLICATIONS (3). Prerequisite, MATH 233. Algebra of matrices with applications; determinants; solutions of linear systems by Gaussian elimination; Gram-Schmidt procedure; eigenvalues. MATH 416 may not be taken for credit after credit has been granted for Math 547. Fall, spring, and summer.

548 [148] COMBINATORIAL MATHEMATICS (STAT 150) (3). Prerequisite, MATH 381 or permission of the instructor. Recurrence relations and generating functions; graph and graph algorithms, principle of inclusion-exclusion. Fall.

550 [130] TOPOLOGY (3). Prerequisite, MATH 233; corequisite, MATH 383 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, tesselations and fundamental group. Research problems discussed at elementary level. Spring.

551 [131] EUCLIDEAN AND NON-EUCLIDEAN GEOMETRIES (3). Prerequisite, MATH 381 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.

555 [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.

564 [145] MATHEMATICAL MODELING (3). Prerequisites, MATH 383; some knowledge of computer programming or permission of instructor. Model validation and numerical simulations using differential equations, probability, and iterated maps. Applications may include conservation laws, dynamics, mixing, geophysical flows and climate change, fluid motion, epidemics, ecological models, population biology, cell biology, and neutron dynamics.

565 [125] COMPUTER-ASSISTED MATHEMATICAL PROBLEM SOLVING (3). Prerequisite, MATH 383. 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 language. Emphasis on graphics. Fall.

566 [166] INTRODUCTION TO NUMERICAL ANALYSIS (3). Prerequisites, MATH 383 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.


578 [138] ALGEBRAIC STRUCTURES (3). Prerequisite, MATH 577 or 547. 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.

579 [157] TOPICS IN MATRIX THEORY (3). Prerequisites, MATH 577 or 547 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.

590 [175] TOPICS IN ANALYSIS (3). Prerequisite, MATH 522 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.
591 [176] TOPICS IN ALGEBRA (3). Prerequisite, consent of the instructor. Topics may include number theory, algebraic number theory, field theory, and algebraic geometry.

592 [177] TOPICS IN GEOMETRY (3). Prerequisite, consent of the instructor. Topics may include non-Euclidean geometries, linear geometry, finite geometries, topology, and algebraic geometry.


641 [189] ENUMERATIVE COMBINATORICS (3). Prerequisite, MATH 578 or permission of the instructor. Basic counting, partitions, recursions and generating functions, signed enumeration, counting with respect to symmetry, plane partitions and tableaux.

643 [190] COMBINATORIAL STRUCTURES (3). Prerequisite, MATH 578 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.

653 [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.


657 [197] QUALITATIVE THEORY OF DIFFERENTIAL EQUATIONS (3). Prerequisites: linear algebra and MATH 653, or consent of the instructor. Existence and uniqueness theorems, linear and non-linear systems, differential equations in the plane and on surfaces, Poincare-Bendixon theory, Liapounov stability and structural stability, critical point analysis. Spring.


668 [198] METHODS OF APPLIED MATHEMATICS I (ENVR 668) (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. Fall.

669 [199] METHODS OF APPLIED MATHEMATICS II (ENVR 669) (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.

676 [186] MODULES, LINEAR ALGEBRA, AND GROUPS (3). Prerequisite, MATH 578 or permission of the instructor. Modules over rings, canonical forms for linear operators and bilinear forms, multilinear algebra, group and group actions. Fall.

677 [187] GROUPS, REPRESENTATIONS, AND FIELDS (3). Prerequisite, MATH 676. Internal structure of groups, Sylow theorems, generators and relations, group representations, fields, Galois theory, category theory. Spring.

680 [180] GEOMETRY OF CURVES AND SURFACES (3). Prerequisite, advanced calculus. Topics include: curves, Frenet formulas, isoperimetric inequality, theorems of Crofton, Fenchel, Fary-Milnor; surfaces: fundamental forms, Gaussian and mean curvature, special surfaces, geodesics, Gauss-Bonnet theorem. Fall.


751 [201] INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS (3). Prerequisite, MATH 653. 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 equation, heat equation.

753 [203] MEASURE AND INTEGRATION (3). Prerequisite, MATH 653 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, Hausdorff measure and convolution. Fall.

754 [204] INTRODUCTORY FUNCTIONAL ANALYSIS (3). Prerequisite, MATH 753. Hahn-Banach and separation theorems. Normed and locally convex spaces, duals of spaces and maps, weak topologies; closed graph and open mapping theorems, uniform boundedness theorem, linear operators. Spring.

755 [205] ADVANCED COMPLEX ANALYSIS (3). Prerequisite, MATH 656. Laurent series; Morera-Leibler’s Theorems; Riemann mapping theorem; Runge’s theorem; additional topics chosen from: harmonic, elliptic, univalent, entire, meromorphic functions; Dirichlet problem; Riemann surfaces. Fall.

756 [206] SEVERAL COMPLEX VARIABLES (3). Prerequisite, MATH 656. Elementary theory, the Cousin problems, domains of holomorphy, Runge domains and polynomial approximation, local theory, complex analytic structures, coherent analytic sheaves and Stein manifolds, Cartan’s theorems. (Alternate years.)

761 [221] NUMERICAL ODE/PDE I (ENVR 761) (MASC 781) (3). Prerequisites, MATH 661 and 662. Single, multi-step 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.

762 [222] NUMERICAL ODE/PDE II (ENVR 762) (MASC 782) (3). Prerequisite, MATH 761. Elliptic equation methods (finite differences, elements, integral equations); hyperbolic conservation law methods (Lax-Friedrich, characteristics, entropy condition, shock tracking/capturing); spectral, pseudo-spectral methods; particle methods, fast summation, fast multipole methods. Spring.

768 [228] MATHEMATICAL MODELING I (ENVR 763) (MASC 783) (3). Prerequisites, MATH 668, 669, 661, and 662. 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.

769 [229] MATHEMATICAL MODELING II (ENVR 764) (MASC 784) (3). Prerequisites, MATH 668, 669, 661, and 662. Current models in science and technology: topics ranging from material science applications (e.g., flow of polymers and LCQ); geophysical applications (e.g., ocean circulation, quasi-geostrophic models, atmospheric vortices). Spring.

771 [231] COMMUTATIVE ALGEBRA (3). Prerequisite, MATH 677. Field extensions, integral ring extensions, Nullstellensatz and normalization theorem, derivations and separability, local rings, valuations, completions, filtrations and graded rings, dimension theory. Spring.

773 [273] LIE GROUPS (3). Prerequisites, MATH 676 and 781. Lie groups, closed subgroups, Lie algebra of a Lie group, exponential map, compact groups.
Haar measure, orthogonality relations, Peter-Weyl theorem, maximal torus, representations, Weyl character formula, homogeneous spaces. Spring.

**774 [274] LIE ALGEBRAS** (3). Prerequisite, MATH 676. 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.

**775 [257] ALGEBRAIC GEOMETRY** (3). Prerequisite, MATH 771. 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.)

**776 [286] ALGEBRAIC TOPOLOGY** (3). Prerequisites, MATH 681 and 676. Homotopy and homology, simplicial complexes and singular homology; other topics may include cohomology, universal coefficient theorems, higher homotopy groups, fibre spaces. Spring.


**782 [272] DIFFERENTIAL GEOMETRY** (3). Prerequisite, MATH 781. Riemannian geometry, first and second variation of area and applications, effect of curvature on homology and homotopy, Chern-Weil theory of characteristic classes, Chern-Weil-Bott theorem, Spring. (Alternate years.)

**853 [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.)

**854 [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.)

**857 [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.

**891 [210] TOPICS IN ANALYSIS** (3). Prerequisite, consent of the instructor. Subjects may include geometric function theory, Riemann surfaces, calculus of variations, distribution theory, partial differential equations, or Fourier analysis. Spring.

**892 [215] TOPICS IN COMPUTATIONAL MATHEMATICS** (3). Prerequisites, MATH 661 and 662. Topics may include: finite element method; numerical methods for hyperbolic conservation laws, infinite dimensional optimization problems, variational inequalities, inverse problems. Spring.

**893 [234] TOPICS IN ALGEBRA** (3). Prerequisite, MATH 677. Topics from the theory of rings, theory of bialgebras, homological algebra, algebraic number theory, categories and functions.

**894 [253] TOPICS IN COMBINATORIAL MATHEMATICS** (3). Prerequisite, MATH 642 or consent of the instructor. Topics may include: combinatorial geometries, coloring and the critical problem, the rankes algebra, reduced incidence algebras and generating functions, binomial enumeration, designs, valuation module of a lattice, lattice theory. Spring. (Alternate years.)

**895 [277] SPECIAL TOPICS IN GEOMETRY** (3 each). Prerequisite, MATH 781. Topics may include elliptic operators, complex manifolds, exterior differential systems, homogeneous spaces, integral geometry, submanifolds of Euclidean space, geometrical aspects of mathematical physics. Fall. (Alternate years.)

**896 [287] TOPICS IN ALGEBRAIC TOPOLOGY** (3). Prerequisite, MATH 776 or permission of the instructor. Topics primarily from algebraic or differential topology, such as cohomology operations, homotopy groups, fibre bundles, spectral sequences, K-theory, cobordism, Morse Theory, surgery, topology of singularities. Fall and spring. (Alternate years.)

920 [390] SEMINAR AND DIRECTED READINGS (1-3).

921 [391] SEMINAR (3).

922 [392] MASTER'S PROJECT (3 or more).

923 [393] MASTER'S THESIS (3 or more). (This should not be taken by students electing nonthesis master's projects.)

924 [394] DOCTORAL DISSERTATION (3 or more).

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**MEDIEVAL STUDIES**

See Department of Classics.

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**DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY**

JEFFREY A. FRELINGER, Chair

**Professors**

Steven L. Bachenheimer (30) Molecular Biology of Viruses

*Ralph Baric (76) Molecular Mechanisms of Virus Cross-Species Transmissibility and Pathogenesis*

Jaime G. Cannon (43) Genetics of Pathogens, Pathogenesis of Infectious Disease, Tumorigenesis and Metastasis

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 Dani (87) Plant Genetics, Plant Disease Resistance and Cell Death Control, Bacterial Type III Secretion Systems*

Marshall H. Edgell (77) Molecular Biology, Protein Biophysics, High Throughput Analyses, Physical Bases for Allostery

SUSAN A. FICSIC (65) HIV Pathogenesis and Diagnostics

James D. Folds (9) Immunology of Treponema Pallidum Infection, Clinical Immunology

Jeffrey A. Frelinger (47) Immunogenetics, Cellular Immunology, Immunoresponse to Pathogens

Peter H. Gilgan (51) Bacterial Toxins, Clinical Microbiology

Jack Griffith (35) Chromosome Structure, Viruses and Their Host Cells

*Norrin M. Hadler (56) Mechanism and Control of Chronic Inflammatory Response*

*Eng-Shiang Huang (48) Molecular Biology, Pathogenesis of Human Cytomegalovirus*

Robert E. Johnson (66) Molecular Genetics of Viral Pathogenesis, Recombinant Viral Vaccines

David G. Klapper (33) Immunochemistry, Development of Protein Technology, Structure of Proteins of Immunologic Interest

*David A. Margolis, Regulation of Gene Expression, Molecular Biology of Retroviruses, HIV Pathogenesis*

Steven R. Meshnick (81) Malaria and Plasmodiology, Molecular Epidemiology, Pathogenesis, Drug Resistance

John E. Newbold (13) Molecular Virology

Joseph S. Pagano (14) Epstein-Barr Virus and Ubiquitin-Proteasomal Systems, Interferon Regulatory Factors, Invasion and Metastasis and Anti viral Drugs

Dhaval Kumar Patel, Inflammation, Chemokines, GPCR Signal Transduction

Nancy Raab-Traub (52) Molecular Virology and Oncogenesis

Howard M. Reissner (32) Immunogenetics of Human Plasma Proteins (particularly IgG and Coagulant Factors VII and IX)

R. Balfour Satter (77) Endotoxin and Pathogenesis of Inflammatory Bowel Disease (especially Crohn's Disease and Associated Extraintestinal Manifestations)

*P. Frederick Sparking (18) Bacterial Pathogenesis, Molecular Biology of Bacterial Membranes*
**Associate Professors**

Robert Bature (64) Signal Transduction in Bacteria, Chemotaxis
Edward J. Collins (69) Immune Recognition, T-Cell Activation, Host-Pathogen Interactions
Blessom Damania (79) Kaposi's Sarcoma-Associated Herpesvirus (KSHV/HHV-8), Rhesus Monkey Rhadinovirus (RRV)
Aravinda de Silva (73) Arthropod Vector-Borne Infectious Diseases and Microbial Pathogenesis
Patrick M. Flood (60) T-Cell Biology, Tumor Immunity, Neuroimmunology
Jean Handy (57) Virus Infection and Host Nutrition
Andrew H. Kaplan (72) Human Immunodeficiency Virus, Infectious Diseases
Thomas Kauff (63) Bacterial Genetics, Microbial Pathogenesis
Zhi Liu, Biochemistry, Cell Biology, and Immunology of Herpesvirus and Basement Membrane
Silva Markovic-Plese, Autoimmune Response in Multiple Sclerosis, New Immunomodulatory Therapies
Glenn Matsushima (68) Molecular Neuroimmunology, Innate Immunity
Jonathan Serody (82) Transplantation and Tumor Immunology
Diane C. Shugars, HIV Pathogenesis
Lishan Su (71) Immune Development, Viral Pathogenesis
Roland Tisch (70) Immune Tolerance, T-Cell Antigen Recognition, T-Cell Mediated Autoimmunity, Tumor Antigen-Specific Genetic Vaccines, Type 1 Diabetes

**Assistant Professors**

Miriam Bronstein (80) Bacterial Pathogenesis, Molecular Genetics, Tuberculosis
Christina Busch, Experimental Studies of Evolution using Viruses
Bruce Cairns, Immune Response to Injury, Cellular Immunology, Transplantation
Dirk Dittrich (68) West Nile Virus (WNV) and Kaposi's Sarcoma-Associated Herpesvirus (KSHV/HHV-8)
Morgan Giddings (85) Bioinformatics, Proteomics, Post-Genomic Complexity, Cellular Modeling, Bacterial Pathogenesis
Mark Hise (83) Molecular Genetics of Viral Pathogenesis
Tal Kafri, Development of HIV-Based Vector for Gene Therapy
Raymond Pickles (86) Respiratory Viruses, Host Innate Defense in the Airways, Virus-Host Cell Interactions, Gene Therapy for Cystic Fibrosis and Other Lung Diseases
Barbara J. Vilen (78) Molecular Immunology, Signal Transduction, and B Cell Tolerance
Jennifer Webster-Cyriac (84) Oral Manifestations of Systemic Disease, Host-Virus Interactions, Viral Oncogenesis, Viral Pathogenesis during Immunosuppression, Signal Transduction, Cellular Biology, Gene Expression
Matthew C. Wolfgang (89) Microbial Pathogenesis, Bacterial Gene Regulation, 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 Ellis, Bacterial Pathogenesis, Iron Acquisition
Marcia M. Hoiby, Pathogenesis of Non-Viral Sexually Transmitted Infections (Trichomonas vaginalis, Neisseria gonorrhoeae) and Molecular Diagnostics

**Research Assistant Professors**

W. June Bricker, Host Immune Responses, Expression Profiling by Microarrays
Edward Gessner, Epstein-Barr Virus (EBV), Antiviral Drugs

Alexander Makov
Robert Male
Karen McElroy, Dendritic Cell Induction of Tumor Specific CD4 and CD8 T Lymphocytes
Ruth Silversmith, Bacterial Chemotaxis, Mechanisms of Phosphotransfer Reactions

**Professors Emeriti**

Kenneth F. Bort
William J. Crowe, Jr.
Harry Gooder
Clyde A. Hutcison III
C. Philip Marrie
John H. Schwab
Myron S. Silverman
Robert Yvarog
*joint faculty member*

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's degree is granted only under special conditions. Research in the department, supported by funds from the University, the National Institutes of Health, the National Science Foundation, the 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, pathogenetic mechanisms, molecular genetics, various areas of immunology, eukaryotic cell and molecular biology, and bioinformatics.

For detailed information, visit the department's Web site at www.med.unc.edu/microimm.

**Facilities**

The department occupies approximately 33,000 square feet of the Mary Ellen Jones laboratory office building. A significant number of faculty who hold primary appointments in the department have laboratories housed in the adjacent Lineberger Comprehensive Cancer Center, as well as other departments within the School of Medicine and the School of Public Health.

Major equipment available to laboratories includes high-resolution transmission electron microscopes, automated instrumentation for amino acid analysis and micro-protein sequencing, peptide and oligonucleotide synthesizers, high pressure liquid chromatography systems, fluorescence-activated cell sorters and analyzers, magnetic cell separation equipment, digital fluorescence microscope, and a phosphorimeter.

Large, well-equipped research laboratories are supplemented by dedicated tissue culture facilities, darkrooms for X-ray film and photographic applications, warm and cold rooms, supervised animal care facilities, and a P3 physical containment facility for viral research.

The department also contains computer facilities with connections to the Medical Center computer system, which provides access to several sequence comparison programs, including GCG sequence analysis package.

In addition, the University provides access to major technology core facilities with major equipment and expertise including genomics, NMR, animal histopathology, oligonucleotide synthesis, proteomics, X-ray crystallography, vectors, bioinformatics, animal models (transgenic mice and embryonic stem cell services), DNA sequencing, gene chip, flow cytometry, confocal microscopy, and mass spectrometry.
Financial Assistance

In 2005 students received an annual stipend of $22,500 plus in-state 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 pre-doctoral fellowship from the Howard Hughes Medical Institute and/or 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; the number of applications that we receive far exceeds the number of applicants that we can admit. 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 Test of English as a Foreign Language (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.

How to Apply

For information on how to apply, please visit the department's Web site at www.med.unc.edu/microimm.

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 631 and 632 or MCRO 643 and 644 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 701, 702, and 901; 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 Cell and Developmental 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 during 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

515 [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.

614 [114] IMMUNOBIOLOGY (3). Prerequisites, a strong background in molecular biology, eukaryotic genetics, and biochemistry, and permission of the instructor. Topics include immunochimistry; genetic mechanisms and the development of cells and cell interactions; hypersensitivity, autoimmunity, and resistance to infection. Three lectures. Fall. Collins, Vilen, Su.

615 [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. Hour and credit to be arranged, any term. Staff.


631 [108] ADVANCED MOLECULAR BIOLOGY I (GNET 631) (BIOL 631) (PHCO 631) (BIOL 631) (3). Prerequisites for undergraduates, 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 chromosomes, structure, replication, recombination, repair, and genome fluidity. Three lecture hours. Fall. Griffith, Sancier, staff.

632 [109] ADVANCED MOLECULAR BIOLOGY II (GNET 632) (BIOL 632) (PHCO 632) (BIOL 632) (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. Marshull, Baldwin, Strahl, staff.

635 [135] BACTERIOLOGY (3). Selected aspects of bacterial cell structure, physiology, genetics, genomics, gene expression, signal transduction, and growth outside the laboratory environment. Fall (alternates years). Braunstein, staff.

640 [140] MICROBIAL PATHOGENESIS (4). Prerequisites, MCRO 630 and 635, or permission of the 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. Staff.

643 [117] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (CBIO 643) (BIOL 643) (PHCO 643) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Fall. Erickson.

644 [118] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (CBIO 644) (BIOL 644) (PHCO 644) (3). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function, and transformation. Spring. Cox.

Courses for Graduates

701, 702 [201, 202] SEMINAR IN MICROBIOLOGY (1 each). Seminars on selected topics in microbiology. Fall and spring. Staff.

710 [210] SEMINAR/TUTORIAL IN PROKARYOTIC MOLECULAR BIOLOGY (Vac.). 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. Staff.
711 [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. Staff.

712 [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.

790 [290] DIRECTED READINGS IN PROKARYOTIC MOLECULAR BIOLOGY (1). Prerequisite, one prior prokaryotic molecular biology course or permission of the instructor. Directed readings in prokaryotic molecular biology under the direction of a member of the graduate faculty. May be repeated for credit.

791 [291] DIRECTED READINGS IN VIROLOGY (1). Prerequisite, one prior virology course or permission of the instructor. Directed readings in virology under the direction of a member of the graduate faculty. May be repeated for credit.

792 [292] DIRECTED READINGS IN IMMUNOLOGY (1). Prerequisite, one prior immunology course or permission of the instructor. Directed readings in immunology under the direction of a member of the graduate faculty. May be repeated for credit.

795 [295] RESEARCH CONCEPTS (2). Prerequisite, permission of the instructor. This course will provide multiple opportunities for the student to write parts of hypothesis-based proposals, receive substantial feedback, and to rewrite the text. There will be approximately ten single-page writing assignments. Edgell, Bourret, Hobbis.

901 [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 the advice and guidance of the staff. May be repeated for credit two or more semesters. Hours and credit to be arranged, any term. Staff.

993 [393] MASTER'S THESIS (3 or more each semester). Staff.

994 [394] DOCTORAL DISSERTATION (3 or more each semester). Staff.

DEPARTMENT OF MUSIC
TIM CARTER, Chair
Annegeret Fauser, Director of Graduate Studies

Professors
Mark Evan Bonds (6) Late Eighteenth- and Nineteenth-Century Music, Aesthetics
Tim Carter (3) Late Sixteenth- and Seventeenth-Century Music, Music and Theater, Analysis
Annegeret Fauser (7) Nineteenth- and Early Twentieth-Century Music, French Music, Women's and Gender Studies, Cultural Studies
Jon W. Finson (36) Nineteenth-Century Music, American Music
John L. Nadas (57) Late Medieval Music, Italian Opera
Severine Neff (12) Twentieth-Century Music and Theory

Associate Professors
Anne MacNeil (8) Sixteenth- and Seventeenth-Century Music, Music and Theater, Gender Studies, Historiography

Adjunct Associate Professor
Philip Vandermeen, Traditional and American Popular Music

Assistant Professors
Jocelyn Neal (5) Twentieth-Century Theory, Popular Music
David Garcia (11) Latin American Music, Popular Music
Mark Katz (8) World Musical Technology, Popular Music, American Music
Felix Wörner (6) History of Theory, Twentieth-Century Music

Degrees
The department offers the degrees of master of arts (MA) in musicology and the doctor of philosophy (PhD) in musicology, conferring "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 degree 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.

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 (GRE). The GRE should be taken early enough for the scores 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 must also 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 750 and 751 (Resources and Methods in Musicology I and II) are required of all MA students in their first and second semesters respectively, as is MUSC 992 (Master's Thesis) in the fourth semester. Other courses are drawn from a range of offerings comprising seminars (research, methodology, 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 seminar. 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 750 and 751 (Resources and Methods in Musikology I and II) in their first two semesters respectively, in addition to four proseminars 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 their 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), 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 graduate students 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 $14,000 to $18,000. Assistantships awarded by the department to qualified students require about ten hours of service per week. Departmental awards average $14,000 and usually include tuition remission for out-of-state students, payment of in-state tuition, and other benefits.

Courses for Graduates

750 [101] RESOURCES AND METHODS OF MUSIKOLOGY I (3). Introduction to the field of musiqueology, 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, ethnomusicalology, music aesthetics, and cultural studies. Fall.

751 [102] RESOURCES AND METHODS OF MUSIKOLOGY II (3). Continuation of MUSC 750. Spring.

830 [248] PROSEMINAR IN MUSIC THEORY (3). Fall and spring.

840 [249] PROSEMINAR IN MUSIKOLOGY (3). Fall and spring.

870 [250] PROSEMINAR IN ETHNOUSIKOLOGY (3). Fall and spring.

890 [298] SPECIAL STUDIES (Var.). The faculty assists and advises graduate students in work on particular research projects. Available to musiqueology graduate students only (MAT students taking special studies must register under MUSC 471). Hours and credits to be arranged.

930 [336] SEMINAR IN MUSIC THEORY (3). Fall and spring.

950 [337] SEMINAR IN MUSIKOLOGY (3). Fall and spring.

970 [338] SEMINAR IN ETHNOUSIKOLOGY (3). Fall and spring.

992 [393] MASTER’S THESIS (3). Fall and spring.

994 [394] DOCTORAL DISSERTATION (3). Fall and spring.

CURRICULUM IN NEUROBIOLOGY

PAUL B. MANIS, Director

Professors

Albert Baldwin, Regulation and Biological Functions of the Transcription Factor NF-κB and the Role of NF-κB in Disease, with a Particular Emphasis on Cancer and Cancer Therapy.

W. E. Bollenbacher (109) Developmental Neuroendocrinology

Thomas W. Bouldin (98) Neurotoxicology, Models of Peripheral Neuropathy, Blood-Nerve Barrier

George B. Breeze (2) Cellular and Molecular Neurobiology, Neuropharmacology, Alkaloids, Neuroplasticity, Transcription Factors, RT/PCR Developmental Disorders, Neuropsychiatric Disorders

Fulton T. Crews (133) Molecular Aspects of Neuronal Vitality and Alcohol Stephen T. Crews (129) Molecular Genetics of Drosophila Nervous System Development, Control of Neural Gene Regulation

Linda Dukstra (51) Behavioral Pharmacology, Opioid Analgesics, Opioid/Immune Interactions


Robert S. Greenwood (61) Neuropeptide and Neuroendocrine Plasticity and Seizures; Brain Growth and Development in Neuro-Fibromatosis

T. Kendall Hadlin (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 J. 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

Anthony LaMantia (146) Inductive Signaling and Control of Gene Expression in the Developing Forebrain/Inductive Control of Genes Related to Neural and Psychiatric Diseases

Jean M. Lauter (71) Neurotransmitters as Developmental Signals, Prenatal Exposure to Drugs of Abuse and Environmental Neurotoxins, Effects on Developing Neurotransmitter Systems

Jeffrey A. Lieberman (141) Neurobiology of Psychotic Disorders, Psychopharmacology, Neuroimaging

P. Ray 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 Maitzner (112) Pain Mechanisms and Analgesia

Patricia F. Maness (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

Gerhard W. Meissner (55) Excitation-Contraction Coupling, Intracellular Calcium Release Channels

A. Leslie Morrow (121) Molecular Neurobiology of GABA Receptors and Alcoholism

Robert A. Nicholas (147) Signaling and Targeting Pathways of P2Y Nucleotide Receptors

Cort A. Pedersen (91) Neuroendocrinology and Neuropharmacology 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 Phenotype.
Aldo Rustioni (50) Excitatory and Inhibitory Neuropeptides in Somatosensory
Richard J. Samulski (135) Development of Viral Vectors for Brain Specific Gene Delivery
Robert Sealsock (58) Cell Biology and Biochemistry of the Neuromuscular Junction, Dystrophin and Dystrophin-Associated Proteins
Paul G. 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 Re-uptake at Photoreceptor Synapses and their Effect on Signal Transfer
Kathleen K. Suik (131) Teratology, Embryology
Kuzuco I. Suzuki (86) Neuropathology of Inborn Errors of Metabolism, Glial Reactions to CNS/PNS Degeneration
Jenny E. Teng (105) Use of Marine Models to Study the Role and Regulation of Inflammatory Genes in Demyelination and Remyelination
Terry A. Van Dyke (143) Cell Growth Regulation, Cancer, Gene Expression
Barry L. Whitting (46) Somatosensory Mechanisms
R. Mark Wightman (118) Neurotransmitters, Dopamine Reward, Excitotoxicity, Neurochemistry
R. Haven Wiley (47) Social Organization and Communication in Vertebrates

Associate Professors
Manzoor Bhat, Genetic Dissection of Axon-Glia Interactions in Drosophila and Mice
Regina M. Carelli (142) Behavioral Neurophysiology, Neurobiology of Drug Abuse, Brain Reward Systems
Richard E. Cherry (136) Molecular Motors 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, Synaptic Formation, Second Messenger Mechanisms in Signal Transduction, Epithelial Biology
Clyde W. Hodge (150) Neurobehavioral Pharmacology and Pharmacogenomics of Addiction
Lars Frederik Jarfog, Molecular Mechanisms that contribute to the Neuropathology of Schizophrenia
Josephine Johns, Behavioral Pharmacology, Toxicology, Teratology, Neuroendocrinology
Kenneth J. Lohmann (150) Animal Navigation, Neuroethology of Magnetic Orientation Behavior, Neural Control of Cilia
Glenn K. Matsubara (139) Neuroimmunology, Function of Activated Microglia in Neuronal Degenerative 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
Todd Thiele, Neurobiology of Alcoholism
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
Ayseen Belger, Cortical Circuits Underlying Attention and Executive Function in the Human Brain
Jay Brennan, Neuronal Dendrite and Axon Morphologies
Mohammad Dehmukh, Neuronal Apoptosis
Joseph Hopfinger, Reflexive Attention Mechanisms, Spatiotemporal Analyses of Voluntary Attention, Attentional Control Mechanisms, Studies of Memory Mechanisms
Xuefei Huang, Structural Basis for Parkinson's Signs and Symptoms; Etiologic Factors in Parkinson's Disease
Carl J. Malanga, Child Neurology, Movement Disorders
Carol Ory, Mechanisms of Cell Motility and Adhesion
Larsa Pevny, Neural Induction, Neurogenesis, SOX Proteins
Benjamin Philpot, Modification of the Cerebral Cortex by Sensory Experience
Franck Polleux, Identification of the Cues and Signaling Pathways Underlying the Development of Connections in the Mammalian Cerebral Cortex

Research Professors
Doug Fitzpatrick, Sound Localization Pathways
Chittima Grolin, Neuroactive Steroids in the Brain
Rick B. Meeker (107) Neuroendocrine Regulation, Glutamate Receptors, Mechanisms of AIDS Dementia
Juli Valetschik, 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 411, 412, 422, 701 or 702, 710, 722 and 723, 850, and 994.

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
400 [101G] CONDITIONING AND LEARNING (PSYC 400) (3). Prerequisite, PSYC 222. 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. Eckerman.
401 [102R] BIOLOGICAL FOUNDATIONS OF BEHAVIOR (PSYC 401) (3). Prerequisite, PSYC 222 or BIOL 101. Ethological, genetic, and physiological variables are studied in relation to their behavior effects. Fall and spring. Gatywy, Hyde.
402 [106B] PHYSIOLOGICAL PSYCHOLOGY (PSYC 402) (3). Prerequisite, PSYC 101, PSYC 220, or permission of the instructor. Elements of neurophysiology, neuroanatomy, and neurochemistry as they apply to the understanding of brain-behavior relationships. (As announced.) Carelli.
411 [111], 412 [112] NEUROBIOLOGY LABORATORY APPRENTICESHIP (3-9). Prerequisite, permission of the director of training in the neurobiology curriculum. A laboratory-oriented course to acquaint the student with methods used in several areas of neurobiology. Fall and spring. Faculty of the neurobiology curriculum.
422 [122] DEVELOPMENTAL NEUROBIOLOGY (PHYI 122) (3). Prerequisites, NBI0 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. LaMunia, faculty.

450 [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

701 [201A] BEHAVIOR AND ITS BIOLOGICAL BASES I (PSYC 701) (3). A survey of psychological and biological approaches to the study of sensory and perceptual information processing; perceptual development. Fall. Staff.

702 [202A] BEHAVIOR AND ITS BIOLOGICAL BASES II (PSYC 702) (3). A survey of psychological and biological approaches to the study of basic learning and higher integrative processing. Spring. Staff.

703 [204] ADVANCED BIOLOGICAL PSYCHOLOGY: CENTRAL NERVOUS SYSTEM (PSYC 703) (3). Prerequisite, PSYC 402 or equivalent. Each fall one specific topic is covered in depth; e.g., neural bases of memory storage, homestasis, and perception. Format includes lecture and seminar meetings with student presentations. Fall. Shinkman.

704 [207] APPLICATIONS OF EXPERIMENTAL PSYCHOLOGY TO HEALTH RESEARCH (PSYC 704) (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, Lyle, Picker.

705 [323] BEHAVIORAL PHARMACOLOGY (PSYC 705) (PHCO 705) (3). Prerequisite, PSYC 404 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. Dykstra.

708 [302] SEMINAR IN THE BIOLOGICAL FOUNDATIONS OF PSYCHOLOGY (PSYC 708) (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. Careelli.

710 [210] MEDICAL NEUROBIOLOGY (PHYI 710) (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. Farel, staff.

722A [222A] CELLULAR AND MOLECULAR NEUROBIOLOGY: INTRODUCTION (BIOL 722A) (PHCO 722A) (PHYI 722A) (2). Prerequisite, permission of the course director. Introductory section covers basic neurobiology, including neuronal cell biology, action potentials, synaptic potentials, molecular biology, and neurotransmitters. Course meets for four weeks with six lecture hours per week. Fall. Stuart.

722B [222B] CELLULAR AND MOLECULAR NEUROBIOLOGY: POSTSYNAPTIC MECHANISMS-RECEPTORS (BIOL 722B) (PHCO 722B) (PHYI 722B) (2). Prerequisite, permission of the 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.

722C [222C] CELLULAR AND MOLECULAR NEUROBIOLOGY: ELECTRICAL SIGNALING (BIOL 722C) (PHCO 722C) (PHYI 722C) (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 coding. Course meets for five weeks with six lecture hours per week. Fall. Stuart.

723A [223A] PRESYNAPTIC MECHANISMS (BIOL 723A) (PHCO 723A) (PHYI 723A) (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 tyrosine kinases. Course meets for five weeks with six lecture hours per week. Spring. Stuart.

723B [223B] INTRACELLULAR SIGNALING (BIOL 723B) (PHCO 723B) (PHYI 723B) (2). Prerequisite, permission of the course director. Explores the mechanisms regulating the release of neurotransmitters from nerve terminals, including quanta 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, faculty.

723C [223C] CNS: ANATOMY AND FUNCTION (3). Prerequisite, permission of the course director. Neuroanatomy will examine the organization of human and animal brains for processing different sensory modalities, with emphasis on anatomical techniques and relating structure to function.


725 [225] EXPERIMENTAL NEUROPHYSIOLOGY (3). Prerequisite, permission of the instructor. Six or more laboratory hours a week. On occasion. Staff of neurobiology curriculum.

728 [228] DISEASES OF THE NERVOUS SYSTEM (2). Prerequisites, NBI0 222 and 223 or NBI0 201. Explores the basic neurobiology and the clinical aspects of a range of diseases of the nervous system, including ALS, Alzheimer’s, autism, schizophrenia, multiple sclerosis, deafness, epilepsy, pain, brain tumors, stroke, Parkinson’s, and other neurodegenerative diseases. Fall. Gilmore, Manis, staff.

729 [221] SENSORY NEURAL INFORMATION PROCESSING AND REPRESENTATION (3).

735 [235] SEMINAR IN CHEMICAL NEUROBIOLOGY (2). Prerequisite, two semesters of biochemistry. Fall. (Alternate years.) Morell.

850 [290] SEMINAR IN NEUROBIOLOGY (BIOL 850) (NBI0 850) (PHYI 850) (PHCO 850) (3). Prerequisite, permission of the instructor. 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.

857 [259] SEMINAR IN COMPARATIVE ANIMAL BEHAVIOR (BIOL 857) (2). Prerequisite, permission of the instructor. Fall or spring. Staff.

858 [260] SEMINAR IN COMPARATIVE PHYSIOLOGY (BIOL 858) (2). Prerequisite, BIOL 451 or permission of the instructor. Fall or spring. Staff.

891 [211], 892 [212] SPECIAL TOPICS IN PHYSIOLOGY (PHYI 891, 892) (1-9). 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.

951 [310] RESEARCH IN NEUROBIOLOGY (PHCO 951) (PHYI 951) (BIOL 951) (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.

994 [394] DOCTORAL DISSERTATION (Var.). Fall, spring, and summer. Research advisor.
SCHOOL OF NURSING

LINDA R. CRONENWETT, Dean
Gwen Sherwood, Associate Dean for Academic Affairs
Jennifer D'Auria, Director of Master's Programs
Molly C. Dougherty, Doctoral Program Faculty Leader

Professors
Linda Beecher (109) Psychiatric-Mental Health
Linda R. Cronenwett (105) Health Care Systems
Molly C. Dougherty (104) Women's Health
Anne Fishel (2) Psychiatric-Mental Health
Catherine I. Fogel (4) Women's Health
Sandra G. Funk (32) Psychology
Barbara Germino (49) Adult Health
Jean Goepplinger (89) Public Health and Community Practice
Joaquín Harrell (54) Adult Health
Donna Havens (123) Health Care Systems
Diane Kjervik (103) Psychiatric-Mental Health
Barbara Mark (5) Health Care Systems
Margaret S. Miles (52) Children's Health
Merle Mule (82) Adult Health
Mary Palmer (6) Adult Health, Gerontology
Susan Pierce (26) Health Care Systems
Margarete Sandelowski (64) Women's Health
Gwen Sherwood, Adult Health

Associate Professors
Alice Boyington (108) Health Care Systems
Jennifer D'Auria (85) Children's Health
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
Shirley Mason (12) Public Health and Community Practice
Chris McQuiston (100) Public Health and Community Practice
Virginia J. Neelon (13) Adult Health, Gerontology
Pamela Pletcher (7) Women's Health
Pamela Rowley (44) Adult Health
Anne Skelly (99) Primary Care/Family Nurse Practitioner
Suzanne Thoyre (45) Children's Health
Marcia Van Riper (8) Children's Health

Assistant Professors
Diane Berry (130) Adult Health
Debra Brown (122) Primary Care/Family Nurse Practitioner
Susan Brunssen (125) Children's Health
Barbara Carlson (113) Adult Health, Gerontology
Janna Dieckmann (113) Public Health and Community Practice
Noreen Espiritu (11) Women's Health
Mary Lynn Fiven (132) Psychiatric-Mental Health
William Powell (113) Primary Care/Family Nurse Practitioner

Emeritus Faculty
Eleanor M. Browning (14)
Barbara Bunker (15)
Margaret E. Campbell (16)
Laurel A. Copp (22)
Jo Ann Dalton (23)
Mary C. Dowe (31)
Margery Duffey (42)
Cynthia M. Freund (17)
Bonnie K. Hensley

Carol C. Hogue (65)
Margaret F. Hudson (10)
Betty H. Landsberger
Patricia Lawrence (11)
Nancy Milio (28)
Helen M. Murphy (25)
Barbara C. Rynerson (19)
Ingrid Swenson
Eleanor Taggart

Master of Science in Nursing
The master of science in nursing (MSN) program prepares nurses for 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-two credits of academic course work including clinical practice, an oral comprehensive examination, and a research project (or in some cases, a thesis). Students may pursue the MSN degree on a full-time or part-time basis. Dual programs of study may be developed on an individual basis, but involve a longer program of study.

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 646, NURS 647) and research core courses (NURS 774, NURS 775, NURS 992 or 993) 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. 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, 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 Science. 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 (nursing.unc.edu); click on "Academic Programs."
Graduate Courses

NURS 642 [142] HEALTH PROMOTION AND ILLNESS PREVENTION IN ADVANCED NURSING (2). Focuses on the promotion of health, prevention of illness, and identification of factors that impact health across the life span.


NURS 647 [147] APPROACHES TO ADVANCED PRACTICE INTEGRATING THEORIES, ROLES, AND ISSUES (3). Examines the historical evolution, theoretical roots, current roles, and context of advanced practice nursing. Content addresses the definition issues and scope of advanced practice nursing within a changing environment.

NURS 710 [200] DEVELOPMENTAL PHYSIOLOGY AND PATHOPHYSIOLOGY (3). Explores developmental changes in morphological processes and normal and pathologic physiology in humans from conception through adolescence. Physiological differences between infants and children and adults are emphasized.

NURS 715 [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 neuro-endocrine-immune responses.

NURS 720 [229] PHARMACOTHERAPEUTICS IN ADVANCED NURSING PRACTICE (3). Prerequisites, NURS 710 or NURS 715. 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 725 [223] ADVANCED ASSESSMENT AND DIAGNOSTIC REASONING IN NEONATAL AND PEDIATRIC NURSING (4). Prerequisite or corequisite, NURS 710. Prepares the advanced practice neonatal/pediatric nurse to comprehensively assess neonates and children using a diagnostic reasoning process.

NURS 726 [226] ADVANCED HEALTH ASSESSMENT AND DIAGNOSTIC REASONING IN PRIMARY CARE NURSING (4). Prerequisite or corequisite, NURS 715. Examines the process of diagnostic reasoning as a framework to synthesize comprehensive assessment of adult patients. Course focuses on the clinical evaluation of common problems that are present in primary care settings.

NURS 727 [224] ADVANCED DIAGNOSTIC PROCESS IN PSYCHIATRIC/MENTAL HEALTH NURSING (4). Prerequisite or corequisite, NURS 715. 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 774 [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 nonexperimental designs.

NURS 775 [275] RESEARCH FOR NURSING PRACTICE II (3). Prerequisite, NURS 774. 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 810 [210] PRIMARY CARE MANAGEMENT OF ADULTS (3-4). Prerequisites, NURS 715, NURS 720. Prerequisite or corequisite, NURS 726. Focuses on the management of illnesses common to young, middle, and older adults in ambulatory care.

NURS 811 [213] SELECTED ISSUES IN ADULT HEALTH (4). Prerequisites, NURS 715, NURS 720, NURS 726, NURS 810, or permission of the instructor.

Provides the opportunity for an in-depth examination of management strategies with selected health problems in adults. Also examines issues inherent in the management of women and elderly populations.

NURS 812 [255] MANAGEMENT OF COMPLEX HEALTH PROBLEMS IN ADULTS (4). Prerequisites, NURS 642, NURS 715, NURS 720, NURS 726, NURS 810, NURS 811, or permission of the instructor. This capstone course focuses on the management of complex health problems in adult populations for the adult nurse practitioner.

NURS 819 [259] PRACTICUM IN PRIMARY CARE MANAGEMENT OF ADULTS (1-2). Prerequisite, completion of NURS 715, NURS 720, NURS 726, NURS 810. 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 825 [212] SEXUAL AND REPRODUCTIVE HEALTH (3). Prerequisites, NURS 715, NURS 720, NURS 810, or permission of the 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 827 [211] CHILD HEALTH ISSUES IN PRIMARY CARE (3). Prerequisites, NURS 715, NURS 720, NURS 726, NURS 810; prerequisite or corequisite, NURS 642 or permission of the instructor. Examines the principles of assessment, management, evaluation, and continuing care of children in primary care settings. Developmentally appropriate, family-centered approaches and management of common medical problems are addressed.

NURS 828 [269] ADVANCED CLINICAL PRACTICUM IN COMMUNITY ORIENTED PRIMARY CARE (2). Prerequisites, NURS 715, NURS 720, NURS 726, NURS 810, NURS 825; NURS 827. 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 830 [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 833 [253] SPECIALTY CARE IN THE HEALTH OF WOMEN (4). Prerequisites, NURS 715, NURS 720, NURS 726, NURS 810, NURS 825, or permission of the 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 838 [254] HEALTH CARE IN WOMEN'S PRACTICUM (1-3). Prerequisites, NURS 715, NURS 726, NURS 810, NURS 825, NURS 833. This course gives the student a concentrated, experiential opportunity to provide advanced practice nursing in selected areas of women's health.

NURS 840 [242] ADVANCED CONCEPTS IN AMBULATORY PEDIATRIC NURSING (4). Prerequisites, NURS 710, NURS 720; prerequisite or corequisite, NURS 725. Focuses on ambulatory nursing management of children. Content includes health promotion, health maintenance, and common clinical symptomatology/problems in infants, children, and adolescents.

NURS 841 [241] FAMILY RESPONSES TO INFANT, CHILD, AND ADOLESCENT HEALTH PROBLEMS (2-3). Prerequisites, NURS 710, NURS 720, NURS 725, NURS 840, or permission of the instructor. Focuses on family responses to neonatal and pediatric health problems. Students function in an advanced practice nursing role, working with families of neonatal and pediatric clients with acute and chronic health problems.
NURS 842 [240] NURSING INTERVENTIONS WITH PSYCHOPHYSIOLOGICAL PROBLEMS OF INFANTS AND CHILDREN (2-3). Prerequisites, NURS 710, NURS 720, NURS 725, NURS 840, or permission of the 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 849 [244] CLINICAL PRACTICUM IN ADVANCED PEDIATRIC NURSING (1-5). Prerequisites, NURS 710, NURS 725, permission of the 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 850 [258] MANAGEMENT OF THE CRITICALLY ILL INFANT (4). Prerequisites, NURS 710, NURS 720, prerequisite or corequisite, NURS 725. Prepares the advanced neonatal nurse to manage the high-risk neonate during the critical and convalescent phases of illness, including after hospital discharge.

NURS 859 [262] EXTERNSHIP IN THE ADVANCED NURSING MANAGEMENT OF THE HIGH-RISK NEONATE (1-5). Prerequisites, NURS 720, NURS 725, NURS 853 (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 860 [246] PSYCHIATRIC NURSING INTERVENTIONS WITH INDIVIDUALS (3). Prerequisite, NURS 727 or permission of the 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 861 [247] PSYCHIATRIC-MENTAL HEALTH NURSING INTERVENTIONS FOR FAMILIES (3). Prerequisites, NURS 727, NURS 860, or permission of the instructor. Students analyze theories, techniques, and research relevant to therapy with families. Clinical placement with preceptors is used to apply knowledge.

NURS 862 [209] PSYCHIATRIC-MENTAL HEALTH NURSING INTERVENTION FOR GROUPS (1). Prerequisites or corequisites, NURS 727, NURS 860, or permission of the instructor. Students analyze and apply theories, techniques, and research relevant to therapy with groups. Clinical placement with selected preceptors provides opportunities for unique experiences.

NURS 863 [248] PSYCHIATRIC-MENTAL HEALTH NURSING FOR UNDERSERVED POPULATIONS (3). Prerequisites, NURS 727, NURS 860, NURS 861, or permission of the instructor. Students analyze epidemiology, psychosocial, care management, and health policy. Students examine the scope of mental health problems for underserved populations.

NURS 869 [278] PRACTICUM IN PSYCHIATRIC-MENTAL HEALTH CARE FOR ADVANCED PRACTICE NURSES (1-3). Prerequisites, NURS 727, NURS 860, or permission of the facility. Students apply knowledge and skill in selected domains of the advanced practice of psychiatric-mental health nursing. Supervision, peer evaluation, and independent readings enhance the experience.

NURS 870 [117] HEALTH CARE INFORMATICS (3). Focuses on developing an understanding of the concepts relevant to health care informatics and the use of computerized information systems, as well as the use of computer applications to support clinical and administrative decision making.

NURS 871 [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 872 [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 873 [238] FINANCIAL MANAGEMENT (3). Examines the issues of health care economics, financial management, and budgeting that relate to managerial decision making.

NURS 874 [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 875 [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 876 [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 878 [243] NURSING MANAGEMENT RESIDENCY AND INTEGRATIVE SEMINAR (3). Prerequisites and corequisites: all required courses for the HCS specialty or concurrent enrollment in final HCS coursework. Students develop, implement, and evaluate managerial strategies related to the management of human and material resources, fiscal services, information systems, policy, quality outcomes, and/or physical facilities in an integrative fashion.

NURS 992 [392] MASTER'S PAPER (3).

NURS 993 [393] THESIS (3-6).

Supporting Graduate Electives

NURS 685 [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 687 [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 7031 [603] ALTERNATIVE MEDICINE (3).

NURS 704 [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 7801 [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.

NURS 781 GENOMICS AND SOCIETY (3). This multidisciplinary course offers the student opportunity to gain a basic understanding of human genetics and explores the ethical, legal, and social implications of recent advances in genetics.


NURS 799 [113] SPECIAL PROBLEMS (Var.).
Doctor of Philosophy in Nursing

The discipline of nursing is concerned with the study of human experiences related to health, illness, and life transitions, as well as the 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 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; adjusting well to their emotional, family, social, and other sequelae; and living 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: (1) the understanding of health conditions in varying biographical, cultural, historical, clinical, ethical/legal, and organizational contexts; (2) practices to appraise health, improve health, and prevent health problems; and (3) ways 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, psychoeducational, 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 capable use 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 three 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 (e.g., families, individuals, or communities), a particular response or intervention strategy, or a particular disease entity, or nursing systems. Because of the rich resources available on the UNC-Chapel Hill campus, courses are available in fields such as psychology, sociology, anthropology, epidemiology, health policy, and administration, and physiology.

Required Core

NURS 921 [335] THEORIES OF PREVENTION OF CHRONIC CONDITIONS (3). Overview of theory and research related to the prevention of chronic conditions across the lifespan. Concepts such as health, illness, chronicity, risk, vulnerability, resilience, and disability are examined. (On request.) Staff.

OR

NURS 922 [336] THEORIES OF MANAGEMENT OF CHRONIC CONDITIONS (3). Examines theories and concepts related to the management of chronic illness including their historical evolution, social-political influences, implicit assumptions, and biases. (On request.)

OR

NURS 928 [279] ORGANIZATIONAL THEORIES APPLIED TO NURSING (3). Examines contemporary issues and problems in nursing systems. Students use a four-level nursing systems model to analyze programs of research related to systems.

NURS 910 [281] KNOWLEDGE DEVELOPMENT IN NURSING (3). Examines the origin and development of nursing knowledge, theories, and of research testing various nursing theories and models.

NURS 915 [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' administration, services, staffing, interorganizational linkages, and health of the public.

NURS 970 [370] ADVANCED STATISTICS I: PRINCIPLES OF REGRESSION AND CORRELATION (3). Principles of bivariate and multivariate regression and correlation are studied. Emphasis is on the application of these techniques in the analysis of nursing and health-related data.

NURS 971 [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 976 [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 977 [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 978 [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 899 [300] SPECIAL TOPICS IN NURSING (Var.). Topics directed by an authority in the field.

NURS 921 [335] THEORIES OF PREVENTION OF CHRONIC CONDITIONS (3). See above.

NURS 922 [336] THEORIES OF MANAGEMENT OF CHRONIC CONDITIONS (3). See above.

NURSE 928 [279] ORGANIZATIONAL THEORIES APPLIED TO NURSING (3). See above.

NURS 930 [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 932 [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 957 [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 960 [384] PROSEMINAR IN NURSING (1-3). Proseminars are offered for one, two, or three credits. Topics differ each semester.

NURS 994 [394] DISSENIATION 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. Minors and secondary areas of study are approved by the major advisor and the director of doctoral programs and an advisor 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 950 [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 953 [353] ETHICS AND LAW IN HEALTH CARE AND RESEARCH (3). Addresses ethical/legal dilemmas in health care and research and how health professionals resolve dilemmas. Students analyze nurses' ethical/legal responsibilities, decision making, and synthesize literature from ethics, law, and policy.

NURS 958 [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 961 INTEGRATIVE LITERATURE REVIEW (3). Designed to develop students' skills in writing integrative literature reviews, students read method literature, issue literature, and examples of published integrative reviews.

NURS 979 [379] QUALITATIVE ANALYSIS (3). Emphasizes the work of analysis and interpretation. Students apply relevant qualitative techniques to their own data.

NURS 980 [380] OBSERVATIONAL METHODS (3). Explores quantitative observational research techniques. Strategies for developing coding systems, determining reliability and validity, and analyzing data are included.

NURS 981 [381] LONGITUDINAL METHODS AND ANALYSIS (3). Examines longitudinal research methods, including conceptualization, design, and analysis. Assumptions and limitations of longitudinal statistics, relationship between design and analyses, and strategies to maintain scientific integrity are covered.

NURS 985 [385] RESEARCH SEMINAR AND PRACTICUM: GUIDED INDIVIDUAL RESEARCH EXPERIENCE (3-5). Directs students to develop research skills related to the dissertation and to their future research.

DIVISION OF OCCUPATIONAL SCIENCE

CATHY NIELSEN, Director

Professor
Ruth Humphrey (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 Disabilities, Sensory Processing and Sensorimotor Performance Related to Childhood Occupations
Malcolm Cutchin (5) Aging, Place, Pragmatism
Virginia A. Dickie (2) Quilting as an Occupation, NC Quilters, Creative Occupations, Community-Based Practice

Clinical Professor
Catherine Nielsen (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 Rouk (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
Linn Wakeford, Occupation-Centered Services for Infants and Preschoolers with Developmental Delay
Jenny Womack, Aging, Community-Based Practice, Assistive Technology, Universal Design and Environmental Accommodations

Emerita
Marlys M. Mitchell
The Division of Occupational Science in the Department of Allied Health Sciences offers two graduate programs: a master of science (MS) degree with a major in Occupational Therapy (OT), and a doctor of philosophy (PhD) degree in Occupational Science. The MS in Occupational Therapy program is a two-year program designed for individuals with a baccalaureate degree in a field other than occupational therapy. It is an entry level program for individuals who wish to become occupational therapists. The PhD program in Occupational Science accepts applicants with an earned master's degree in occupational therapy or a related field (see admission requirements below). The doctoral program prepares individuals who wish to pursue academic careers that could include teaching, research, and other scholarly activities related to occupational science.

Requirements for Admission into the MS program in Occupational Therapy

1. Bachelor's degree from an accredited institution.
2. Submission of Graduate Record Examination (GRE) 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/individual 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: Complete a course in either an academic or community-based setting that requires the skills of your body as well as your mind. Learn an activity that is new to you and personally challenging. This course should be taught in class format so learning an activity includes other people. The class must be of substantial length (minimum of 6 weeks, meeting once a week) and depth. You must complete this class prior to writing the reflective statement for your application. (Examples: creative writing, poetry writing, studio art class, woodworking, jewelry making, 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.

Courses for Graduates in the MS in Occupational Therapy Program

704 [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 ensure evidence-based practice. Fall. Cuschin.

718 [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.

720 [220] NEUROSCIENCE: PROCESSES SUPPORTING OCCUPATION (3).
Neurophysiological processes contributing to functional abilities. Study of CNS related to observed behaviors, affect, and higher cognitive components of function. Spring. Womack.

Direct experience with clients/patients in varied service treatment settings. Experience will include adult disabilities (A) and a second experience in an area of special focus (B). Summer. Coppola.

722 [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 existential values, biometrical information, and investigative reasoning for effective occupation-centered practice. Spring. Staff.

736 [207] OCCUPATIONAL THERAPY PRACTICE ENVIRONMENTS (2).
Overview of OT practice settings, professional organizations, and 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.

738 [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. Nielson.

740 [344] EVOLUTION OF COMMUNITY-BASED PRACTICE: DEVELOPMENT, IMPLEMENTATION, AND EVALUATION (2).
History and development of occupational-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. Nielson.

748 [244] 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.

750 [250] OCCUPATIONS, ADAPTATION, AND TECHNOLOGY I (5).
Prerequisites: OCCT 726, 748. 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. Womack, staff.

751 [251] OLDER ADULTS: OCCUPATIONS, ADAPTATION, AND TECHNOLOGY II (2-3).
Prerequisites: OCCT 826, 748. A problem-based learning approach to the occupational therapy clinical reasoning process; assessments, interventions, and adaptations for older adults. Spring. Coppola.

752 [252] CHILDREN: OCCUPATIONS, ADAPTATION, AND TECHNOLOGY III (3).

828 [228] OCCUPATIONAL AND ENVIRONMENTAL TRANSFORMATIONS II (3). Prerequisite, OCCT 826. Age-related changes in occupational performance from infancy through adolescence. Developmental contextualism used to frame intrinsic changes and environmental influences. Fall. Humphrey.

842 [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. Dickie.

890 [350] INDEPENDENT STUDY: OCCUPATIONAL THERAPY AND SCIENCE (Var.). Elective. Independent study to pursue specific interests and topics. Faculty supervision. May be repeated for credit. Fall, spring, and summer. Baranek, Cutchin, Humphrey, Coppola, Dickie.


993 [393] MASTER'S THESIS (Var./minimum 4). Permission required. Fall, spring, and summer. Staff.

Requirements for Admission into the PhD Program in Occupational Science

The PhD program in Occupational Science accepts academically qualified applicants who have completed master degrees in occupational therapy, relevant social and behavioral sciences, or related health fields. Applicants receive a thorough review for evidence of potential success in a doctoral program in The Graduate School at UNC-Chapel Hill. In order to achieve closely monitored research experiences, only applicants with expressed interests consistent with existing programs of research and scholarly work of the faculty are admitted. Final selection among qualified applicants will be based on his or her interview with core faculty members in the PhD program in Occupational Science. Review the UNC-Chapel Hill Web site for information about application to The Graduate School. In addition to the formal application to the Graduate School, the following information is required:

- Official copies (two copies) of all undergraduate and graduate transcripts;
- Graduate Record Examination (GRE) scores (taken within the last 5 years);
- Results of the TOEFL (Test of English as a Foreign Language, if applicable);
- A reflective essay detailing personal and professional goals relevant to the pursuit of a PhD in Occupational Science at UNC-Chapel Hill (submit directly to the Division of Occupational Science); and
- Three letters of recommendation from individuals that support the applicant's potential as an educator and scholar (sent to the Division).

The PhD program requires a minimum of forty-five semester credit hours beyond the master's degree. This course of study covers four domains: (a) occupational science, (b) an interdisciplinary cognate area that complements occupational science, (c) research design and methodology, and (d) competencies for an academic career. All graduates must complete a doctoral dissertation in occupational science. Students are also expected to reach satisfactory competence in teaching and research as determined by their career goals.

With approval from the instructor, Occupational Science courses are open to graduates students interested in: (1) the study of people engaged in everyday activities in different situations; and (2) how various experiences in an activity or patterns of engagement influence development, health, and quality of life across the lifespan.

Courses for Graduates in the PhD Program in Occupational Science


828 OCCUPATIONAL AND ENVIRONMENTAL TRANSFORMATIONS, II: CHILDHOOD (3). Study of age-related change process shaping everyday activities from infancy through adolescence within family, SES, and cultural contexts. Fall. Humphrey.

842 HISTORICAL EVOLUTION OF OCCUPATIONAL THERAPY AND SCIENCE (3). The 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. Dickie.

850 INDEPENDENT STUDY IN OCCUPATIONAL SCIENCE (1-3). Independent study to pursue specific interests and topics under faculty supervision. Fall and spring. Baranek, Cutchin, Dickie, Humphrey.

890 SEMINAR ON SPECIAL TOPICS IN OCCUPATIONAL SCIENCE (3). Discussion and critical evaluation of philosophy, theory and scientific issues associated with the study of people's activities in the context of their everyday lives. Topics differ each semester. Fall and spring. Baranek, Cutchin, Dickie, Humphrey.


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. Bouldin, Vice Chair for Faculty and Trainee Development
David G. Kaufman, Vice Chair for Research Development

Professors

Nadia Malouf Anderson (26) Muscle Diseases, Plasticity of Adult-Derived Stem Cells
Dwight A. Bellinger (89) Laboratory Animal Medicine, Comparative Pathology
Thomas W. Bouldin (72) Neuropathology, Ocular Pathology, Neurotoxicology
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 Hemostasis, Breast and Prostate Carcinogenesis, Macromolecular Structure-Function
Marisa Coelho-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
Rosann A. Farber (118) Genetic Instability in Cancer, Human Molecular Genetics, Microsatellite Instability, Fragile X Mental Retardation
Susan A. Fiscus (173) Retrovirology
James D. Fields (135) Immunophenotyping of Human Lymphocytes, Flow Cytometry, Immune Response to Infectious Organisms and Pneumococcal Immunology
Peter H. Gilligan (174) Diagnostic Bacteriology, Pulmonary Disease in Cystic Fibrosis, Toxin 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 Endometrial Epithelial and Stromal Cells
William K. Kaufmann (95) Human DNA Metabolism and Cancer
Susan T. Lord (94) Macromolecular Structure/Function of Fibrinogen, Molecular Genetics, Cardiovascular Disease
Nobuyuki Mada (116) Molecular Genetics of Atherosclerosis, Transgenic Laboratory Animals as Model Systems, Molecular Evolution
Susan J. Maynard (131) General Surgical Pathology, Cytopathology, Prostate Carcinogenesis
Timothy C. Nichols (150) General Cardiology, Cardiac Catheterization, Percutaneous Transluminal Coronary Angioplasty
Howard M. Reiser (58) Immunogenetics of Blood Coagulation, Immunohematology
Oliver Smithies (115) Molecular Pathology, Genetically Engineered Animal Models of Human Disease, Targeted Mutagenesis
Dared W. Stafford (127) Molecular Biology
Kazuo I. Suzuki (110) Neuropathology, Genetic Neurological Disorders
James A. Swenberg (66) Chemical Carcinogenesis, Toxicology
Richard R. Tishwell (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, Ipiridic 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
William K. Funkhouser Jr. (152) Surgical Pathology, Molecular Pathology, Immunology
Margaret L. Gulley (190) Molecular Diagnostics, Oncology, Epstein-Barr Virus
J. Ed Hall (177) Infectious Diseases, Pathogenic Protozoa, Drug Metabolism
Catherine A. Hamstra-Stabler (171) Clinical Chemistry, Toxicology, Clinical Pharmacology
Suzanne L. Kirby (181) General Hematology/Oncology and Bone Marrow Transplantation
Volker Nickle (190) Renal Pathology, Fibronectins
W. Eugene Sanders (176) Diffusion, Fascinating, Pathology
John L. Schnitz (168) Flow Cytometry, HIV, Diagnostic Immunology, Sexually Transmitted Diseases
Hanharan K. Singh (186) Cytodiagnosis, Fine Needle Aspiration Biopsy
Karen E. Week (210) Molecular Genetic Pathology
John T. Woolley (133) Dermatopathology, Hepatobiliary and Gastrointestinal Pathology, Histopathologic Assessment of Prognosis

Assistant Professors
David G. Grefe (206) Clinical Chemistry
Jonathan W. Homeister (225) Defining the Molecular Mechanisms of Leukocyte Trafficking and Homing in inflammatory and/or Immune Reactions
Chad A. Livasy (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. Perou (205) Breast Cancer, Genomics, Microarrays, Tumor Classification, Drug Resistance
Nobuyuki Takahashi (184) Animal Models of Hypertension, Preeclampsia, Diabetic Nephropathy and Obesity
Joan M. Taylor (187) Adhesion Signaling, Cardiovascular Disease
Keith E. Volmar (219) Neoplasia and Developmental Abnormalities of the Pancreas
Monte S. Willis (223) Molecular Mechanisms of Cardiac Disease and Ubiquitin-Proteasome Biology

Clinical Professors
John D. Butts (70) Forensic Pathology, Injury Prevention
M. David Goodman (216) Autopsy Pathology
Harold R. Roberts (15) Thrombosis and Hemorrhage Research and Therapy, Hematology

Clinical Associate Professors
Debra A. Badwitz (132) Surgical Pathology, Cytopathology, Diagnostic and Prognostic Markers in Gynecologic Neoplasms
Thomas B. Clark III (134) Forensic Pathology, Computer Applications in Forensic Medicine
Kathleen A. Kaiser-Rogers (212) Clinical Cytogenetics
Ruth A. Lining (160) Surgical Pathology, Breast Pathology
Deborah L. Radsch (213) Forensic Pathology
Scott V. Smith (164) Vascular Biology, Cardiovascular Pathology, Platelets and von Willebrand Factor Pathophysiology

Clinical Assistant Professors
Aruba N. Allenyi-Annan (220) Transfusion Medicine
Maureen S. Bauer (208) Surgical Pathology, Cytopathology
Jessica K. Boeker (199) Genetics, Breast Cancer
Maryanne Gaffney-Kraft (225) Forensic Pathology
Diana Ganis (202) Forensic Toxicology
David B. Thomas (192) Nephropathology, Neurourology, Gynecological Pathology
Leigh B. Thorne (207) Molecular Pathology, Autopsy Pathology
Ruth E. Winecker (165) Forensic Pathology

Clinical Instructors
Kristen M. Boland (214) Anatomic Pathology and Medical Education
Vincent J. Molyan, Jr. (218) Cardiac Pathology and Autopsy Pathology

Research Professors
C. Robert Bagnell Jr. (109) Application of Advanced Light and Electron Microscopy to Research in Basic Medical Sciences
John F. Bradfield (221) Laboratory Animal Medicine and Pathology
Virginia L. Godfrey (148) Veterinary Pathology, Animal Models of Genetic Disease, Autoimmunity

Research Associate Professors
Thomas H. Fischer (169) Gene Therapy, Blood Coagulation, Atherosclerosis
Tracey M. Heenan (163) Laboratory-, Exotic-, and Companion-Animal Medicine
Hyung-Suk Kim (137) Gene Targeting and Animal Models for Human Diseases, Hypertension and Hereditary Cerebral Hemorrhage with Amyloidosis and Molecular Evolution
Judith N. Nielsen (222) Animal Health Maintenance, Diagnosis and Eradication

Research Assistant Professors
Jayne C. Beyer (200) Human Molecular Genetics, Molecular Mechanisms of Microsatellite Instability
Oleg V. Gorkun (195) Coagulation, Fibrinolysis, Fibrinogen Structure
Seigo Hatada (217) Applying Gene Targeting for Curing Genetic Diseases
Masao Kakoki (224) Prevention of Cardiovascular Diseases
Julia Whitaker (227) Laboratory Animal Medicine
Hong Xiao (215) Immune-Mediated Glomerular Disease and Vasculitis
Alisa Sue Wolberg (198) Thrombosis Research, Coagulation
Maimoon A. Zariwala (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 (140) Mechanisms of Carcinogenesis
Gary J. Smith (85) Prostate Cancer, Cancer Cell-Tissue Microenvironmental Interaction, Angiogenesis

Adjunct Associate Professors
Gary A. Boorman (102) Toxicological Pathology, Myelotoxicology
Jeffrey I. Eweritt (180) Experimental Pulmonary and Toxicology Pathology
Kevin T. Morgan (103) Nsaid Toxicology
Richard S. Paules (144) Oncogene Tumor Suppressor Genes and Cell Cycle Control in Neoplastic Transformation of Mammalian Cells
Douglas C. Wolf (185) Mechanisms of Toxicity and Carcinogenesis

Adjunct Assistant Professor
Susan C. Hadler (194) Oral Diagnosis

Adjunct Research Assistant Professor
Christopher W. Gregory (201) Prostate Cancer, Androgen Receptor

Professor Emeriti
Walter Benson
Robert E. Cross
Frederic G. Dallendorf
Cora-Jean S. Edgell
Donald T. Forman
Joe W. Graham
John E. Hammond
William D. Huffines
William W. McLendon
James R. Pick
Katherine B. Fryzwansky
Marjorie S. Read
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 or university.

The department is located in the Brinkley-Bullitt Building, and offers well-equipped laboratories for research and advanced work in pathology.

Courses for Graduates and Advanced Undergraduates

128 [008] BIOLOGY OF HUMAN DISEASE (BIOL 128) (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 an informed use of modern health care. Fall. Reister, Smith.

426 [134] BIOLOGY OF BLOOD DISEASES (BIOL 426) (3). Prerequisite, BIOL 205 or permission of the 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.

462 [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.

463 [163] ELECTRON MICROSCOPY (3). 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 (2007 and alternate years). Bagnell.


678 [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 (2006 and alternate years). Kaufmann.

Courses for Graduates

713 [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. Fall. Church.

723 [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. (2006 and alternate years). Whetman.

725 [225] CANCER PATHOBIOLoGY (3). Permission of the course director required. This course examines pathological 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. Kaufmann.

750 [250] DATA ANALYSIS (PHCO 750) (TOXIC 750) (2). 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 PHCO/TOXIC/PATH graduate students. Permission of the instructor is required for other students. Fall. Graves.

792 [292] SEMINAR IN CARCINOGENESIS (TOXIC 792) (2). Prerequisite, permission of the instructor. Survey of classical and current 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.

801 [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. Cordeiro-Stone.
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, Neuroprotective Stem Cells and Addiction
Channing Der (74) Ras Protein Superfamily, Signal Transduction and Oncogenesis
Kenneth H. Dudley (28) Drug Bioactivation, Penicillin Hypersensitivity
*Linda Dykstra (55) Opioid Analgesics, Drugs of Abuse
*H. Shelton Earp (63) Growth Regulation, Growth Factor and Protein Kinases
Barry Cox (29) Virus and Cancer Chemotherapy
K. Hahn (126) Development of Fluorophores for Site-Specific Protein Labeling; Live Cell Biosensors and their Biological Applications; Modlil, Apoptosis and Cysteine Knots in Signaling
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. Jutilano (62) Membrane Biochemistry of Cell Interactions, Drug Delivery Systems
J. Stephen Kiner (34) Molecular and Cellular Biology of Post-Translational Processing
Rynard Kole (57) RNA Splicing, RNA-Protein Interactions, Antisense Oligonucleotides
*Richard B. Malim (52) Neuropharmacology, Structure and Function of Dopaminergic Receptors, Molecular Drug Design
*William Maixner (64) Pain Research and Autonomic Nervous System Research
Ken D. McCarthy (42) Neuronal/Neuronal Interactions Studied in situ Using Electrophysiology, Confocal Imaging and Conditional Knockouts
*Bevery 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. Nichols (68) G-Protein-Coupled P2Y Receptors, Mechanisms of Antinflammatory Action
*David A. Ortyns (30) Endocrine Pharmacology, Clinical Endocrinology
Leslie V. Parese (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

Associate Professors
*Adrienne D. Cox (90) Ras Family Oncogenes, Lipid Modification and Protein Function
*H. G. Dohman (127) Receptors and Signal Transduction: Mechanisms of Drug Desensitization
Lee M. Graves (89) Growth Factor-Mediated Signal Transduction
*Cam Patterson (115) Vascular Biology, Angiogenesis, and Protein Folding and Degradation
David Siderovski (111) Structure and Function of Regulator of G-Protein Signaling (RGS) Proteins
John Sondak (100) X-Ray Crystallography and Transmembrane Signaling
JoAnn Trejo (112) Internalization and Subcellular Trafficking of G-Protein-Coupled Protease-Activated Receptors (PARs)

Assistant Professors
Pilar Blanco (128) Tumorigenesis and Tumor Progression
Tim Elson (129) MAPK Activation in the Therapeutic Response Pathway of Yeast, Noise in Gene Regulatory Networks, Airway Surface Liquid Regulation, Diffusion in Viscoelastic Fluids, Dicyclic Metabolism, and the Motion Protein Dynein
Franck Pollet (125) Signaling Pathways in the Mammalian Cerebellar Cortex

Research Associate Professor
Jose Spychala (81) Regulation of Adenosine, Nucleotide and Nucleoside Analogs, Metabolism

Research Assistant Professors
Suresh K. Alahari (109) Integrin Associated Proteins and Antisense Therapeutics
Gavin E. Arceel (118) Alcohol-Induced Liver and Pancreatic Injury, Oxidative Stress
Laurie Betts (116) Structural Biology of G-Protein Signaling, X-ray Crystallography
Bonita Blinks (121) G-Protein Signaling in the Central Nervous System
James T. McLaughlin (117) Structure and Function of Ion Channels
Zhi Zhong (119) Hepatotoxotoxicology, Renal Toxicology, Organ Transplantation

Adjunct Professors
Emmanuel J. DiBello Jr. (61) Neuropharmacology
James W. Putney (84) Second Messenger Signaling

Adjunct Associate Professors
Jose Boyer (79) Regulation of Signal Transduction Mechanisms
Kenneth S. Korach (83) Biochemistry and Biology of Steroid Hormone Receptors
Howard A. Rockman (108) Molecular Modeling and Cardiovascular Disease

Adjunct Assistant Professor
John P. O’Bryan (114) Signal Transduction by Tyrosine Kinases, Role of Adaptor Proteins, Oncogenesis

Professors Emeriti
Hugh J. Burford
Philip L. Carl (Research Associate Professor)
Currie Harper
John T. Getz
Philip F. Hirsch
Tom S. Miya
Paul L. Munson
William Henry Pearlman
Doris T. Poole
Ray V. Talmage
Suevi U. Tovar
* joint faculty members

The Department of Pharmacology offers a program of study that leads to the degree of Doctor of Philosophy in Pharmacology. 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 students 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, and 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) 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 N.C. Neurosciences Hospital.

Assistantships and Other Student Aid

Financial assistance is provided to all students. The stipend is currently $23,000 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

643 [117] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL I (BIOC 643) (CBIO 643) (MCRO 643) (Var.). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, tissue, and transformation. Fall. Cox, Jacobson, Lee, Meissner.

644 [118] CELL STRUCTURE, FUNCTION, AND GROWTH CONTROL II (BIOC 644) (CBIO 644) (MCRO 644) (Var.). Prerequisite, undergraduate cell biology or biochemistry or permission of the instructor. Comprehensive introduction to cell structure, function and transformation. Spring. Cox, Jacobson, Lee, Meissner.

701 [201] INTRODUCTION TO MOLECULAR PHARMACOLOGY (2). Permission of the instructor required. A first-year pharmacology course outlining the basic of molecular pharmacology, including molecular biology, drug-receptor interactions, receptors and ion channels, regulation of second messengers, and drug metabolism. Two lecture hours a week. Fall. Trejo, Siderovski.

702 [202] PRINCIPLES OF PHARMACOLOGY AND TOXICOLOGY (TOXC 702) (3). Permission of the instructor required. Introduces students to the major areas of pharmacology and toxicology and serves as a basis for more advanced courses. Three lecture hours a week. Spring. Paris.

703 [322] BEHAVIORAL PHARMACOLOGY (NBIO 703) (PSYC 703) (3).

707 [207] ADVANCED TOXICOLOGY (TOXC 707) (3). Prerequisite, PHCO 702 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 a week. Fall. Swenberg.

710 [210] CELL MEMBRANES (2).

715 [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 chemotherapeutic strategies, with emphasis on novel approaches including immunotherapy, antiviral oligonucleotides, and gene therapy. The course includes faculty lectures and student presentations. Fall. Kole.

721 [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.

722 [222] CELLULAR AND MOLECULAR NEUROBIOLOGY I (PHYI 722) (Var.). 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. Stuart.


722C [222C] ELECTRICAL SIGNALS (BIOC 722C) (NBIO 722C) (PHYI 722C) (2).

723 [223] CELLULAR AND MOLECULAR NEUROBIOLOGY II (PHYI 723) (Var.). 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. Stuart.

723A [223A] CELL & MOLECULAR NEUROBIOLOGY A (BIOC 723A) (NBIO 723A) (PHYI 723A) (2).

723B [223B] PRESYNAPTIC MECHANISMS (BIOC 723B) (NBIO 723B) (PHYI 723B) (2).

724 [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.

725 [221B] SIGNAL TRANSDUCTION (2). Seminar/discussion course on molecular aspects of the receptors, G-proteins, effector proteins, kinases, and phosphatases that mediate hormone, neurotransmitter, growth factor, and sensory signaling. Spring. (Alternate years.) Harden.

726 [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, neuronal development, immunity, and embryologic development. Spring. (Alternate years.) Julian/Piris.

727 [221D] STRUCTURE AND FUNCTION OF ION CHANNELS (2). Seminar/discussion course on the physiology, pharmacology, biochemistry, and molecular biology of ion channel proteins. Spring. (Alternate years.) Rosenberg, Oxford.


730 [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, Blancafort.

731 [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. McCarthy.

732 [332] GRANT WRITING (2). Prerequisites: PHCO 701 and permission of the course director. A discussion course covering the elements of successful grant proposals and scientific ethics. Fall, spring, and summer. Parise.

733 [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.

734 [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, Dystata, Hollins, Light.

735 [221I] DISCOVERY BIOLOGY AND PHARMACOGENOMICS (2). Lecture/discussion course covering a variety of aspects of new biological and computational technologies. The course is predominantly in a lecture format with computer-based and literature assignments. Spring. (Alternate years.) Sidersovski, Sondek.

736 [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.

737 [221K] TARGET-BASED DRUG DISCOVERY AND CANCER TREATMENT (2). A lecture/discussion course that emphasizes preclinical and clinical studies for the development of anti-cancer drugs that target signal transduction. Topics include: target identification and validation, drug discovery, the process of government approval for clinical trials, design of clinical trials, and new genetically based technologies to foster drug development. Spring, alternate years. Der, Cox.

750 [250] DATA ANALYSIS FOR BIOMEDICAL SCIENCES (CBIO 750) (PATH 750) (TOXIC 750) (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 the instructor is required for other students. Fall, Nicholas.

850 [290] SEMINAR IN NEUROBIOLOGY (BIOC 850) (NBIO 850) (PHY 850) (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 curriculum.

900 [499] SPECIAL PHARMACOLOGY RESEARCH (3-6).

901 [301] RESEARCH IN PHARMACOLOGY (5 or more). Prerequisite, permission of the staff. Fall, spring, and summer. Graves.

911, 912 [211, 212] INTRODUCTION TO PHARMACOLOGICAL RESEARCH (Vas). 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. Graves.

913 [213] INTRODUCTION TO PHARMACOLOGICAL RESEARCH (Vas). Prerequisites, PHCO 911 and 912. This is a continuation of PHCO 911 and 912. Six laboratory hours a week, first summer session. Graves.

914 [214] INTRODUCTION TO PHARMACOLOGICAL RESEARCH (Vas). Prerequisites, PHCO 911, 912, and 913. This is a continuation of Pharmacology 911, 912, and 913. Six laboratory hours a week, second summer session. Graves.

951 [310] RESEARCH IN NEUROBIOLOGY (BIOC 951) (NBIO 951) (PHYI 951) (PSYC 951) (BIOL 951) (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 curriculum.

989 [299] SPECIAL PHARMACOLOGY RESEARCH (3-6).

993 [393] THESIS FOR MASTER'S DEGREE (3 or more). Prerequisite, permission of the staff. Fall, spring, and summer.

994 [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 Infectious Disease and Trauma on Altered Physiologic States (i.e., Aging and Obesity), and the Expression and Regulation of Drug Metabolizing Enzymes
William H. Campbell (83) Pharmacoeconomics, Pharmacy and Health Care Policy
Dale B. Christensen (105), Pharmacy and Drug-Related Outcomes Research, Drug Policy, Patient Compliance, Pharmacoconomics
Frederick M. Eked (9) Exploration and Role Development of Pharmacist as Health Team Members
B. W. Hadjiev (19) Analysis of Drugs and Their Metabolic Degradation Products
Anthony J. Hickey (86) Pulmonary Drug Delivery, Aerosol Formulations
Leif Huang (121) Gene Therapy, Targeted Drug Delivery
Harold Kohn (106) Organic, Medicinal, and Bio-Orga-nic 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 Antimicrobials, Anti-AIDS, Antimalarial, Antiinflammatory, Anti-Arthritis and Antiviral Agents; Antibacterial and Antifungal Antibiotics; Insect Antifeedants; Chinese Herbal Medicine
Michael D. (Mick) Murray (119) Medication Management Programs, Patient Adherence to Prescription Medications, Pharmacoepidemiology, Pharmaceutical Outcomes Research
Gary M. Pollow (53) Pharmacokinetics and Pharmacodynamics of CNS Active Agents, Pharmacokinetic Model Development, Toxicokinetics
Dhiren Thakker (87) Mechanisms of Drug Transport, Pro-Dru-g Strategies for Enhanced and Targeted Drug Delivery, Disposition of Macromolecules (e.g., Genes)
Alexander Troshna (81) Molecular Modeling, Computer-Assisted Drug Design, Molecular Dynamics of Proteins, Protein Folding

Associate Professors
Kenneth F. Bastow (84) Design and Testing of Antiviral/Anticancer Drugs
Susana J. Blalock (115) Psychosocial Aspects of Chronic Illness, with Emphasis on Musculoskeletal Disorders
Stephen M. Caiola (14) Evaluation of Pharmacy Service Delivery Models and Therapeutic Regimens in Ambulatory Care Settings
Moo J. Cho (79) Targeted Drug Delivery
James E. Hall (109) Development of Anti-Parasitic and Anti-Viral Agents
Timothy J. Ives (90) Ambulatory Care, Pharmacy Practice
Angela D.M. Kashuba (114) Pharmacogenetics, Pharmacokinetics and Pharmacodynamics of Antiretroviral Agents, Influence of Cytokines on Drug-Metabolizing Enzymes
Richard J. Kowalsky (26) Radiopharmaceuticals
Celeste M. Lindley (58) Pharmacogenetics, Pharmacokinetics, and Pharmacodynamics of Antineoplastic Agents and Coagulation Products; Drug Metabolism
Matthew L. Maciejewski (123) Health Economics, Medicare Managed Care, Diabetes Costs and Outcomes, Obesity-Related Quality of Life and Costs
J. Herbert Patterson (47) Pharmacokinetic Evaluation of Cardiovascular Drugs
A. Wayne Pittman (30) Hypertension, Clinical Pharmacokinetics, Cardiology and Drug Administration
Ralph H. Raasch (32) Infectious Diseases, Parenteral Nutrition
Robert P. Shrewsbury (39) Biopharmaceutics
Betsy L. Sleet (91) Provider-Patient Communication, Drug Utilization Review, Patient Compliance, Pharmacoepidemiology
Philip C. Smith (85) Pharmacokinetics, Drug Metabolism
Dennis M. Williams (92) Pharmacokinetics and Pharmacodynamics, Inhalation Therapy for Pulmonary Disease, Hypertension

Assistant Professors
Richard A. Harnen, Prescription Drug Insurance, Pharmaceutical Outcomes, Pharmacoeconomics, Direct-to-Consumer Advertising
Roy Hawke (118) Pharmacogenetics of Drug Metabolism and Liver Disease, Lipotropics, Drug Toxicity
Michael B. Jarstfer (112) Telomerase and High-Throughput Drug Discovery
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 Heparan Sulfate
Rihe Liu (113) Proteomics and Functional Genomics
Mary T. Rohl, Quality of Medication Use and Clinical Outcomes in Older Adults

Research Associate Professors
Feng Liu, Gene and Drug Delivery

Research Assistant Professors
Arlene P. Bridge, Mass Spectrometry
Lucila Garcia-Contreras, Aerosol Drug Delivery
Alexander Golbraikh, Informatics
Mary F. Paine, Pharmacokinetics, Drug Metabolism and Transport, Pharmacogenetics
Hengbing Wang (122), Drug Metabolism and Transport, Drug Resistance in Cancer

Clinical Professors
Gary M. Armstrong, Public Policy, Deception in Advertising, Sales Force Management
Allen E. Cato, Clinical Drug Trials, Pediatric Diseases, and Pulmonary Medicine
Peter Gal, Pediatric Pharmacotherapy
J. Heyward Hull, Cardiovascular Pharmacology, Clinical Pharmacokinetics, Study Design and Analysis

Clinical Associate Professors
Kimberly H. DeLoatch, Educational Media and Instructional Design
Robert E. 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
Colleen Gresham, Drug Utilization Review
Amanda H. Croft, Pharmacology of Antiretrovirals, Opportunistic Infection Therapies in Resource Poor Countries
Stefanie P. Ferrer, Evaluating Pharmaceutical Care in the Community Pharmacy Setting
Jo Ellen Rodgers, Cardiovascular and Critical Care Drug Therapy

Adjunct Professors
Arnold Broiss, Synthesis and Study of Biologically Active Natural Products, Drugs Useful in Malaria Chemotherapy
Patricia Bush, Pediatric and Adolescent Health
Barry Goi, Drug Resistance in Cancer Cells
Michael Cory, Design, Synthesis, and Binding Studies of DNA Interacting Agents, Quantitative Structure-Activity Relationships, Computer Applications to Drug Design
Arnold D. Kallury, Health Policy
Andrew T. McPhee, 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 Swarbrick, Physical Pharmacy, Biopharmaceutics
Hugh H. Tilton, Pharmacoepidemiology
Raymond J. Townes, Pharmacoconomics

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 Chao, Receptor Binding Involving Estrogen and Other Synthetic Estrogenic Compounds
James Crow, Pulmonary and Hematology Inflammation
Donald K. Knight, Pharmaceutical Industry
Thomas R. Konrad, Primary Care, Health Services Research
John E. Paul, Pharmacoconomics, Health Policy, Pharmacoepidemiology
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, Bioid and Interface Science, Aerosol Science, and Pharmaceutical Science
Stanley Levy, Cosmetic Science and Technology
Alan Parr, Pharmaceutics
Rukmini Rajagopal, Pharmacoconomics
Michiel 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
C. Joseph Norwood
Claude Piantadosi
LeRoy D. Werley Jr.
Jack K. Wert

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 medicinal chemistry and natural products, molecular pharmaceutics, pharmaceutical outcomes and policy, and pharmacotherapy and experimental therapeutics.

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, the Wake Forest University School of Medicine, and many other organizations in the Research Triangle Park area.

The School of Pharmacy occupies Beall and Kerr Halls, which are 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.

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, microbiology, molecular modeling, natural products, neurochemistry, parasitology, and structural biology.

MS and PhD programs are offered in medicinal chemistry and natural products.

Molecular Pharmaceutics

Molecular pharmaceutics 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 Molecular Pharmaceutics 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. 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 the Research Triangle Park area.

Pharmaceutical Outcomes and Policy

Research and education in the Division of Pharmaceutical Outcomes and Policy (DPOP) 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. DPOP 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 and Experimental Therapeutics

The Division of Pharmacotherapy and Experimental Therapeutics offers a PhD program in the pharmaceutical sciences with a focus on translational research in experimental therapeutics. The goal of this program is to develop an individual who is capable of 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.

Requirements for Admission

Applicants who have completed a standard collegiate curriculum in pharmacy, chemistry, biochemistry, biology, 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 graduate program in Pharmaceutical Sciences. 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 the UNC-Chapel Hill School of Pharmacy.

The Graduate School online application (gradschool.unc.edu) is the standard means of applying for admission. Inquiries concerning admission to programs in the pharmaceutical sciences may be directed to the Office of Research and Graduate Education, CB# 7360, 29 Beard 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 $21,000 for twelve months’ service. All awards are made 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 Research and Graduate Education, School of Pharmacy.

MEDICINAL CHEMISTRY

Courses for Graduates and Advanced Undergraduates
MEDC 821 [121] CHEMISTRY OF NATURAL PRODUCTS (3). Prerequisites, CHEM 466 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.

MEDC 842 [156] THERAPEUTIC PROTEINS (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.

MEDC 900 [141] INTRODUCTION TO RESEARCH IN MEDICINAL CHEMISTRY (1-3). Prerequisites, CHEM 261, 262, permission of the instructor. One conference and three or more laboratory hours a week. Fall and spring. Staff.

Courses for Graduates


MEDC 806 [276] MACROMOLECULAR MODELING (BIOC 806) (3). Prerequisites: MATH 231-232, CHEM 430 or equivalent. Introduction to modeling and simulation techniques for biological macromolecules. Two lecture and three to four laboratory hours per week. Spring. Trophola.

MEDC 822 [244] SELECTED TOPICS IN NATURAL PRODUCTS (2). Prerequisites, CHEM 466 and 468. Discussion of important recent developments in the chemistry of natural products of biomedical significance. Spring. Lee, staff.


MEDC 836 [243] SELECTED TOPICS IN SYNTHETIC MEDICINAL CHEMISTRY (2). Prerequisite, CHEM 460 or equivalent. Discussions from current literature on the chemistry and techniques involved in the synthesis of drug molecules. Two lecture hours a week. Spring and fall. Lee, staff.

MEDC 899 [361] SEMINAR (1). Fall and spring.

MEDC 991 [391] RESEARCH IN MEDICINAL CHEMISTRY (1-5). One conference and nine laboratory hours a week per course. Fall or spring. Staff.

MEDC 993 [393] MASTER'S THESIS (3). Fall and spring. Staff.

MEDC 994 [394] DOCTORAL DISSERTATION (3). Fall and spring. Staff.

MOLECULAR PHARMACEUTICS

Courses for Graduates and Advanced Undergraduates
MOPH 801 [107] NUCLEAR PHARMACOLOGY I (3). Prerequisites, PHCY 411 and permission of the instructor. Basic principles of radiation physics, instrumentation, radiation safety, and radiation biology. Fall. Kowalsky.


MOPH 810 [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.

MOPH 840 [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 and spring. Staff.

MOPH 850 [191] PHARMACEUTICAL ANALYSIS (3). Prerequisite, permission of the instructor. Introduction to quantitative instrumental analysis in pharmaceuticals. One lecture hour a week. Fall. (Even years.) Smith.

MOPH 855 [156] PRINCIPLES OF PHARMACOKINETICS (3). Prerequisites: PHCY 413 or equivalent, permission of the instructor. Introduction to pharmacokinetic theory, mathematical model development, and data analysis techniques. Fall. (Odd years.) Pollack, Brouwer.

MOPH 856 [256] ADVANCED PHARMACOKINETICS AND PHARMACODYNAMICS (4). Prerequisites, MOPH 855, 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.

MOPH 864 [165] ADVANCES IN DRUG DELIVERY (4). Prerequisites: PHCY 410, 411, or equivalent. CHEM 430 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.

Courses for Graduates
MOPH 865 [269] TRENDS IN DRUG DELIVERY RESEARCH (3). Prerequisite, MOPH 864. 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.

MOPH 890 [253] SPECIAL TOPICS IN ADVANCED PHARMACEUTICS (Var.). Prerequisite, permission of the instructor. Lecture and/or laboratory course designed to present new concepts and innovations in the area of drug delivery and disposition. Fall and spring. Staff.

MOPH 899 [361] SEMINAR (1). Fall and spring. Staff.

MOPH 991 [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.
PHARMACOTHERAPY AND EXPERIMENTAL THERAPEUTICS

Courses for Graduates and Advanced Undergraduates

DPET 813 [185] CARDIOVASCULAR PHARMACY (3). Provides an in-depth discussion of the pharmacology of major cardiovascular diseases such as hypolipidemia, hypertension, ischemic heart disease, heart failure, and arrhythmias. Fall. Patterson.

DPET 821 [250] PRINCIPLES OF PHARMACY PRACTICE (3). Prerequisite, PHIP 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.

DPET 822 [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.

DPET 830 [210] INTRODUCTION TO DEVELOPMENT (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. Cato.

DPET 831 [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.


DPET 899 [361] SEMINAR (1). Fall and spring. Staff.

DPET 900 [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.

DPET 994 [394] DOCTORAL DISSERTATION (3). Fall and spring. Staff.

PHARMACEUTICAL SCIENCES (INTERDISCIPLINARY)

Phcy 800 [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.

Phcy 801 [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 Boxill (26) Social and Political Philosophy, African American Philosophy
Geoffrey Brennan, Political Philosophy, Economics, Rationality
Thomas E. Hill Jr. (24) Ethics, Political Philosophy
Marc Lange (44) Philosophy of Science, Metaphysics, Epistemology
William G. Lycan (22) Philosophy of Mind, Philosophy of Language, Epistemology
Alan Nelson, History of Philosophy, Philosophy of Science
Douglas MacLean (38) Moral Theory, Social and Political Philosophy
Gerald J. Postema (20) Legal Philosophy, Political Philosophy, Ethics
C. D. C. Reeve (39) Ancient Philosophy, Metaphysics, Moral Psychology, Ethics
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 Professors
Jesse Prinz (42) Philosophy of Mind, Cognitive Science
John T. Roberts (37) Philosophy of Science, Philosophy of Physics, Metaphysics

Assistant Professors
Thomas Hofweber (42) Metaphysics, Philosophy of Language, Epistemology,
Philosophy of Mathematics
Joshua Knobe (46) Cognitive Science, Moral Philosophy, Philosophy of Psychology
Ram Neta (43) Epistemology, Philosophy of Mind

Lecturers
Warren A. Nord (34) Philosophy of Religion, Philosophy of Education
Jeanette M. Boxill (33) Social and Political Philosophy, Feminism

Adjunct Professors
Michael Corrado, Philosophy of Law
Rebecca Walker, Bioethics, Ethical Theory

Professors Emeriti
Edward Galligan
Douglas Long
Stanley Munzat
Michael Renk
George Schlesinger
Richard A. Smith
Robert D. Vance

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 a program 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, typically with a major in philosophy, with a broad range of courses.

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 700 and PHIL 455; there may be adjustments with the consent of the department. Successfully completing an MA thesis is a condition for receiving the degree of master of arts.

Candidates for the doctoral degree must satisfactorily complete sixty semester hours of graduate work, including six hours of PhD dissertation credit.

The candidate for the degree of doctor of philosophy must pass two examinations. First, there is the Admission to Candidacy examination, which itself has two parts, 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. Second, 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 non-service fellowships. These include the Graham Kenan Fellowship and the Horace Williams, Mary Taylor Williams, and Bertha Colton Williams Fellowships. The department has available teaching assistantships with stipends of $1,400. In addition, The 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. Library facilities are available to students at each institution.

Courses for Graduates and Advanced Undergraduates
(Prerequisite, one course below 400 or consent of the instructor.)

411 [151] ARISTOTLE (3) Fall or spring. Reeve.
412 [150] PLATO (3). Fall or spring. Reeve.
415 [152] TOPICS IN MEDIEVAL PHILOSOPHY (3). Spring.
421 [153] CONTINENTAL RATIONALISM (3). Fall or spring. Nelson.
423 [155] KANT (3). Fall or spring. Rosenberg, Hill.
427 [156] HEGEL (3). Fall or spring. Postema.
428 [159] TOPICS IN AMERICAN PHILOSOPHY (3). Fall or spring.
433 [116] CURRENT ISSUES IN ANALYTIC PHILOSOPHY (3). Fall or spring. Bar-On, Lycan, Prinz, Rosenberg.
450 [108] PHILOSOPHY OF NATURAL SCIENCES (3). Fall or spring. Lange, Roberts.
451 [122] PHILOSOPHY OF PHYSICS (3). Fall or spring. Lange, Roberts.
452 [123] PHILOSOPHY OF BIOLOGY (3) Fall or spring. Lange, Roberts.
453 [109] PHILOSOPHICAL PROBLEMS IN PSYCHOLOGY (3). Fall or spring. Knobe, Prinz.
454 [107] PHILOSOPHY, HISTORY, AND THE SOCIAL SCIENCES (3). Fall or spring.
455 [101] SYMBOLIC LOGIC (LING 443) (3). Fall. Hofweber, Simmons.
456 [111] ADVANCED SYMBOLIC LOGIC (3). Fall or spring. Simmons.
457 [190] SET THEORY AND LOGIC (3). Fall or spring. Hofweber, Simmons.
459 [106] PHILOSOPHY OF MATHEMATICS (3). Prerequisite, PHIL 455 or equivalent background in logic or mathematics. Fall or spring. Hofweber, Simmons.
Courses for Graduates

700 [200] PROTO-SEMINAR IN PHILOSOPHY (3).
705 [205] ADVANCED STUDIES IN SYSTEMATIC PHILOSOPHY (3).
710 [210] ADVANCED STUDIES IN ANCIENT PHILOSOPHY (3).
715 [215] ADVANCED STUDIES IN MEDIEVAL PHILOSOPHY (3).
720 [220] ADVANCED STUDIES IN MODERN PHILOSOPHY (3).
725 [225] ADVANCED STUDIES IN NINETEENTH-CENTURY PHILOSOPHY (3).
730 [230] ADVANCED STUDIES IN METAPHYSICS (3).
735 [235] ADVANCED STUDIES IN EPISTEMOLOGY (3).
740 [240] ADVANCED STUDIES IN PHILOSOPHY OF MIND (3).
745 [245] ADVANCED STUDIES IN PHILOSOPHY OF LANGUAGE (LING 745) (3).
750 [250] ADVANCED STUDIES IN PHILOSOPHY OF SCIENCE (3).
755 [255] ADVANCED STUDIES IN PHILOSOPHY OF LOGIC (3).
760 [260] ADVANCED STUDIES IN MORAL THEORY (3).
765 [265] ADVANCED STUDIES IN VALUE THEORY (3).
770 [270] ADVANCED STUDIES IN POLITICAL PHILOSOPHY (3).
775 [275] ADVANCED STUDIES IN FEMINISM (WMST 775) (3).
780 [280] ADVANCED STUDIES IN PHILOSOPHY OF LAW (3).
790 [290] COLLOQUIUM SERIES SEMINAR (3).
800 [300] PRE-DISSERTATION SEMINAR IN PHILOSOPHY (3).
805 [305] RESEARCH SEMINAR IN SYSTEMATIC PHILOSOPHY (3).
810 [310] RESEARCH SEMINAR IN ANCIENT PHILOSOPHY (3).
815 [315] RESEARCH SEMINAR IN MEDIEVAL PHILOSOPHY (3).
820 [320] RESEARCH SEMINAR IN MODERN PHILOSOPHY (3).
825 [325] RESEARCH SEMINAR IN NINETEENTH-CENTURY PHILOSOPHY (3).
830 [330] RESEARCH SEMINAR IN METAPHYSICS (3).
835 [335] RESEARCH SEMINAR IN EPISTEMOLOGY (3).
840 [340] RESEARCH SEMINAR IN PHILOSOPHY OF MIND (3).
845 [345] RESEARCH SEMINAR IN PHILOSOPHY OF LANGUAGE (3).
850 [350] RESEARCH SEMINAR IN PHILOSOPHY OF SCIENCE (3).
855 [355] RESEARCH SEMINAR IN PHILOSOPHY OF LOGIC (3).
860 [360] RESEARCH SEMINAR IN MORAL THEORY (3).
865 [365] RESEARCH SEMINAR IN VALUE THEORY (3).
870 [370] RESEARCH SEMINAR IN POLITICAL PHILOSOPHY (3).
880 [380] RESEARCH SEMINAR IN PHILOSOPHY OF LAW (3).
890 [390] CURRENT RESEARCH GROUP SEMINAR (3).
993 [393] MASTER’S THESIS.
994 [394] DOCTORAL DISSERTATION.

DEPARTMENT OF PHYSICS AND ASTRONOMY

LAURIE E. MCNEIL, Chair

Professors
Bruce W. Carnegy (22) Optical Observational Astrophysics
Gerald N. Cecil (47) Optical Observational Astrophysics
Arthur E. Champagne (51) Experimental Nuclear Physics and Astrophysics
Wayne A. Christiansen (4) Theoretical Astrophysics, Radio Astronomy
Thomas B. Clegg (5) Nuclear Physics, Polarization Phenomena
Louise A. Dolan (49) Theoretical Particle Physics, Quantum Gravity
Jonathan Engel (57) Theoretical Nuclear Physics
Charles R. Evans (48) Gravitation, Relativity, Theoretical Astrophysics
Paul H. Frampson (33) Theoretical Particle Physics (Including Gravitation)
John P. Hernandez (10) Condensed Matter Theory, Electron States
Hugon J. Karwowski (37) Experimental Nuclear Physics and Astrophysics
Janping Lu (50) Condensed Matter Theory
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
Richard Superfine (55) Experimental Studies of Interfaces
Hendrik Van Dam (20) Theoretical Physics (retired)
Sean Washburn (50) Experimental Condensed Matter and Low Temperature Physics
Yue Wu (54) Nuclear Magnetic Resonance, Electron Spin Resonance in Solids
Oto E. Zhou (62) Materials Science, Nanotechnology

Associate Professors
J. Christopher Clemens (64) Observational Astronomy, Astrophysics, Astronomical Instrumentation
Christian G. Iliadis (61) Experimental Nuclear Astrophysics  
Dmitri V. Khveshchenko (1) Theoretical Physics  
Lu-Chang Qin (27) Materials Science, Nanotechnology  
Frank Tsui (59) Experimental Condensed Matter and Materials Physics

**Assistant Professors**  
Laura Merzini (19) Theoretical Cosmology  
Daniel E. Reichart (13) Gamma Ray Bursts, Early Universe, Interstellar Extinction, Galaxy Clusters  
Paul H. E. Tiesinga (6) Computational and Theoretical Neuroscience, Biophysics

**Research Professor**  
Robert K. McManus 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 Kleinhammer, Condensed Matter Physics, Materials Science  
E. Timothy O'Brien, Physics Related to Biology, Light Microscopy, Biological Sample Preparation

**Adjunct Professors**  
John M. Bane Jr. (29) Physical Oceanography  
William W. Clark III, Electronics, Optics  
Richard T. Hammond, General Relativity, Gravitation, Optics  
Ryan M. Rehm, Quantum Field Theory, Theoretical Particle Physics  
John E. Rowe, Materials Science, Nanotechnology  
Jie Tang, Materials Physics, Nanomaterials

**Adjunct Associate Professors**  
John D. Hunn, Applied Condensed Matter Physics  
M. Christopher Thompson, High Energy Astrophysics  
Anton Tonchev, Nuclear Physics

**Adjunct Assistant Professor**  
Brian R. Stone, Applied Materials Science

**Professors Emeriti**  
Wayne A. Bowers  
C. Victor Brascoe  
Sang-II Choi  
Morris S. Davis  
Kian S. Dy  
William M. Hooke  
Paul S. Hubbard  
Horst Kuesneier  
Edward J. Ludwig  
J. Ross MacDonald  
Eugen Meisel  
Earl N. Mitchell  
Everett D. Palminter  
Dietrich Schroer  
Stephen M. Shafroth  
Lawrence M. Slifkin  
William J. Thompson  
James W. York Jr.

The Department of Physics and Astronomy offers graduate work leading to the degrees of master of science and doctor of philosophy.

The active fields of research are: condensed-matter physics; microelectronics; nuclear physics and astrophysics; 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 116, 117, 128L, 301, 302, 341, 415, 311, 312; together with MATH 252, 233, and 524. At the end of the spring semester, a student who does not already have a degree in physics or astronomy must take the MS written examination. The 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.

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 701 and a minimum of six hours from ASTR 519, 702, 703, or 704.

The requirements for a PhD in physics for students entering in 2006 are:  
(a) successful completion of the following courses in the department, or completion of their equivalents elsewhere as an undergraduate or graduate student: 701, 711-712, 741, and 721-722;  
(b) passing PhD written examination based on core graduate courses in physics as listed in a;  
(c) 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;  
(d) a student must take a course outside his or her field of specialization from a list approved by the director of graduate studies;  
(e) a student must pass at least three other graduate-level courses appropriate to his or her field of specialization. A PhD candidate must also take a preliminary doctoral oral examination within the first two years of graduate study in physics at UNC-Chapel Hill. The oral examination is concerned mainly with the student's dissertation research project. 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 the course outside the specialty, PHYS 701, 711, 721, 741, and ASTR 701, 702, 703, 704, and an additional 700-level course. To gain familiarity with experimental astrophysics or observational astronomy, a student must either: pass ASTR 519/719; 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 the 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 began regular operations in 2004, and on the 11-meter SALT Telescope in South Africa, which began 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 the design, synthesis, integration, and characterization of novel solid state materials, including nanostructured materials such as quantum dots, carbon nanotubes and nanorods; quasi-crystals; and 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 targets. Applied nuclear physics.

**Facilities and Equipment**

Facilities. 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 "Nanowave" (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 microscopies, 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 nanomaterials production and experimental facilities. The department is a partner 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 (SALT) in South Africa. Numerous national laboratories - including Oak Ridge, Brookhaven, Los Alamos and Argonne, as well as KamiLAND, 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 $16,020 for nine months) are available to qualified graduate students. The duties of assistants include supervising laboratory classes in elementary physics or astronomy, assisting in the supervision of advanced laboratories, teaching recitation sections, 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 $21,360 for the calendar year. Summer employment is usually available.

Application forms for admission, including graduate appointments, should be completed online at gradschool.unc.edu/students_prospective.html, or may be downloaded from the Web at www.physics.unc.edu.

**Courses for Graduates and Advanced Undergraduates**

* ASTR 301 is not to be taken for graduate credit by graduate students in physics and astronomy.

** Astronomy**

301 [117]* COSMIC EVOLUTION (3). Prerequisites, MATH 232 and ASTR 101 (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.

501 [142] ASTROPHYSICS I (Stellar Astrophysics) (3). Prerequisites, PHYS 128, MATH 383, 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.

502 [143] ASTROPHYSICS II (Interstellar Matter and Galaxies) (3). Prerequisites, PHYS 128, MATH 383, 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 flow and shock formation, star formation, galactic evolution, the expanding universe, and cosmology. Spring. Carney, Christiansen, Rose.

519 [137] OBSERVATIONAL ASTRONOMY (4). Prerequisite, ASTR 101 or permission of the instructor. A course designed to familiarize the student with observational techniques in optical and radio astronomy, including application of photography, spectroscopy, photometry, and radio methods. Three lecture and three laboratory hours a week. (Laboratory fee required.) Fall or spring. (Alternate years.) Rose, staff.

701 [244] PHYSICAL PROCESSES IN STELLAR ATMOSPHERES AND INTERIORS (3). Prerequisites, PHYS 711 and 721. 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.

703 [243] GALACTIC DYNAMICS AND PHYSICAL PROCESSES IN THE INTERSTELLAR MEDIUM (3). Prerequisites, PHYS 701 and 721. Collapsing and collisional stellar dynamics; disk dynamics and spiral structure; encounters between stellar systems. Physical processes in diffuse gas, HI regions, and supernova remnants; ionization and energy balance of the interstellar medium; star formation. Fall. Rose.

704 [245] EXTRAGALACTIC ASTROPHYSICS (3). Corequisite, PHYS 701. 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.

719 [237] ASTRONOMICAL DATA (4).

891 [350] SEMINAR IN ASTROPHYSICS (1 or more). Recent observational and theoretical developments in stellar, galactic, and extragalactic astrophysics. Fall and spring. Staff.

**PHYS 301-302 and 311-315 are not to be taken for graduate credit by graduate students in physics.

301 [103*] MECHANICS I (3). Prerequisites, PHYS 117 (or permission of the instructor) and MATH 233. Particle kinematics, central forces, planetary motions. Systems of particles, conservation laws, nonlinearity. Statics, motion of rigid bodies. Lagrange's and Hamilton's equations, Euler's equations. Vibrations and waves. Spring. Washburn, staff.

302 [104*] MECHANICS II (3). Prerequisite, PHYS 301. Advanced topics in mechanics. Fall. Staff.

311 [107], 312 [108*] ELECTRICITY AND MAGNETISM (3 each). Prerequisites, PHYS 117 (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. Clegg.

313 [113*] SPACE AND TIME IN PHYSICS AND PHILOSOPHY (3). Contingent and necessary properties of space and time. The direction and flow of time.Fatalism. Effects preceding their causes. Spring. Van Dam, staff.


331 [061] INTRODUCTION TO NUMERICAL TECHNIQUES IN PHYSICS (4). Prerequisite, PHYS 116 (or PHYS 105); corequisite, MATH 233. Applications of calculus, vector analysis, differential equations, complex numbers, and computer programming are made to realistic physical systems. Three lecture and two computational laboratory hours a week. Spring. Staff.

341 [105] HEAT AND THERMODYNAMICS (3). Prerequisites, PHYS 117 (or PHYS 105 by permission of the instructor) and MATH 233. Equilibrium statistical mechanics; the thermodynamics laws, internal energy, entropy, thermodynamic potentials. Maxwell equations. Fall. Wu.

351 [101] ELECTRONICS I (3). Prerequisites, introductory physics and MATH 231, or permission of the instructor. DC and AC circuit analysis, op junctions and diodes, single-transistor circuits, transistors, op amps, analog devices. Applications in research and industry. Extensive circuit building with testing, trouble shooting, and debugging. Fall. Karwowski.


471 [140] PHYSICS OF SOLID STATE ELECTRONIC DEVICES (3). Prerequisite, 117. Corequisite or prerequisite, PHYS 211 or 311. 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.


481 [142L], 482 [143L] ADVANCED LABORATORY I AND II (2 each). Prerequisite, PHYS 351 or 352 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.


492L [149L] MATERIALS LABORATORY II (APPL 492L) (2). Prerequisite, PHYS 491 or APPL 491L. Continuation of Physics 491 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. Purkh.

521 [163] APPLICATION OF QUANTUM MECHANICS (3). Prerequisite, PHYS 321. 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. Khveshchenko.

543 [161] NUCLEAR PHYSICS (3). Prerequisites, PHYS 321 or equivalent. Structure of the nucleus, symmetries, nuclear forces, nuclear structure and reactions, weak interactions, and physics beyond the standard model. Spring. Champagne.

545 [165] INTRODUCTION TO ELEMENTARY PARTICLE PHYSICS (3). Prerequisites, PHYS 312 and 321. Relativistic kinematics, symmetries and conservation laws, elementary particles and bound states, gauge theories.
quantum electrodynamics, chromodynamics, electroneutrality, standard model, and beyond. Spring. Staff.

573 [169] INTRODUCTORY SOLID STATE PHYSICS (3). Prerequisite, PHYS 321 or equivalent. Crystal symmetry, atomic structure of crystalline and noncrystalline solids, 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. Hernandes.


633 [193] SCIENTIFIC PROGRAMMING (3). Prerequisites, MATH 528 or 529, or PHYS 631 or 632; elementary FORTRAN, C, or Pascal programming. Structured programming in FORTRAN or Pascal; use of secondary storage and program package; numerical methods for advanced problems, error propagation, and computational efficiency, symbolic mathematics by computer. Spring. Staff.

660 [151] FLUID DYNAMICS (MASC 560) (GEOL 560) (ENVR 452) (3). Prerequisite, PHYS 501 or permission of the instructor. The physical properties of fluids, kinematics, governing equations, viscous incompressible flow, vorticity dynamics, boundary layers, and inviscid incompressible flow. Fall. Benc.

671L [1811], 672L [1821] ADVANCED LABORATORY (3 each). Prerequisite, PHYS 501, PHYS 502, or permission of the instructor. Six laboratory hours a week. Fall and spring. McNeil.

Courses for Graduates

*The PHYS 281 and PHYS 461 sequence alternates with PHYS 282-283.


712 [205] ELECTROMAGNETIC THEORY II (3). Prerequisite, PHYS 711 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.


771L [2011], 772L [2012] ADVANCED SPECTROSCOPIC TECHNIQUES (3 each). Prerequisite, PHYS 301, PHYS 312, 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. PHYS 771 (fall) has two hours of lecture and three hours of laboratory a week; PHYS 772 (spring) has one hour of lecture and five hours of laboratory a week. McNeil.

821 [262] ADVANCED QUANTUM MECHANICS (3). Prerequisite, PHYS 722. Advanced angular momentum, atomic and molecular theory, many-body theory, quantum field theory. Fall. (Alternate years.) Dolan.

822 [263], 823 [264] FIELD THEORY (3 each). Prerequisite, PHYS 722. 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.


827 [288] PRINCIPLES OF CHEMICAL PHYSICS (CHEM 788) (3). Prerequisite, PHYS 321 or CHEM 781 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.

829 [290] PRINCIPLES OF MAGNETIC RESONANCE (3). Prerequisite, PHYS 721, or CHEM 781, or permission of the instructor. Fall or spring, as announced. Wu.

831 [274] DIFFERENTIAL GEOMETRY IN MODERN PHYSICS (3). Prerequisites, PHYS 701, 711, 712. Applications to electrodynamics, general relativity, and nonabelian gauge theories of methods of differential geometry, including tensors, spinors, differential forms, connections and curvature, covariant exterior derivatives, and Lie derivatives. Fall or spring, as announced. Staff.

832 [275] GENERAL THEORY OF RELATIVITY (3). Prerequisite, PHYS 831 or permission of the instructor. Differential geometry of space-time. Tensor fields and forms. Curvature, geodesics. Einstein's gravitational field equations. Tests of Einstein's theory. Applications to astrophysics and cosmology. Fall or spring, as announced. Evans.


871 [270], 872 [271] SOLID STATE PHYSICS (MTSC 871, 872) (3 each). Prerequisite, PHYS 321 or equivalent. Topics considered include those of PHYS 573, 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.


883 [267] CURRENT ADVANCES IN PHYSICS (3). Prerequisite, permission of the instructor. In recent years, elementary particle physics, amorphous solids, neutrinos, and electron microscopy have been among the topics discussed. Fall or spring, as announced. Staff.
Research Courses

893 [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.

895 [360] SEMINAR IN NUCLEAR PHYSICS (1 or more). Current research topics in low-energy nuclear physics, especially as related to the interests of the Triangle Universities Nuclear Laboratory. Fall and spring. Kowalskowi.

896 [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.

897 [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. Mersini.

899 [322] SEMINAR IN PROFESSIONAL PRACTICE (Vac.). 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.

901 [301] RESEARCH (3 or more). Ten or more laboratory or computation hours a week. Fall and spring. Staff.

992 [392] MASTER'S RESEARCH PROJECT (3 or more). Fall or spring. Staff.

993 [393] MASTER'S THESIS (3 or more). Fall or spring. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall or spring. Staff.

DEPARTMENT OF POLITICAL SCIENCE

EVELYNE HUBER, Chair

Professors

Thad Beyle (5) 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 Harrity (46) Comparative Politics, Latin American Politics
Liebets Hooghe (94) Comparative Politics, European Union, West European Politics
Evelyn Huber (54) Comparative Politics, Political Economy, Latin American Politics
Michael Lienest (38) History of Political Thought, American Political Theory
Stuart Elaine Macdonald (35) 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 Rabinowitz (25) Elections, Political Parties, Statistical Methods
Lars Schultitz (20) U.S.-Latin American Relations
Donald Searing (30) Comparative Politics, Political Psychology
Jeffrey Spinoz-Halaf (11) History of Political Thought, Contemporary Political Theory, Democratic Theory
Jorg Steiner (31) Comparative Politics, Ethics in Politics
John Stephens (55) Political Economy, Western Europe, Caribbean
James Simons (65) American Politics, Political Methodology
James White (34) Comparative Politics, Urban Politics, East Asian Politics

Associate Professors

Susan Bickford (58) History of Political Thought, Feminist Theory, Democratic Theory

Michele Hoyman (06) 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 (66) Judicial Politics, American Politics
Thomas Osterley (57) International Relations, International Political Economy, European Countries
Andrew Reynolds (13) Comparative Politics, Political Institutions, African Politics
Marco Steensberg (61) Political Psychology, Public Opinion, Voting Behavior, Quantitative Methods
Terry Sullivan (47) Congressional and Executive Politics
Issac Unah (62) Judicial Politics, Regulatory Policy, Bureaucratic Implementation
Georg Vanberg (17) American Politics, Comparative Politics, Formal Modeling

Assistant Professors

Mark Crescenzi (08) International Politics, Conflict Processes, Political Economy
Erik Engstrom (14) American Politics, Legislative Politics
Stephen Gent (8) International Conflict, Civil Conflict, Game Theory
Lauma Mosley (9) International Relations, International Political Economy, Comparative Political Economy
Greene Roberson (7) Comparative Politics, Russian Politics, Labor and Social Movements, Democratization
Milada Vachudova (12) Comparative Politics, International Institutions, Western and Eastern European Politics

Professors Emeriti

Raymond Dawson
Lewis Lipset
Duncan MacRae
Richard Richardson
Robert Rupen
Glenn Snyder
Alan Stern
Dell Wright

The Department of Political Science offers courses of study leading to the master of arts in political science, the 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 (GRE). 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; teach; to fill active political and administrative duties; and to carry on other roles that advance 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, graduate 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 advisor 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 (CES) 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 consortium with eight European and American universities. CES is funded as a National Resource Center by the U.S. 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 U.S. 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

The national polling company 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


400 [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.


Stimson.
404 [102] RESEARCH IN URBAN POLITICS (3). Prerequisites, POLI 100 or POLI 101. Examines contemporary research programs on urban politics conducted by political scientists. These topics will be examined both in terms of substantive findings and research methodology. Fall and spring. Lowery.

405 [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.


408 [169] BUSINESS GOVERNMENT RELATIONS (3). Explores the non-market 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.

409 [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 is on creative blending theory and practice. Fall. MacKuen.

410 [155] THE CONSTITUTION OF THE UNITED STATES (HIST 530) (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.


414 [151] THE ADVERSARY SYSTEM (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. LeFevre.


416 [153] CONSTITUTIONAL POLICIES AND THE JUDICIAL PROCESS (PWAD 416) (3). Analysis of the structure and functions of judicial systems emphasizing the organization, administration, and politics of judicial bureaucracies and the roles of judges, juries, counsel, litigants, and interest groups in the adjudication process. Fall. Unah.

417 [167] ADVANCED POLITICAL PSYCHOLOGY (3). Prerequisite, POLI 215, 216, or 697. 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.

418 [174] MASS MEDIA AND AMERICAN POLITICS (3). Prerequisites, junior/senior standing and POLI 100. Examination of the role, behavior, and influence of the mass media in American politics. MacKuen.

419 [171] RACE, POVERTY, AND POLITICS (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.

420 [178] LEGISLATIVE POLITICS (3). Examines the politics of the U.S. Congress. Emphasis on representation, the legislative process, and policymaking. Fall. Engstrom.

430 [128] EUROPEAN POLITICS (3). Prerequisite, POLI 239. Active participation of students in a research project on current issues and political principles in European countries. Fall and spring. Staff.

432 [113] TOLERANCE IN LIBERAL STATES (3). Prerequisites, POLI 100, POLI 239. 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. Seering.


434 [116] POLITICS OF MEXICO, CENTRAL AMERICA, AND THE CARIBBEAN (3). Prerequisite, POLI 238 or permission of the instructor. The analysis of politics in Mexico, Central America, and the Caribbean. Fall or spring. Hartsyn. Huber.

435 [127] DEMOCRACY AND DEVELOPMENT IN LATIN AMERICA (3). Prerequisite, POLI 238 or permission of the instructor. The analysis of social issues of democracy and development in Latin America. Fall or spring. Hartsyn. Huber.

436 [1275] DEMOCRACY AND DEVELOPMENT IN LATIN AMERICA (3). Prerequisites, POLI 238 and SPAN 101, 102, 203, 204 or equivalent intermediate-level language knowledge; or, by permission of the instructor. The analysis of central issues of democracy and development in Latin America. Spring. Hartsyn.


438 [121] DEMOCRACY AND INTERNATIONAL INSTITUTIONS IN AN UNDIVIDED EUROPE (INTS 438) (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.

439 [114] COMPARATIVE EUROPEAN SOCIETIES (SOC3 439) (3). Examination of the functional and structural similarities and differences of European societies and the tensions and difficulties attending the European integration process. Fall. Marks.

440 [123] GOVERNMENT AND POLITICS IN JAPAN (ASIA 440) (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.

442 [140] INTERNATIONAL POLITICAL ECONOMY (3). Prerequisites, POLI 150 and ECON 101. Theories of international political economy; major trends in international economic relations; selected contemporary issues. Fall. McKeeown. Oster.

443 [144] AMERICAN FOREIGN POLICY: FORMULATION AND CONDUCT (PWAD 443) (3). Prerequisite, POLI 150 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.

446 [149] DEFENSE POLICY AND NATIONAL SECURITY (AERO 446) (3). Prerequisite, POLI 150 or permission of the instructor. A study of national defense policy as affected by the constitutional and political setting, as well as its relationship to foreign policy. Some attention to strategic doctrine. Ciesenze.
447 [150] THEORY OF WAR (PWAD 447) (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.

449 [141] HUMAN RIGHTS AND INTERNATIONAL CRIMINAL LAW (3). This course examines international efforts to punish genocide, crimes against humanity, and war. The evolution of international criminal law, jurisdiction, remedies, problems, alternatives, and recent case studies is included.

450 [147] CONTEMPORARY INTER-AMERICAN RELATIONS (PWAD 450) (3). Prerequisite, POLI 238 and/or 231 or PWAD 231. A comprehensive analysis of the hemispheric international relations and foreign policies of individual Latin American nations. Spring. Schoule.

451 [146] INTERNATIONAL COMMUNICATIONS AND COMPARATIVE JOURNALISM (JOMC 446) (3). Fall and spring.

456 [145] CONTEMPORARY INTERNATIONAL RELATIONS OF THE UNITED STATES (3). Prerequisite, POLI 150 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.

457 [142] INTERNATIONAL CONFLICT PROCESSES (3). Prerequisite, POLI 150 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. Crescenzi. BA-level Social Science Perspective.

459 [122] THE UNITED STATES AND RUSSIA (3). A comparative inquiry into contrasting cultures, values, attitudes, and behavior patterns. Attempts to answer the question, "Why can't and why don't the Russians want to be like Americans?" Fall. Staff.

470 [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.

471 [166] RECENT 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.


475 [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.


Courses for Graduates

700 [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.

701 [204] AMERICAN POLITICAL INSTITUTIONS (PLCY 710) (3). Theory and practice of political institutions in the American context. Fall. Staff.


703 [286] CONGRESS AND THEORY BUILDING (3). This course examines diverse theoretical perspectives on national institutional change and stability, using as our institutional focus the United States Congress between 1789 and 1989. Spring. Staff.


705 [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 the relationships between judicial and other policymaking processes. Spring. McGuire, Utah.

706 [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.

707 [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.

708 [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.

709 [236] RESEARCH TOPICS IN CONTEMPORARY SOUTHERN POLITICS (3). Topics vary, but 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.

710 [275] POLITICAL PARTIES (3). Selected problems and issues in the study of American and comparative parties and party systems. Staff.

711 [203] AMERICAN POLITICAL BEHAVIOR (3). Theoretical study of mass behavior (i.e., participation, voting, protest) in the American context. Spring. Staff.

712 [270] PUBLIC OPINION (3). A study of public opinion, its formation, expression, and impact on political systems and public policy.

713 [271] DYNAMICS OF ELECTORAL POLITICS (3). Change within mass electorates. Topics include issue and attitude change, political realignments, and models of electoral competition. Rabinowitz.

714 [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.

715 [284] SEMINAR IN POLITICAL PSYCHOLOGY (3). Prerequisite, POLI 711. This course surveys and evaluates current and past research in political psychology. Topics may include: personality, attitudes and values, socialization, personal reasoning, information processing, decision making, political identity, and political affect. Spring. Steenbergen.

716 [216] POLITICS AND POLICY (3).

720 [213] MANAGING PUBLIC POLICY (PUBA 749) (3). Prerequisites. POLI 700, 745, or PUBA 723. 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.

721 [221] PUBLIC POLICY AND ADMINISTRATION (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. Gray.

722 [219] POLITICS OF THE ADMINISTRATIVE PROCESS (PUBA 722) (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.

724 [230] ORGANIZATION DESIGN (3). Prerequisite, POLI 700, or permission of the instructor. Field study, motivation, communication, and systems perspectives as theoretical bases for organization design. Spring. Staff.

725 [237] METHODS FOR POLICY ANALYSIS AND EVALUATION (PUBA 720) (3). 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. Staff.

726 [238] INTERGOVERNMENTAL RELATIONS (PUBA 778) (3). Conflict 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. Wright.

728 [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.

729 [295] THE PSYCHOLOGY OF COLLECTIVE POLITICS (3). Explores the psychological underpinnings of collective politics from the perspective of both individuals and groups. Political behaviors examined include: deliberation, protest, nationalism, and intergroup conflict. Fall. Conover.

730 [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. Steiner. Earling.

731 [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 the new nations of Africa, Asia, and Latin America. Hardy, Huber.

733 [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.

734 [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. Earling.

735 [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.

736 [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.


739 [234] COMMUNIST POLITICAL SYSTEMS (3). An examination of the political evolution and process in societies governed by communist parties. Fall. Staff.

740 [227] ISSUES IN LATIN AMERICAN POLITICS (3). Explores the central issues of Latin American politics and analyzes major theoretical debates. Fall or spring. Huber, Hartlyn.

741 [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. Hartlyn, Huber.

742 [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. Hartlyn, Huber.

743 [246] SEMINAR ON UNITED STATES-LATIN AMERICAN RELATIONS (3). Analysis of the central conceptual and major theoretical approaches to the study of inter-American relations, with a focus on United States foreign policy toward the region. Spring. Scholz.

744 [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.

745 [211] VARIETIES OF DEMOCRATIC CAPITALISM IN EUROPE AND NORTH AMERICA (3). This course will examine the development of different types of welfare states in Europe and North America. Stephens.

750 [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. McKown.

751 [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 systemic change. Spring. McKown.

752 [243] INTERNATIONAL ORGANIZATION (3). Theories and approaches to the study of international organizations and regimes; plus selected non-economic case studies. Staff.


754 [248] INTRODUCTION TO MATHEMATICAL INTERNATIONAL RELATIONS (3). Surveys research in mathematical models of international decision making, bargaining, systemic change, arms races, coalitions, and perception. Philosophic and historical considerations about this field are also discussed.
755 [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.


757 [233] POLITICAL ECONOMY OF THE NATION STATE IN THE WORLD SYSTEM (3). Prerequisite, ECON 460 or 465 or permission of the instructor. Analysis of the interaction between the external sector of the economy and domestic politics in weak capitalist states. Staff.

758 [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.

759 [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.

760 [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.

761 [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.

762 [256] SECURITY STUDIES (3). This course introduces students to the major theoretical approaches to the study of national security. Fall and spring. Staff.


770 [310] COMMUNITY ECONOMIC DEVELOPMENT, STRATEGIES AND CHOICES (PUBA 770) (3). The goal of this course is to acquire a command of the fundamentals of economic development from the community's perspective. This is done by reading and absorbing the theoretical literature on economic development from the fields of urban politics, planning, sociology, economics, political science, and sociology. Hoyman.

771 [264] MODERN POLITICAL THEORY (3). An introduction to modern political thought, its major thinkers and issues. Fall or spring. Leonard, Lienesch, Bickford.


773 [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.


775 [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.

777 [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.

778 [207] THE FORMAL THEORY OF INSTITUTIONS (3). This course is a comprehensive introduction to the burgeoning literature on the formal theory of institutions.

780 [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.

781 [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.

782 [260] LOGIC OF POLITICAL INQUIRY (3). A critical examination of models of political inquiry. Empirical (naturalist), interpretive, and critical metaphors are considered in terms of each model's ontological, epistemological, and practical/political consequences and presuppositions. Fall or spring. Leonard.

783 [281] STATISTICS (3). Elementary descriptive statistics and basic principles of statistical inference including estimation and tests of hypotheses. Fall. Steenbergen.

784 [282] INTERMEDIATE STATISTICS (3). This course extends the coverage of POLI 281. Topics to be covered include analysis of variance, multiple and partial correlation, and multiple regression. Spring. Steenbergen.

785 [283] INTRODUCTION TO STRUCTURAL EQUATION MODELS (3). Prerequisite, POLI 784 or equivalent. Introduces structural equation models with observed variables and econometric estimation methods. Some attention to models with unobserved variables and LISREL-type analyses. McDonald.

786 [284] TIME SERIES ANALYSIS OF POLITICAL DATA (3). Prerequisite, POLI 784 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.

787 [287] MAXIMUM LIKELIHOOD METHODS (3). Prerequisites, POLI 783 and 784. 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.

789 [288] GAME THEORY (3). This class provides graduate students with an introduction to game theoretic modeling, focusing on non-cooperative game theory. Topics covered include normal form games, extensive-form games, and games of incomplete information. Vanberg.

790 [289] POSITIVE POLITICAL THEORY (3). This seminar surveys applications of rational choice models across the subfields of political science. It also considers critiques of national choice approaches and alternative theoretical approaches to modeling human behavior.

800 [321] SEMINAR IN AMERICAN GOVERNMENT AND POLITICS (3). Fall. Boyle.

801 [353] JUDICIAL BEHAVIOR RESEARCH (3).

802 [395] RESEARCH IN PUBLIC ADMINISTRATION (PUBA 900) (Var.). Fall, spring, and summer. Staff.
803 [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. Byrle.

811 [311] SEMINAR IN POLITICAL SOCIOLOGY (SOCI 811) (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.

813 [202] COMPARATIVE WELFARE STATES (SOCI 813) (3). This course examines the development, achievements, present crisis, and future of welfare states in advanced industrial democracies. Fall and spring, Stephens.

816 [268] INFLUENTIAL WORKS IN DEMOCRACY (SOCI 816) (3). The course covers the major traditions of democratic theory from ancient Greece to the present, with a focus on political organization, and nineteenth- and twentieth-century developments in democratic thought. Fall, Staff.

846 [346] SEMINAR IN INTERNATIONAL COMMUNICATION (JOMC 846) (3). Prerequisite: JOMC 446 or permission of the instructor. Spring.

850 [303] THEORIES OF INTERNATIONAL POLITICS (3). Topics relating to the development of theory in the realm of international politics.

851 [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, McKown.

870 [361] SEMINAR IN POLITICAL THEORY (3). Special topics in political theory such as Marxism, Socialism, Democratic theory, contemporary political thought, or related topics. Fall or spring, Leonard, Lienesch.

880 [300] DESIGN AND ANALYSIS OF EXPERIMENTS AND SURVEYS (3). Prerequisite: POLI 780 and 783. 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, Seering.

881 [380] TEACHING POLITICAL SCIENCE (3). The director of graduate studies assigns each teacher to a faculty supervisor, who provides advice on course design, teaching, and related matters. Fall and spring.

890 [341] DIRECTED READINGS IN POLITICAL SCIENCE (Var.). 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.

891 [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.

993 [393] MASTER'S THESIS (3 or more). Fall and spring. Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Graduate faculty.

DEPARTMENT OF PSYCHOLOGY

KAREN M. GIL, Chair
Donald T. Lysle, Associate Chair

Professors

Donald H. Bemson (104) Sex Roles, Marital Therapy, Depression Assessment
Martha Cox (206) Family Processes and Child Social and Emotional Development; Poverty, Family and Child Transitions
Regina M. Carelli (187) Neurobiology of Reward, Drug Abuse, Behavioral Neurophysiology

Linda A. Dykstra (9) Behavioral Pharmacology, Opioid Analgesia, Drugs of Abuse
Barbara Fredrickson (229) Emotions; Positive Emotions; Social, Cognitive, and Physiological Effects of Pleasant Emotional States; Flourishing Mental Health
Karen M. Gil (181) Health Psychology, Chronic Illness, Stress and Coping, Pain Management, Cancer Survivorship
Peter C. Gordon (170) Psychology of Language, Cognitive Neuroscience
Bernadette Gray-Little (16) Sociocultural Influences on Personality, Marital Interaction, Psychopathology
Mark Hollins (17) Sensory and Perceptual Aspects of Pain and Touch
Chester A. Insko (18) Attitude Change, Balance Theory, Individual-Group Discontinuity
Joseph C. Lowman (24) Qualities of Exemplary College Instructors, Personality Measurement, Evolutionary Personality
Donald T. Lysle (155) Psychoneuroimmunology, Learning Theory, Comparative Animal Behavior
Vonnie C. McLeod (208) Impact of Economic Hardship on Family Processes, Children's Mental Health, Beliefs about Personal Efficacy
Peter A. Ornstein (28) Cognitive Development, Development of Learning and Memory
David L. Penn (196) Social Cognition and Social Impairment in Schizophrenia; Stigmas; Cognitive-Behavior Therapy for Severe Mental Illness
Mitchell J. Picker (131) Discriminative Stimulus Properties of Drugs, Tolerance and Cross-Tolerance, Behavioral Effects of Opioid and Neuroleptic Drugs
J. Steven Reznick (192) Infant Memory and Mental Ability, Influence of Nutrition on Development, Early Detection of Autism
David M. Thissen (157) Psychometrics, Item Response Theory, Statistical Models for Developmental Data, Graphical Data Analysis

Associate Professors

Ute J. Bayen (184) Human Memory, Memory and Aging, Cognitive Aging
Patrick J. Curran (195) Structural Equation Modeling, Longitudinal Data Analysis, High Risk Adolescent Development
Jean-Louis Garety (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)
Joseph B. Hopfinger (198) Neural Mechanisms of Visual Selective Attention in Humans, Electrophysiological and Neuroimaging Studies of Executive Attentional Control and Perception
Andrea M. Huysong (188) Adolescent Substance Use: Models of Peer, Family and Affective Risk
Beth E. Kurtz-Costes (142) Development of Motivational Beliefs in Childhood and Adolescence, Family and Cultural Influences on Development
Neil Mulligan (211) Cognitive Psychology, Human Memory, Implicit vs. Explicit Memory, Episodic Memory, Attention and Memory
Mich Pfeifer (222) Developmental Psychopathology, Interpersonal Models of Adolescent Depression and Suicide, Peer Contagion of Health Risk Behaviors
Abigail T. Pater (144) Evaluation, Measurement, Advanced Quantitative Methods, Survey Methodology, Personality, Educational Diversity in Higher Education
Lawrence Santia (199) Social Cognition, Mental Simulations, Judgment and Decision Making Over Time
Todd Thiele (203) Neurobiology and Genetics of Alcoholism, Conditioned Taste
Aversion Learning, Food Intake and Body Weight Regulation

Assistant Professors

Jennifer Arnold (221) Psychological Processes Underlying Language Production and Comprehension in Both Adults and Children
Daniel Bauer (224) Structural Equation Models, Multilevel Models, Mixture Models, Analysis of Change
Rita Fuchs Lekendagard (227) Biopsychological Aspects of Drug Addiction Using Preclinical Models
Melanie Green (225) Attitudes and Persuasion, Individual-Level Bases of Social Capital
Deborah Jones (223) Family Transmission of Mental and Physical Health in African American and Single Mother Families, Maternal and Child Adjustment during Adolescent Transition
Keith Payne (227) Social Cognition, Stereotyping, Prejudice, Emotions
Lorraine Taylor (204) Parenting and Parent-Child Relationships, Emotional Development, Cultural and Socioeconomic Influences on Child Development

Research Professor
Kathleen C. Light (147) Behavioral Medicine

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
Arline Margolis (134) Psychopathology and Treatment of Adolescents and Cognitive Assessment
Gary B. Meltzer (94) Normalization and Community Programs for Handicapped People, Normal Social and Personality Development

Clinical Associate Professors
Laura 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
Erica Wise (214) Psychotherapy with Adolescents and Adults, Legal and Ethical Issues in Clinical Psychology, Training Clinic Outcomes Research

Clinical Assistant Professors
Scott Schwartz (209) Applied Clinical Research with Adolescents, Diversity Issues in Assessment and Treatment
Jennifer Snyder (193) Schizophrenia, Psychiatric Hospitalization, Forensic Psychology, Non-Linear Dynamic Systems Analysis

Adjunct Associate Professor
Mark E. Sazron (137) Developmental Psychobiology, Developmental Neurotoxicology, Ontogeny of Learning and Memory Processes

Adjunct Assistant Professor
Josephine Johnson (190) Comparative Animal Behavior, Substance Abuse and Aggression, Neuroendocrinology

Professors Emeriti
Elliot M. Crane
W. Grant Dahlstrom
David A. Eckerman
Samuel Fillerbaum
Edward S. Johnson
Lyle V. Jones
Richard A. King
Eugene R. Long
Barclay Martin
Paul Shinkman
Vaida D. Thompson
Forrest W. Young

The Department of Psychology offers training for the doctor of philosophy degree in six areas of psychology: biological, clinical, cognitive, developmental, 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, the programs 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) engage in research during each year of enrollment; (2) pass a PhD written examination; (3) pass a PhD oral examination; (4) complete a special competency requirement (e.g., foreign language competency, teaching competency, professional competency); (5) submit an acceptable dissertation and pass a final oral examination; and (6) in most cases, serve as a teaching assistant or teach a course for at least one academic year.

Additional information about graduate training in these areas may be obtained from the Department's Web site, psychology.unc.edu. 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 advisor. 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: For undergraduates, PSYC 101 or the equivalent is prerequisite to all courses numbered above 400.

400 [101] CONDITIONING AND LEARNING (NBIO 400) (3). Prerequisite, PSYC 222. 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. Staff.

401 [102] BIOLOGICAL FOUNDATIONS OF BEHAVIOR (NBIO 401) (3). Prerequisite, PSYC 222 or BIOL 101. Ethological, genetic, and physiological variables are studied in relation to their behavioral effects. Garey, Lyle.

402 [106] PHYSIOLOGICAL PSYCHOLOGY (NBIO 402) (3). Prerequisite, PSYC 101, 220, or permission of the instructor. Elements of neurophysiology, neuroanatomy, and neurochemistry as they apply to the understanding of brain-behavior relationships. As announced. Carelli, staff.

403 [107] PHYSIOLOGICAL PSYCHOLOGY LABORATORY (3). Prerequisite, PSYC 220 or 402. Hands-on laboratory course designed to introduce students to experimental protocols emphasizing brain-behavior relationships. Topics include: gross neuroanatomy, stereotactic surgery, and the effects of drugs on behavior. Carelli, staff.

404 [124] PSYCHOLOGICAL APPLICATIONS OF DRUGS (3). Prerequisites, PSYC 222 and 245. This course investigates the pharmacological effects and the clinical efficacy of drugs used to treat behavior disorders. Picker.

425 [121] ADVANCED PERCEPTUAL PROCESSES (3). Prerequisites, PSYC 230, 225, or 220. The perception of shape, space, and motion; the role of cognitive factors in perception. As announced. Staff.


431 [123] INTRODUCTION TO COGNITIVE SCIENCE (3). Prerequisite, PSYC 210 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.
432 [125] PSYCHOLOGY OF LANGUAGE (3). Prerequisite, PSYC 230 or LING 101 or LING 400. 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. Gordon.

433 [135] BEHAVIORAL DECISION THEORY (3). Prerequisite, PSYC 101. 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. Staff.

434 [132] THE BRAIN AND COGNITION (3). Prerequisites, PSYC 210; PSYC 230, 225, 222, or 220 or BIOL 450 or BIOL 455. 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. Gordon, Hartman, Hopfinger.

435 [100] TOPICS IN COGNITION (3). Prerequisite, PSYC 230, 225, 222, or 220. 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, Gordon.

460 [126] HUMAN INFANCY (3). Prerequisite, PSYC 250. The primary focus of this course is the psychological development of human infants, but other perspectives are considered: philosophy, parenting, health and public policy, and the law. Reznick.


464 [131] PERSPECTIVES ON NON-PARENTAL CHILD CARE (3). Prerequisite, PSYC 250. This course explores the history, politics, and practice of non-parental child care through readings, lectures, and a seminar-long internship in a child care center. Reznick, staff.

465 [165] POVERTY AND DEVELOPMENT (3). Prerequisite, PSYC 101. Poverty is one of the most consistent and influential risk factors for problematic development. This course focuses on the scientific study of how poverty affects development across the human life span. As announced. Taylor.

466 [170] RESEARCH IN DEVELOPMENTAL PSYCHOLOGY (3). Prerequisites, PSYC 250 and 210. 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.

467 [171] DEVELOPMENT OF BLACK CHILDREN (3). Prerequisite, PSYC 250. A survey of the literature on the development of black children. Topics include peer and social relations, self-esteem, identity development, cognitive development, school achievement, parenting, and family management, and neighborhood influences. PSYC 210 recommended. McLeod, Taylor.

468 [172] FAMILY AS A CONTEXT FOR DEVELOPMENT (3). Prerequisites, PSYC 250 and 210. Explores how the family influences children's development. Topics include genetics, family structure (e.g., single parents, working mothers, divorce, number of siblings); discipline; parental values and beliefs; ethnic diversity. Cox, Jordan, Karrz-Costes.

469 [162] EVOLUTION AND DEVELOPMENT OF BIOBEHAVIORAL SYSTEMS (3). Prerequisites, PSYC 210 or 215, BIOL 101. Examines the evolution and development of behavior patterns and their physiological substrates. Staff.

500 [144] PSYCHOLOGICAL DISORDERS OF CHILDHOOD AND ADOLESCENCE (3). Prerequisites, PSYC 101, 250, and 245, or graduate standing. A survey of theories bearing on aetiology, development and disordered behavior, and an examination of major child and adolescent behavior problems and clinical syndromes. Husson, Margolin.


502 [141] PSYCHOLOGY OF ADULTHOOD AND AGING (3). Prerequisite, PSYC 250. A developmental approach to the study of adulthood, from young adulthood through death. Topics include adult issues in personality, family dynamics, work, leisure and retirement, biological and intellectual aspects of aging, dying and bereavement. As announced. Barrick or staff.

503 [142] PSYCHOLOGY OF BLACK AMERICANS (3). Prerequisite, PSYC 240. This course focuses on the personal characteristics of black Americans as these have been studied by psychologists and other social scientists. Various methodological approaches are considered. As announced. Gray-Little.

504 [145] HEALTH PSYCHOLOGY (3). Prerequisite, PSYC 245 or graduate standing. An in-depth coverage of theoretical issues and clinical manifestations of psychological responses characteristic of individuals with chronic physical disorders. Gil, Koo-Lob.

505 [147] INTRODUCTION TO CLINICAL PSYCHOLOGY (3). Prerequisites, PSYC 210 and 245. Overview of clinical psychology -- its history, scientific basis, and major activities and concerns including: assessment, psychotherapy; and other psychological interventions; community psychology; ethics; and professional practice. Staff.

506 [152] ATYPICAL PERSONALITIES AND GROUPS I (3). Prerequisite, PSYC 245. 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, psychosis, or dementia. Barrick, Flanagan.

507 [160] AUTISM (3). Prerequisites, PSYC 250 and 245. This intensive service-learning seminar on autism includes a supervised community placement. Topics include: historical perspective, diagnostic issues, etiological theories, assessing patterns of functioning, developmental/life span issues, family concerns, and intervention approaches. Staff.

508 [146] BEHAVIOR AND THE BRAIN: INTRODUCTION TO NEUROPSYCHOLOGY (3). Prerequisite, PSYC 230 or 220. 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. Hartman.

509 [109] APPLIED BEHAVIORAL ANALYSIS (3). Prerequisites, PSYC 222 and 245 or permission of the instructor. A survey of applications of learning theory in solving clinical, educational, and societal problems. Practicum experience included. Staff.


511 [150] STRESS AND COPING IN CHILDREN AND ADOLESCENTS (3). Prerequisite, PSYC 250. Examines issues related to the role of risk and protective factors in the development of psychopathology in children and adolescents. The course includes practicum experience with youth. Staff.

512 [155] POPULARITY, FRIENDSHIP, AND PEER RELATIONS (3). Prerequisite, PSYC 101. This course will review literature regarding peer relations among children and adolescents, including peer acceptance/rejection, popularity, bases of friendship selection, peer crowds, romantic relationships, and theories of peer influence. Prinstein.


561 [185] SOCIAL COGNITION (3). Prerequisites, PSYC 210 and 260. 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, expectancies, social motives, etc. Staff.

562 [187] APPLIED SOCIAL PSYCHOLOGY (3). Prerequisites, PSYC 210 and 260. Applications of social psychological theory/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.

563 [188] SMALL GROUPS (3). Prerequisites, PSYC 210 and 260 or permission of the instructor. Intensive survey of research and theory on behavior in small groups combined with appropriate experience in studying various structured groups. As announced. Staff.

564 [189] INTERPERSONAL PROCESSES (3). Prerequisites, PSYC 210 and 260, or permission of the instructor. Intensive coverage of normal interpersonal processes, focusing on the dyad. As announced. Staff.


566 [191] ATTITUDE CHANGE (3). Prerequisites, PSYC 210 and 260, or permission of the instructor. A detailed consideration of the theoretical issues in attitude and belief change. As announced. Staff.

600 [112] HISTORICAL TRENDS IN PSYCHOLOGY (3). Prerequisite, PSYC 101. Limited to psychology 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.

601 [180] PSYCHOLOGY AND LAW (3). Prerequisites, PSYC 101, PSYC 270. 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. Mulligan, Snyder.

602 [163] EVOLUTIONARY PSYCHOLOGY (3). Prerequisites, PSYC 101. Major topics of general psychology are examined from an evolutionary perspective, with an emphasis on empirical studies asking why much current human behavior and experience would have been adaptive for our early ancestors. Lowman.

Courses for Graduates

701 [201] BEHAVIOR AND ITS BIOLOGICAL BASES I (NBIO 701A) (3). A survey of psychological and biological approaches to the study of sensory and perceptual information processing, with an emphasis on touch and pain. Fall. Staff.

702 [202] BEHAVIOR AND ITS BIOLOGICAL BASES II (NBIO 702A) (3). A survey of psychological and biological approaches to the study of basic learning and higher integrative processing. Spring. Staff.

703 [264] ADVANCED BIOLOGICAL PSYCHOLOGY: CENTRAL NERVOUS SYSTEM (NBIO 706) (3). Prerequisite, PSYC 402 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. Staff.

704 [207] APPLICATIONS OF EXPERIMENTAL PSYCHOLOGY TO HEALTH RESEARCH (NBIO 704) (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, Gerdler, Light, Lyde, Picker.

705 [323] BEHAVIORAL PHARMACOLOGY (NBIO 705) (PHCO 705) (3). Prerequisite, PSYC 404 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. Dykstra.

707 [324] CLINICAL PSYCHOPHARMACOLOGY (3). Examinations of the clinical efficacy, side effects, and neuropsychopharmacological actions of drugs used in the treatment of behavioral disorders. Additional topics include the behavioral and neuropsychopharmacological actions of drugs of abuse. Spring. Picker.

708 [302] SEMINAR IN THE BIOLOGICAL FOUNDATIONS OF PSYCHOLOGY (NBIO 708) (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. Carelli.

709 [325] SEMINAR IN THEORETICAL-EXPERIMENTAL PSYCHOLOGY (1-3). As announced. Staff.

719 [321] SEMINAR IN EXPERIMENTAL HEALTH PSYCHOLOGY (3). An in-depth treatment of research topics in behavioral and biological aspects of health psychology. Fall and spring. Light, Light.

720 [333] RESEARCH SEMINAR IN EXPERIMENTAL PSYCHOLOGY (3). Prerequisite, graduate 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. Light.

721 [334] RESEARCH SEMINAR IN EXPERIMENTAL PSYCHOLOGY (3). Prerequisite, graduate 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. Light.

730 [209A] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to the history of cognitive psychology. Fall and spring, as announced. Staff.

731 [209B] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to learning and memory. Fall and spring, as announced. Staff.

732 [209C] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to sensation and perception. Fall and spring, as announced. Staff.

733 [209D] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to speech and language. Fall and spring, as announced. Staff.

734 [209E] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to judgment and thinking. Fall and spring, as announced. Staff.

735 [209F] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to methods and models. Fall and spring, as announced. Staff.

736 [209G] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to cognitive aging. Fall and spring, as announced. Staff.

737 [209H] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to cognitive neuropsychology. Fall and spring, as announced. Staff.
738 [2091] PROSEMINAR IN COGNITIVE PSYCHOLOGY (1). An advanced introduction to cognitive neuroscience. Fall and spring, as announced. Staff.

740 [336] SEMINAR IN COGNITIVE PSYCHOLOGY (1-3). 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.

745 [290] ADVANCED TOPICS IN MEMORY (3). Prerequisite, permission of the instructor. This course reviews recent theoretical and empirical advances in memory research. Topics include large-scale models of memory encoding and retrieval and modular models of memory. Fall and spring. Staff.

750 [337] RESEARCH SEMINAR IN COGNITIVE PSYCHOLOGY (3). Prerequisite, graduate 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 and spring. Staff.

751 [338] RESEARCH SEMINAR IN COGNITIVE PSYCHOLOGY (3). Prerequisite, graduate 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 and spring. Staff.

760 [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-Frazier approaches. Spring. Ornstein, Kurratz-Coxes.

761 [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.

762 [216] DEVELOPMENTAL PSYCHOLOGY: METHODOLOGY I (3). Philosophical and sociological perspectives on research in developmental psychology, with specific applications to ongoing projects. As announced. Staff.

763 [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.

764 [275] DEVELOPMENTAL ASSESSMENT (3). Introduction to instruments used for the assessment of development and cognition in infants, preschoolers, and school-aged children, with primary focus on research issues. Practice administration of instruments in field settings. Spring. Staff.

765 [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.

766 [286] DEVELOPMENTAL PSYCHOBIOLOGY (3). Provides an introduction to psychobiological research, focusing on early development in animals. Topics include embryology, developmental neurobiology, the development of sensory and communication systems, and social behavior. As announced. Garey.

767 [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. Cox, Kurratz-Coxes.

768 [306] SEMINAR IN DEVELOPMENTAL PSYCHOLOGY (3). Prerequisite, permission of the instructor. Intensive study of selected topics in developmental psychology. As announced. Staff.

780 [276] DEVELOPMENTAL PSYCHOLOGY FORUM. Prerequisite, permission of the instructor. Presentations of research by faculty, students, and visitors; discussion of professional topics.

781 [308] PROSEMINAR IN DEVELOPMENTAL SCIENCE (3). Prerequisite, 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.


791 [300] SPECIAL READINGS IN PSYCHOLOGY (3). Prerequisite, permission of the instructor. Intended for advanced graduate students. Fall and spring. Staff.

792 [331] PROFESSIONAL PROBLEMS IN PSYCHOLOGY (1). Prerequisite, permission of the instructor. Consideration of problems facing academic psychologists. Fall. Staff.

793 [332] LABORATORY IN COLLEGE TEACHING (3). Specific training in presentational and interpersonal skills needed by college teachers, such as planning, lecturing, discussing, motivating, and evaluating. Fall. Lowman.

801 [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.

802 [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.

803 [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.

804 [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.

805 [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.

806 [256] 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.

807 [259] CLINICAL RESEARCH SEMINAR (2). Prerequisite, graduate status in clinical psychology. PSYC 256. Designing and presenting research proposals in individual students' research areas in oral and written form. Critiquing research proposals. Research ethics and preparing and evaluating protocols for ethical review. Spring. Staff.

809 [244] ADVANCED PSYCHOPATHOLOGY (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, Huxson.

810 [245] ADVANCED PSYCHOPATHOLOGY (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, Huxson.

811 [254] 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.
812 [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.

813 [250] ADVANCED ADULT ASSESSMENT (3). Prerequisite, graduate standing in clinical psychology. 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 also considered. Two lecture and two laboratory hours a week. Fall. Baucom.

814 [251] ADVANCED CHILD ASSESSMENT (3). Prerequisite, PSYC 808. 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.

815 [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.

816 [264] 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 or professional ethics. Fall and spring. Staff.

817 [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 or professional ethics. Fall and spring. Staff.

818 [266] SELECTED CLINICAL PRACTICUM (1-3; can be repeated). Prerequisite, PSYC 817. Individualized clinical practicum for advanced doctoral students in clinical psychology. Supervised experience in psychotherapy, psychological assessment, and consultation. Fall and spring. Baucom.


820 [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.

821 [246] INTRODUCTION TO NEUROPSYCHOLOGY (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. Hartman.

822 [326] SEMINAR IN CLINICAL PSYCHOLOGY (1-3). As announced. Staff.

823 [262] ADVANCED CLINICAL PRACTICUM - COUPLE THERAPY PRACTICUM (3).

824 [263] ADVANCED CLINICAL PRACTICUM - CHILD THERAPY PRACTICUM (3).

825 [267] SELECTED CLINICAL PRACTICUM (1-3; can be repeated). Prerequisite, PSYC 817. Individualized clinical practicum for advanced doctoral students in clinical psychology. Supervised experience in psychotherapy, psychological assessment, and consultation. Fall and spring. Baucom.

826 [261] ADVANCED CLINICAL PRACTICUM - ADULT PSYCHOTHERAPY PRACTICUM (3).

830 [281] STATISTICAL METHODS IN PSYCHOLOGY I (4). Prerequisite, a course in introductory statistics. Data analysis, sampling, applied probability, elementary distribution theory, principles of statistical inference. Fall. Staff.

831 [282] STATISTICAL METHODS IN PSYCHOLOGY II (4). Prerequisite, PSYC 830. Statistical estimation and hypothesis testing for linear models (ANOVA, ANCOVA, regression analysis); statistical models in the design and analysis of experiments. Spring. Staff.

834 [208A] PROSEMINAR IN QUANTITATIVE PSYCHOLOGY I (1). An introduction to data analysis and visualization. Fall. Staff.

835 [208B] PROSEMINAR IN QUANTITATIVE PSYCHOLOGY II (1). An introduction to research synthesis (meta-analysis). Fall. Staff.


837 [208D] PROSEMINAR IN QUANTITATIVE PSYCHOLOGY IV (1). An introduction to the practicum in quantitative psychology research. Fall. Staff.


839 [208F] PROSEMINAR IN QUANTITATIVE PSYCHOLOGY VI (1). An introduction to test theory. Fall. Staff.

840 [285] COMPUTATIONAL STATISTICS (3). Prerequisite, PSYC 831 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 statistical graphics. Fall. Staff.

841 [283] INTRODUCTION TO MULTIVARIATE TECHNIQUES FOR THE BEHAVIORAL SCIENCES (3). Prerequisite, PSYC 831 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.


843 [236] FACTOR ANALYSIS (3). Prerequisite, PSYC 831 or permission of the instructor. Advanced topics in factor analytic models, multivariate correlational models, and analysis of covariance structures as applied in behavioral research. As announced. Panter.

844 [231] STRUCTURAL EQUATION MODELS WITH LATENT VARIABLES (3). Prerequisite, PSYC 831 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.

850 [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 the reviewing of articles. Fall and spring. MacCallum, Thissen, Curran, Panter.

851 [230] MULTIDIMENSIONAL SCALING (3). Prerequisites, PSYC 831 and 854, 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.

852 [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.

853 [237] ANALYSIS OF FREQUENCY TABLES IN BEHAVIORAL RESEARCH (3). Prerequisite, PSYC 831 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.

854 [284] QUANTITATIVE RESEARCH SYNTHESIS (META-ANALYSIS) (3). Prerequisite, PSYC 831 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.

859 [330] SEMINAR IN QUANTITATIVE PSYCHOLOGY (1-3). As announced. Staff.

860 [233] 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.

861 [244] 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.

862 [228] ADVANCED SOCIAL PSYCHOLOGY (3). Prerequisite, PSYC 867 or permission of the instructor. Intensive study of interdependence theory and research of interpersonal relationships. Spring. Staff.

863 [233] METHODS OF SOCIAL PSYCHOLOGY (3). Prerequisite, PSYC 867 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. Insko, staff.

864 [235] TOPICS IN ATTITUDE RESEARCH (3). Prerequisite, PSYC 867 or permission of the instructor. A critical examination of selected topics in attitude theory and change. Spring. Insko, staff.

865 [258] METHODS OF APPLIED SOCIAL PSYCHOLOGY (3). Prerequisite, graduate standing. Supervised research experience in an applied setting and accompanying methods of non-laboratory research, including nonquantitative methods of social psychology and evaluation of quasi-experimental and non-experimental designs. Spring. Staff.

866 [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. Staff.

867 [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.

868 [328] SEMINAR IN SOCIAL PSYCHOLOGY (3). Prerequisite, PSYC 867 or permission of the instructor. Fall or spring. Staff.

869 [252] ADVANCED SOCIAL COGNITION (3). Prerequisite, PSYC 867 or permission of the 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. Santana, staff.


991 [341] ADVANCED RESEARCH (3). Six laboratory hours a week. Fall and spring. Staff.

993 [393] MASTER'S THESIS (3 or more). Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Fall and spring. Staff.

SCHOOL OF PUBLIC HEALTH
BARBARA K. RIMMER, DrPH, Dean
Peggy Lean, Ph.D., Associate Dean of Academic Affairs
Felicia Mebane, Ph.D., Assistant Dean for Students

The University of North Carolina at Chapel Hill School of Public Health was ranked the best public school of public health (tied for #2 overall) by U.S. News & World Report in 2003. It is the second largest of the nation's thirty-two schools accredited by the Council on Education for Public Health. With more than 200 full-time faculty members and more than 1,600 students, the School offers undergraduate, graduate and postgraduate training, certificate, and leadership programs.

The focus of the School's public health researchers, teachers, leaders, and practitioners of public health is to improve the health of all people, especially those who are underserved by the health care system and who are from diverse backgrounds. The School's duty and mission is to reach out to all students who seek to improve the health of people in their communities and around the world, and to embrace all those who have the energy, enthusiasm and talent to pursue public health careers or enhance careers they already have begun to develop.

Carolina's School of Public Health was organized in 1936 as a division within the School of Medicine at the University of North Carolina at Chapel Hill. Separate status as a school of public health was granted in 1939, and the first graduate degrees were awarded in 1940. The UNC-Chapel Hill School of Public Health was the first school of public health established within a state university. 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.

Departments and curricula in the School of Public Health 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 departments have graduate degree programs and four (*) offer degrees for undergraduates.

Interdisciplinary programs that provide additional opportunities for students in public health-related education, service, and research include: the Carolina Population Center, the Cecil G. Sheps Center for Health Services Research, the Center for Environmental Health and Sustainability, the Center for Health Promotion and Disease Prevention, the Clinical Nutrition Research Center, the Injury Prevention Research Center, the Lineberger Comprehensive Cancer Center, the North Carolina Institute for Public Health, the North Carolina Occupational Safety and Health Education Resource Center, and the North Carolina Center for Public Health Preparedness.

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 Degree

The master of public health degree is designed to prepare students for positions that require a considerable breadth of knowledge of the field of public health and a lesser degree of specialization in one area. Students in this degree 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 often a terminal degree, and qualified students may proceed in the School of Public Health to a DrPH or PhD program for further study.

MSPH Degree

The master of science in public health degree is designed to prepare students for professional careers in specialized areas of public health and health policy. Students in this degree program typically take courses primarily in one major department or curriculum of the School of Public Health. Core requirements provide for orientation to a broader view of public health. The master of science in public health degree is usually a terminal degree; however, students may use this degree or the master of science degree (more so than the master of public health) as a precursor to a doctoral program. Programs of study leading to the MSPH degree are offered by the following departments: Environmental Sciences and Engineering, Health Behavior and Health Education, Health Policy and Administration, and Maternal and Child Health.

MHA Degree

The master of health care administration degree in the Department of Health Policy and Administration is designed to prepare students for management careers in healthcare organizations. Graduates will be prepared to take positions as staff, management or consultants for hospitals, health maintenance organizations, clinics, public health departments, and other health care settings. Courses focusing on health care services are supplemented with core courses offering a broader view of public health.

MS Degree

The master of science degree is offered in the departments of Biostatistics, Environmental Sciences and Engineering, Nutrition, 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, students 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.

DrPH Degree

The doctor of public health degree provides professional training to prepare students to effectively conduct or supervise research, usually of an applied nature. Graduates are also prepared to integrate 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. Programs of study leading to the DrPH degree are offered by the following departments: Biostatistics, Health Policy and Administration (distance learning format), Maternal and Child Health, and Nutrition.

PhD Degree

The doctor of philosophy degree prepares students for leadership in academic and related settings involving teaching and research. Students learn how to develop and apply theories for understanding public health, health care services, and policy. Graduates are typically employed by universities or other organizations conducting research. This degree is offered in the departments of Biostatistics, Environmental Sciences and Engineering, Epidemiology, Health Behavior and Health Education, Health Policy and Administration, Maternal and Child Health, and Nutrition. The precursor to the PhD degree is typically (although not exclusively) an MSPH degree, if the research is oriented to public health, or an MS degree.

Dual Degree Programs

A number of dual degree programs are offered in select departments of the School of Public Health. Under the dual 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 dual degree through the departments of Epidemiology, Health Policy and Administration, Maternal and Child Health, or Public Health Leadership. Dentistry, business, law, city and regional planning, and information and library science students may enroll in dual degree programs through the Department of Health Policy and Administration. A dual degree is also offered through the Department of Maternal and Child Health in conjunction with the School of Social Work.

Distance Education

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 program. This 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.

The Leadership MPH is offered through the Public Health Leadership Program. This degree is designed for individuals who already have a professional identity and who have three to five years health-related experience but who desire to broaden their knowledge and skills in public health philosophy and sciences. Applicants come from a variety of professional disciplines and have a range of experiences.

The Doctoral Program in Health Leadership (DrPH) is available through the Department of Health Policy and Administration. This is the only program of its kind in the country that prepares working healthcare professionals to become top leaders. This highly competitive, distance learning program uses the latest Internet technology to connect distinguished faculty and students in an unparalleled educational environment.
DEPARTMENT OF BIOSTATISTICS (BIOS)

MICHAEL R. KOSOROK, Chair
Lawrence L. Kupper, Associate Chair

Professors
Jianwen Cai (93) Survival Analysis and Regression Models, Clinical Trials, Analysis of Correlated Responses
Joseph G. Ibrahim (11) Bayesian Inference, Missing Data Problems, Bayesian Survival Analysis, Generalized Linear Models, Genomics
William D. Kalbeme (55) Sample Design, Survey Analysis, Nonparametric Methods
Alan F. Karr, Inference for Stochastic Processes, Image Analysis (Joint Appointment with Statistics)
Gary G. Koch (14) Categorical Data Analysis, Nonparametric Methods
Lawrence L. Kupper (19) Regression Analysis, Statistical Applications in Epidemiology and Environmental Health
Danyu Lin (89) Survival Analysis, Semiparametric Statistical Methods, Clinical Trials
Keith E. Muller (76) Linear and Nonlinear Repeated Measures Models, Study Design
Pranab K. Sen (10) Statistical Inference, Clinical Trials, Multivariate Analysis (Joint Appointment with Statistics)
Chirayuth M. 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
Lloyd J. Edwards (95) Longitudinal Data Analysis, Measurement Error Models, Clinical Trials
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
Bahjat Qasgh (94) Generalized Linear Models, Survival Analysis, Statistical Computing
Craig D. Turnbull (26) Public Health Statistics, Research on Perinatal Outcomes and Behavioral Sciences
Fred A. Wright (7) Statistical Genetics
HaiBo Zhou (40) Missing/ Auxiliary Data, Survival Analysis, Human Fertility

Assistant Professors
Mayyuri Gupta (39) Statistical Methods for Computational Biology, Stochastic Computation and Monte Carlo Methods, Bayesian Inference and Model Selection
Ethan Lange, Genetics
Dongjin Zeng (5) High Dimensional Data, Survival Analysis
Fei Zou (4) Statistical Genetics
Mark A. Weaver (46) Clinical Trials

Research Professors
Shrikant I. Bangdiwala (80) Nonparametric Methods, Clinical Trials Methodology, International Health, Injury Prevention
Lloyd E. Chambers (82) Epidemiological Applications, Analysis of Survey Data, Measurement Error
Robert M. Hamer (28) Linear Models, Mixed Models, Clinical Trials
Lisa LaVange (45) Clinical Trials

Research Associate Professors
James D. Hosking (79) Data Management, Multivariate Techniques, Clinical Trials
Paul W. Stewart (84) Linear Models, Distribution Theory, Statistical Inference, Longitudinal Data
John S. Preiser Jr. (89) Categorical Data, Longitudinal Data Analysis
David J. Couper (77) Epidemiological Methods, Longitudinal Data, Data Quality

Research Assistant Professors
Diane Cutler (78) Linear Models, Missing Data, Clinical Trials
Peta Bukovka (50) Longitudinal Data, Semiparametric Modeling, Marginal Regression, Biased Sampling, Survival Data
Michael Hudgens (42) Nonparametric Estimation, Group Testing, Causal Inference, Infectious Diseases
Todd A. Schwartz (13) Categorical Data, Clinical Trials
Charity Moore, Complex Survey Sampling, Models with Incomplete Covariate Data

Clinical Assistant Professor
Jane Monaco (43) Survival Analysis, Correlated Failure Time Data

Research Instructor
Katherine J. Roggenkamp (3) Statistical Computing

Adjunct Professors
John P. Greason, Statistical Applications in Environmental Health, Dose-Response Methodology
Margaret R. Burchinal, Longitudinal Data Analysis, Mixed Models, Child Development Research
Joseph K. Haemr, Statistical Methods in Environmental Health, Toxicology, and Cancer
Daniel G. Horvitz, Sample Survey Design, Nonparametric Methods, Surveys
Norman L. Kaplan, Stochastic Processes, Statistical Genetics
Herman E. Mitchell, Clinical Trials, Health Care Research, Clinical Epidemiology
Christopher J. Portier, Design and Analysis of Environmental Health Research Studies
Ibrahim A. Salama (38) Nonparametric Statistics, Order Statistics, Ergodic Theory
Babubhai V. Shih (49) Survey Data Analysis Software, Multivariate Data Analysis, and Quality Assurance
Clarice R. Weinberg, Statistical Methods in Environmental and Environmental Health, Reproductive Epidemiology

Adjunct Associate Professors
J. Michael Bowling, Survey Methodology, Evaluation, Injury Prevention
Kerrie E. Boyle, Demographic Models, Survey Statistics
David B. Dunson, Bayesian Methods, Latent Variables, Nonparametric Processes, Model Uncertainty, Correlated and Multivariate Data, Reproductive Epidemiology, Bioinformatics
Katherine L. Moritz, Clinical Trials, Mixed Models
Timothy M. Morgan, Clinical Trials, Survival Analysis, Cancer Statistical Methods
R. Woodrow Setzer, Environmental Statistics, Risk Assessment, Toxicology
Steven M. Spagni, Statistics in the Pharmaceutical Industry
Mauri E. Stoklos, Categorical Data Analysis
Donald C. Tros, Statistics in the Pharmaceutical Industry, Statistical Genetics, Multivariate Analysis

Adjunct Assistant Professors
Sonja M. Davis, Bioequivalence, Statistics in the Pharmaceutical Industry
Hrishikesh Chakraborty, HIV/AIDS
Christopher S. Coffey, Adaptive Designs, Internal Pilots
Ralph B. D’Agostino, Measurement Error, Clinical Trials, Missing Data, Statistical Genetics
Ralph A. DeMasi, Statistical Methodology
Hongbin Gu
William D. Irish
Kerry B. Hafner, Statistics in the Pharmaceutical Industry, Design and Analyses of Crossover Trials, Repeated Measures Designs
Robert H. Lyles, Environmental Statistics, Measurement Error Models, Statistical Methods in Epidemiology
Henry S. Lynn, Statistical Methods in Clinical Epidemiology, Clinical Trials
Sandra S. Stinnett, Statistical Consulting and Education, Epidemiologic Methods
Douglas J. Taylor (12) Child Development, Environmental Health Statistics, Sexually Transmitted Diseases, Repeated Measures Analysis
Courses

511 [111] INTRODUCTION TO STATISTICAL COMPUTING AND DATA MANAGEMENT (3). Prerequisite, previous or concurrent course in applied statistics or permission of the instructor. 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.

540 [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.

541 [141] QUANTITATIVE METHODS FOR HEALTH CARE PROFESSIONALS I (4). Prerequisite, permission of the 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.

542 [142] QUANTITATIVE METHODS FOR HEALTH CARE PROFESSIONALS II (4). Prerequisites, BIOS 541 and permission of the instructor. Continuation of BIOS 541; main emphasis is on logistic regression; other topics include exploratory data analysis and survival analysis. Spring.

545 [145] PRINCIPLES OF EXPERIMENTAL ANALYSIS (3). Prerequisites, BIOS 600 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 the School of Public Health. Continuation of Bioss 600; the analysis of experimental and observational data, including multiple regression, and analysis of variance and covariance. Fall and spring.

550 [150] BASIC ELEMENTS OF PROBABILITY AND STATISTICAL INFERENCE I (GNET 636) (3). Prerequisite, MATH 232 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.

551 [151] BASIC ELEMENTS OF PROBABILITY AND STATISTICAL INFERENCE II (3). Prerequisites, BIOS 550 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.

600 [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.

660 [160] PROBABILITY AND STATISTICAL INFERENCE I (3). Prerequisite, MATH 233 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.

661 [161] PROBABILITY AND STATISTICAL INFERENCE II (3). Prerequisite, BIOS 660. Distribution of functions of random variables: 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.

662 [162] INTERMEDIATE STATISTICAL METHODS (4). Corequisites, BIOS 511, 550, 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.

663 [163] INTERMEDIATE LINEAR MODELS (4). Prerequisite, BIOS 662 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.

664 [164] SAMPLE SURVEY METHODOLOGY (STAT 358) (3). Prerequisite, BIOS 550 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.

665 [165] ANALYSIS OF CATEGORICAL DATA (3). Prerequisites, BIOS 545, 550, and 662, or permission of the instructor. Introduction to the analysis of categorical data: rates, ratios, and proportions; relative risk and odds ratios; Cochran-Mantel-Haenszel procedure; survivorship and life table methods; linear models for categorical data. Applications in demography, epidemiology, and medicine. Fall.

666 [166] APPLIED MULTIVARIATE ANALYSIS (3). Prerequisite, BIOS 663 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. On demand.

667 [167] APPLIED STOCHASTIC PROCESSES (3). Prerequisite, BIOS 661 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.


670 [170] DEMOGRAPHIC TECHNIQUES I (3). 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.

680 [180] INTRODUCTORY SURVIVORSHIP ANALYSIS (3). Prerequisite, BIOS 661 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.

691 [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.

735 [235] STATISTICAL COMPUTING - BASIC PRINCIPLES AND APPLICATIONS (3). Prerequisites, BIOS 651; 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.

740 [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.

750 [250] ADVANCED TECHNIQUES IN BIOMETRY (1-4). Prerequisites, BIOS 661, 663 or equivalents, 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.

756 [256] INTRODUCTION TO NONPARAMETRIC STATISTICS (3). Prerequisite, BIOS 661 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.


759 [259] APPLIED TIME SERIES ANALYSIS (3). Prerequisites, BIOS 661 and 663 or equivalents, 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.

760 [260] ADVANCED PROBABILITY AND STATISTICAL INFERENCE I (3). Prerequisite, BIOS 661 or permission of the instructor. Measure space, sigma-field, Lebesgue measure, measurable functions, integration, Fubini-Tonelli theorem, Radon-Nikodym theorem, probability measure, conditional probability, independence, distribution functions, characteristic functions, exponential families, convergence almost surely, convergence in probability, convergence in distribution, Borel-Cantelli lemmas, strong law of large numbers, central limit theorem, the Cramer-Wold device, delta method, U-statistics, martingale central limit theorem. Least squares estimation, uniformly minimal variance and unbiased estimation, estimating functions, maximum likelihood estimation, Cramer-Rao lower bound, information bounds, LeCam's lemmas, consistency, asymptotic efficiency, expectation-maximization algorithm, nonparametric maximum likelihood estimation. Fall.

761 [261] ADVANCED PROBABILITY AND STATISTICAL INFERENCE II (3). Prerequisite, BIOS 760 or permission of the instructor. Elementary decision theory, utility, admissibility, minimax rules, loss functions, Bayesian decision theory, likelihood ratio, Wald, and score tests, Neyman-Pearson tests, UMP and unbiased tests, rank tests, contiguity theory, confidence sets, parametric and nonparametric bootstrap methods, jackknife and cross-validation, asymptotic properties of resampling methods. Elements of Stochastic processes, including Poisson process, renewal theory, discrete-time Markov chains, continuous-time Markov chains, Martingales, and Brownian motion. Spring.

762 [262] ADVANCED LINEAR MODELS I (4). Prerequisites, BIOS 661 and 663, MATH 547, MATH 416 or 577. 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.

763 [263] GENERALIZED LINEAR MODEL THEORY AND APPLICATIONS (4). Prerequisite, permission of the instructor if non-Biostatistics major. Introduction to the theory and applications of generalized linear models, quasi-likelihoods, and generalized estimating equations. Topics include logistic regression, over-dispersion, Poisson regression, log-linear models, conditional likelihoods, multivariate regression models, generalized mixed models, and regression diagnostics. Spring.

764 [264] ADVANCED SURVEY SAMPLING METHODS (3). Prerequisite, BIOS 664 or equivalent. Continuation of BIOS 664 for advanced students: stratification, special designs, multistage sampling, cost studies, nonsampling errors, complex survey designs, employing auxiliary information, and other miscellaneous topics. On demand.

765 [265] LINEAR MODELS IN CATEGORICAL DATA ANALYSIS (3). Prerequisites, BIOS 661, 663, 665, and 666 or equivalents. Theory of statistical methods for analyzing categorical data by means of linear models; multifactor and multiregression situations; interpretation of interactions. Spring.

767 [267] ADVANCED LINEAR MODELS II (4). Prerequisite, BIOS 762. Theory and methods of linear statistical models for continuous response data, including definitions of parameters, hypotheses, isomorphic 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.

771 [271] DEMOGRAPHIC TECHNIQUES II (3). Prerequisites, BIOS 670 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.

777 [277] MATHEMATICAL MODELS IN DEMOGRAPHY (3). Prerequisite, permission of the instructor. A detailed presentation of fertility models, including necessary mathematical methods, and applications; deterministic and stochastic models for population growth, migration. Fall (2000 and alternate years).

779 [231] BAYESIAN STATISTICS (3). Prerequisite, BIOS 762 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.

780 [280] THEORY AND METHODS FOR SURVIVAL ANALYSIS (3). Prerequisites, BIOS 760 and 761 or permission of the instructor. Counting
781 [281] STATISTICAL METHODS IN HUMAN GENETICS (GNET 281) 
(3). Prerequisites, BIOS 661 and 663 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.

783 [283] STATISTICAL METHODS IN QUANTITATIVE GENETICS (3). 
Prerequisites, BIOS 661 and 663 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.

784 [284] INTRODUCTION TO COMPUTATIONAL BIOLOGY (3). 
Prerequisites, BIOS 661 and 663, or permission of the instructor. Molecular biology, the construction of physical and genomic maps, cloning, sequence assembly, sequence analysis, DNA-RNA protein sequence alignment, sequence patterns, hidden Markov models, matching statistics and the Poisson approximation, discovery of functional motifs via likelihood and Monte Carlo Bayesian approaches, modeling secondary structure, computational algorithms, statistical software, applications to cancer. Spring.

785 [285] STATISTICAL METHODS FOR DNA MICROARRAY DATA (3). 
Prerequisites, BIOS 661 and 663, or permission of the instructor. Clustering algorithms, classification techniques, statistical techniques for analyzing multivariate data, analysis of high dimensional data, parametric and semiparametric models for DNA microarray data, measurement error models, Bayesian methods for analyzing microarray data, statistical software for analyzing microarray data, sample size determination in microarray studies, applications to cancer. Fall.

841 [341] PRINCIPLES OF STATISTICAL CONSULTING (1). 
Prerequisites, BIOS 545 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.

842 [342] PRACTICE IN STATISTICAL CONSULTING (1-3). 
Prerequisites, BIOS 511, 545, 550, 841, 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.

850 [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.

889 [389] RESEARCH SEMINAR IN BIOSTATISTICS (1-3). 
Prerequisite, permission of the instructor. Seminar on research developments in biostatistical topics. Fall and spring.

900 [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 statistics. Fall, spring, and summer.

992 [392] MASTER'S PAPER (3 or more). Fall, spring, and summer.

993 [393] MASTER'S THESIS (3 or more). Fall, spring, and summer.

994 [394] DOCTORAL DISSERTATION (Minimum of 3). Fall, spring, and summer.

DEPARTMENT OF ENVIRONMENTAL SCIENCES AND ENGINEERING (ENVR)

DONALD L. FOX, Interim Chair

Professors
Michael D. Atkien (66) Wastewater and Hazardous Waste Treatment, Applied Biotechnology
Richard N. L. (Pete) Andrews (50) Environmental Policy
Louise M. Ball (62) Metabolism, Toxicology and Genotoxicity of Xenobiotics
John M. Bane Jr., (Marine Sciences
Douglas J. Crawford-Brown (54) Environmental Risk Analysis, Mathematical Modeling of Human Health Effects
Francis A. DiGiano (51) Water and Wastewater Treatment Processes, Mathematical Modeling of Mass Transport
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
Avram Gold (43) Environmental Toxicology
William G. Gray (104) Environmental Modeling
Millon S. Heath Jr. (59) Natural Resource Law
Harvey E. Jennings (14) Atmospheric Chemistry, Modeling, and Computerized Data Acquisition
Richard M. Kamens (55) Atmospheric Gas-Particle Partitioning of Semivolatile Toxic Organics, Reactions of Atmospheric PAH and Other Organic Toxics, Modeling Biogenic Aerosol Formation from Gas Phase Reactions
Donald T. Lauria (18) Water and Wastewater Systems Analysis, Mathematical Modeling
David H. Leiht (56) Air Pollution Control Engineering, Aerosol Technology
Dana P. Loomis (106) Epidemiology
Richard A. Luecht Jr., Marine Sciences, Physics of Shallow Water Bodies
Christopher S. Maroni (62) Marine Sciences
David H. Moreau (48) Water Resources Planning
Hans W. Paerl (65) Environmental Microbial Ecology
Frederic K. Pfaender (25) Environmental Microbiology
Stephen M. Rappaport (76) Exposure Assessment, Industrial Hygiene
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
Dale Whittington (70) Water Resources Economics, International Development

Associate Professors
Leena A. Nylander-French (95) Environmental Health Sciences
Stephen C. Whalen (93) Ecology, Limnology
Assistant Professors
Gregory W. Characklis (98) Water Resources
Ivan I. Ruyn (103) Environmental Genomics
Marc L. Sere (100) Environmental Modeling
William Vizuete (6) Air Quality Modeling
Howard S. Weinberg (96) Aquatic Chemistry

Research Assistant Professors
Matthew W. Fairting (7) Environmental Modeling
Myosen Jang (107) Atmospheric Chemistry
Jim Nakamura (108) Environmental Toxicology

Research Associate Professor
Lori A. Todd (75) Application of Computer Tomography and Optical Remote Sensing for Sampling and Evaluating Gases in Workplace Air
Adjunct Professors
Francis S. Binkowski, Air Quality, Meteorology
Linda S. Birnbaum (86) Xenotoxic Metabolism, Biochemical Toxicology
Daniel L. Costa (97) Pulmonary Toxicology
David M. DeMarini (81) Genetic Toxicology
Alfred D. Eisner, Aerosol Science
David S. Ensor (80) Aerosol Science
Chung Kim, Human Exposure Assessment
Joellen Lewtas, Genetic Bioassays
Charles R. O’Melia, Water Chemistry
Paul W. Prendiville, 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 (88) Environmental Chemistry
Gaylen R. Brubaker, Bioremediation
Nelson W. Couch, Radiological Hygiene
John M. Dement (60) Industrial Hygiene
Robert T. Hitchcock, Physical Agents
R. Wayne Litaker, Coastal Estuaries
Joseph Pinto (82) Atmospheric Modeling
Jane Ellen Simmons (91) Hepatic and Renal Toxicology
Thomas B. Starr, Risk Assessment

Adjunct Assistant Professors
Deborah A. L. Amaral, Risk Analysis
Martin W. Doyle, Hydrology
Jane E. Gallagher, Environmental Toxicology
M. Iain Gilmour, Immunotoxicology
Michael C. Madden, Ozone Reactions with Biomolecules
Rachel T. Noble (110) Marine Sciences
Andrew V. Pekash, Water and Wastewater Treatment Plant Design
Terrence K. Pierson, Environmental Risk Assessment
Woodall Stopford, Occupational Medicine Physics
Douglas J. Taylor, Biostatistics
Russell W. Wiener (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
Parker C. Reist
Morris A. Shifman
Mark S. Shuman
Charles M. Weiss
James E. Watson Jr.
Clinical Professor Emeritus
Donald E. Francisco

Courses
263 (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.

296 (100) READING IN ENVIRONMENTAL SCIENCES AND ENGINEERING I (4-6). 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. Staff.

400 (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.

401 (104) UNIFYING CONCEPTS (3). Unifying concepts of environmental systems, including conservation principles, modeling, economics, and policy with applications from throughout natural, engineered, and human systems. Interfaces among scientific, engineering, and policy aspects of the field. Fall. Staff.

402 (105) PROBLEM BASED LEARNING (2). Prerequisite, permission of the 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. Staff.

403 (110) ENVIRONMENTAL CHEMISTRY (ENST 403) (3). Presents important environmental topics and issues from an environmental chemistry perspective. General topics to be discussed are: global warming, stratospheric ozone, fine particles in the atmosphere, photochemical smog, acid rain, toxic chemicals in ground water, and waste water and soil. Fall and summer. Kamens.

411 (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.

412 (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. Pfander.

413 (113) LIMNOLOGY (3). Prerequisites: introductory biology, chemistry, and physics. Basic aspects of freshwater ecosystems 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. Whalen.

415 (115) BIOGEOCHEMICAL PROCESSES (ENST 450) (GEOl 450) (6). Prerequisites: one year biology plus organic and/or physical chemistry, or one of MASC 401, GEOl 510, ENVIR 415, or permission of the instructor is required. (Note: Advanced graduate students should consider MASC 550.) 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. (Even-numbered years.) Armstrong.

416 (116) INTRODUCTION TO AEROSOL SCIENCE (4). Prerequisite, admission 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 time. Three lecture hours and two lab hours a week. Fall. (Even-numbered years.) Leckie.

417 (117) OCEANOGRAPHY (BIOL 350) (GEOl 403) (MASC 401) (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 a college science background; other students should take Geology 103. Three lecture hours a week. Fall and spring. Staff.

419 (119) CHEMICAL EQUILIBRIA IN NATURAL WATERS (3). Principles and applications of chemical equilibrium 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.
421 [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.

422 [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.

423 [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.

430 [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.

431 [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.

432 [137] OCCUPATIONAL SAFETY AND ERGONOMICS (PHNU 780) (PUBH 780) (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.

438 [138] HEALTH HAZARDS OF INDUSTRIAL OPERATION (3). Prerequisite, ENVR 422. An introduction to the health hazards associated with the various unit operations of industry. Field trips to local industries planned. Spring. Flynn.

434 [139] THEORY AND PRACTICE OF EXPOSURE EVALUATION (3). Prerequisites, permission of the instructor. Methodology and philosophy of evaluating exposure 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. Staff.

442 [132] BIOCHEMICAL AND MOLECULAR TOXICOLOGY (BIOC 442) (TOXC 442) (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 toxins, and proper application of novel laboratory techniques for hypothesis-driven mechanistic research. Three lecture hours per week. Spring. Busyn.

449 [114] ECOLOGY OF WETLANDS (MASC 449) (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 U.S. Fall. Staff.

450 [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, Leith.

451 [151] PROCESS DYNAMICS IN ENVIRONMENTAL SYSTEMS (3). Prerequisites, MATH 524 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. Vizuete.

452 [152] FLUID DYNAMICS (GEOG 560) (MASC 560) (PHYS 660) (3). Prerequisite, PHYS 301 or permission of the instructor. The physical properties of fluids, kinematics, governing equations, viscous incompressible flow, vorticity dynamics, boundary layers, and irrotational incompressible flow. Three lecture hours per week. Spring. Scotti.

453 [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, and the transport and reaction of contaminants. Three lecture hours per week. Fall. Miller.

461 [160] ENVIRONMENTAL SYSTEMS MODELING (ENST 415) (GEOG 415) (MASC 415) (3). Prerequisites, Math 383, Physics 105, or Physics 117 (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 methods of analysis, mathematical methods, computational issues, and visualization techniques. Two lecture and one computer laboratory hour per week. Spring. Rial, Werner, staff.


471 [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.) Sobsey.

480 [154] MARINE SYSTEMS MODELING (GEOG 480) (MASC 480) (3). Prerequisite, MATH 232 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. Werner, Rial.

505 [118] CHEMICAL OCEANOGRAPHY (GEOG 505) (MASC 505) (4). Prerequisite, one semester of physical chemistry or ENVR 419 or CHEM 480, or permission of the instructor. Variation and abundance of sea water constituents; the
chemical, physical, and biological processes contributing to their distribution; processes of dispersion of conservative and nonconservative substances. Three lecture and two recitation hours a week. Spring. Martins, Arnosti, Alperin.

516 [116L] AEROSOL SCIENCE LABORATORY (2). Prerequisite or corequisite. ENVR 416. Basic laboratory exercises in aerosol sciences. Fall. (Alternate years.) Leith.

520 [120] BIOLOGICAL OCEANOGRAPHY (BIOL 657) (MASC 504) (4). Prerequisite, BIOL 201 or 475 or permission of the instructor. Physical, chemical, and biological factors characterizing estuarine and marine environments emphasizing factors controlling animal and plant populations, including methods of analysis, sampling, and identification. Spring. Liadquis.

522 [181] ENVIRONMENTAL CHANGE AND HUMAN HEALTH: INTRODUCTION TO ECO-HUMAN INTERCONNECTIVITIES (ENST 522) (3). Prerequisites, ENST 202 or ENST 201. The course will provide students with a multidisciplinary perspective of environmental changes to encompass both human health and ecological health (Ecohealth).

525 [125] ORGANIC GEOCHEM (GEOL 552) (MASC 552) (3). Prerequisites, MASC 505 or CHEM 261, 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 which affect organic matter composition, distribution, and turnover. Fall. (Alternate years.) Arnosti.

585 [105] AMERICAN ENVIRONMENTAL POLICY (ENST 585) (PLAN 585) (PLCY 585) (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.


668 [165] METHODS OF APPLIED MATHEMATICS I (MATH 668) (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.

669 [166] METHODS OF APPLIED MATHEMATICS II (MATH 669) (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. Three lecture hours per week. Spring. Camassa.

685 [286] WATER AND SANITATION PLANNING AND POLICY IN DEVELOPING COUNTRIES (PLAN 685) (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. Whittington.

686 [186] ENVR POLICY INSTRUMENTS (ENST 686) (PLAN 686) (PLCY 686) (3). Prerequisite, ECON 410 or PLAN 710 or equivalent. The course is intended primarily for graduate and professional students in Public Policy, Environmental Sciences and Engineering, City and Regional Planning, and related fields; advanced undergraduates and graduate students in other fields may be admitted with the permission of the instructor. Design of public policy instruments as incentives for sustainable management of environmental resources and ecosystems, and comparison of the effects and effectiveness of alternative policies. Fall. Andrews, Whittington.

701 [216] ECOLOGY OF AQUATIC PLANTS AND WETLAND ECOSYSTEMS (3). Prerequisites, BIOL 101, CHEM 101, 102, or permission of the instructor. 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.) Staff.

707 [231] ADVANCED TOXICOLOGY (PHCO 707) (TOX 707) (3). Prerequisite, PHCO 702 or permission of the instructor. Cellular and physiological basis of toxicity of environmental chemicals, with emphasis on organ-specific toxicology, developmental toxicology, and radiation toxicology. Three lecture hours per week. Fall. Swenberg.

710 [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. Ashken.

722 [234] SEMINARS IN TOXICOLOGY (TOX 722) (1). This course will consist of presentations 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. Rushn.

724 [201] CURRENT TOPICS IN ENVIRONMENTAL ANALYTICAL CHEMISTRY (1). Students will select, critically review, and discuss current research papers for content, relevance, innovation, and clarity. Papers can be from any aspect of the environmental sciences. Two lecture hours per week, every other week Fall. (Even-numbered years.) Weinberg.


726 [211] INSTRUMENTAL METHODS FOR THE CHEMICAL ANALYSIS OF ENVIRONMENTAL SAMPLES (3). Prerequisite, 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.

727 [213] CHEMISTRY OF HUMIC SUBSTANCES (1). Prerequisites, organic or physical chemistry and permission of the instructor. Critical analysis for PhD students of the chemistry, role, and function of refractory organic matter in aquatic environments. Two lecture hours per week. Fall. Christman.

728 [214] ANALYSIS OF TRACE ORGANICS (3). Prerequisites, CHEM 261- 262, CHEM 481-482, and PHYS 104-105; 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, Albright.
729 [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.

732 [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. Hazucha.

740 [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.

750 [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.

751 [250D] VENTILATION DESIGN PROBLEM (1). Corequisite, ENVR 750; prerequisite, permission of the instructor. Design problem for industrial operation. One seminar hour per week. Fall. Flynn.


755 [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. Characklis.

756 [253] PHYSICAL/CHEMICAL TREATMENT PROCESSES (3). Prerequisites, ENVR 419 or equivalent, and 451 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.

757 [255] WATER AND WASTEWATER TREATMENT PLANT DESIGN (3). Prerequisites, ENVR 756 and 710. 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.

758 [256] ENVIRONMENTAL ENGINEERING PROJECT (3). Prerequisite, permission of the 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.

759 [265] MULTIPHASE TRANSPORT PHENOMENA (3). Prerequisite, ENVR 463 or 661 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.

761 [261] NUMERICAL ODE/PDE I (MATH 761) (MASC 781) (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.

762 [262] NUMERICAL ODE/PDE II (MATH 762) (MASC 782) (3). Prerequisite, MATH 661/662, a previous course in the theory of PDE, concurrent enrollment in MATH 751, or permission of the instructor. Elliptic equation methods (finite differences, elements, integral equations); Hyperbolic conservation law methods (Lax-Friedrich, characteristics, entropy condition, shock tracking/capturing); spectral, pseudo-spectral methods; particle methods, fast summation, fast multipole/vortex methods. Three lecture hours per week. Spring. Minion, Miller, Werner.

763 [263] MATHEMATICAL MODELING I (MATH 768) (MASC 783) (3). Prerequisites, MATH 668, 669, 661, 662. Nonlinear dimensioning and identification of 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. Three lecture hours per week. Fall. Camassa, Forest, Miller, Werner.

764 [264] MATHEMATICAL MODELING II (MATH 769) (MASC 784) (3). Prerequisites, MATH 668, 669, 661, 662. 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.

765 [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. Sere.


767 [279] MODELING FOR ENVIRONMENTAL RISK ASSESSMENT (3). Prerequisite, ENVR 470. 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.

768 [280] MICROENVIRONMENTAL AIR FLOW MODELING (3). Prerequisites, fluid mechanics and permission of the instructor. Applications of finite element and vortex methods for modeling air flows of significance in industrial hygiene applications. Three lecture hours per week. Fall. Flynn.

769 [276] ADVANCED METHODS OF EXPOSURE ASSESSMENT (3). Prerequisites, BIOS 551, 545 (545 may be taken concurrently), ENVR 430 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.

770 [233] BIOLOGICAL MONITORING (2). Prerequisite, ENVR 430 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.

781 [291] WATER RESOURCES PLANNING AND POLICY ANALYSIS (PLANN 871) (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.
784 [290] ENVIRONMENTAL LAW (PLAN 784) (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 resource law, regulatory law, and natural resource administration. Regulatory aspects of pollution control programs are covered. Three lecture hours a week. Fall. Heath.

785 [299] PUBLIC INVESTMENT THEORY (PLAN 785) (PLCY 785) (3). Prerequisite, PLAN 710 or equivalent. Basic theory, process, and techniques of public investment planning and decision making, involving synthesis of economic, political, and technological aspects. Theory underlying benefit-cost analysis; adaptation to a descriptive and normative model for planning public projects and programs. Three lecture hours per week. Spring. Whittington.

786 [292] ENVIRONMENTAL QUALITY PLANNING (PLAN 786) (3). Planning and analysis of regional environmental systems with focus on management of mass flows that affect the quality of the regional environment. Three lecture hours per week. Spring. Moreau.

850 [285] SYSTEMS ANALYSIS IN ENVIRONMENTAL PLANNING (3). Prerequisite, calculus. Applications of systems analysis techniques to the management of environmental quality. Spring. Laura.

865 [288] CURRENT APPLICATIONS IN ENVIRONMENTAL MANAGEMENT (4). Interdisciplinary group project. Analysis of a current environmental management problem. Topics change each year. Three lecture hours and one laboratory hour per week. Spring. Staff.

890 [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.

892 [353] PHD SEMINAR IN ENVIRONMENTAL MANAGEMENT AND POLICY (PLAN 892) (PLCY 892) (1). Prerequisites, doctoral standing and permission of the instructor. PhD seminar on theory, methods, and current research literature in environmental management and policy. One to two seminar hours per week. Fall or spring, on demand. Andrews.

899 [300] SEMINAR IN ENVIRONMENTAL SCIENCES AND ENGINEERING (1 or more). Prerequisite, permission of the instructor for nonmajors. Readings and discussions to provide opportunity to develop new concepts and topics in various aspects of environmental sciences and engineering. Fall, spring, and summer. Staff.

991 [391] RESEARCH IN ENVIRONMENTAL SCIENCES AND ENGINEERING (1-9). Prerequisites, consultation with the faculty and approval of subject and proposed program and permission of the instructor. May be repeated. Hours and credits to be arranged. Fall, spring, and summer. Staff.

992 [392] MASTER'S TECHNICAL REPORT (3-6). The technical report requirement for MSPH, MPH, and MSEE candidates is satisfied by the extensive study of a problem in environmental sciences and engineering. Fall, spring, and summer. Staff.

993 [393] MASTER'S THESIS (3-9). Fall, spring, and summer. Staff.

994 [394] DOCTORAL DISSERTATION (3-9). Fall, spring, and summer. Staff.

**DEPARTMENT OF EPIDEMIOLOGY (EPID)**

**Professors**
- Ralph S. Baric (142) Public Health Virology, Molecular Virology
- Marilie D. Garnson (195) Cancer Epidemiology
- Gerardo Heiss (41) Cardiovascular Epidemiology
- Dana P. Loomis (130) Occupational Epidemiology, Environmental Epidemiology
- David M. Margolis (220) Infectious Disease Epidemiology
- Steven R. Melnick (200) Infectious Disease Epidemiology
- Andrew F. Olshan (147) Reproductive Epidemiology
- Wayne D. Rosamond (162) Cardiovascular Epidemiology
- Robert (Robin) W. Ryder (197) Infectious Disease Epidemiology
- Robert S. Sandler (73) Cancer Epidemiology
- John R. Seed (144) Biochemistry of the Host-Parasite Relationship
- H. June Stevens (172) Nutritional Epidemiology
- David J. Weber (96) Infectious Disease Epidemiology

**Associate Professors**
- Wilfrid Behe (210) Infectious Disease Epidemiology
- James E. Hall (143) Host-Parasite Metabolism, Biological Chemistry
- Katherine E. Hatzmann (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
- Robert C. Millikan (166) Cancer Epidemiology
- Charles L. Poole (193) Methodology
- Victor J. Schoenbach (64) Behavioral Epidemiology, Infectious Diseases
- Anna Maria Sega-Ritz (218) Nutritional Epidemiology, Reproductive Epidemiology
- Lola V. Summ (145) Public Health Bacteriology, Molecular Cloning, Pathogenesis of Infectious Disease
- James C. Thomas (127) Infectious Disease Epidemiology
- Steven W. Wing (99) Cardiovascular Epidemiology, Occupational/Environmental Epidemiology

**Assistant Professors**
- Jiu-Chiuan Chen (214) Environmental Epidemiology, Occupational Epidemiology
- Julie Daniels (206) Environmental Epidemiology, Reproductive Epidemiology
- Karen North (205) Cardiovascular Epidemiology, Genetic Epidemiology
- David B. Richardson (213) Environmental Epidemiology
- Jessie A. Saxa (215) Nutritional Epidemiology, Cancer Epidemiology
- Jean C. Schoedler (203) Cancer Epidemiology, Environmental Epidemiology, Genetic Epidemiology
- Annelies Van Rie (202) Infectious Disease
- Suma Vuppaturi (208) Cardiovascular Epidemiology, Chronic Disease Epidemiology

**Research Associate Professors**
- Kelly R. Evenson (209) Cardiovascular Epidemiology
- Philip Seed (217) Social Epidemiology, Chronic Disease Epidemiology
- Suzanne West (207) Health Care Epidemiology, Pharmacoeconomics

**Research Assistant Professors**
- Jennifer Benson, Cancer Epidemiology, Molecular Epidemiology
- Myra Carpenter, Cardiovascular Epidemiology
- Carri Casteel, Injury Epidemiology
- Kathleen C. Doney, Cancer Epidemiology
- Sara Huston, Cardiovascular Epidemiology
- Debra E. Irwin (176) Cancer Epidemiology, Reproductive Epidemiology
- Pia MacDonald, Infectious Disease Epidemiology
- Tamar Riegel-Kulka, Pharmacoeconomics
- Kathryn M. Rose, Cardiovascular Epidemiology, Women's Health
- Jennifer S. Smith, Infectious Disease Epidemiology
- Andres Villaevgas, Injury Epidemiology
- Anissa Vines, Social Epidemiology, Health Care Epidemiology
- Sharon S. Weir, Infectious Disease Epidemiology
- Eric A. Wintzel, Cardiovascular Epidemiology
- Karin Yerats, Environmental Epidemiology
Research Instructors
Steven Callens, Infectious Disease Epidemiology
Michele Jonsson Funk (210), Infectious Disease Epidemiology, Pharmacoeconomics
Audrey Pettifor (215) Infectious Disease Epidemiology

Clinical Professors
Timothy S. Carey (138) Clinical Epidemiology
David F. Ransohoff (160) Health Care Epidemiology
Desmond K. Runyan (88) Clinical Epidemiology/Pediatrics
Ross J. Simpson Jr., Cardiovascular Epidemiology, Health Care Epidemiology
Ronald F. Strauss (182) Oral Epidemiology
Edward H. Wagner (15) Clinical Epidemiology, Health Services Research

Clinical Associate Professors
Peter A. Margolis (155) Health Care Epidemiology
Bonnie Rogers (187) Occupational Epidemiology

Clinical Assistant Professors
Lorraine Alexander, Public Health Preparedness, Distance Education
Debbie Gipson, Health Care Epidemiology

Adjunct Professors
Neumair Almeida Filho, Psychosocial Epidemiology
Edward Baker Jr., Occupational Epidemiology, Environmental Epidemiology
James D. Beck (167) Dental Epidemiology
Douglas Bell, Cancer Epidemiology
Dan German Blazer (108) Psychosocial and Aging Epidemiology
Gregory L. Burke, Cardiovascular Epidemiology
Willard Case (188) Reproductive and Infectious Disease Epidemiology
Dennis A. Clements (152) Infectious Disease Epidemiology
Joan Comoni-Huntley (94) Aging, Physical, Cognitive, and Social Functioning
John R. Crouse (103) Cardiovascular Epidemiology
Robert Desowitz, Infectious Disease Epidemiology
Jeffrey Engel, Infectious Disease Epidemiology
Robert Fletcher (45) Health Care Epidemiology
Suzanne Fleisher (46) Health Care Epidemiology
Judith A. Forney (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
Russell P Harris (125) Cancer Epidemiology, Clinical Epidemiology
Sherman A. James (07) Psychosocial Epidemiology, Cardiovascular Epidemiology
C. David Jenkins, Social Epidemiology
Ulrich Koll (169) Cardiovascular Epidemiology, Occupational Epidemiology
Stephen Katchevsky, Aging Epidemiology
Ruth E. Little (173) Reproductive Epidemiology
Stephanie London, Cancer Epidemiology
Matthew Longecker, Environmental and Occupational Epidemiology
Melinda S. Mead (58) Medical Geography
George Parkinson Jr., Health Care Epidemiology
David Pedersen, Environmental and Occupational Epidemiology
Miquel Porta, Cancer Epidemiology, Clinical Epidemiology, Pharmacoeconomics
Walter J. Regan (39) Environmental Epidemiology
Michael Rosenberg, Reproductive Epidemiology
Carol W. Runyan (154) Injury Control
Dale Sandler (90) Environmental Epidemiology
David A. Savitz (101) Reproductive Epidemiology
Irene C. Siegel (148) Aging
Philip D. Sleane (131) Aging
John W. Stamm (92) Dental Epidemiology
Patrick F Sullivan, Genetic Epidemiology
Steven Treusch, Chronic and Infectious Disease Epidemiology

Adjunct Associate Professors
John Thorpe Jr., Reproductive Epidemiology
Hugh H. Tilson (87) Pharmacoeconomics
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
Adana Adimora, Infectious Diseases Epidemiology
Timothy Earl Aldrich (124) Cancer Epidemiology
Elizabeth B. Andrews (140) Pharmacoeconomics
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
Daniel J. Caplan (211) Oral Epidemiology
Joe Steven Cline, Infectious Disease Epidemiology, Environmental Epidemiology, Occupational Epidemiology
Thomas B. Cole (128) Injury Epidemiology
Glenda S. Cooper (196) Chronic Disease Epidemiology, Reproductive Epidemiology
Giselle Corbie-Smith, Women's Health
Martin Crane, 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
Joanne Jordan, Chronic Disease Epidemiology
James Kirkpatrick, Infectious Disease Epidemiology
Peter Leone, Infectious Disease Epidemiology
Hester Lipscomb, Environmental and Occupational Epidemiology
Margaret F. McCormack (100) Reproductive Epidemiology
William F. McDonnell III (170) Environmental Epidemiology
Pauline Mendola, Occupation, Environmental, and Reproductive Epidemiology
Christine L. Moe (174) Infectious Disease Epidemiology
Patricia Moorman, Cancer Epidemiology
Dexter L. Morris (113) Cancer Epidemiology
Kenneth A. Mundt, Occupational Epidemiology
Evan Myers, Health Care Epidemiology
Lucas Neas, Environmental Epidemiology
Warren P. Newton, Health Care Epidemiology
Joellen M. Schindlauer (126) Cancer Epidemiology
Maria Schmidt, Chronic Disease Epidemiology
Nicholas Shabazz, Health Care Epidemiology
Betsy Sleath, Health Care Epidemiology
C. Gregory Smith (83) Environmental and Occupational Epidemiology
David C. Solai (178) Reproductive Epidemiology
Jack Taylor, Environmental and Occupational Epidemiology
Alice D. White (117) Cardiovascular Epidemiology
Timothy C. Wilcosky (98) Cancer Epidemiology
Sheryl Zimmerman, Aging

Adjunct Assistant Professors
Mary Anthony, Nutritional Epidemiology
Rukmini B. Balu, Infectious Diseases, Reproductive Epidemiology
Jane H. Brice, Clinical Epidemiology, Cardiovascular Epidemiology
Loi Carter Edwards (192) Cardiovascular Epidemiology
Patricia Chang, Cardiovascular Epidemiology
Kourney Davis, Pharmacoeconomics
Nancy Dele, Reproductive Epidemiology
Jane Hoppin, Environmental Epidemiology
Esher C. Janowsky, Cancer Epidemiology
Dionne G. Law, Reproductive Epidemiology, Infectious Disease Epidemiology
Dumpling Liao (189) Cardiovascular Epidemiology
William C. Maier, Pharmacoepidemiology
Ann M. McNell, Cardiovascular Epidemiology
Mark Massing, Cardiovascular Epidemiology
Miriam Morry, Health Care Epidemiology, Aging Epidemiology
Edward L. (Lenn) Murrel, Environmental Epidemiology, Genetic Epidemiology
Vilma Santana, Occupational Epidemiology
Williams Saunders, Psychosocial Epidemiology
Pamela Schwing, Chronic Disease Epidemiology, Reproductive Epidemiology
Scott R. Smith, Pharmacoepidemiology
Paul E. Seng (163) Chronic Disease Epidemiology
Markus Steiner, Methodology
Emmanuel Walter, Infectious Disease Epidemiology
Christiana Williams, Aging
Rachel E. Williams, Health Care Epidemiology
Christopher Woods, Infectious Disease Epidemiology

Professors Emeriti
Barbara S. Hulka
Michel A. Ibrahim
Berton H. Kaplan
Carl M. Shy
Herman A. Tyroler

600 [160] PRINCIPLES OF EPIDEMIOLOGY (3). An introductory course that considers the meaning, scope, and applications of epidemiology to public health practice and the uses of vital statistics data in the scientific appraisal of community health. One lecture and two lab hours per week. Fall and spring, Schoenbach, Alexander.


650 [120] INFECTIOUS DISEASE EPIDEMIOLOGY AND THE HEALTH OF THE PUBLIC (3). An overview of current problems 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.

689 [101] 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.

690 [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.

695 [125] INJURY AND VIOLENCE AS A PUBLIC HEALTH PROBLEM (MHCH 725) (HBHE 725) (3). Prerequisite, EPID 600 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. Runyan and Koch.

700 [150] SAS AND DATA MANAGEMENT (3). An introduction to statistical analysis, programming and data management, using the SAS programming language. Two lecture hours and two lab hours per week. Fall.

705 [158] INTRODUCTION TO LOGIC AND PROBABILITY LOGIC IN EPIDEMIOLOGY (2). Corequisite, EPID 710 or approved equivalent. Required for nonmajors. Covers valid and fallacious arguments, the probability calculus, interpretation of probability, probabilistic fallacies, applications of Bayes, theorem, and interpretation of P-values and confidence intervals in epidemiologic research. Fall. Poole.

710 [168] FUNDAMENTALS OF EPIDEMIOLOGY (4). Corequisite, BIOS 600. 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 600 for satisfying the SPH core requirements. Three lecture and two seminar hours a week. Fall. Rosamond.

711 [170] CLINICAL MEASUREMENT/EVALUATION (PUSH 760) (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.

715 [268] THEORY AND QUANTITATIVE METHODS IN EPIDEMIOLOGY (5). Prerequisites, EPID 705 and EPID 710, BIOS 545, and competence in SAS or STATA. Permission required for nonmajors. An in-depth treatment of basic concepts and skills in epidemiologic research, including problem conceptualization, study design, research conduct, data analysis and interpretation. Four lecture and two laboratory hours per week. Spring. Poole, Schoeder.

718 [269] EPIDEMIOLOGIC ANALYSIS OF BINARY DATA (3). Prerequisite, EPID 715. Permission of the instructor required for nonmajors. Concepts and applications, including logistic regression, binomial regression, model building strategies, additive and multiplicative interaction, and graphical exploration. Includes computer-based experience with real data. Two lecture and one lab hours per week. Fall.

719 [270] READINGS IN EPIDEMIOLOGIC MODELING (1). Corequisite, EPID 718. Permission of the instructor required for nonmajors. Students currently enrolled in EPID 718 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.


725 [200] RESEARCH PLANNING WORKSHOP (U.S.). Prerequisite, second year PhD student (majors only). This course is designed to guide students through the initial stage of formulating an epidemiologic research topic and plan, leading towards the development of a full research proposal. Spring. Gammon, Heiss, Ryder.

726 [201] EPIDEMIOLOGIC RESEARCH METHODS (3). Prerequisites, EPID 715 and EPID 725, 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. Gammon, Heiss, Ryder.

730 [369] ADVANCED METHODS FOR EPIDEMIOLOGY (1). Prerequisites, EPID 715 and 718, and BIOS 545. 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.

735 [256] **CARDIOVASCULAR DISEASE EPIDEMIOLOGY** (3). Corequisites, introductory epidemiology and biostatistics. Review of the main 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. (On request.) Hes. 

737 [258] **ADVANCED CARDIOVASCULAR DISEASE EPIDEMIOLOGY** (3). Prerequisites, EPID 710 and 735, or permission of the instructor. Contemporary findings, methodological issues, and research recommendations in cardiovascular epidemiology. Topics include risk factors, trends, interventions, and health care. Students critique research and participate in a field experience. (On request.) Rosamond. 

743 [229] **GENETIC EPIDEMIOLOGY: METHODS AND APPLICATIONS** (3). Prerequisites, EPID 715 and BIOS 345 or permission of the instructor. Concepts and methods of genetic epidemiology relevant to the 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. 

745 [230] **MOLECULAR TECHNIQUES FOR PUBLIC HEALTH RESEARCH** (2). Prerequisites, undergraduate-level biology and genetic course(s). Theory and application of selected nucleic acid and protein-based techniques for public health research, including topics of sample preparation, PCR, DNA sequencing, genotyping, microarrays, immunohistology, and immunohistochemistry. Two lecture hours per week. (On request.) 

750 [213] **ACUTE DISEASE SURVEILLANCE AND OUTBREAK RESPONSE** (3). Prerequisite, EPID 600 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. 


752 [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. Will focus on diseases in developed countries, especially the United States. Three lecture hours a week. Fall. Weber. 

753 [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. 

754 [221] **MATHEMATICAL MODELING OF INFECTIOUS DISEASES** (3). Prerequisites, EPID 600 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. 

755 [222] **EPIDEMIOLOGY OF IMMUNIZATIONS** (3). Prerequisite, EPID 600 or equivalent. This course explores the application of epidemiological methods to immunization practices. Topics include vaccine development, vaccine efficacy, post-licensing evaluation, vaccine coverage, and cost-benefit analysis. Three lecture hours a week. (On request.) 

756 [226] **CONTROL OF INFECTIOUS DISEASES IN DEVELOPING COUNTRIES** (3). Prerequisite, EPID 600. Epidemiology and control of selected infectious diseases prevalent in developing countries. Course involves lectures, critical discussions of published articles, and a final group project. Three lecture hours per week. (On request.) Mashiuk. 

757 [227] **EPIDEMIOLOGY OF HIV/AIDS IN DEVELOPING COUNTRIES** (3). Prerequisite, EPID 600. This course examines the epidemiology of AIDS from an international perspective. It considers the AIDS pandemic in a broad epidemiologic perspective, including key aspects of basic, clinical, and social science. Three lecture hours per week. (On request.) Behets. Weir. 

759 [223] **METHODS IN FIELD EPIDEMIOLOGY** (3). Course will focus on epidemiological methods required to investigate urgent public health problems. Course covers the skills and tools needed to conduct outbreak investigations and communicate findings to the public. Three lecture hours per week. 

764 [380] **HOSPITAL EPIDEMIOLOGY** (1-2). Prerequisites, EPID 710 and EPID 752. 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. 

765 [232] **METHODS AND ISSUES IN PHARMACOEPIDEMIOLOGY** (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.) 

770 [233] **CANCER EPIDEMIOLOGY AND PATHOGENESIS** (3). Prerequisite, EPID 710 or equivalent. BIOS 600, undergraduate major or strong preparation in the biological sciences. Permission of the instructor required for non-majors. 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.) Schoeder. 

771 [234] **CANCER EPIDEMIOLOGY METHODS** (3). Prerequisite, EPID 715. 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.) Milikan. 

772 [299] **CANCER PREVENTION AND CONTROL SEMINAR (HPAA 765)** (HBHE 765) (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. 

775 [335] **ADVANCED CANCER EPIDEMIOLOGY: CLASSIC AND CONTEMPORARY CONTROVERSIES IN CANCER CAUSATION** (2). Prerequisites, EPID 715 and 718 and EPID 770 or 771. Permission of the instructor required. Readings and discussions on classic and contemporary controversies in cancer causation. Two seminar hours per week. (On request.) Gammon. 

780 [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. 

785 [277] **ENVIRONMENTAL EPIDEMIOLOGY** (3). Prerequisites, EPID 710 and BIOS 600. 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.) Shen. 

786 [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.
800 [212] EPIDEMIOLOGY OF MEDICAL CARE (2). Prerequisite, EPID 600 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) Hartman.

801 [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.

805 [205] CLINICAL EPIDEMIOLOGY AND CLINICAL RESEARCH METHODS (6). Permission required. Intense interdisciplinary approach to clinical research, intended primarily 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. Miller.

806 [206] CLINICAL RESEARCH SKILLS (6). 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.

810 [254] PHYSICAL ACTIVITY EPIDEMIOLOGY AND PUBLIC HEALTH (NUTR 810) (3). Prerequisites, EPID 600 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.

813 [259] NUTRITIONAL EPIDEMIOLOGY (NUTR 813) (3). Prerequisites, EPID 600 or 710 and BIOS 600. This course builds the foundation for critical evaluation of the nutritional epidemiologic literature. Three lecture hours a week. Spring.


815 [262] DIET AND CANCER (NUTR 815) (3). Prerequisites, EPID 600 or 710 and BIOS 600. 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.

818 [358] ADVANCED NUTRITIONAL EPIDEMIOLOGY (NUTR 818) (3). Prerequisites, BIOS 545, EPID 600 or 710, and NUTR/EPID 813 or permission of the 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) Siega-Riz, Adair.

825 [280] SOCIAL DETERMINANTS OF HEALTH: THEORY, METHOD, AND INTERVENTION (HHHE 802) (3). Prerequisites, EPID 600 and public health major. Discussion and readings will focus on population vs. international perspectives on health, risk condition vs. risk factors, concepts of causation, knowledge development as a historic and social process, and will examine macro-level determinants.

826 [228] SOCIAL EPIDEMIOLOGY: CONCEPTS AND MEASURES (3). Prerequisite, EPID 600. Social forces affecting community health and how to measure them for epidemiologic analysis. Topics range from social networks to racism and ethics. Three lecture hours per week. (On request) Thomas.

850 [246] EPIDEMIOLOGY AND PREVENTION OF WOMEN'S HEALTH ISSUES (MHCH 850) (2). Course focuses on the epidemiology and prevention of diseases that affect women disproportionately, or manifest differently, or are unique to women. Siega-Riz.

851 [219] REPRODUCTIVE AND PERINATAL EPIDEMIOLOGY (MHCH 851) (3). Corequisites, EPID 600 and BIOS 600, or equivalents. Epidemiology of reproductive and perinatal health outcomes, including infertility, fetal loss, preterm birth, birthweight, congenital malformations, and infant mortality. Includes current knowledge regarding epidemiology of these outcomes and discussion of methodologic issues. Three lecture hours per week. Fall. Ohlman, Daniels.


880 [210] FOUNDATIONS OF PUBLIC HEALTH ETHICS (3). Basic ethical rationales underlying concerns central to public health. These include: ethical reasoning; concepts of justice; the influence of religion; principles of interacting with communities; professional conduct; and research ethics. (On request) Thomas.

881 [216] HISTORY OF EPIDEMIOLOGY (3). Prerequisites, EPID 600 or 710 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.

882 [217] PHILOSOPHY OF EPIDEMIOLOGY (3). Prerequisites, EPID 715 and BIOS 545. 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.

883 [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 departmental courses. Two to eight seminar hours a week. Fall and spring. Staff.

884 [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.)

889 [300] TOPICS IN EPIDEMIOLOGY SEMINAR (1). Prerequisites, EPID 710 and EPID major. Topics are chosen to reflect emerging issues in the field, as well as those that meet the interests of the students and faculty in the department. (On request.)

890 [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. (On request) Wing, Daniels.

891 [390] EPIDEMIOLOGY DOCTORAL SEMINAR (2). 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.

892 [306] INTERDISCIPLINARY SEMINAR IN HEALTH DISPARITIES (MHCH 892) (1). Prerequisite, MHCH 756. This seminar will provide an opportunity for students to synthesize knowledge across disciplines and to develop an interdisciplinary approach to addressing their identified health disparities research topic. One seminar hour per week.

893 [301] PHARMACOEPIDEMILOGY 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, EPID 765. May be repeated. Two seminar hours a week. (On request.) West.

894 [302] INFECTIONOUS DISEASE SEMINAR (1). Prerequisites, introductory epidemiology and biostatistics. Detailed review of selected topics in infectious disease epidemiology. May be repeated for credit.


896 [305] SEMINAR IN CLINICAL RESEARCH (1). Prerequisite, CRC Fellow or permission of the 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.

897 [351] ADVANCED SEMINAR IN CARDIOVASCULAR RESEARCH (1-3). Permission required. Review of substantive and methodological research in cardiovascular and cerebrovascular diseases. May be repeated for credit. Two to six seminar hours a week. (On request.) Heiss.

900 [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.

905 [359] EPIDEMIOLOGY LABORATORY PRACTICUM (1-9). Permission required. Students work individually with a faculty member supervised laboratory research and skills development. May be repeated for credit. Two to eighteen laboratory hours a week. Fall and spring.

910 [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.

992 [392] MASTER'S PAPER (Var). Fall, spring, and summer. Graduate faculty.

994 [394] DOCTORAL DISSERTATION (Var). Fall, spring, and summer. Graduate faculty.

DEPARTMENT OF HEALTH BEHAVIOR AND HEALTH EDUCATION (HBHE)

EDWIN FISHER, Chair

Professors
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 Advisor Interventions
Edwin Fisher (89) Diabetes, Community and Peer Interventions, Chronic Disease Management, Smoking and Smoking Cessation
Barbara Rimer (83) Cancer Control and Prevention, Tailored Print Communications
Carol Runyan (31) Injury Control, Violence Prevention, Worksite Injury Prevention
Allan Stokley (12) Qualitative Methods, Organizational Change, Native Americans

Associate Professors
Susan T. Ennet (45) Social Networks, Adolescent Health Risk Behaviors, Research Methods
Vangie Foster (43) Dating Violence, Adolescent Health, Program Evaluation
Laura Linnan (66) Applied Research in Worksites and Other Community-Based Settings, Multiple Risk Factor Behavior, Organizational Change
Kurt Ribisl (64) Mass Media and Policy-Based Health Promotion Interventions, Tobacco Control

Assistant Professors
Noel Brewer (85) Biased in Health Decisions, Health Communication, Decision-Making
Megan Lewis (63) Social Relationships and Health, Cardiovascular Disease, Social Ecology
Suzanne Maran (88) HIV/AIDS, International Health, Associations between HIV and Violence
Deborah Tate (87) Obesity, Computer/Internet Interventions, Health Communication

Research Professor
Robert DeVellis (23) Research Methods, Health Behavior, Health Psychology

Research Associate Professors
James Michael Bowling (48) Injury Prevention, Statistics and Methods, Program Evaluation
H. Douglas Robertson (71) Highway, Traffic, Pedestrian, and Bicycle Safety: Transportation Policy Development

Research Assistant Professors
Lynn H. Blanchard (51) Research around Public Service (including Community Partnerships and Collaboration), Program Evaluation, Service Learning
Carolyn Grumpp (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

Lecturers
Mary Aitker (80) Health Promotion and Older Adults, Particularly Older Women, Community-Based Research and Health Promotion with Older Adults, Community-Based Research with Rural Populations
Sallie Benedict (56) Dissemination of Best Practice/Best Practice, Women's Health Promotion, Community-Based Participatory Research
Susan Blalock (39) Patient Education, Musculoskeletal Disorders, Medication Use
Linda Carl (60) Community-Based Interdisciplinary Education, Latino Language and Culture, Distance Education for Health Professionals, College Health
Tamera Coyle-Beale, Injury and Violence Prevention, Adolescent Health and Risky Behaviors, Minority Health
Janet Dal Santo (86) Child Labor (Focus on International Child Labor), Childhood Injuries, International Health and Development
Mary Davis (78) Prevention Education, Program Evaluation, Program Planning, Robert Ross, Alcohol and Transportation-Related Injury, Adolescent Injury, Social Policy Approaches to Injury Prevention
Susan Gaylord (57) Alternative Therapies and Integrative Health Care, Aging, Health Beliefs and Care Pathways
Shelley Golden (87) Training and Facilitation, Health Communications, Population-Level Public Health Determinants and Health Policy
Alexis Moore, Community-Based and Rural Health Promotion, Lay Health Advisors, Breast and Cervical Cancer
Karen Straza Moore, Community-Based Public Health, Community-Based Participatory Research, Minority Health, International Health
Carol Parkinson, Obesity Prevention, Coping Mechanisms for Chronic Illness, Community Networking in Research Endavors
Michael Fignlee, Literacy and Health, Shared Decision-Making, Colon Cancer Prevention
Julie Swedler, Communications and Marketing, Women's Health, Program Planning
Kari Umble (50) Management and Leadership Development in Public Health, Continuing Professional Education and Training, Program Planning and Program Evaluation
Anna Walker (54) Injury Prevention and Control, Data System Users (Especially Database Design), Emergency Department Data and Surveillance
Adjunct Professors

Thomas Arcuri (59) Health Disparities among Immigrant Communities, Rural and Minority Aging and Health, Environmental Health
Wendy Demark-Wahnefried, Lifestyle Interventions among Cancer Survivors, Dietary Interventions Aimed at Cancer Prevention, Dietary Interventions Aimed at Cancer Control
Victor W. Marshall (81) Aging, Health Promotion, Work and Life Course
Michael Schulman (83) Occupational Injury: Injury Prevention and Control; Work, Violence, and Health among Adolescents

Adjunct Associate Professors

Forrest Council (55) Injury Research Methods, Highway-Related Injury, Highway Injury Data
Isaac Lipkus (80) Theories of Health Behavior Change, Risk Communication, Medical Decision-Making
Collene McBride (79) Genetic Risk Communication, Health Disparities, Behavior Change Interventions
Christopher Ringwalt (60) Drug Prevention, Survey Research, Program Evaluation
Cellette Skinner (91) Cancer Screening, Cancer Genetics, Tailored Interventions
Jason Smith (68) Sexual and Reproductive Health, International Health, Turning Research into Practice

Adjunct Assistant Professors

Robert Flewelling (73) Substance Abuse Prevention, Community-Based Intervention, Adolescent Health Risk Behaviors
Alfredo Fort, Measurement of Primary Health Care Provider Performance, Facility and Community-Based Surveys, Program Evaluation
Moses Goldman, Adolescent Health and Development, Leadership, Role of Faith in Promoting Health and Preventing Disease, Action Research in Ministry/Community-Based Participatory Research
Kathleen Hoffman, Physician-Patient Communication in Malpractice/Negligence Prevention, Health Communication using Mass Media and New Targeted Communication Techniques, Cancer and Heart Disease Prevention
Anita Page Holmes, Lay Health Advisors, Minority Health, Access to Health Care, Church-Based Health Promotion
David Jolly (74) Tobacco, HIV/STDs, Health Policy
Linda Kistinger (53) Behavioral Change for Weight Management, Behavioral Counseling Interventions in Primary Care Practice, Patient Education about Shared Decision-Making
Kathleen MacQueen, Qualitative Research Methods and Approaches in Research, Design, Ethics in Public Health and Research (including Applied Ethics Research), Social and Behavioral Dimensions of Clinical Trials Research (especially HIV Prevention Trials)
David McCoy, Americans Indian Health, Health Care of Rural and Minority Populations, Budgetary and Policy Aspects of the Delivery of Health Care
Elizabeth Moracco (67) Women's Health, Violence against Women, Evaluation Research
Chad Morrison, HIV/STDs, Reproductive Health, Sexual and Drug Behavior, Contraception Research
Melva Okun, Tobacco Cessation, Nutrition, Physical Activity
Kathryn Pollak, Patient-Physician Communication, Smoking Cessation, Health Disparities
Elizabeth Randall-David (70) Women's Health, Empowerment Education
Anna Schenck, Health among the Elderly, Cancer Treatment and Outcomes, Cancer Screening
Manit Sethi, Career Development and Counseling, Internship Interests, Master's Thesis Advising
Sudha Shrestiwai, Aging and Health of Minorities in the U.S., Gender Violence in Asia and among Asian Immigrants in the U.S., Aging and Health Issues in South Asia
Paige Hall Smith (76) Violence against Women, Women's Health, Breastfeeding

Yvonne Wasilewski, Asthma Management Intervention Research with Children and Adolescents, Violence Prevention Research with Adolescents, Peer-led Health Promotion and Disease Prevention Research

Adjunct Instructors

Mary Bobbitt-Cooke, Community Organization/Mobilization, Community Assessment, Policy Development and Advocacy
Tekoia Fiseha, Communicable Diseases (i.e., HIV/AIDS/STDs), Lead Poisoning, Infant Mortality Reduction using the Perinatal Periods of Risk Approach
Bernard Glassman, Emerging Technologies for Health Communication, Communication about Emerging Health Technologies, Writing about Science for Results
Deborah Higgenbotham, Clinical Trials, Research Subject Protection, Data Collection
Vanessa Jeffries, Community-Based Public Health, Minority Health Issues, Evaluation
Dennis Jolley, Community Health Policy Development, Community Health Assessment, Program Planning and Implementation
Karen Monzo, Tobacco Control (Adult and Teen Smoking Cessation), Program Development, Training
Regina Petteway, Program Planning, Strategic Planning, Program Administration, Community Capacity Building, Working with Faith-Based Organizations
LaGracia Romo, Global Health, HIV/AIDS, Communications and Marketing, Health Disparities, Cancer Prevention, Adolescent Health
Elizabeth Stern, Intimate Partner Violence, Training and Education, Latino Health, Sexual Violence
Katherine Turner, International Women's Health, Education and Training, Sexual and Reproductive Health Education and Counseling, Cultural Competency (especially on Lesbian, Gay, Bisexual, and Transgender Health)
Gina Upholt, Health Policy, Aging, Pharmaceutical Care
Karen Webb, Mental Health, Substance Abuse Prevention, Coalition-Building

Professors Emeriti

Harriet B. Barr, Clinical Associate Professor Emeritus
Karl Bauman, Professor Emeritus
Leonard H. Dawson, Clinical Professor Emeritus
John Hatch, Kenan Professor Emeritus
Evel J. Jackson, Clinical Assistant Professor Emeritus
Elizabeth Murray, Professor Emeritus
James R. Sorensen, Professor Emeritus

HBHE 296 [140] PROBLEMS IN HEALTH EDUCATION (1-6). A course for undergraduates who wish to do an independent study in the area of Public Health Behavior and Health Education. To be arranged with faculty in HBHE.

HBHE 396 [141] PROBLEMS IN HEALTH EDUCATION (1-6). Advanced course for undergraduates who want to pursue a topic or research study in Health Behavior and Health Education. To be arranged with HBHE faculty.

HBHE 561 [196] MEDICAL REPORTING FOR ELECTRONIC MEDIA (JOMC 461) (HPAA 551) (3). Prerequisite, HBHE 600 or permission of the 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.

HBHE 562 [197] SCIENCE DOCUMENTARY TELEVISION (JOMC 562) (HPAA 552) (3). Students learn skills needed to produce a science documentary for broadcast on television, including research and script writing. Spring. Linden.

HBHE 563 [160] INTRODUCTION TO WOMEN'S HEALTH AND HEALTH EDUCATION (WMST 563) (3). Using a lecture-discussion format, this course provides an overview of women's health-specific interests 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. Staff.
HBHE 660 [131] SOCIAL AND BEHAVIORAL SCIENCES IN PUBLIC HEALTH (3). 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.

HBHE 660 [159] MEDICAL JOURNALISM (OMC 460) (HIPAA 550) (3). Prerequisite. OMC 450 or permission of the 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.

HBHE 699 [142] SPECIAL TOPICS IN HEALTH BEHAVIOR AND HEALTH EDUCATION (1-6). An experimental course designed for faculty who wish to introduce a new course to the department. Fall, spring, and summer.

HBHE 708 [208] 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. Staff.

HBHE 709 [108] U.S. POPULATIONS OF COLOR (3). This course explores the various structural forces that impact the health status and health behaviors of populations of color in the United States. Spring. Staff.

HBHE 710 [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 photovoice) through learning projects. Spring. Eng.

HBHE 725 [125] INJURY AS A PUBLIC HEALTH PROBLEM (MHCH 725) (EPID 783) (3). Prerequisite. EPID 600 or equivalent. This course considers the causes and consequences of traumatic injury within developmental, social, and economic contexts, and dilemma in injury prevention. Injuries associated with transportation, violence, and the home and occupational environments are included. Three lecture hours per week. Fall. Runyan and Koch.

HBHE 726 [189] ADOLESCENT HEALTH (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. Ermert.

HBHE 730 [130] SOCIAL AND BEHAVIORAL SCIENCE FOUNDATIONS OF HEALTH EDUCATION (1-4). 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.

HBHE 731 [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 policies and cultural skills. Public health topic areas include AIDS, global health, reproductive health, violence prevention, and federal public health goals. Fall. Staff.


HBHE 740 [240] FOUNDATIONS OF HEALTH PRACTICE (2). Historical and critical examination of public health and health education professions and major paradigms that inform our research and planning approaches. Students acquire skills needed for research and practice. Two lecture hours per week. Field fee: $500. Fall. Eng.

HBHE 741 [241] ACTION-ORIENTED COMMUNITY DIAGNOSIS (4). Prerequisite, HBHE 740. Student teams work under field preceptors to acquire analytic and empowerment education skills in real world context for engaging communities and service providers in examining social determinants of health. Four lecture hours per week. Spring. Eng.

HBHE 742 [242] PROGRAM INTERVENTION, IMPLEMENTATION, AND MONITORING I (2). Prerequisite, HBHE 741. Methods for executing health education intervention plans, including monitoring effectiveness and making appropriate modifications. Students work under faculty advisors to collaborate with local agencies and implement the plan of action developed in HBHE 741. Fall. Eng.


HBHE 744 [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 an intervention or testing a hypothesis. The practicum requires a total of 200 hours of work starting in the second year of the program. Summer. Foshee.

HBHE 745 [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. Foshee.

HBHE 750 [250] APPLIED RESEARCH METHODS IN HEALTH BEHAVIOR AND HEALTH EDUCATION (4). Prerequisite for nonmajors, permission of the instructor. Research methods of relevance to planned change in health-related behavior and program planning. Research design includes quantitative and qualitative methods and focus on application to public health practice. Four lecture hours per week. Fall. Brewer.

HBHE 751 [251] THE ROLE OF EVALUATION IN HEALTH EDUCATION (2). Emphasis on methods to show the importance of evaluation in health education program planning and developing skills in formative evaluation design, emphasizing analysis that contributed to decision making regarding programs. Two lecture hours per week. Spring. Staff.

HBHE 752 [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. Four seminar hours per week. Spring. Steckler.

HBHE 753 [253] QUALITATIVE EVALUATION AND RESEARCH METHODS (NUTR 753) (3). Prerequisite, HBHE 750 or equivalent. Theoretical and methodological approaches of applied medical anthropology to health program development and evaluation. Field methods for collecting and analyzing data through observation, interviewing, group methods, and case studies. Fall. Maman.

HBHE 754 [254] ADVANCED RESEARCH METHODS IN HEALTH BEHAVIOR AND HEALTH EDUCATION (3). Advanced considerations of basic research methodology (e.g., measurement, variable association, theory-hypothesis link, sampling, survey research designs, and evaluation research design) are discussed weekly in a seminar format. Students have the opportunity to apply methods they are learning to their own research. Fall. Ermert.

HBHE 772 [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.


HBHE 799 [200] SPECIAL STUDIES IN BEHAVIOR CHANGE (1-6). Experimental course to be offered by faculty to determine the need and demand for the subject. Topics will be chosen by faculty based on current public health issues. Fall, spring, and summer. Staff.

HBHE 800 [300] SOCIAL PSYCHOLOGICAL THEORIES OF INDIVIDUAL HEALTH BEHAVIOR (3). Prerequisite, HBHE 730 or permission of the instructor. Selected social psychological theories and their relationship to health promotion, disease prevention, and patient education. Three lecture hours per week. Spring. DeVellis.

HBHE 801 [301] TOPICS IN SOCIOLOGY OF HEALTH (3). Prerequisite, HBHE 600 or 730. Permission required for nonmajors. Health issues will be analyzed using sociological approaches in order to determine research needs to develop more informed social policy. Implementation for practice will be discussed. Fall. (Alternate years.) Staff.

HBHE 802 [302] SOCIAL DETERMINANTS OF HEALTH: THEORY, METHOD, AND INTERVENTION (3). Prerequisite, EPID 600. Discussion and readings will focus on: population vs. individual perspectives on health; risk conditions and risk factors; concepts of causation; and knowledge development as a historical and social process. Course will also examine macro-level determinants of population health. Fall. Staff.

HBHE 803 [303] SOCIAL RELATIONSHIPS AND HEALTH (3). Prerequisite, EPID 600 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.

HBHE 810 [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.

HBHE 811 [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. Tate.

HBHE 812 [312] DOCTORAL SEMINAR: PROFESSIONAL ISSUES (3). Topics related to optimal functioning as a doctorally prepared professional, including writing and reviewing grants, manuscripts, abstracts, consulting; legal; confidentiality; teaching; job search; ethics, collaboration, fraud, and politics in research. Three lecture hours per week. Fall and spring. DeVellis.

HBHE 813 [313] DOCTORAL SEMINAR: MODELS OF HEALTH EDUCATION AND 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). Three lecture hours per week. Fall and spring. Eng.

HBHE 825 [225] HEALTH COMMUNICATION THEORY AND RESEARCH (3). Prerequisite, HBHE 730. Permission required 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. Staff.

HBHE 840 [210], 841 [341] ADVANCED FIELD TRAINING IN HEALTH EDUCATION (1-3). Open to doctoral students in the department. Under guidance of faculty and field counselors, students assume major responsibility for planning, executing, and evaluating community health education projects. Field fee: $125. Fall and spring. Staff.

HBHE 842 [317] TEACHING PRACTICUM FOR DOCTORAL STUDENTS (1-4). Practicum is designed to enhance knowledge and skills in teaching. Student must be involved in teaching a two or three credit course. Co-teaching course may satisfy this requirement. Fall, spring, and summer. Staff.

HBHE 843 [342] INTERVENTION PRACTICUM FOR DOCTORAL STUDENTS (1-4). The intervention must provide a senior role in a health intervention and have a research or evaluation component. Fall, spring, and summer. Staff.

HBHE 844 [343] RESEARCH PRACTICUM FOR DOCTORAL STUDENTS (1-4). Designed to fulfill the research practicum for doctoral students, which may involve designing and implementing a research project, carrying out data analysis, writing manuscripts, or assuming responsibility for a project. Fall, spring, and summer. Staff.

HBHE 850 RESEARCH MANAGEMENT DEVELOPMENT (3). Prerequisite, HBHE 751 or HBHE 860. This seminar is designed to help advanced students refine conceptual and writing skills essential to the production of a manuscript based on already collected qualitative and quantitative data. Three hours per week. Spring. Earp.

HBHE 851 [351] CAUSAL MODELING AND STRUCTURAL EQUATIONS (3). Prerequisites, BIOS 545 or equivalent, and permission of the instructor. This seminar is designed to help advanced students develop structural models in relation to health and health behaviors. Three seminar hours per week. Spring. (Alternate years.) Staff.

HBHE 852 [352] SCALE DEVELOPMENT METHODS (3). Prerequisites, HBHE 750 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.

HBHE 853 [353] ADVANCED EVALUATION OF HEALTH INTERVENTION PROGRAMS (3). Prerequisites, BIOS 545, HBHE 750 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, and utility analysis). Both quantitative and qualitative methods are emphasized. Three seminar hours per week. Fall. Ennett.

HBHE 860 [260] RESEARCH METHODS (3). Permission required for master's students and nonmajors. An intermediate-level course providing comprehensive coverage of behavioral science methods as applied to health behavior and health education problems. Topics include program formulation, design, sampling, measurement, analysis, and interpretation. Three lecture hours per week. Spring. Foster.

HBHE 891 [201] SPECIAL STUDIES IN BEHAVIOR CHANGE (1-6). An independent course designed for study areas of natural or planned change; personal
and nonpersonal methods, in health related fields. To be arranged with faculty in each case.

**HBHE 892 [202] SPECIAL TOPICS IN PROGRAM DESIGN AND EVALUATION** (1–6). Repeatable within degree (for 6 hours). An independent course of study designed for students who wish to pursue advanced studies in program design and evaluation. Prerequisite, to be arranged with the faculty in each case. Fall, spring, and summer. Staff.

**HBHE 893 [203] SPECIAL STUDIES IN BEHAVIOR CHANGE** (1–6). An independent course of study for students who wish to pursue studies in social class and variations in planned change. To be arranged with faculty in each case. Fall, spring, and summer. Staff.

**HBHE 897 [204] ADVANCED TOPICS IN HEALTH BEHAVIOR HEALTH EDUCATION** (1–6). For doctoral students who wish to pursue an independent study or research in a selected area. Student will work with a faculty member in designing the study. Fall, spring, and summer. Staff.

**HBHE 960 [603] PRINCIPLES AND PRACTICES OF ALTERNATIVE AND COMPLEMENTARY MEDICINE** (3). Permission of the instructor required. This course is designed to introduce medical students and other health professionals to the underlying philosophies, practitioners, techniques, and evidence of efficacy of alternative therapies currently in use in the U.S., including chiropractic, dietary, mind-body, acupuncture, homeopathy, and healing. Fall, Gaylord.

**HBHE 992 [392] MASTER'S PAPER** (3–6). Fall, spring, and summer. Staff.

**HBHE 993 [393] MASTER'S THESIS** (3–6). Fall, spring, and summer. Staff.

**HBHE 994 [394] DOCTORAL DISSERTATION** (3–9). Fall, spring, and summer. Staff.

**DEPARTMENT OF HEALTH POLICY AND ADMINISTRATION (HPAA)**

**PEGGY LEATT, Chair**

**Professors**

Peggie Dillworth-Anderson (308)
Richard N. L. Andrews (117) Environmental Policy
Jeffrey L. Houpt (284) Health Policy, Mental Health
Peggy Lean (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. Rickerts (139) Rural Health Care, Primary Care, Regionalization of Services, Political Philosophy, Policy Implementation and Policy Development
William L. Roever (239) Outcomes Research, Health Policy, Managed Care
Richard Gary Resier (29) Dental Public Health
Morris Weinberger (300) Quality Management, Health Outcomes Research, Health Services Research
William N. Zelman (62) Health Care Financial Management, Activity-Based Costing, Cost of Quality, Instructional Design, Quality Improvement

**Associate Professors**

Andrea K. Biddell (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
George Pink (309) Integrated Health Care, Health Services Accounting and Finance, Financial Performance Measurement, Executive Compensation, Nursing Cost Analyses
Sally C. Stearns (150) Health Economics, Health Policy

**Assistant Professors**

Maria E. Domino (279) Health Economics
Shou-Yih Daniel Lee (301) Medical Care Organization
Felicia Mbune (302) Media Communications of Health Policy, Health Policy-making, Public Opinion
Bryan J. Weiner (277) Organization and Management of Community Health Partnerships

**Clinical Professors**

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. DeFriese (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
Pamela Silberman (249) Public Health Legal Issues

**Clinical Assistant Professors**

Oscar R. Aylor (268) Health Care Administration Programs
Benjamin Gilbert (93) Health Policy, Health Law, Legislative Process
Brian Goldstein (278)
James V. Portu (134) Management and Information Systems, Public Budgeting and Finance

**Clinical Instructor**

Gary S. Palmer (217) Health Services Administration, Managed Care

**Research Professors**

Thomas R. Konrad (69) 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
William A. Scolletto (262) Health Research Methodology

**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 Tolleston Knecht (293) Health Outcomes Research, Political Science, Women's Issues
Lucy A. Savitz (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 (266) 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. Hartt (109) Pharmacy Administration
H. Garland Hershey Jr. (256) Dental Public Health
R. Edward Howell (316)
William F. Jesse (76) Medical Group Management, Health Care Quality and
    Outcomes
Mary G. Koval (147) Aging, Health Policy
Michael Lawlor (317)
Barbara Mark (318)
Daniel Mendelson (319)
Joseph P. Morrisey (139) Health Services Research, Administrative Medicine,
    Community Mental Health
Eric B. Manson (92) Hospital Administration
Harry A. Nurnik (208) Health Services and Hospital Administration
John Paul (320) Health Policy, Health Economics, Outcomes Related to
    Pharmaceutical Products.
Kenneth Rethmeier (303) Community Needs Assessment
Dennis A. Revicki (209) Quality of Life Measures in Pharmaceutical Economics
    Research
Lillian Ridky (322)
Hugh H. Tilson (81) Health and Human Services, Preventive Medicine
Judith Tintinalli (323)

Adjunct Associate Professors
Deborah A. Amarat (210) Environment
Mary A. Beck (164) Health Care Administration
Stephen M. Downes (283) Pediatric Research
Steven A. Gaffinkel (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 MacTaggart (324)
Michael S. O'Malley (235) Health Services/Oncology Research
Patricia Pirtman (325)
Arjun Rajaratnam (326)
Bonnie Rogers (327) Occupational Health and Safety, Public Health Nursing
Robert C. Simon (273) Health Care Management
Betsy L. Sleath (254) Pharmacy Administration
Steven G. Slosser (228) Health Policy and Administration
Wendel M. Welschberg (291) Clinical Addiction and Drug Treatment, HIV Projects

Adjunct Assistant Professors
Samuel Arb (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 Hobb (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 Otman (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
Euihul 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
Dawn Carter Buckner (281) Strategic Planning and Marketing
Nelson Coach (299)
Michael L. Freeman (265) Strategic Planning and Marketing
William B. Gentry (321)
Noah D. Glick (238) Health Policy and Administration
James P. Hanlon (302)
Nancy Henley (270) Quality Assurance and Managed Care
Sarah E. Jaggar (240) Health Policy and Administration
Douglas A. Johnston (174) Health Law
Lawrence K. Mandelker (244) Database Design for Health Care
Daniel B. Reimer (152) Health Policy and Administration
William R. Service (247)
Robert Stevens (333)
Deborah Teasley (334)
J. Bennett Waters (334)
Michael Womble (335)

Adjunct Lecturers
David S. Aaberg (215) Health Reform Proposals, Policy Development
Kathryn W. Ahlport (216) Organizational Design and Behavior
Majorie A. Satinsky (250) Health Policy and Administration

Professors Emeriti
James P. Dixon
Patricia Z. Fischer
William S. Flash
William T. Herzig
Jacob C. Koornen
Robert A. Lodgengard
Curtis P. McLaughlin
Harry T. Phillips
Morris Schaefer

The Department of Health Policy and Administration offers three master's degrees, two doctoral degrees, and two graduate-level certificate programs:

Master of Public Health (MPH) (Residential)
The MPH is a professional degree intended for those students who hold a doctoral-level professional degree (JD, MD, DDS, etc.) or a PhD. Students gain a comprehensive understanding of public health philosophy, methods, and values and are provided with an orientation to management and policy-related careers in the health field. The degree is suitable for individuals who have an interest in either healthcare management or health policy.

Master of Healthcare Administration (MHA)
The MHA is a professional degree for students wishing to pursue management careers in health systems, hospitals, consulting firms, managed
care organizations, insurance firms, medical group practices, government agencies, and other healthcare settings. The MHA degree is designed to provide strong preparation in the management disciplines, a comprehensive understanding of the healthcare sector, and an opportunity to pursue an area of concentration.

Master of Science in Public Health (MSPH)

The MSPH is a professional degree designed to prepare students for careers in health policy analysis, planning, development, evaluation, and advocacy at local, state, federal, and international levels as well as in the private sector. Students obtain a comprehensive understanding of the healthcare system, master methods for the analysis of healthcare policy options, and pursue an area of concentration.

The Executive Master's Program (Distance Education)

The Department of Health Policy and Administration provides graduate-level education to employed health professionals and public health administrators through its Executive Master's program. This national program provides master's degree study to full-time health professionals throughout the United States and beyond. This program comprises intensive summer institutes on the Chapel Hill campus, faculty-guided distance learning, and, occasionally, limited credit transfer from approved programs at other universities.

Doctor of Philosophy (PhD)

The Department of Health Policy and Administration's PhD program provides students the academic foundation and research experience to become creative and independent researchers and teachers. The department also offers two collaborative PhD programs, one in pharmacy and the other in occupational safety and health. The doctoral curriculum is designed to provide students with the competencies they need for a successful career in health services/health policy research. All students take courses in research design, quantitative methods, health services research, and health policy. Also, through their minor, students develop expertise in a substantive area. The PhD program is designed to be completed in four years.

Doctoral Program in Health Leadership (DrPH)

Students must have a master's or a doctoral degree before matriculating into the DrPH. They must be committed to assuming senior leadership positions in public health, hospitals, government agencies, policy-making, or other organizations in which they can improve the public's health. Program focus is on improving health in the U.S. The student's employer needs to support the student's commitment to complete the program in three years, as students MUST move through the program with their cohort.

Certificate Program in Community Preparedness and Disaster Management

The professional certificate program in Community Preparedness and Disaster Manager is designed to provide community leaders in emergency services (fire, law enforcement, EMS, 911 Communications), public health, emergency management, health services, veterinary services, and all who prepare for and respond to disasters with the opportunity to enhance their knowledge of management systems used to combat natural and man-made disasters, including terrorism. Students may simultaneously complete their Certified Emergency Manager (CEM)® Credential.

Certificate Program in Healthcare Management

The Health Care Management certificate is designed to prepare teams and individuals for current demands and emerging challenges in the health sector. Students from state and local health departments, hospitals, group practices, and other healthcare providers take a four-course sequence over a period of a year, simultaneously developing a business plan in a related area. Most of the course credits are transferable to a degree program.

Graduate Courses

404 [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. Summer and spring. Files, staff.

405 [221] THIRD PARTY PAYERS AND CONTRACTING (3). Overview of the healthcare industry, including private, for-profit, and not-for-profit plans; Medicare, Medicaid, Workers' Compensation, Tricare; and managed care systems. Theory of insurance, reimbursements, contracting. Summer and fall. Files, Crawford.

420 [135] COMMUNITY AND PUBLIC HEALTH SECURITY - DISASTERS, TERRORISM, AND EMERGENCY MANAGEMENT (3). Permission of the instructor required. This course examines systems for emergency management at federal, state, and local levels. The role of emergency management, health services, and public health in disaster management are examined. Spring. Porto.


422 [137] EMERGENCY MANAGEMENT I (3). Permission of the 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 disaster management. Fall. Porto.

423 [138] EMERGENCY MANAGEMENT II (3). Permission of the instructor required. Explores issues of preparedness, response, recovery, mitigation, and research in disaster management. Students will participate in the development of a plan and simulation to evaluate the plan. Fall. Porto.

435 [141] MARKETING FOR NOT-FOR-PROFIT ORGANIZATIONS (3). Prerequisite: permission of the instructor. Application of basic principles of marketing and marketing decision models to problems in health care and other non-for-profit organizations. Spring. Crawford.

440 [155] INTRODUCTION TO MANAGEMENT INFORMATION SYSTEMS IN HEALTH CARE (3). Conceptual and practical aspects in the analysis, development, and utilization of computer-based information and control systems, with emphasis on application to the health care environment. Spring. Potenziani, staff.

465 [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. Silberman.

466 [279] COMPETITION, REGULATION, AND INSURANCE (3). Prerequisites: HIPAA 715, HIPAA 771, 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.

472 [245] PROGRAM EVALUATION (3). Prerequisite, HPAA 770 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. Rickets, Umbre.

480 [157] DATABASE DESIGN FOR HEALTH CARE APPLICATIONS (3). Prerequisites, HPAA master's student and permission of the instructor. Hands-on introduction 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. Spring. Mandelker.

496 [140] READINGS IN HEALTH POLICY AND ADMINISTRATION (1-6). Staff.

510 [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 bio-ethical issues such as assisted suicide. Spring. Harris.

531 [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. Walker.

532 [146] HEALTH CARE CONSULTING (3). This course will provide students with a working knowledge of the various forms of health care consulting, including internal consulting. Students will enhance their analytical, presentation, teamwork, and project management skills. Fall. Thomas.

550 [195] MEDICAL JOURNALISM (HBHE 660) (JOMC 460) (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 interpreting medical information for consumers. Fall. Linden.

551 [196] MEDICAL REPORTING FOR THE ELECTRONIC MEDIA (HBHE 561) (JOMC 561) (3). Conceptual, 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.

552 [197] SCIENCE DOCUMENTARY TELEVISION (HBHE 562) (JOMC 562) (3). Students learn skills needed to produce a science documentary for broadcast on television, including research and script writing. Spring. Linden.

560 [261] MEDIA AND HEALTH POLICY (3). Prerequisite, HPAA 564 or equivalent. Permission of the instructor is required for graduate students who have not taken HPAA 564. Introduces students to news media organizations and their role in health policy development. Students will learn how to evaluate media content and strategies and to effectively communicate via mass media. Spring. Mebane.

561 [262] ADVANCED POLICY ANALYSIS (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 policy. Spring. Rickerts.

564 [220] HEALTH CARE IN THE UNITED STATES: ADMINISTRATIVE AND POLICY ISSUES (3). Permission of the 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.

600 [119] INTRODUCTION TO HEALTH Policy and ADMINISTRATION (3). Provides an overview of the United States health system, emphasizing the role of policy development and administrative decision making through case examples. Fall and spring. Havala Hobbs.


602 [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.

634 [134] PUBLIC HEALTH ISSUES IN COMMUNITY PREPAREDNESS AND DISASTER MANAGEMENT (3). Examines conventional public health constructs of community preparedness and disaster management. Includes a review of traditional and emerging literature. Emphasizes conceptual development and application of adaptive leadership strategies within local, federal, and state public health organizations responsible for disaster planning, mitigation, response and recovery. Fall. Waters.

650 [128] PHARMACEUTICAL RESEARCH, DEVELOPMENT, AND MARKETING (DPOP 800) (3). This course acquaints future regulators, policy analysts, and corporate managers with the internal and external environments influencing decision making and management in the discovery, development, and marketing of pharmaceuticals. Fall. Staff.

652 [268] ECONOMIC EVALUATION OF HEALTH CARE TECHNOLOGY (DPOP 802) (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. Rittenhouse.

653 [267] ECONOMICS AND BEHAVIOR OF THE INTERNATIONAL PHARMACEUTICAL INDUSTRY (DPOP 801) (3). Provides an economic perspective on such issues as industry structure, regulation, pricing, research and development, product innovation, patient policies, and profitability. Spring. Shih.

660 [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. Fried, Harris.

661 [210] MANAGEMENT OF FOREIGN AID IN HEALTH AND POPULATION (3). Prerequisites, HPAA 725 and 660, 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. Staff.

701 [201] PROFESSIONAL TRAINING I (1). Prerequisite, HPAA major. Supervised professional training (fee is $550). Fall. Fried.

702 [202] PROFESSIONAL TRAINING II (1). Prerequisite, HPAA major. Supervised professional training (fee is $500). Fall. Fried.

703 [203] PROFESSIONAL TRAINING III (Var.). Prerequisite, HPAA major. Supervised professional training (fee is $500). Spring. Fried.

704 [209] FIELD WORK IN HEALTH POLICY AND ADMINISTRATION (Var.). Prerequisite, HPAA major. Supervised field experience in approved health agencies. (Internship fee: $450) Summer. Staff.

710 [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.

711 [276] RESEARCH MANAGEMENT AND ETHICS IN HEALTH POLICY (1). This course is aimed at doctoral and MPH 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, while the second part deals with ethical issues of the research setting, such as whistleblowing, various publishing and authorship issues, conflict of interest and commitment, human subjects, plagiarism, and fraud. Spring. Brooks.
715 [270] HEALTH ECONOMICS FOR POLICY AND ADMINISTRATION (3). Prerequisites, BIOS 600, 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. Norton.


720 [230] MANAGEMENT OF HUMAN RESOURCES IN HEALTH ORGANIZATIONS (3). Prerequisite, HPAA 730 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.

725 [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. Spring. Paul.

730 [130] ORGANIZATIONAL DESIGN AND BEHAVIOR OF HEALTH INSTITUTIONS (3). Overview of organizational theory and empirical findings appropriate to the design and behavior of health care organizations. Topics include the design of the organization, its performance, and its relationship to the environment. Fall. Paul.

732 [233] MANAGEMENT OF ORGANIZATIONAL CHANGE (3). The objective of this course is to improve competence in analyzing health organizations and managing planned change. Summer. Staff.

735 [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. Sloat, staff.

740 [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, staff.

741 [251] MANAGEMENT ACCOUNTING FOR HEALTH ADMINISTRATORS (3). Prerequisite, HPAA 740 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.

742 [252] HEALTH CARE FINANCE I (3). Prerequisite, HPAA 740. Topics include basic financial management concepts, capital acquisition, cost of capital and capital structure, and capital allocation. Fall. Pink.

743 [253] HEALTH CARE FINANCE II (3). Prerequisite, HPAA 742. Topics include financial analysis and forecasting, working capital distributions to owners, mergers, captation, and financial risk. Spring. Pink.

744 [350] MANAGERIAL TOPICS IN HEALTH CARE FINANCIAL MANAGEMENT (3). Prerequisite, HPAA 740 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/marketing plan. Fall. Zelman.

745 [351] TOPICS IN HEALTH CARE FINANCE (3). Prerequisite, HPAA 740, or permission of the instructor. Analysis of topics of current interest in financial management of health care organizations. May include project selection, endowment stewardship, and access to capital. Spring. Staff.

750 [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. Rozier.

751 [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. Rozier.

752 [228] ORAL EPIDEMIOLOGY FOR HEALTH POLICY AND ADMINISTRATION (3). Prerequisite, HPAA 750, EPID 600, 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. Rozier.

755 [260] INTRODUCTION TO HEALTH POLICY AND POLITICS (3). Prerequisite, HPAA 564 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.

756 [306] SPECIAL PROBLEMS IN HPAA (3). Prerequisites, doctoral standing and permission of the instructor and the director of the doctoral program. Examination of special problems in health policy and health administration studies. Spring. Staff.

760 [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.


763 [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. Spring. Tollefson-Rinhardt.

765 [290] CANCER PREVENTION AND CONTROL SEMINAR (EPID 772) (HHSHE 765) (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. O'Malley.

770 [241] OPERATIONS RESEARCH FOR HEALTH CARE SYSTEMS (3). Prerequisites, BIOS 600 and permission of the instructor. Review of the systems analysis 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. Spring and summer. Staff.

771 [271] STUDY DESIGN AND REGRESSION ANALYSIS (3). Prerequisites, BIOS 600 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. Biddle.
772 [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.

789 [391] MASTER'S PAPER DEVELOPMENT (2). Prerequisite, second-year MS in Health Policy Administration. 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 an independent master's paper. Fall. Steinert.

810 [377] LEADERSHIP IN HEALTH LAW AND ETHICS (2). Course is designed to provide learners with an introduction to critical issues relating to law, ethics, and public health. Havada Hobbs.

815 [278] GRADUATE HEALTH ECONOMICS SEMINAR (1). Permission of the instructor required. Recent developments in health economics. Students must have solid knowledge of graduate microeconomics theory and econometrics. Fall. Specialty.

820 [375] ORGANIZATIONAL LEADERSHIP THEORY AND PRACTICE (2). Focus is on the behavioral, power-influence, trait, and situational approaches to leadership. Addresses core leadership principles plus leadership-followship theory, transformational and strategic leadership, and creating change. Fall. Brooks.

821 [381] CURRENT TOPICS IN PUBLIC HEALTH LEADERSHIP (2). This course is designed for executives in private and public health organizations. Includes guest presentations on timely issues in health leadership in order to foster understanding and mastery of such skills as leadership and change. Spring. Brooks. Havada Hobbs.

850 [387] POPULATION PERSPECTIVES FOR HEALTH (1). A review of how the population perspective is used to create programs and to change health care in the United States. Fall. Rickert.

870 [300] DOCTORAL SEMINAR IN HEALTH POLICY AND ADMINISTRATION I (3). Prerequisites, doctoral standing. Readings and discussion of various aspects of health services. Special emphasis is given to the interrelationships of administrative and organizational theory to selected health service topics. Fall. Lee.

871 [304] SEMINAR IN TEACHING HEALTH POLICY AND ADMINISTRATION (1). Problems and processes of teaching health policy and administration, including supervised practicum experience. Fall. Zelman.

872 [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 for students interested in the doctoral student's specific interests and needs. Spring. Mortissey.

873 [360] POLICY SEMINAR IN HEALTH POLICY AND ADMINISTRATION (1). Seminar on policy issues in health policy and administration. Fall and spring. Pink.

881 [274] ANALYSIS OF CATEGORICAL DATA (SOCCI 711) (3). Prerequisite, HPAA 882 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.

882 [273] LINEAR REGRESSION MODELS (SOCCI 709) (3). Prerequisites, HPAA 796 (16) and HPAA 496 (28) or equivalent. This course is an introduction to linear regression models. Topics include: linear algebra, least squares regression, multicollinearity, heteroscedasticity, autocorrelation, and hypothesis testing. Fall. Norton, Domino.

883 [371] ADVANCED METHODOLOGY IN HEALTH POLICY AND ADMINISTRATION RESEARCH (3). Prerequisites, HPAA 881 and 882, 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. Spring. Steinert.

885 [301] DOCTORAL SEMINAR IN HEALTH POLICY AND ADMINISTRATION II (3). Prerequisite, HPAA 870. Explores the nature and process of scientific inquiry in the field of health services research by examining the methodology and practices of health services research. Spring. Weinier.

886 [302] QUALITATIVE METHODS IN HEALTH SERVICES RESEARCH (3). Introduces students to the purpose, approaches, and methods of qualitative research methods used in health services research. Fall. Weinier.

900 [330] DOCTORAL SEMINAR IN ORGANIZATION THEORY AND HEALTH SERVICE ORGANIZATIONS (3). Prerequisites, doctoral standing and HPAA 730 or equivalent, or permission of the instructor. Review and application of selected theories in organization theory to health services research. Fall. Lee.

950 [378] THE RESEARCH PROCESS (1). The course introduces doctoral students to the world of scientific and policy inquiry. It emphasizes the goal, structure, and content of the dissertation that will be written in the latter part of the program. Rickert.

951 [379] LITERATURE REVIEW AND APPRAISAL (2). This course is the second in a sequence of courses in research design and methods in the Executive DrPH. The purpose of this course is to explore the nature and process of scientific inquiry in the field of public health. Specifically, the course will establish a foundation for methodological exploration and focus on the process of developing researchable questions. Spring. Brooks.

952 [380] COMMUNITY INVOLVEMENT IN RESEARCH (2). Relevant literature and guest speakers will highlight cases depicting different levels of community involvement in public health research. Spring. Calleson.


992 [392] MASTER'S PAPER (2-3). Fall, spring, and summer. Staff.

994 [394] DOCTORAL DISSERTATION (Vcr). Staff.

DEPARTMENT OF MATERNAL AND CHILD HEALTH (MHCH)

HERBERT PETERSON, Chair

Professors
Janice M. Dodds (36) Leadership Development in Public Health Nutrition, Child Health, Community-Based Public Health
E. Michael Foster (07) Social Services for Children and Families and Research (Statistical) Methodology
Jonathan Kott (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 (01) International Health, Reproductive Health
John Thorp Jr., Preterm Birth, Birth Asphyxia, Episiotomy, Community Child Health

Associate Professors
Trudy A. Bennett (46) Women's Health and Maternal Morbidity; Intersection of Race, Class, and Gender in Maternal and Child Health (MCH); Reproductive Health and Social Welfare Policy
Carolyn Hapern (32) Adolescent Health and Development, Sexual Health and Research, Methodology
Levi 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**
Alen Cross (42) Pediatrics, Adolescent Health, School Health and Infant Mortality Prevention
Anita M. Fare (33) Program and Policy Development for Children with Special Health Care Needs, High Risk Infants, Public Health Practice

**Professors of the Practice**
Miriam Labkov, Infant Feeding, Health Outcomes

**Research Professor**
J. Richard Udry (14) Population, Demography, Sexual Behavior, Gender Roles, Program Evaluation

**Research Associate Professors**
Sian Curtis (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
Ruth Petersen (69) Violence in Pregnancy, Unintended Pregancies, Adolescent Health
Ilene Speizer (15) Unintended Pregnancy Prevention, Evaluation of Reproductive Health Programs in Developing Countries, Adolescent Health, Male/Couple Involvement, Gender-Based Violence

**Assistant Professors**
Gustavo Angeles (75) Research Methods, Program Evaluation Health Economics, International Health
Andrea Weathers (77) Health Care Utilization/Access, Children in Poverty, Ethnic/Cultural Minorities, Immigrant Children

**Clinical Associate Professor**
Vijaya Hogan (76) Perinatal Epidemiology, Preterm Delivery, Infant Mortality, Health Disparities

**Research Assistant Professors**
Shehla Bloom (73) HIV/AIDS, Reproductive Health, Maternal Mortality and Morbidity, Gender Content of Reproductive Health
Jon M. Husey (34) Child Abuse and Neglect, Child and Adolescent Health, Injury Prevention, Population
Kavita Singh (10) Child Survival, Displaced Populations and HIV/AIDS Orphans

**Adjunct Professors**
Bruce Barron
Jose Belzun, International Maternal and Child Health, Maternal Mortality and Morbidity
Pooja Bhushanwadi, Obstetrics and Gynecology, International Women's Health, Maternal and Child Health
Gerald L. Brenn, Perinatal Epidemiology, Epidemiology of Osteoporosis, Evaluation of Preventive Interventions, Clinical Epidemiology
Paul A. Buuscher, MCH Infant Health, Poverty and Health, MCH Program Evaluation
Judith Forman, Maternal Mortality and Morbidity in Developing Countries
Marcia Herman-Giddens, Child Abuse, Child Parasitology, Alternative Healing
Denise Hallfors, Adolescent Health, Community Prevention Programs, Substance Abuse Prevention, Child and Adolescent Mental Health
Roy Jacobstein
Marian Johnson-Thompson
Michael Kafri, Clinical Reproductive Health
Lynn Knox, International Family Planning (FP) and Maternal Health, Training of FP/MCH Health Personnel, MCH/FP Program Development and Evaluation
Robert Meyer, Reproductive and Perinatal Epidemiology, Birth Defects Surveillance, Program Evaluations
Roland E. Mthenga, Obstetrics and Gynecology
Merry-K Moos, Perinatal Care, Women's Preventive Health, Fertility Decision Making
Kevin J. Ryan, Worldwide Delivery of Women's Health Services, Perinatal Health, Health Care Ethics
Katherine Shea
Amy O. Tsui, International Family Planning, Reproductive Health, Research Methods
Thomas Vitagliano, Early Childhood Programming, Health Care Financing

**Adjunct Associate Professors**
Patty Bailey, International Maternal and Child Health
Pricilla Guild, MCH and Primary Care Health Services Planning and Evaluation
Deborah Billings, International Family Health
Joseph DeGraff-Stephens, International Reproductive Health
Abigail English, Adolescent Health Law
Alfredo Fort, International Reproductive Health in Latin America, Program Research and Evaluation
Kathryn E. (Beth) Moracco, Women's Health, Violence against Women, Program Planning and Evaluation
Robert Murphy
Susan Spai, School Health, Adolescent Substance Abuse, HIV
John Stanback, International Family Health
Jane Stein, Women's Health in Developing Countries, Social Determinants of Health, Evaluation
Mary Rose Tally, Lactation

**Adjunct Assistant Professors**
Joy Baumgartner
Mary Benson
Colleen Bridger
Caroline Whitehead-Doherty, Primary Health Care for Farm Workers, Health, Hispanic Health, Reproductive Health
Cyril Engmann
Norma Gavin
Elaine Hart-Johnson, Women's Health, Cardiovascular Epidemiology, Education and Prevention
Heidi Bart Johnson, Reproductive Health
Eileen Kugler, Community Health Programs
Wendy Lam
Li-Ching Lee
Jack Leiss, MCH Research
Kara McGregor
Denise Nadeau, Family Planning, Reproductive Health
Sarsindra Nguprphan
Heidi Reynolds
Susan Rogers, Demography, Sexually Transmitted Disease (STD)
Catherine Rohweder
Jo Shackelford, Children with Special Needs, Special Education Legislation
Lucille Siegel, Pregnant Women and Infants
Stephanie Triantafillou

**Lecturers**
Kathryn Clark, Biostatistics
Jacqueline Resnick, Research Training, Proposal Development
Courses

610 [200] ISSUES IN MATERNAL AND CHILD HEALTH (3). Prerequisite, permission of the 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.

611 [111] NUTRITION OF CHILDREN AND MOTHERS (NUTR 611) (3). Prerequisite, NUTR 400 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.

701 FOUNDATIONS OF MATERNAL AND CHILD HEALTH (4). This course introduces the major issues that affect the health and well-being of women during the reproductive years, infants, children, and adolescents in domestic and international settings. First semester of a two-semester course. Permission required for nonmajors. Fall. Bennett, Margolis, Korch.

701L FOUNDATIONS OF MATERNAL AND CHILD HEALTH LAB (1). This lab allows for deeper discussion of the major issues that affect the health and well-being of women during the reproductive years, infants, children, and adolescents in domestic and international settings, with a focus on evidence review and policy implications. First semester of a two-semester lab. Fall. Staff.

702 FOUNDATIONS OF MATERNAL AND CHILD HEALTH (4). Second part of a two-part course which introduces the major issues that affect the health and well-being of women during the reproductive years, infants, children, and adolescents in domestic and international settings. Second semester of a two-semester course. Permission required for nonmajors. Spring. Bennett, Margolis, Korch.

702L FOUNDATIONS OF MATERNAL AND CHILD HEALTH LAB (1). This lab allows for deeper discussion of the major issues that affect the health and well-being of women during the reproductive years, infants, children, and adolescents in domestic and international settings, with a focus on evidence review and policy implications. Second semester of a two-semester lab. Fall. Staff.

705 [205] INTERNATIONAL FAMILY PLANNING (3). Permission required. Prerequisite, graduate study in MHCH. Analysis of the family planning movement, its policies, operations, and research, with emphasis on developing countries. Three lecture hours a week. Fall. Curtis.

712 [315] PROGRAM ASSESSMENT IN MATERNAL AND CHILD HEALTH (3). Nonmajors must have 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. Fazal.

713 [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. Student groups 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.

713L [213L] RESEARCH AND EVALUATION METHODS IN MATERNAL AND CHILD HEALTH LAB (1). Co-requisite, MHCH 713. Permission required for nonmajors. The MHCH 713 Lab, which is a companion course to MHCH 713, introduces students to statistical analysis using SPSS-PC and microcomputers. Two lab hours per week. Fall. Hussey.

714 [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. Fall. Dodds.

715 [215] MATERNAL AND CHILD HEALTH MANAGEMENT (3). Permission of the 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.

716 [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.

717 [214] FIELD TRAINING IN MATERNAL AND CHILD HEALTH (2-3). 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. An additional field fee of $350 is assessed. Fall, spring, and summer. Minimum of six weeks. Staff.

718 [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 717. Variable number of hours. Fall, spring, and summer. Staff.

721 [221] MATERNAL AND CHILD HEALTH ISSUES FOR IMMIGRANT POPULATIONS (3). Prerequisites, BIOS 600, EPID 600, MHCH 701/702. Course covers the new pattern of immigration in the United States, not only in social, economical, and political landscapes, but in the health services arena as well. Spring. Weathers.

722 [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. Singh.

725 [125] INJURY AS A PUBLIC HEALTH PROBLEM (EPID 695) (HBHE 725) (3). Prerequisite or corequisite, EPID 600. 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. Runyan, Korch.

730 [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.
740 [140] PROBLEMS IN MATERNAL AND CHILD HEALTH (1-3). Prerequisites to be arranged with departmental faculty in each individual case. Two to six hours a week. Fall, spring, and summer. Staff.

753 [253] VIOLENCE AGAINST WOMEN (3). Permission required for non-MCH majors. Violence against women is examined as a public health problem. Areas investigated include: definition, prevention, and community and medical interventions. Spring. Martin.

756 [256] UNDERSTANDING AND ADDRESSING HEALTH INEQUITIES IN THE U.S. (PUBH 756) (3). Disparities in morbidity/mortality in subpopulations continue to be major issues for all U.S. populations. Explore contributors to inequities and identify strategies to counterbalance contributors to social inequities using public health resources. Three lecture hours per week. Spring. Hogan.

757 SPECIAL CHILD POPULATIONS (3). This course will focus on two populations that warrant special attention. By examining these populations in one course, students will be exposed to a range of contemporary questions that cut across childhood development. Both sections will emphasize the role of empirical research in understanding growth and development and formulating health services policies and programs. The first part of the course will focus on access to services for children with chronic conditions. Children with chronic conditions require not only primary and specialty care in the health services system, but also diverse non-medical services. The second part of the course will focus on the developmental transitions of adolescence, and their implications for risk taking and health. Course participants will analyze current programs, interventions, and policies as they relate to these two special populations. Throughout the semester, students will examine their own attitudes toward and experience with children and youth with special needs. Fall. Farel, Halpern.

801 [301] DOCTORAL SEMINAR IN MATERNAL AND CHILD HEALTH (3). Permission required for nonmajors and master’s students. Prerequisite: MHCH 701/L, 702/L, or equivalent, or MPH in MHCH. This seminar explores the origins of and developments in major maternal and child health and housing policies and programs in order to understand their effects on the health of mothers and children. Three lecture hours per week. Spring. Margolis.

802 [302] DOCTORAL RESEARCH SKILLS (3). Permission required for nonmajors and master’s students. Prerequisite: MHCH 701/L, 702/L, or equivalent, or MPH in MHCH. This seminar is the first semester of a one-year research skills curriculum for all new doctoral students. The course addresses research problem definition, proposal design, and development. One-hour seminar a week. Fall. Staff.

803 [303] DOCTORAL RESEARCH SKILLS (3). Permission required for nonmajors and master’s students. Prerequisite: MHCH 701/L, 702/L, or equivalent, or MPH in MHCH. This seminar is the second semester of a one-year research skills curriculum for all new doctoral students. The course addresses research problem definition, proposal design, and development. One-hour seminar a week. Spring. Staff.

840 [340] MATERNAL AND CHILD HEALTH DOCTORAL INTERNSHIP (3). 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.

850 [246] EPIDEMIOLOGY AND PREVENTION OF WOMEN’S HEALTH I (3). Course focuses on the epidemiology and prevention of diseases that affect women disproportionately, or manifest differently, or are unique to women. Sieg-Riz.

851 [219] EPIDEMIOLOGY (EPID 851) (3). Prerequisite, EPID 600, BIOS 600, or equivalent. 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. Oehmke, McMahon.


859 [259] THEORETICAL PERSPECTIVES ON MATERNAL AND CHILD HEALTH (3). Prerequisites, doctoral students, permission of the instructor. A survey of theoretical models used in MCH research and program development, and how these models are used to guide the formulation of questions, hypothesis testing, and evaluation. Fall. Halpern.

860 [260] CONCEPTUALIZATION, DESIGN, AND MEASUREMENT (3). Permission required of nonmajors and master’s students. Prerequisite, MHCH 859. The course follows the research process from the formulation of a research question and the design of a research methodology to the addressing of the question through the design of an appropriate analysis strategy. Three lecture hours a week. Spring. Martin.

862 [262] MATERNAL AND CHILD HEALTH PROGRAM EVALUATION (3). Permission required for nonmajors and master’s students. Prerequisite, knowledge of SAS or Stata, MHCH 713 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. Angles.

892 [306] SEMINAR IN HEALTH DISPARITIES (EPID 892) (1). This seminar will provide an opportunity for students to explore in greater depth selected topics/issues relating to the study of and intervention on health inequities. Select topics on theory, measurement, or intervention will be discussed. Fall. Hogan, Hines.

992 [392] MASTER’S PAPER (Var.). Fall, spring, and summer.

993 [393] MASTER’S THESIS (Var.). Fall and spring.

994 [394] DOCTORAL DISSERTATION (Var.). Fall, spring, and summer.

DEPARTMENT OF NUTRITION (NUTR)

JUNE STEVENS, Chair

Professors


John J. B. Anderson (2) Calcium; Isoflavones, Other Nutrients, and Bone Indicies in Women; Osteoporosis, Physical Activity, and Body Composition; Diet and Aging

Melinda Beck (70) Antioxidant Nutrition and Infectious Disease; Obesity and Infectious Disease; Nutritional Status and Immune Function

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, HPLC Methodology

Rosalind A. Coleman (39) Diabeses: 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
Nobuyo 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
Daniel Pomp (90) Obesity: Genetic Predisposition for Components of Energy Balance; Gene x Diet Interactions; Fat as a Risk Factor for Cancer
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: Creation of Large-Scale Program and Policy Initiatives to Address Nutrition-Related Noncommunicable Diseases
June Stevens (50) 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 Swenberg, Chemical Carcinogenesis and Toxicology: DNA Damage and Repair; Oxidative Stress, Biomarkers, and Mass Spectrometry
Diane Ward, (79) Community- and School-Based Interventions to Prevent Obesity and Promote Healthy Weight Behaviors; Measurement of Physical Activity
Steven H. Zeisel (38) Nutrients and Brain Development: Choline and Carcinogenesis; Choline Metabolism and Requirements in the Human; Isoflavones and Cancer; Antioxidants and Apreosis; Computer-Assisted Instruction

Associate Professors
Alice S. Amterman (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
Marc K. Campbell (57) Nutritional and Health Behavior Change Interventions; Cancer Prevention and Control: Health Communication; Minority Health
Pamela S. Haines (32) Aging; Dietary Trends, Patterns, and Determinants; Diet Quality Assessment; Women's Health, Nutrition, and Public Policy; Nutrition Epidemiology
Joyce Harp (66) Obesity and Adipocyte Formation
Anna María Siega-Riz (62) Maternal Nutrition and Birth Outcomes; Infant and Child Dietary Habits; Obesity Development in Women of Reproductive Age, Infants, and Children; Gestational Diabetes; Diet Methodology; and Reproductive Epidemiology
Boyd R. Switzer (5) Cancer and Carotenoids, Phytochemicals, Vitamin A and E, and Nutritional Biomarkers

Assistant Professors
Terry Combs (88) Glucose and Lipid Metabolism, Endotoxemia, Heart Disease, Obesity, Cancer, Reproductive Function and Aging
Penny Gordon-Larsen (78) Obesity Epidemiology, Physical Activity, Environmental and Sociodemographic Determinants of Physical Activity, Minority Health, Adolescent Nutrition and Health
Jessie Satia (81) Nutritional Epidemiology, Cancer Survivorship, Dietary Assessment, Health Disparities, Health Communications
Deborah Tate (95) Obesity Prevention and Treatment in Adults and Adolescents; Application of New Technology and the Internet to Behavioral Treatments for Overweight; Obesity Treatment in Workplaces and Community Settings
Michael Wheeler (91) Liver Immune Response and Liver Related Pathology

Research Professors
Martin Kehle-Meier (53) Nutritional Genomics, Biomarkers in Nutritional Epidemiology, Lipoprotein Metabolism, Vitamin K Transport and Function, Nutrition Education in Medical Schools
Rudolf Salganik (80) Oxidative Stress, Apoptosis, and Cancer

Research Associate Professors
Mimov S. Suino (72) Metabolic Interactions of Essential Microelements (Especially Trace Metals) with Toxic Metals and Metalloids that Contaminate the Food Chain and Drinking Water Reservoirs

Research Assistant Professors
Kerry-Danna da Costa (58) Choline, Folate, and Metabolism
Jianhu Deng, Obesity and Adipocyte Formation; Adipogenesis
Leslie Fisher (87) 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 Laitin (82) Influence of Food Security on Health Outcomes within Vulnerable Populations, Maternal Nutrition and Birth Outcomes, Nutrition Policy
Tel Lewin (89) Cardiomyopathy: Lipid Metabolism, Barth Syndrome, Obesity; Triacylglycerol Accumulation in the Heart; Regulation of Heart Triacylglycerol Synthesis
Eric Pack, Diet and Carcinogenesis, Dietary Components and Inflammation
Carmen Samuel-Hodge (86) Interventions in Diabetes Self-Management Education; Weight Loss and Lifestyle Behavior Change Interventions; Peer Counselors/Lay Advisors in Community-Based Nutrition Interventions
Lisa Sutherland (85) Impact of Media and Marketing on Childhood Obesity and the Development of Interventions; Health Communication and Marketing; Childhood Obesity, Nutrition Interventions

Clinical Professor
William D. Heitler (46) Gastrointestinal Absorption, Malabsorption Syndromes, Consequences of Long-Term Parenteral Nutrition in Hospitalized Patients, Digestive Diseases Causing Malnutrition

Clinical Assistant Professor

Clinical Instructor
Karen Lindell, Nutrition Education in Medicine, Nutrition Research and Clinical Trials

Adjunct Professors
Daniel Carroll, Chemistry and Processing of Plant Products
Steven A. Kliewer, Regulation of Lipid and Xenobiotic Metabolism by Nuclear Receptors
Bernadette Marrier
Guy Miller, Energy Metabolism and Metabolic Control; Therapeutics; Entrepreneurship
Richard C. Theus, Infant Foods and Nutrition

Adjunct Associate Professors
Alvin Berger
Katherine M. Flegal, Epidemiology of Obesity and Related Conditions; Dietary Assessment: Method; Misclassification and Measurement Error

Adjunct Assistant Professors
Jared Bean, Clinical and Behavioral Treatment of Obesity, Preoperative Assessment of 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
Frank Kani, Nutrition and Environmental Health
Miriam Peterson

Adjunct Instructor
Angelo Mejica (94) Food Service Management

Professors Emeriti
Rebecca B. Bryan
Joseph C. Edzon
MaryAnn C. Farthing
Mildred Kaufman

Courses
NUTR 400 [100] INTRODUCTION TO MEDICAL NUTRITION (3). Prerequisites, NUTR 240, CHEM 101, 102, and BIOL 101. Function 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 600. Spring. Switzer.

NUTR 600 [110] NUTRITIONAL BIOCHEMISTRY AND NORMAL CELL FUNCTION (3). Prerequisite, NUTR 400, CHEM 101, 102, and BIOL 101 or equivalent. Covers normal cell biochemistry and physiology, emphasizing the roles of nutrients throughout the life cycle; chemistry and metabolism of proteins, nucleic acids, carbohydrates, and lipids; endocrine/autonomic regulation of metabolism. Fall. Combs and Coleman.

NUTR 611 [111] NUTRITION OF CHILDREN AND MOTHERS (MECH 611) (3). Prerequisites, NUTR 400 or equivalent, to be taken in parallel with NUTR 600. Biologic basis 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 and Siega-Riz.

NUTR 615 [112] NUTRITION IN THE ELDERLY (1). Prerequisites, NUTR 400 or equivalent. Special dietary and nutritional needs and conditions of the elderly. Includes overview of biology and demography of aging, discussion of nutritional requirements, and assessment of the elderly, as well as nutrition in health and various disease states of the elderly. Fall. Haines.

NUTR 620 [120] NUTRITIONAL BIOCHEMISTRY AND DISEASE PROCESSES (3). Prerequisite, NUTR 600. Covers biochemistry and physiopathology 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.

NUTR 630 [132] NUTRITION ASSESSMENT AND COUNSELING SKILLS (3). Prerequisite, NUTR 240 or equivalent. Functions of a nutritionist working with individuals, emphasizing interviewing, assessment, nutrition care planning, counseling, and service documentation in prevention and therapeutic situations. Practice in the use of current dietary analysis software programs and development of educational materials included. Fall. Barrett.

NUTR 640 [121] MEDICAL NUTRITION THERAPY (3). Prerequisite, NUTR 630; corequisite, NUTR 620. Course designed to examine the rationale and implementation of diet therapy and nutrition support in the prevention or treatment of disease. Spring. Barrett.

NUTR 650 [140] FOOD SCIENCE AND MEAL PREPARATION (3). Prerequisite, NUTR 240. 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 of $30. One lecture hour and two laboratory hours per week. Fall. Barrett.

NUTR 660 [141] FOOD SERVICE SYSTEMS MANAGEMENT (2). 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. Fall/Spring. Mojica.

NUTR 661L [141L] FOOD SERVICE SYSTEMS MANAGEMENT (1). Prerequisite or corequisite, NUTR 660. This is a food service management practicum that applies the basic concepts of institutional food service systems. Two laboratory hours per week. Fall/Spring. Mojica.

NUTR 670 [142] FOOD PRODUCTION, PROCESSING, AND PACKAGING (2). Prerequisite, NUTR 400 or equivalent. Impact of all parts of the food industry on availability and nutritive value of foods, and food safety. Spring. Carroll.


NUTR 695 [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.

NUTR 696 [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.

NUTR 700 [200] NUTRITION IN MEDICINE (2). Prerequisite, BIOL 252 and NUTR 600 or equivalent. Comprehensive review of nutrition basics with strong clinical perspective. Integrates nutrient biochemistry and metabolism into a framework of nutritional assessment and dietary intervention. Fall. Zeisel.

NUTR 705 [210] NUTRITION ASSESSMENT (1-3). Prerequisite, NUTR 400 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.

NUTR 710 [220] CLINICAL NUTRITION EXPERIENCE (6). Prerequisites, NUTR 620, 640, 630. Students are assigned to medical facilities where, under the supervision of registered dietitians, they participate in the nutritional care of patients. Field fees of $450. Forty hours per week for twelve weeks. Summer. Barrett and field preceptors.

NUTR 715 [230] DIETARY CHANGE INTERVENTIONS (3). Prerequisites, NUTR 680 or permission of the instructor. Focus on developing theory-based nutrition interventions at the population level. Addresses levels of interventions such as individual, social, and organizational (e.g., schools and worksites): methods of implementation (including social marketing and mass media); and principles of assessing change. Spring. Campbell.

NUTR 720 [250] PUBLIC HEALTH NUTRITION MANAGEMENT I (4). Prerequisite, NUTR 680. 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 and Samuel-Hodge.

NUTR 725 [251] PUBLIC HEALTH NUTRITION MANAGEMENT II (4). Prerequisite, NUTR 720. 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.
NUTR 730 [252] PUBLIC HEALTH FIELD EXPERIENCE (4). Prerequisites, NUTR 710 and NUTR 725. During a consecutive eight-week block of time, students are assigned to a state, local, or district health agency or other appropriate agency for their supervised field experience. Field fee of $450. Fall, spring, and summer. Dodds and Switzer.

NUTR 735 [253] NATIONAL NUTRITION ISSUES (1). Prerequisite, NUTR 725 or permission of the instructor. Three-day in-depth seminar held in Washington, DC, 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 of $50. Spring. Kelsey.

NUTR 740 [255] BLOCK FIELD RESEARCH (4). Prerequisite, NUTR 700 and NUTR 813. During a consecutive ten-week block of time, students conduct nutrition-related research on topics including cancer, diabetes, hypertension, obesity, and cardiovascular disease. Supervised by an approved faculty and mentor. Field fee of $450. Fall, spring, and summer. Switzer.

NUTR 745 [261] INTERNATIONAL NUTRITION (3). Provides a broad overview of international nutrition research issues, programs, and policies. Topics will 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 and Bentley.

NUTR 750 [262] INTERNATIONAL NUTRITION: SPECIAL TOPICS (1). Prerequisite, NUTR 745. Follow-up in greater detail of selected issues discussed in NUTR 745. Two seminar hours per week. Spring. Adair.

NUTR 753 [354] QUALITATIVE EVALUATION AND RESEARCH METHODS (HBEHE 753) (3). Prerequisites, HBEHE 750 and 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 and Steckler.

NUTR 755 [270] NUTRITION RESEARCH METHODS (1). Corequisites or prerequisites, BIOS 600 and EPID 600 or 710. 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. Fischer.

NUTR 805 [350] ADVANCED NUTRITION POLICY (2). Prerequisite, NUTR 680 or permission of the instructor. Students will evaluate nutrition-related programs and policies designed to achieve individual and organizational behavioral change and to influence governmental regulations and laws, which affect the nutrition of the population. Spring. (Alternate years) Tate.

NUTR 810 [254] PHYSICAL ACTIVITY EPIDEMIOLOGY AND PUBLIC HEALTH (EPID 810) (3). Prerequisite, EPID 600 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 and Evenson.

NUTR 813 [258] NUTRITIONAL EPIDEMIOLOGY (EPID 813) (3). Prerequisites, EPID 600 or 710 and BIOS 600 or equivalent. This course reviews current topics in nutritional epidemiology and teaches the skills needed for critical evaluation of the nutritional epidemiological literature. Spring. Siege-Katz.

NUTR 814 [361] OBESITY EPIDEMIOLOGY (EPID 814) (3). Prerequisites, EPID 600 or 710 and BIOS 600. Examines epidemiology research on the causes, consequences, and prevention of obesity. Emphasis on methodological issues pertinent to obesity research. Spring. (Alternate years) Stevens.

NUTR 815 [362] DIET AND CANCER (EPID 815) (3). Prerequisites, EPID 600 or 710 and BIOS 600. 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) Satia.

NUTR 818 [360] ANALYTICAL METHODS IN NUTRITIONAL EPIDEMIOLOGY (EPID 818) (3). Prerequisites, EPID 600 or 710, NUTR 813 and BIOS 545, or permission of the instructor. This course teaches the 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 hazard modeling); and appropriate use and interpretation of anthropometric indices. Fall. (Alternate years) Adair.

NUTR 820 [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 the development and management of nutrition policy and programs. Spring. (Alternate years) Dodds.

NUTR 845 [305] NUTRITIONAL METABOLISM (3). Prerequisite, NUTR 600 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. Wheeler and Nutrition Biochemistry faculty.

NUTR 850 [315] BIOCHEMISTRY OF NUTRITION-RELATED DISEASES (3). Prerequisite, NUTR 600 or equivalent. Seminar and problem-based approach to the biochemistry of nutrition-related diseases including obesity, diabetes, atherosclerosis, cancer, and osteoporosis. Spring. (Alternate with NUTR 845.) Coleman.

NUTR 855 [310] ADVANCED NUTRITIONAL BIOCHEMISTRY: SIGNAL TRANSDUCTION (2). Prerequisites, NUTR 600 and 620 or equivalent. Includes interactions of nutrients/growth factors/hormones/second messengers with metabolism, growth, and differentiation of oncogenesis. Fall. (Alternate with NUTR 860 and 867.) Faculty.

NUTR 860 [311] ADVANCED NUTRITIONAL BIOCHEMISTRY: NUTRITIONAL GENETICS (2). Prerequisite, NUTR 850 and 867 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. (Alternate with NUTR 850 and 867.) Kohlmeier.

NUTR 861 [312] ADVANCED NUTRITIONAL BIOCHEMISTRY: NUTRITION AND IMMUNOLOGY (2) Prerequisites, NUTR 600 and 620 or equivalent. Presents an understanding of basic immunology and the role of nutrition in modifying the immune response. Spring. (Alternate years) Beck.

NUTR 865 [320] NUTRIENTS AND DISEASE: MINERALS (2). Prerequisite, NUTR 620. A seminar reviewing the nutrition and metabolism of the major minerals, with a focus on calcium and phosphorus. Spring. (Alternate with NUTR 866 and 868.) Anderson.


NUTR 867 [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. (Alternate with NUTR 850 and 855.) Switzer.

NUTR 868 [323] NUTRIENTS AND DISEASE: BRAIN FUNCTION AND DEVELOPMENT (2). Prerequisites, NUTR 600 and 620 or equivalent. Seminar
on nutrients that influence brain and neuron development and function. Spring. (Alternating with NUTR 865 and 866.) Zeisel.

NUTR 870 [325] ADVANCES IN CARBOHYDRATE AND LIPID METABOLISM (1). Prerequisites, NUTR 600, 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, and w-3 fatty acids in neural development. Spring. Coleman.

NUTR 875 [335] NUTRITION POLICY SEMINAR (2). Prerequisite, permission of the 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. Larosa and Sutherland.

NUTR 880 [371] ELEMENTS OF BEING A SCIENTIST (3). Prerequisites, 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, and scientific ethics. Fall. Zeisel, Popkin, and Ward.

NUTR 885 [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 articles. Fall (Adair and Combs); spring (Ward and Lewin).

NUTR 910 [375] NUTRITION RESEARCH (1-9). Individual arrangements with faculty for doctoral students to participate in ongoing research. Fall, spring, and summer. Faculty.

NUTR 920 [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. da Costa.

NUTR 992 [392] MASTER’S PAPER (3-6). Fall, spring, and summer. Faculty.

NUTR 993 [393] MASTER’S THESIS (3-6). Fall, spring, and summer. Faculty.

NUTR 994 [394] DOCTORAL DISSERTATION (3-9). Fall, spring, and summer. Faculty.

PUBLIC HEALTH LEADERSHIP PROGRAM (PUBL)

WILLIAM A. SOLLECCITO, Director
Russell Harris, Health Care and Prevention, Director
Bonnie Rogers, Occupational Health Nursing, Director (Residential and Distance)
David Steffen, Leadership, Director (Residential and Distance)

Professors
Jean Goepfert, Health Promotion and Leadership

Associate Professor
Bonnie Rogers, Occupational Health Nursing, Public Health Nursing

Research Assistant Professor
Christina A. Harlan, Migrant Health, Cultural Competency, Public Health Nursing

Clinical Professors
William A. Sollecito, Leadership, Continuous Quality Improvement, Project Management, Distance Learning
Hugh H. Tilson, Public Health Practice, Leadership, Epidemiology

Clinical Assistant Professors
Diane Callahan, Program Planning and Evaluation, Scientific Writing, Distance Learning
Cheryl L. Leshinski, Continuous Quality Improvement, Community Assessment, Public Health Practice, Distance Learning
Holly Pavlica, Project Management, Marketing, Distance Learning
David Steffen, Leadership, Public Health Practice, Public Health Nursing, Distance Learning
William Williamson, Public Health Practice, Scientific Writing, Distance Education

Clinical Instructors
Judith S. Ostendorf, Occupational Health Nursing
Susan A. Randolph, Occupational Health Nursing

Adjunct Professors
Stephanie Bailey, Public Health Practice
Gene Matthews, Public Health Law
Russ Harris, Health Care and Prevention

Adjunct Associate Professors
Virginia Adams, Occupational Health Nursing
Linda Kinsinger, Health Care and Prevention
Adam Goldstein, Health Care and Prevention

Adjunct Assistant Professors
Kathryn Andolee, Health Care and Prevention
Kay Campbell, Occupational Health Nursing
Gerald Garst, Health Care and Prevention
Carol Golfin, Health Care and Prevention
Margaret Gourlay, Health Care and Prevention
John Graham, Public Health Practice
Don Francisco, Environmental Health Science
Diane Kelly, Continuous Quality Improvement
Samuel Moon, Occupational Health Nursing
Hazel Moore, Public Health Nursing
Joy Reed, Public Health Nursing
Kevin Sowers, Public Health Nursing
Stacey Sheridan, Health Care and Prevention
Patricia Travers, Occupational Health Nursing
W. Jon Wallace, Occupational Health Nursing

Adjunct Lecturer
Vic Cocowitch, Leadership, Group Dynamics and Organizational Effectiveness

Adjunct Instructors
Ruth Bazlow, Occupational Health Nursing
Christopher Cooke, Social Marketing
Jennifer Horney, Preparedness and Public Health
Elizabeth Lawhorne, Occupational Health Nursing
Beth Lamanna, Public Health Nursing
Karen Mastroianni, Public Health Nursing
Grace Rome Schnachtenberg, Occupational Health Nursing
Geraldine Williamson, Occupational Health Nursing
Angela Zabel, Occupational Health Nursing

Professors Emeriti
Nora E. Cline
Marion E. Highriter
Arnold D. Kaluzny
Rachel H. Stevens
Dorothy M. Talbot
Julia D. Watkins
Courses

The Public Health Leadership program uses both PUBH and PHNU abbreviations for course listings. PUBH courses are open to any student unless permission is required of the instructor. PHNU courses are open to registered nurses only or by permission of the instructor. Visit the Web site for additional information: www.sph.unc.edu/phlp.

PUBH 420 [120] AIDS: PRINCIPLES AND POLICY (1). Elective course jointly given by the Schools of Dentistry, Public Health, Nursing, Pharmacy, and Medicine, designed to provide a multidisciplinary understanding of social, clinical and biologic aspects of the AIDS epidemic. Fall, spring, and summer. Strauss.

PUBH 423 [123] AIDS SERVICE (1). This course will integrate community services into the campus-wide AIDS course. Students will work as volunteer interns three to five hours per week for 10 weeks during the semester with Triangle-area community service organizations. Fall and spring. Strauss.

PUBH 450 [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. Online course. Fall, spring, and summer. Williamson.

PUBH 496 [140] READINGS IN PUBLIC HEALTH PRACTICE (Var.). Intensive study of a special problem in public health practice. Fall, spring, and summer. Staff.

PUBH 600 [221] HEALTH CARE IN THE UNITED STATES (3). An introduction to the fundamental organisation, behavior, financing, and challenges of the health system of the United States. The course treats the entire edifice of American health care as "the American health system," and intends to examine it in toto, including by comparing it to other national health systems, and in part, by examining critical components of the health system. Fall and summer. Tolleson-Rinehart.

PUBH 6131 [613] INTERMEDIATE SPANISH FOR HEALTH CARE 1 (AHSC 6131) (DENT 613) (MEDI 613) (NURS 6131) (PHCY 6131) (SOWO 6131) (3). Prerequisite, college-level Spanish 2, a minimum score on a self-assessment test available on the Web, and permission of the 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. Online course. Fall, spring, and summer. Instructors from the UNC-Chapel Hill Department of Romance Languages.

PUBH 6141 [614] INTERMEDIATE SPANISH FOR HEALTH CARE 2 (AHSC 6141) (DENT 614) (MEDI 614) (NURS 6141) (PHCY 6141) (SOWO 6141) (3). Prerequisite, completion of Intermediate Spanish for Health Care 1 and permission of the 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. Online course. Fall, spring, and summer. Instructors from the UNC-Chapel Hill Department of Romance Languages.

PUBH 6151 [615] ADVANCED SPANISH FOR HEALTH CARE 1 (AHSC 6151) (DENT 615) (MEDI 615) (NURS 6151) (PHCY 6151) (SOWO 6151) (3). Prerequisite, college-level Spanish 3, a minimum score on a self-assessment test available on the Web, and permission of the 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. Online course. Fall, spring, and summer. Instructors from the UNC-Chapel Hill Department of Romance Languages.

PUBH 6161 [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.

PUBH 670 [140] INTERDISCIPLINARY PERSPECTIVES IN GLOBAL HEALTH (3). This course explores contemporary issues, problems, and controversies in global health through an interdisciplinary perspective. It examines the tapestry of social, economic, political, and environmental factors affecting global health, and to understand the major determinants of, and responses to, poverty and health in developing countries. Fall. Bentley.

PUBH 680 [180] PUBLIC HEALTH PRACTICE (3). A comprehensive introduction to public health concepts and practice through an examination of the philosophy, purpose, history, organizations, functions, tools, activities and results of public health practice at the national, state, and community levels. Online course. Fall. Lesnieski.

PUBH 690 [201] SPECIAL STUDIES (1-3). Permission of the instructor required. Sections will focus on specific topics of current interest to health workers. Flies describing the section offering will be distributed prior to registration each semester. Lecture hours per week depend entirely upon credit. Fall, spring, and summer. Staff.

PUBH 730 [230] QUALITY IMPROVEMENT AND LEADERSHIP (3). Course designed to provide students with an understanding of use of continuous quality improvement methods in community health settings, drawing heavily on actual experiences of the students in their professional lives. Online course. Spring. Kelly.

PUBH 731 [231] SOCIAL MARKETING (3). Course will orient students to market-based strategies, models, and tactics for improving individual and community health status within the framework of marketing, strategic communication, and advocacy. Online course. Spring. Cooke.


PUBH 733 [233] INTRODUCTION TO PUBLIC HEALTH PREPAREDNESS FOR DISASTERS AND EMERGENCIES (3). Introduction to topics related to public health preparedness for intentional and natural outbreaks and natural disasters, including food and water safety, mental health impacts, and risk communication. Online course. Spring. Horney.

PUBH 735 [235] POLICY DEVELOPMENT (2). Permission of the instructor is required for non-SPH students. Focus is on an institutional policy development, regulation and enforcement, and field observation. Online course. Spring. Staff.

PUBH 740 [201] SPECIAL ISSUES IN PUBLIC HEALTH PRACTICE (1-3). Permission of the instructor required. Guided reading, discussions, and presentations on current, significant issues in public health. (On request.) Staff.


PUBH 747 [247] PROJECT MANAGEMENT PRINCIPLES AND PRACTICES (3). Graduate students only. Provides an overview of knowledge and skills required for effective project/team leadership and management. Includes modules.
on leadership and management techniques and organizational designs that complement team-based organizations. Also includes an introduction to continuous quality improvement, with an emphasis on application to project management. Online course. Spring and summer. Pavlica and Sollecito.

PUBH 748 [248] POLICY DEVELOPMENT (2). Permission of the instructor is required for non-SPH students. Designed to provide students with an opportunity to focus on the fundamental aspects of policy development, with an emphasis on local, state, and federal levels within a community setting. Online course. Fall. Randolph.

PUBH 750 [250] STRATEGIES OF PREVENTION FOR CLINICIANS (3). Designed for those interested in the clinical arena. Establishes a framework for examining prevention activities for clinicians, and 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 30 students. Fall. Harris.

PUBH 751 [251] APPRAISAL MED LIT I (2). Emphasizes the process of critical appraisal of existing medical research literature, with examples from a variety of subject areas. Fall. Harris.

PUBH 752 [252] A & B SEMINAR IN CRITICAL APPRAISAL OF MEDICAL LITERATURE (2). Emphasizes the process of critical appraisal of existing medical research literature, with examples from a variety of subject areas. Student presentations of structured critical appraisals constitute about fifty percent of sessions. Spring. Harris.

PUBH 753 [253] COMPREHENSIVE STRATEGIES IN PUBLIC HEALTH INTERVENTION: THE CASE OF TOBACCO USE REDUCTION (3). Permission of the instructor required for non-SPH majors. Using the case study of reducing tobacco consumption, this course will consider current efforts of health education and health advocacy. Three lecture hours per week. Spring. Goldstein.


PUBH 760 [260] CLINICAL MEASUREMENT/EVALUATION (EPID 711) (3). Focuses on work, workplace exposures and hazards, and their effect on health. Interdisciplinary approaches to risk identification, reduction, and communication will be emphasized within regulatory and ethical contexts. Online course. Spring. Rogers and Randolph.

PUBH 785 [285] INTERDISCIPLINARY APPROACHES TO OCCUPATIONAL HEALTH (3). Focuses on work, workplace exposures and hazards, and their effect on health. Interdisciplinary approaches to risk identification, reduction, and communication will be emphasized within regulatory and ethical contexts. Spring. Rogers and Randolph.

PUBH 786 [286] OCCUPATIONAL SAFETY AND ERGONOMICS (ENVR 432) (PHNU 786) (3). Fundamentals of occupational safety and ergonomics, with an 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 and Wallace.

PUBH 799 [290] LEADERSHIP ASSESSMENT (2). Course is structured as a highly interactive, intensive, three-day workshop that focuses on helping participants understand their own and others' leadership styles. Self-assessment instruments and readings required in advance. Summer I. Steffen and Cocowitch.

PUBH 791 [291] CORE PRINCIPLES OF PUBLIC HEALTH LEADERSHIP (2). Course will introduce students to leadership theories and research, provide a context for leadership in public health, and help students learn core leadership skills. Online course. Fall. Steffen.

PUBH 886 [396] FIELD PRACTICUM IN PUBLIC HEALTH (3-6). The second integrative experience is a practicum or field experience. This experience will be completed after most regular course work. It is intended to provide the student an opportunity to integrate course work in a new or different type of health-related setting. The practicum cannot be only an observational experience. Rather, it must involve a project acceptable to all relevant parties. Fall, spring, and summer. Staff.

PUBH 992 [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, and summer. Staff.

PHNU 496 [140] 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.

PHNU 690 [201] DELIVERY OF COMMUNITY NURSING SERVICES (3). Permission of the instructor required. Analysis of patterns of organization of community nursing services and their relationships to the health care delivery system. Special emphasis on basic management skills and their application. Staff.

PHNU 724 [224] SCHOOL-AGED POPULATION: HEALTH PROBLEMS AND PROGRAMS (MHCH 224) (3). Permission of the instructor required. Health needs and problems of the 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 725 [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 the delivery of school health services. Three to twelve laboratory hours per week. Spring. Staff.

PHNU 740 [240] 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. Staff.

PHNU 742 [254] INSTRUMENT DEVELOPMENT (HHHE 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. Staff.

PHNU 744 [244] ROLES AND FUNCTIONS IN PUBLIC HEALTH NURSING (3). Emphasizes 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. Summer. Harlan.

PHNU 760 (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 managers. Three lecture hours per week. Spring. Staff.

PHNU 781 [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. Rogers.

PHNU 782 [282] OCCUPATIONAL HEALTH NURSING II - OCCUPATIONAL HEALTH PROGRAMMING (3). Prerequisite, PHNU 781. Permission of the instructor required. Continuation of PHNU 781. Role components of occupational health nursing with emphasis on designing, implementing, and evaluating
PHNU 783 [283] OCCUPATIONAL HEALTH NURSING, FIELD
PRACTICUM I (2). Prerequisite or co requisite, PHNU 781. 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, and summer. Rogers.

PHNU 784 [284] OCCUPATIONAL HEALTH NURSING, FIELD
PRACTICUM II (2). Prerequisites, PHNU 781, 783. Corequisite, PHNU 782. Permission of the instructor required. Students have the opportunity to learn about the managerial and administrative role of the OHN. Emphasis is placed on analysis of the organizational structure, external influencing factors, and evaluation mechanisms. Fall, spring, and summer. Rogers.

PHNU 786 [286] OCCUPATIONAL SAFETY AND ERGONOMICS (EVNR 137) (EVNR 432) (PUBH 786) (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. Osendarp and Wallace.

PHNU 787 [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.

PHNU 886 [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. Fall, spring, and summer. Staff.

PHNU 993 [393] MASTER'S THESIS (3-6). Fall, spring, and summer. Staff.

DEPARTMENT OF PUBLIC POLICY
RICHARD N. L. ANDREWS, 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
Michael L. Luger, Regional Economic Development, Technology Policy, Environmental Infrastructure and Finance, Urban Economics
Michael A. Stigman, National Housing Policy, National Urban Policy, Community Capitalism

Associate Professor

Assistant Professors
Daniel P. Gitterman, Political Institutions/Governance, Political Economy of Regulation, Health Policy
Krista M. Pereira, Health, Immigration, Social Welfare Policy

Professor of the Practice
W. Hoddinott Carter III, Professor of Leadership and Public Policy and Parr Fellow of Ethics. Public Policy and the Media: the Emerging South

Professor Emeritus
Duncan MacRae Jr., HIV/AIDS Policy, Education Policy

Adjunct Professors
Jennifer A. Bremer, International Trade and Development
Walter C. Farrell Jr., Health Policy and Administration, Social Epidemiology, Community Mental Health
Harvey A. Goldstein, Economic Development, Technology Policy, Design of Policy Research, Planning Theory
Jonathan B. Howes, Environmental Policy, State and Local Government
James H. Johnson Jr., Interregional Black Migration, Interethnic Minority Conflict in Advanced Industrial Societies, Minority and Women-Owned Business Development, Workplace Diversity Issues
Michael Munger, Policy Analysis, Statistical Methods, Political Institutions
Dennis K. Ortner, Social Psychology, Work and Family Welfare Policy
Joel Schwartz, Health Policy and Politics

Adjunct Associate Professor
David H. Schanzer, Terrorism and Homeland Security

Adjunct Assistant Professors
John Hardin, Policy Analysis, Science and Technology Policy
Catherine S. Renault, Science and Technology Economic Development, Evaluation, Entrepreneurship

Doctor of Philosophy
The Department of Public Policy offers the PhD degree to students who wish to increase understanding of public policy problems, contribute new knowledge to the understanding of public policy decision-making and institutions, and develop and justify proposals for public policy solutions to societal problems. Graduates of the program are prepared to conduct sophisticated policy research that provides useful information to decision makers, and to advance the bodies of knowledge both about public policy-making in general and about their specific specialization field. Doctoral graduates of the Department of Public Policy hold academic positions in major universities, research positions in policy research organizations, and senior policy staff positions in government agencies and other policy development organizations.

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 700 course in basic quantitative techniques in economics during the 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 who do not have a degree from a U.S. institution 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 as research design, appropriate research methods, and a specialization in a particular subject area of public policy. Doctoral students are required to complete 50 hours of coursework, including 23 hours in core courses common to all students and 27 hours in a self-defined policy specialization field. Core courses include PLCY 710, 716, 780, 785, 788, 789, 801 or 802, and 810. Students who have successfully completed graduate courses elsewhere that approximate these required courses may petition to have up to nine such hours counted toward the 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 27 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 9 hours of research methods, including at least 6 hours of quantitative methods through multivariate statistics. Students take no less than 9 credit hours of courses related to the theory and subject matter of their policy concentration, plus at least 3 credits (in addition to the core course on institutions) on policies and policy institutions related to the policy field specialization; up to 6 hours of specialization area credits may be taken as independent studies. The remaining 6 hours of required field specialization credits are normally completed as PLCY 994 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 (PLCY 810). The department offers a weekly seminar 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, analytic, 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 policymaking 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 16 hours of approved coursework in public policy analysis for doctoral students, or 12 credits for master’s students, approved by the Department of Public Policy and the student’s major department. (These 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 department’s 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 of Public Policy coordinates teaching, research, and public service activities with the Department of Environmental Sciences and Engineering, the Carolina Environmental Program, the Department of City and Regional Planning, and several other 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, Luger, Webster, Whittington, Hornstein, Howes)

Economic Development and Science and Technology Policy. A member of the core faculty directs the UNC-Chapel Hill Center for Competitive Economies, a research center that helps 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, the Rural Economic Development Center, the Southern Technology Center, Sigma Xi scientific research society, and others. (Related faculty: Dill, Hands, Luger, Stegman, Webster, Whittington, Bremer, Hardin, Goldstein, Johnson, Kasarda)
Social Policy, including Welfare, Education, and Low-Income Communities. This area of application includes collaborative activities with two centers: the Center for Community Capitalism, which is a cooperative effort between the Department and the Frank Hawkins Kenan Institute of Private Enterprise, and the Jordan Institute of Family Policy in the School of Social Work. The Center for Community Capitalism explores ways to apply private sector approaches to revitalization of America's distressed communities, focusing on policy strategies that are both effective in building wealth and assets in disadvantaged communities and sustainable from a business perspective. The Jordan Institute for Families develops and tests policies that strengthen families and engage communities. (Related faculty: Dill, Gitterman, Handa, Luger, Perreia, Siegman, Farrell, Howes, Johnson, Kasarda, Ochsner, 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 collaborate with considerable expertise and resources 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, Perreia, 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 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, Health Policy and Administration, the Public Administration program, and the schools of Education, Law, Business, Social Work, and Medicine.

Visiting Scholars
The University of North Carolina at Chapel Hill hosts visiting public policy scholars from around the world and exchanges 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-Chapel Hill 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 nearby North Carolina State University 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 urbanisation, 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.

Carolina Center for Competitive Economies
The Carolina Center for Competitive Economies (C3E) conducts research and policy analysis to help address problems of economic competitiveness, primarily within the state of North Carolina. C3E is a pan-University activity and is housed in the Kenan Institute for Private Enterprise.

Howard W. Odum Institute for Research in Social Science (IRSS)
The 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.

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, Telephone:(919) 962-1600. E-mail: acrowe@email.unc.edu. Web site: www.unc.edu/depts/pubpol.

**Courses for Graduates and Advanced Undergraduates**

**460 [175] QUANTITATIVE ANALYSIS FOR PUBLIC POLICY (3).** Prerequisite, STAT 155. Application of statistical techniques, including regression analysis, in public policy program evaluation; research design and data collection and management. Fall and spring. Staff.

**480 [120] ENVIRONMENTAL DECISION MAKING (ENST 480) (3).** Introduces factors shaping environmental decision making by individuals, businesses, governments, advocacy groups, and international institutions, and explores public policy incentives and action strategies for influencing them. Spring. Andrews.

**490 SPECIAL TOPICS IN PUBLIC POLICY (3).** Fall or spring. Staff.

**496 INDEPENDENT STUDY/READING IN PUBLIC POLICY (3).** (Var.) Fall or spring. Staff.

**499 SELECTED TOPICS IN PUBLIC POLICY (3).** Fall or spring. Staff.

**510 [183] Policy Analysis of Global Climate Change (ENST 510) (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.

**520 [184] ENVIRONMENT AND DEVELOPMENT (INTS 520) (ENST 520) (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 or spring. Staff.

**Courses for Graduates**

**526 [226] PUBLIC FINANCE FOR PLANNING AND POLICY (1.5).** Introduces professional master's and advanced undergraduate students to principles of public finance, for use in planning and public policy in the U.S. Course builds on a foundation of intermediate micro theory. Spring. Luger.

**527 APPLIED PUBLIC FINANCE (1.5).** Applies principles of state-local finance to infrastructure and economic development. Prerequisite, PLCY/PLAN 526. Spring. Luger.

**585 [185] AMERICAN ENVIRONMENTAL POLICY (ENVR 585) (PLAN 585) (ENST 585) (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.

590 SPECIAL TOPICS IN PUBLIC POLICY (3). Fall or spring. Staff.

596 INDEPENDENT STUDY/READING IN PUBLIC POLICY (3). (Var.) Fall and spring. Staff.

599 SELECTED TOPICS IN PUBLIC POLICY (3). Fall and spring. Staff.


690 SPECIAL TOPICS IN PUBLIC POLICY (3). Fall or spring. Staff.

696 INDEPENDENT STUDY/READING IN PP. (Var.) Fall and spring. Staff.

699 SPECIAL TOPICS IN PUBLIC POLICY (Var.) Fall or spring. Staff.

701 [204] AMERICAN POLITICAL INSTITUTIONS (POLI 701) (3). Theory and practice of political institutions in the American context. Fall and spring. Staff.

710 [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. Staff.


731 [701] SOCIAL WELFARE POLICY (SOWO 731) (3). Prerequisite, doctoral standing or permission of the instructor. Review of developments in United States welfare policy and economic, social, and political forces underlying reform initiatives since the 1960s. Analysis of data on impacts of welfare policies and programs. Orthner.


768 [258] SEMINAR IN COMMUNITY CAPITALISM (PLAN 768) (3). Limited to graduate students. Reflects the convergence of business and community development interests. Seminar explores theory and applications in inner city business and capital markets, development finance, and urban policies. Requires major research project. Fall. Stegmam.

780 [231] ETHICS AND FORMAL ANALYTIC TECHNIQUES I (3). Ethical considerations are integrated with formal analytical approaches in policy advising. Topics include criteria for policy choice, user participation, and analysts' obligations in political situations. First semester: non-economic techniques. Fall. Webster.


787 [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 analysts' obligations in political situations. Second semester: mainly cost-benefit analysis. Spring. Staff.

788 [288] ADVANCED ECONOMIC ANALYSIS FOR PUBLIC POLICY I (PLAN 788) (3). Economic theory applied to policy issues. Policy issues analyzed require microeconomic theory, including theory of utility and demand, organization and operation of producer and factor markets, production theory, regulation, and welfare economics. Fall. Staff.
DIVISION OF REHABILITATION COUNSELING AND PSYCHOLOGY

CHARLES P. BERNACCHIO, Director

Associate Professor
Eileen J. Burker (22) Behavioral Medicine/Health Psychology; Religion,
Spirituality, and Quality of Life Associated with Heart and Lung
Transplantation; Psychological Aspects of Cardiac and Pulmonary Rehabilitation

Assistant Research Professor
Charles P. Bernacchio, Psychiatric Rehabilitation Practice, Supported Employment,
Universal Design for Learning, Supervision and Transition of Youth with
Disabilities.

Clinical Assistant Professor
Stacia A. Carone (27) Counselor Supervision, Volunteer Programs for Persons with
Severe Mental Illness

The Division of Rehabilitation Psychology and Counseling (DRPC) of
the Department of Allied Health Sciences offers a two-year graduate pro-
gram leading to the Master of Science degree.

The graduate courses offered in rehabilitation counseling and psychology
(RCP) present and discuss theoretical constructs and their application to
clinical practice; stimulate critical, analytical, and creative thought; and
prepare students for professional positions in rehabilitation counseling includ-
ing specialty settings for people with developmental and/or psychiatric dis-
abilities.

Mission

The mission of the Division of Rehabilitation Counseling and Psychology
is to serve the people of North Carolina by educating rehabilitation coun-
selors with the knowledge and expertise to provide services to our citizens
with disabilities with an emphasis on those with psychiatric and/or develop-
mental disabilities. The mission is based on the fundamental belief in the
dignity and worth of all people and the rights of people with disabilities
to live self-determined lives in inclusive communities of their choice. The
Division of Rehabilitation Counseling and Psychology seeks to educate
rehabilitation counselors who use the counseling relationship and skills to
work collaboratively with individuals to maximize functional capacity, pro-
ductive and independent living skills and quality of life, and to provide
access to and manage personalized services to support the unique needs and
preferences of each individual, his or her family, and community.

Fundamental to this is a focus on the whole person – psychological, voca-
tional, spiritual and physical aspects – as well as family, social, work, and
community relationships. The division seeks to educate rehabilitation coun-
selors who possess the knowledge, critical thinking abilities, commitment to
independent learning and scholarship, vision, and courage required to forge
new models of community practice to address the diverse needs of the indi-
viduals with disabilities now and in the future.

In carrying out this mission the faculty of the division has the obligation
to acquire, discover, preserve, synthesize, and transmit knowledge; to be
models of professional leadership; and to create a culture of educational
excellence that will nurture students intellectual and ethical development.
Students have the responsibility to fully engage in an educational process of
research, free inquiry, and personal responsibility and to become foremost
practitioners, scholars, researchers, and leaders in the profession of rehabili-
tation counseling.
The University of North Carolina at Chapel Hill is recognized, nationally and internationally, as a leading center of scholarship, research, and creative work with a mission to serve the people of North Carolina and the nation. The mission of the University's Division of Rehabilitation Counseling and Psychology is to contribute actively and substantively to this tradition.

Objectives
Graduates of the Rehabilitation Counseling Psychology Program will:

- Effectively apply current best practices in rehabilitation counseling within a community-inclusion model;
- Accurately assess the rehabilitation preferences and needs of people with disabilities and work in partnership with consumers to provide the appropriate rehabilitation counseling, services, and supports needed;
- Acquire specific knowledge and skills to address the counseling and case management needs of people with disabilities, with particular emphasis on strategies and techniques for serving people with psychiatric and developmental disabilities;
- Work collaboratively with professionals, family members, community providers, employers, and agency policy- and decision-makers to achieve optimal rehabilitation outcomes for people with disabilities;
- Engage in a process of lifelong learning, collaboration, and collegiality as part of ongoing professional development as rehabilitation counselors;
- Have the necessary leadership, business and management, and public policy skills to assume leadership roles in the practice and the profession of rehabilitation counseling and;
- Promote and support consumer empowerment and self-advocacy of people with disabilities.

Students must successfully complete sixty-five semester hours of required and elective coursework; submit an approved master’s thesis, paper, or project; and complete an approved internship.

Requirements for Admission

- A bachelor's degree from an accredited college or university;
- A grade point average of B (3.0 on a 4.0 scale) or better in the area of the major;
- Submission of Graduate Record Examination (GRE) scores (Quantitative and Verbal scores @ fiftieth percentile);
- Three letters of recommendation;
- Completion of application supplement for RCP within graduate school application;
- Possible pre-admission interview with the DRCP faculty.

Courses for Graduates

700 [200] INTRODUCTION TO REHABILITATION COUNSELING AND PSYCHOLOGY (3). This course will cover topics germane to the history and philosophy of rehabilitation. Students will obtain an overview of the field, its consumers, and methods of service delivery. Fall. Bernacchio.


706 [206] TESTS AND MEASUREMENT IN REHABILITATION COUNSELING AND PSYCHOLOGY (3). This course is an overview of the selection, administration, and interpretation of major assessment tools. Emphasis is on persons with mental illness or developmental disabilities. Spring. Staff.

708 [208] COMMUNITY INTEGRATION FOR INDIVIDUALS WITH DISABILITIES: WORK, HOME, AND LEISURE (3). This course will cover career development and counseling with emphasis on community integration in vocational and leisure pursuits of persons with disabilities, particularly those with mental illness and developmental disabilities. Fall. Staff.


714 [214] PRINCIPLES OF GROUP COUNSELING IN REHABILITATION PSYCHOLOGY AND COUNSELING (3). Strategies and techniques in developing and implementing groups in counseling. Attention to group counseling with persons with disabilities, specifically those with mental illness and developmental disabilities. Fall. Bernacchio/Carone.

716 [216] CASE MANAGEMENT, REHABILITATION SERVICES AND RESOURCES (3). Emphasis on leadership in all aspects of person-centered service coordination to include transdisciplinary and multi-agency effectiveness, knowledge of community organization and resources, service and support options. Fall. Carone.

800 [300] REHABILITATION COUNSELING AND PSYCHOLOGY RESEARCH AND PROGRAM EVALUATION (3). Prerequisites: RPSY 700 and 702. Research methods, evidence-based practice, and ethical, legal, and cultural issues related to research and evaluation. Covers basic statistics, library research for rehabilitation related information, proposal development, and grant writing. Fall. Barker.

802 [302] REHABILITATION COUNSELING AND PSYCHOLOGY PRACTICUM (6). Prerequisites, all Rehabilitation Counseling and Psychology first-year didactic courses. Direct experience with clients/patients in varied service delivery settings. Fall/spring. Staff.

806 [306] APPLIED COUNSELING SKILLS IN REHABILITATION COUNSELING AND PSYCHOLOGY (3). Designed to teach foundational counseling skills that will enable students to begin counseling. Focus on counseling individuals with mental illness and developmental disabilities. Includes ethics and multi-cultural awareness. Fall. Barker, staff.

808 [308] EXECUTIVE LEADERSHIP IN REHABILITATION COUNSELING AND PSYCHOLOGY (3) Examines leadership in RCP practice within complex political, economic, and service environments, emphasizing supervision, team coordination, public policy, and funding. Emphasis on North Carolina service delivery systems. Fall. Staff.

810 [310] INTERNSHIP IN REHABILITATION COUNSELING AND PSYCHOLOGY (12) Prerequisites, all Rehabilitation Counseling and Psychology didactic courses including RPSY 992, 802. Direct experience with clients/patients in either developmental disability or mental illness settings, Parts 1 and 2. Spring, summer, and fall. Staff.

814 [314] INTRODUCTION TO REHABILITATION COUNSELING AND PSYCHOLOGY WITH PEOPLE WITH MENTAL ILLNESS AND DEVELOPMENTAL DISABILITIES (3). Historical perspective, description, diagnoses, classification, etiology, patterns of functioning, current best practices with focus on RCP service delivery and community support; day-in-the-life component included. Fall. Bernacchio.
816 [316] ADVANCED REHABILITATION COUNSELING AND
PSYCHOLOGY PRACTICE WITH PEOPLE WITH DEVELOPMENTAL
DISABILITIES (3). Prerequisites, RSYS 700, 702, and 814. Prepares students for
RCP practice with persons with developmental disabilities; covers a wide range of
intervention and coordination strategies focusing on achievement of a participatory,
person-centered, independent, and productive community life. Spring. Staff.

818 [318] ADVANCED REHABILITATION COUNSELING AND
PSYCHOLOGY PRACTICE WITH PEOPLE WITH MENTAL ILLNESS (3)
Prerequisites, RSYS 700, 702, and 814. Prepares students for RCP practice with
persons with mental illness; covers a wide range of intervention and coordination
strategies focusing on support of recovery and achievement of a healthy, independent,
and productive life. Spring. Staff.

890 [364] SPECIAL TOPICS IN REHABILITATION COUNSELING AND
PSYCHOLOGY (3). Faculty-mentored independent study to pursue specific inter-
ests and topics. Fall, spring, or summer. Staff.

992 [392] MASTER'S PAPER/PROJECT IN REHABILITATION
COUNSELING AND PSYCHOLOGY (3). Individual work by a student (super-
vised by faculty) to explore an area of interest in a research paper, program develop-
ment, or a professional project. Fall, spring, and summer. Staff.

993 [393] MASTER'S THESIS IN REHABILITATION COUNSELING AND
PSYCHOLOGY (3). Individual research supervised by a faculty member in a spe-
cial field of study. Fall, spring, and summer. Staff.

DEPARTMENT OF RELIGIOUS STUDIES

BART D. EHRMAN, Chair

Professors
Yaakov S. Ariel (48) Judaism and Evangelical Christianity in America, Messianic
Movements and Missions, Christian-Jewish Relationship
Carl W. Ernst (42) Islamic Studies, Sufism, South Asia
Peter L. Kaufman (16) History of Christian Traditions; Patristic, Medieval, and
Reformation Studies
Jodi Magness (54) Archaeology of the Qur'an 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
Laurie Maffly-Kipp (29) History of Religion in America, African American Religion
Zlatko Plese (49) Religion in Late Antiquity

Assistant Professors
Barbara Ambros (57) Japanese Religions, East Asian Religions, Buddhism, Religion
in Asian Diaspora Communities
Lauren Love (56) Theravada Buddhism, Ethnographic Methods, South and
Southeast Asian Religions
Randall Syens (52) Critical Approaches to the Study of Religion, Modern Western
Religious Thought

Adjunct Professors
Judith Farquhar, Chinese Medicine
Philip Gura, Religion and American Literature
Jonathan Hess, Modern Judaism
Paul W. Meyer, New Testament and Early Christianity
Albert Rabl, 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. Doxon Jr.
William J. Peck
David Halperin
James H. Sanford
Jack M. Sasson
John H. Schutz
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 those 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; and
- demonstrated competence in French or German.

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, Islamic studies, religions of Asia, medieval and early modern studies, and religion and culture.

PhD students should expect to take at least eighteen hours 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; and
- a dissertation (and an oral defense of the dissertation).

For further information, write to the Director of Graduate Studies, Department of Religious Studies, CB# 3225, 125 Saunders Hall, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3225; e-mail: religion@unc.edu. Also see the department's Web page at www.unc.edu/depts/rel_sld.

Courses for Graduates and Advanced Undergraduates

401 [113] BIBLICAL HEBREW (3). A thorough and rigorous introduction to biblical Hebrew, with an emphasis on grammar and vocabulary acquisition. Staff.

402 [114] BIBLICAL HEBREW (3). Prerequisite: RELI 401. A continuation of RELI 401, this course builds vocabulary and grammar through translation of biblical prose. Staff.
403 [115] INTERMEDIATE CLASSICAL HEBREW (3). Prerequisite, RELI 402 or permission of the instructor. Readings in biblical, Mishnaic, and medieval poetry and prose. Staff.

404 [116] INTERMEDIATE CLASSICAL HEBREW (3). Prerequisite, RELI 403 or permission of the instructor. Continuation of RELI 403. Staff.

409 [119] GREEK NEW TESTAMENT (GREK 458) (3). Prerequisite, GREK 221 or equivalent. (On demand.) Staff.

410 [224] ARAMAIC/RABBINIC HEBREW (3). Prerequisites, RELI 403-404 or permission of the instructor. Reading in rabbinic Hebrew, or in Biblical and/or Talmudic Aramaic, with appropriate grammatical instruction. Staff.

411 [220] ADVANCED AKKADIAN (3). Readings in literary, epistolary, and juridical texts. Staff.

412 [222] UGARITIC (3). Prerequisites, RELI 403, 404. Readings in the alphabetic texts of Ras Shamra and a study of the elements of Ugaritic grammar. Staff.

413 [112] BIBLICAL COPTIC AND EARLY EGYPTIAN MONASTICISM (3). Prerequisite, permission of the 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.

422 [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.

423 [156] THEORIES OF RELIGION, ETHNICITY, AND RACE (3). Prerequisite, RELI 140 or permission of the instructor. 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. Maffly-Kipp.

424 [182] GENDER THEORY AND RELIGION (WUST 424) (3). An examination of contemporary gender theory, with particular focus on its application to the study of religion. Syers.

428 [142] RELIGION AND ANTHROPOLOGY (FOLK 428) (3). Prerequisite, junior/senior or graduate standing. Religion, studied anthropologically, as a cultural, social, and psychological phenomenon in the works of classical and contemporary social thought. Tyson and Peacock.

429 [190] RELIGION AND SOCIETY (SOCI 429) (3). Prerequisite, SOCI 101 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.

435 [130] RELIGION, NATURE, AND ENVIRONMENT (ANTH 438) (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.

440 [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, Maffly-Kipp, Tweed.

441 [148] HISTORY OF RELIGION IN AMERICA TO 1865 (3). An examination of primary sources in the history of American religion from the pre-colonial era to the Civil War. Ariel, Maffly-Kipp.


443 [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.

444 [154] GENDER AND SEX IN JUDAISM (JWST 444) (3). This seminar examines the developments in gender roles and in sexuality in contemporary Judaism. Ariel.


446 [144] MEDIEVAL SLAVIC CULTURE (3) (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 concentrations. Staff.

480 [086] MODERN MUSLIM LITERATURE (3). Stresses the diversity of modern Islamic experience by examining the works of various Muslim authors. Genres may include travelogues, memoirs, novels, sermons, and treatises, among others. Staff.


490 [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. Staff.

502 [131] MYTHS AND EPICS OF THE ANCIENT NEAR EAST (FOLK 502) (3). Prerequisite, permission of the instructor. An examination of Babylonian, Canaanite, Egyptian, Hittite, and Sumerian texts from the pre-biblical era, focusing on representative myths, epics, sagas, songs, proverbs, prophecies, and hymns. (Alternate years.) Staff.

503 [122] EXPLORING THE DEAD SEA SCROLLS (3). A comprehensive introduction to the Dead Sea Scrolls and the different Jewish groups connected with them. Staff.

512 [111] ANCIENT SYNAGOGUES (CLAR 512) (JWST 512) (3). Prerequisite, RELI 605 or permission of the instructor. Ancient synagogues in Palestine and the Diaspora from the Second Temple period to the seventh century A.D. Magness.

522 [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.

525 [311] SEMINAR IN RELIGION AND LITERATURE (3). Prerequisite, permission of the instructor. Topics vary. Saunders.

528 [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.

534 [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.

540 [152] MORMONISM AND THE AMERICAN EXPERIENCE (3). Prerequisite. RELI 140 or permission of the 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. Maffly-Kipp.
581 [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 deployment in Arab, Persian, Indic, and Turkish regions. Ernst.

582 [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.

583 [173] RELIGION AND CULTURE IN IRAN (ASIA 583) (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, and literature. Ernst.

591 [174] CHINESE WORLD VIEWS (ANTH 574) (ASIA 574) (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. Staff.

592 [176] RELIGIOUS CONFLICT AND NARRATIVE IN INDIA (HNUR 592) (3). Historical causes of violence between Hindus and Muslims in modern India. Short stories, poetry, and novels in translation are used to explore how conflicts over religious sites, religious conversion, image worship, and language use contributed to a sense of conflicting religious identity. Staff.

602 [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. Staff.


607 [127] PROBLEMS IN EARLY CHRISTIAN LITERATURE AND HISTORY (3). Prerequisite, one of the following: RELI 104, 207, or 208, or permission of the instructor. Ehrman.


617 [129] DEATH AND AFTERLIFE IN THE ANCIENT WORLD (3). Prerequisites, RELI 103, 104, 106, 161, 209 or permission of the instructor. Examination of practices and discourses pertaining to death and the afterlife in ancient civilizations of the Near East, Greece, and Rome. Pecce.

681 [179] READINGS IN ISLAMIC LITERATURE (3). Prerequisite, permission of the instructor. Study of selected religious, literary, and historical texts in Arabic, Persian, or Urdu. On demand. Staff.

688 [286] OBSERVATION AND INTERPRETATION OF RELIGIOUS ACTION (3). Prerequisite, permission of the instructor. Exercises in learning to read the primary modes of public action in religious traditions; sermons, testimonies, rituals, prayers, etc. Primary focus on construction and interpretation of texts from field observation. Tyson.

700 [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.

702 [241] RELIGION AND LITERATURE OF ISRAEL (3). A study of the religious traditions in ancient Israelite literature from the twelfth through the second centuries BCE. Staff.

704 [266] READINGS IN RELIGIONS OF THE ANCIENT NEAR EAST (3). Focusing on the Mediterranean religions before Alexander, the course consists of readings of original documents in translation, illustrating theology and cult, as well as on the major history of religious interpretations. Staff.

707 [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.


720 [244] CRITICAL AND COMPARATIVE LINEAGES IN RELIGION AND CULTURE (3). Exploration of the intellectual lineages shaping the contemporary study of religion and culture. Tyson, Saunders, Syers.


723 [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 critical thought (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.

734 [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 religious and cultural contexts. Saunders.

735 [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.

740 [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.

741 [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 pre-colonial era to the present. Maffly-Kipp.

742 [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.

743 [205] CURRENT TRENDS IN AMERICAN JUDAISM (3). The course aims at examining the current developments in American Judaism: cultural, spiritual, and social. As well as social and institutional. Ariel.

744 [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, Maffly-Kipp.


746 [312] THE CHRISTIAN-JEWISH ENCOUNTER IN AMERICA (3). Course examines the Christian-Jewish encounter in America from the seventeenth century to the present. Analyses both theological and social interactions. Ariel.

760 [207] APPROACHES TO MEDIEVAL AND EARLY MODERN STUDIES (3). Prerequisite, graduate standing in religious studies or permission of the

780 [277] METHODS IN 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: the Muslim presence in Europe and America; contemporary reflection on classical sources; modern Muslim thinkers; gender studies; and other related subjects. (Gateway course.) Ernst.

781 ANTHROPOLOGY OF ISLAM (3). Survey of anthropological and ethnographic approaches to Muslim societies with an emphasis on the multiple cultural locations of Islam, in contrast with the Orientalist definition of Islam as a purely textual religion. Staff.

801 [305] SEMINAR IN BIBLICAL STUDIES (3). Topics vary; consult the department. Ehrenman.


810 [223] READINGS IN EARLY JEWISH AND CHRISTIAN APOCALYPTIC (3). Prerequisite, permission of the instructor. Readings from apocalyptic texts in the original languages. Staff.

812 [231] DIASPORA JUDAISM (CLAR 812) (3). Prerequisite, graduate standing or permission of the instructor. Seminar examines the evidence for the ancient Jewish communities of Egypt, Rome, Asia Minor, and Mesopotamia. Magness.

813 [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.

814 [264] PROBLEMS IN RABBINIC HISTORIOGRAPHY (3). Prerequisite, RELI 712 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.


818 [307] THE Gnostic SCRIPTURES (3). Prerequisite, RELI 413 or permission of the instructor. Close reading and interpretation of ancient gnostic texts found near Nag Hammadi in Egypt. Plese.


821 [310] SEMINAR IN RELIGION AND CULTURE (3). Prerequisite, permission of the instructor. Topics vary; consult the department. Tyson, Saunders, Syers.

823 [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.

835 [313] SPACE, PLACE, AND RELIGION (3). This interdisciplinary graduate seminar focuses on religion, space, and place in the United States. Tweed.

838 TOPICS IN RELIGION AND LAW (3). This course examines selected themes in legal and social theory relating to the position of religion in contemporary American society. Syers.

840 [303] SEMINAR IN AMERICAN RELIGION (3). Topics vary. May be repeated for credit. Maffly-Kipp, Tweed, Ariel.

841 [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, and social reform. Maffly-Kipp.

842 [312] RELIGION AND CULTURAL CONTACT IN AMERICA (3). Examination of religion in America through instances of intercultural contact. Topics vary. Maffly-Kipp.

843 [266] ROMAN CATHOLICISM IN AMERICA (3). A seminar on Roman Catholicism in the United States that also considers developments elsewhere in the Western hemisphere. Focus is on ritual practice and visual culture. Tweed.

866 [269] MEDIEVAL 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.

867 [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.

870 [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 tradition. The instructor selects several case studies that illustrate both the topic and the developments within traditions. Staff.

890 [299] TOPICS IN THE STUDY OF RELIGION (3). Prerequisite, graduate standing in religious studies or permission of the instructor. Topics vary. Staff.

900 [325] READINGS AND RESEARCH (3). Prerequisite, permission of the instructor. Staff.

990 PRELIMINARY PREPARATION (Var.).

993 [393] MASTER'S THESIS (3 or more). Staff.

994 [394] DOCTORAL DISSERTATION (var.). Staff.

DEPARTMENT OF ROMANCE LANGUAGES AND LITERATURES

ERIKA LINDEMANN, Interim Chair

Professors

French
Martine Anthe (45) Twentieth-Century French Literature
Catherine A. Maley (11) Romance Linguistics
James S. Nobile, Applied Linguistics and Language Learning

Italian
Dino Cerignini (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
Marsha S. Collins (42) Golden Age Spanish Literature
Frank A. Domínguez (25) Medieval and Golden Age Spanish Literature, Ideology and Literature, Computer Applications in the Humanities
Larry D. King (36) Spanish and Romance Linguistics, Semantics and Pragmatics
Rosa Perlemuter (37) Colonial Spanish American Literature, Contemporary Spanish American Narrative

**Associate Professors**

**French**
Dominique Fisher (46) Nineteenth-Century French Literature
Hasan Melbye (64) Early Modern French and Comparative Literature, Contemporary Critical Theory, Film
Edward D. Montgomery (9) Romance Philology

**Italian**
Ennio Rao (15) Italian Renaissance

**Spanish**
Lucía Binotti (47) Medieval, Renaissance, Golden Age Philology and Linguistic Thought
José Manuel Polo de Bernabé (34) Nineteenth- and Twentieth-Century Spanish Drama and Poetry, Contemporary Critical Theory, Film
Alicia Rivero (38) Contemporary Spanish American Literature, Contemporary Critical Theory, Gender Issues, Literature and Science, Intellectual History

**Assistant Professors**

**Italian**
Federico Luissetti (69) Twentieth-Century Italian Literature, Contemporary Critical Theory

**Spanish**
Juan Carlos González Espitia (62) Nineteenth-Century Spanish American Literature, Decadentism and Nation Building
Carmen Hsu (51) Golden Age Spanish Literature, Chronicle Literature of the East Indies

**Professors Emeriti**
Césareo Bandera
Pablo Gil Casado
Angel L. Gilvet
Julio Cortés
Yves de la Quérière
Alva V. Ebersole
L. R. Sutflag Haig II
Antonio Illiano
Anthony G. Lo Ré
G. Mallory Masters
María A. Salgado
Carol Lynn Sherman
Frederick Wright Vogler

**Requirements for Advanced Degrees**

The degree of master of arts is offered with concentrations in French, Italian, 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 concentrations in: Romance languages and literatures; Romance philology; French, Italian, Spanish American, or Spanish languages and literatures.

Although graduate courses in Portuguese are listed below, they are available only to graduate students currently enrolled in the MA and PhD programs in Portuguese. These graduate programs are no longer admitting new students.

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 Walter Royal 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, Romansh, 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 Nodier Beren Nanay 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 journal, a collection of over 25,000 plays (many of them pre-1830 sueltas), and the Flaton Collection of Latin American Conradia, 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 Web page at www.unc.edu/depts/roml.

**FRENCH**

**Courses for Graduates and Advanced Undergraduates**


504 [104] CULTURAL WARS: FRENCH/U.S. PERSPECTIVES (3). This course examines the limits of universalism in today's "multicultural" France and how the European Union will affect French universalism and French resistance to identity politics. Fisher.

564 [126] HISTORY OF THE FRENCH LANGUAGE (LING 564) (3).
Prerequisite, FREN 300 or permission of the instructor. The phonology, morphology, and syntax of French are traced from the Latin Foundation to the present. Lectures, readings, discussions, and textual analysis. Spring. (Alternate years.) Staff.

565 [145] FRENCH PHONETICS AND PHONOLOGY (LING 565) (3).
Prerequisite, FREN 300 or equivalent, or permission of the instructor. The study of sounds as system in modern standard French. Lecture, discussion, and laboratory practice in practical phonetics according to individual needs. Spring. Staff.

566 [146] STRUCTURE OF MODERN FRENCH (LING 566) (3).
Prerequisite, FREN 300 or equivalent, or permission of the instructor. Introduction to phonology, morphology, and syntax of modern standard French. Application of modern linguistic theory to the teaching of French. Fall. Maley.

**Courses for Graduates**

601 [101X] FRENCH FOR READING I (3). French language for reading. For students with no background in French or those needing a review of grammatical structures and vocabulary in preparation for FREN 602. Fall. Staff.
602 [102X] FRENCH FOR READING II (3). Prerequisite, FREN 601 or equivalent background in French. Focus on reading French in preparation for the writing of a graduate degree. This course satisfies the requirement for most departments. Spring. Staff.


716 [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. Andre, Fisher.

721 [221] OLD FRENCH (3). An introductory course designed to enable students to read medieval texts with rapidity and accuracy. Phonology, morphology, semantics, and syntax. Montgomery.


734 [234] THE FRENCH CLASSICAL THEATRE (3). Readings in sixteenth- and seventeenth-century French theater, Cibello, and, Voltaire. Selection of texts will be announced by the instructor. Fall. Staff.


748 [248] FRENCH LITERATURE OF THE FOURTEENTH AND FIFTEENTH CENTURIES (3). A study of literary trends of the period, with emphasis on the rise of the prose nouvelle and lyric poetry from Machaut through Villon. Montgomery.

761 [261] STUDIES IN FRENCH RENAISSANCE (3). Interdisciplinary seminar on a cultural topic or a theme through readings in literary and nonliterary texts. Melchy.


774 [274] THE MORALISTS (3). A study of the works of Pascal, La Rochefoucauld, Bosuet, La Bruyère, and La Fontaine. Staff.


784 [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 Encyclopedists, and others. Staff.


793 [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. Fisher, staff.


795 [295] THE FRENCH REALISTIC AND NATURALISTIC NOVEL (3). A study of major Realistic and Naturalistic novelists (Flaubert, the Goncourts, Daudet, Zola, Maupassant, and Huysman). Staff.


830 [330] SEMINAR (3). Staff.

840 [340] SPECIAL READINGS (Vcr.). (For doctoral students only) Members of the graduate faculty.

993 [393] MASTER'S THESIS (3). Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3). Research in a special field under the direction of a member of the graduate faculty. Members of the graduate faculty.

ITALIAN

Courses for Graduates and Advanced Undergraduates

503 [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. Staff.

511 [111] SURVEY OF ITALIAN LITERATURE AND CULTURE I (1 to 1600) (3). Permission of the instructor for undergraduates: none for graduates. The survey is based on anthologies, with particular attention to authors and texts included in the current departmental reading lists. Rao.

512 [112] SURVEY OF ITALIAN LITERATURE AND CULTURE II (1600 to present) (3). Permission of the instructor for undergraduates: none for graduates. See description under ITAL 511.


535 [135] BOCCACCIO AND EUROPEAN NARRATIVE (CMPL 535) (3). Boccaccio's Decameron within the context of previous narrative traditions and the subsequent development of narrative in Europe. Class discussions in English; readings in Italian for majors and in translation for nonmajors. Cervigni.


671 [171] THE SEVENTEENTH AND EIGHTEENTH CENTURIES (3). Prerequisite, ITAL 204, 402, or equivalent. The Age of the Baroque. Campanella, the new genres, Tasso. The literature of Arcadia, the Enlightenment, Goldoni, Parini, and Alfieri. Luissetti.

681 [181] ITALIAN ROMANTICISM (3). Prerequisite, ITAL 204, 402, or equivalent. Pre-romanticism; Alfieri; the lyrics and novels of Foscolo, Leopardi, Manzonii. The Romantic drama from Pindeemonte to Niccolini. Luissetti.

682 [182] ITALIAN LITERATURE IN THE SECOND HALF OF THE NINETEENTH CENTURY (3). Prerequisite, ITAL 204, 402, or equivalent. The major literary forms in the second half of the century with particular regard to Verismo, Verga, Carducci, Pascoli, Scapigliatura, and Decadentismo. Staff.

684 [194] MODERN ITALIAN POETRY (3). Prerequisite, ITAL 204, 402, or equivalent. The major poets and trends of the late nineteenth and twentieth centuries: Decadentism, Cuscuzadri, Futurism, Ermetismo. Luissetti.

695 [195] MODERN ITALIAN FICTION (3). Prerequisite, ITAL 204, 402, or equivalent. D'Annunzio, Svevo, Moravia, Pasti, Vittorini, Calvino, etc. Luissetti.

696 [196] MODERN ITALIAN DRAMA (3). Groteschi, Pirandello, Italian drama after World War II, Eduardo de Filippo, etc. Luissetti.

Courses for Graduates

631 [231] DANTE I (3). Prerequisite, graduate standing or permission of the instructor. Brief presentation of Dante's life and works, and study of the Divine Comedy in the original (Inferno and first five cantos of Purgatorio). Cervigni.

632 [232] DANTE II (3). Prerequisite, graduate standing or permission of the instructor. Complete critical reading of the Divine Comedy, starting with Purgatorio. Under satisfactory conditions Dante I will not be a prerequisite for Dante II. Cervigni.


830 [330] SEMINAR (3). Special study and research in set topics; e.g., Seicento and Baroque, autobiography, Renaissance theater, literature and film. Staff.

840 [340] SPECIAL READINGS (Var.). A tutorial on a topic agreed upon by the student and a member of the graduate faculty. Members of the graduate faculty.

993 [393] MASTER'S THESIS (3). Research in a special field under the direction of a member of the graduate faculty. Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3). Research in a special field under the direction of a member of the graduate faculty. Members of the graduate faculty.

PORTUGESE

Courses for Graduates and Advanced Undergraduates

501 [101] SURVEY OF PORTUGUESE LITERATURE I (3). Prerequisite, PORT 204, 402, or equivalent. An introduction to Portuguese literature from its origin through the eighteenth century. Rector.

502 [102] SURVEY OF PORTUGUESE LITERATURE II (3). Prerequisite, PORT 204, 205, 402, or equivalent. A survey of Portuguese literature of the nineteenth and twentieth centuries. Rector.

503 [103] SURVEY OF BRAZILIAN LITERATURE I (3). Prerequisite, PORT 204, 205, 402, or equivalent. A survey of Brazilian literature of the colonial period and nineteenth century. Rector.

504 [104] SURVEY OF BRAZILIAN LITERATURE II (3). Prerequisite, PORT 204, 205, 402, or equivalent. A survey of major writers of twentieth-century Brazilian literature. Clark.

526 [126] HISTORY OF THE PORTUGUESE LANGUAGE (3). Prerequisite, PORT 402 or equivalent, or permission of the instructor. Survey of the history of Portuguese, with emphasis on the characteristics of Brazilian Portuguese and the factors underlying them. Rector.

535 [135] BRAZILIAN DRAMA (3). Prerequisite, PORT 402 or equivalent, or permission of the instructor. A study of representative Brazilian plays of the twentieth century, with a review of the development of the theater in Brazil. Clark.

Courses for Graduates


704 [206] LUSO-BRAZILIAN BIBLIOGRAPHY AND METHODOLOGY (3). An introduction to bibliography and methodology in Luso-Brazilian literary and linguistic research. (On demand.) Clark, Rector.


712 [212] THE BRAZILIAN NOVEL (3). Extensive reading of representative Brazilian novels from the second half of the nineteenth century to the present. Clark.

713 [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. Clark, Rector.


731 [231] CAMÔES (3). The works of Camões (epic, lyric poetry, and drama) are studied with reference to the contemporary Iberian historical and literary background. Rector.

791 [291] PORTUGUESE 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. Staff.

830 [330] SEMINAR IN PORTUGUESE LITERATURE (3). Rector.

833 [333] SEMINAR IN LUSO-BRAZILIAN LINGUISTICS (3). Rector.

835 [335] SEMINAR IN BRAZILIAN LITERATURE (3). Clark, Rector.

840 [340] SPECIAL READINGS (Var). Members of the graduate faculty.

993 [393] MASTER'S THESIS (3). Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3). Members of the graduate faculty.

**ROMANCE**

Courses for Graduates and Advanced Undergraduates

660 [164] VIOLENCE AND RELIGION IN LITERATURE FROM EPIC TO NOVEL (PWAD 664) (3). Prerequisite, permission of the instructor. The sacred character of epic violence and its historical decline through a process of religious desacralization associated with the emergence of the modern novel. Staff.

670 [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. King.

700 [200] THEORIES AND TECHNIQUES OF TEACHING (3). Required of all new graduate instructors. Exploration of theoretical issues in teaching Romance languages with their practical applications, including the integration of technology. Fall. Jarausch/Cowell.

751 [201] INTRODUCTION TO MEDIEVAL STUDIES (3). Interdisciplinary course to introduce graduate students to the sources, methods, and approaches of Medieval Studies. Staff.

755 [205] WORKSHOP ON LITERARY THEORY AND RESEARCH METHODS (1.5). An introduction to contemporary theoretical positions to acquaint the student with issues posed by formalism, Marxism, feminism, and deconstruction. Orientation to Romance bibliography and research methods. Staff.

820 [220] VULGAR LATIN (3). An investigation of the development of the stemma plebeius from its earliest manifestations to its fragmentation into the Romance vernaculars. Montgomery.


830 [330] SEMINAR IN ROMANCE LANGUAGES (3). Staff.

840 [340] SPECIAL READINGS (Var). Members of the graduate faculty.


993 [393] MASTER'S THESIS (3). Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3). Members of the graduate faculty.

**SPANISH**

Courses for Graduates and Advanced Undergraduates

403 [103] ADVANCED COMPOSITION (3). Prerequisite, SPAN 300. 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.

405 [105] SPANISH FOR HEALTH CARE PROFESSIONALS (3). Prerequisite, SPAN 102 or equivalent. Distance course requiring access to computer with CD drive. Focuses on improving communication within the context of Latino/a immigrant culture in health care settings. Staff.

610 [110] THE GENERATION OF 1898 (3). Prerequisite, SPAN 371, 372, or 373. Study of innovative literary forms and techniques of the Generation of 1898 as seen through representative authors such as Azorín, Baroja, Machado, and Valles-Inclán. Casado, Polo de Bernabé.

613 [113] COLONIAL AND NINETEENTH-CENTURY SPANISH AMERICAN LITERATURE (3). Prerequisites, SPAN 371, 372, or 373. An advanced survey of the literary works written in Spanish America from the sixteenth through the nineteenth centuries, with emphasis on their rhetorical foundations and historical, political, and aesthetic connections. Peelmeyer, Rivera.

617 [117] CERVANTES (3). Prerequisite, SPAN 371, 372, or 373. The works of Cervantes, stressing the Quijote and the novellas ejemplares, with consideration of the background of Renaissance prose (the romance of chivalry, pastoral, picaresque novel). Collins, staff.


635 [135] MODERN SPANISH DRAMA (3). Prerequisite, SPAN 370, 371, or 373. A study of plays by principal Spanish dramatists of the twentieth century. Polo de Bernabé.


Courses for Graduates

601 [101X] SPANISH FOR READING I (3). For students with no background in Spanish or those needing a review of grammatical structures and vocabulary in preparation for SPAN 602. Fall. Staff.

602 [102X] SPANISH FOR READING II (3). Prerequisite, SPAN 601 or equivalent background in Spanish. Focus on Spanish for the reading knowledge exam for graduate degrees. SPAN 602 satisfies the requirement for most departments. Spring. Staff.

701 [201] BEGINNINGS OF CASTILLAN HEGEMONY TO 1369 (3). Early medieval romance period (eleventh century to 1369). The establishment of Castilian hegemony studied through a variety of texts (chronicles, miracles, collections of law and exempla, fuentes, epic and lyric poems). Dominguez.

702 [202] THE TRASTAMARA DYNASTY: 1369 TO 1504/1516 (3). The final shaping of Castile, the beginning of nationhood, and American expansion studied through a variety of texts (chronicles, books of chivalry, lyric and narrative poems, sentimental novels, and travel narratives). Dominguez.
707 [207] THE HISPANIC FILM: THEORY/CULTURE/LITERATURE (3). A study of Spanish and Spanish American film, with special attention to problems of an aesthetic and ideological nature and to the relationships between literature, culture, and film. Polo de Bernabé.


712 [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, Benet, and others. Casado.


715 [215] SPANISH POETRY AND DRAMA OF THE NINETEENTH AND EARLY TWENTIETH CENTURY (3). Study of Spanish dramatic poets and poets in the period in the context of the nineteenth-century aesthetics and literary movements such as romanticism, post-romanticism, symbolism, and modernism. Polo de Bernabé.

716 [216] CONTEMPORARY LYRIC POETRY (3). Major poets from the Generation of 1927 to the present. Polo de Bernabé.

721 [221] SPANISH HISTORICAL LINGUISTICS (3). Provides a detailed and comprehensive survey of the Spanish language, tracking its development from its Indo-European ancestors to modern usage and examining its phonology, morphology, syntax, vocabulary, lexis, and semantics. Binotti.

722 [222] THE HISTORY OF THE SPANISH LANGUAGE (3). Traces the development of the Spanish language from Latin to the present, focusing upon cultural, literary, and historical factors that have contributed to its evolution. Binotti.

725 [225] GOLDEN AGE PROSE (3). The major prose works of the Golden Age, excluding those of Cervantes. Hsu, staff.

737 [237] TOPICS IN CONTEMPORARY LITERARY AND CULTURAL THEORY (CMPL 737) (3). Study of major topics in modern theory such as identities, time, space, history, nation, language, text, and image, from modernity to post-modernity and beyond. Polo de Bernabé.

738 [238] SPANISH INTELLECTUAL HISTORY (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. Binotti.

750 [250] THE EIGHTEENTH CENTURY IN SPAIN (3). Readings from eighteenth-century authors in various genres. Casado.

890 [330] SEMINAR (3). Staff.

891 [331] SEMINAR IN MODERN SPANISH LITERATURE (3). Staff.

892 [332] SEMINAR IN SIXTEENTH- AND SEVENTEENTH-CENTURY LITERATURE (3). A thorough study of a scholarly topic not covered in any other Goldene Age course. Representative topics include the scope of tragedy in the Comedia, Calderón's sacramental plays, and others. Staff.

840 [340] SPECIAL READINGS (Var.). (Doctoral students only). Members of the graduate faculty.

993 [393] MASTER'S THESIS (3). Members of the graduate faculty.

994 [394] DOCTORAL DISSERTATION (3). Members of the graduate faculty.

**SPANISH AMERICAN**

Courses for Graduates and Advanced Undergraduates

613 [113] COLONIAL AND NINETEENTH-CENTURY SPANISH AMERICAN LITERATURE (3). Prerequisite: SPAN 371, 372, or 373. An advanced survey of the literary works written in Spanish America from the sixteenth through the nineteenth centuries, with emphasis on their rhetorical foundations and historical, political, and aesthetic connections. Perelmaner, González Espiña.

614 [114] MODERNIST AND CONTEMPORARY SPANISH AMERICAN LITERATURE (3). Prerequisite, SPAN 371, 372, or 373. An advanced survey of the literary works written in Spanish America from the 1880s through the present, with emphasis on their rhetorical foundations and historical, political, and aesthetic connections. Perelmaner, Rivero, González Espiña.


Courses for Graduates


743 [243] TOPICS IN SPANISH AMERICAN PERFORMANCE STUDIES (3). A thorough grounding in contemporary plays in the Spanish-speaking Americas. Topics include performing class, ethnicity, and gender; parody; staging nations; politics of metatheatre; post-modern agency; and the performance of everyday life. Staff.

744 [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. Perelmaner.

745 [245] THE VANQUARDS (CMPL 745) (3). The theory and practice of innovative writing, especially since the nineteenth century. Topics include the historical Spanish American and Anglo-European vanguards, experimental literature, modernismo's literary rebellion, gender, and cultural studies. Rivero, González Espiña.

746 [246] THE NOVEL IN SPANISH AMERICA (3). The novel to 1960. The course examines Romanticism, Realism, Naturalism, Modernism, and the new national literatures through such authors as Avellaneda, Rlest Gana, Silva, Asturias, Carpenter, Riufo, Bombal, and Vargas Llosa. González Espiña.

835 [335] SEMINAR IN SPANISH AMERICAN LITERATURE (3). The focus of this seminar will vary, according to the instructor. Staff.
CURRICULUM IN RUSSIAN AND EAST EUROPEAN STUDIES

ROBERT M. JENKINS, Director

Professors
Richard N. Andrews, Public Policy
Christopher Browning, History
Richard R. Cole, School of Journalism and Mass Communication
Carolyn Connor, Classics
Patrick Conway, Economics
Douglas Crawford-Brown, Environmental Sciences
Carl Ernst, Religious Studies
Jaroslav Folda, Art
David M. Griffiths, History
H. Garland Hershey, School of Dentistry
Iva Hertz-Ficociello, School of Public Health
Beth Holmgen, 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
Robbie Lubker, School of Education
David McNelis, Carolina Environmental Program
Louise McReynolds, History
Eric Mlyn, International Studies
Barbara Moran, School of Information and Library Science
Michael Peck, School of Medicine
John Pickles, Geography
David Pike, Germanic Languages
Barry Popkin, Carolina Population Center
Donald J. Raleigh, History
Steven S. Rosefeld, Economics
Robert L. Stevenson, School of Journalism and Mass Communication

Associate Professors
Lawrence E. Feinberg, Slavic Languages and Literatures
Charles Kurzman, Sociology
Timothy McKeown, Political Science
Christopher Putney, Slavic Languages and Literatures
Michele Rivkin-Fish, Anthropology
Michael Vost, Music
Thomas Rickert, School of Public Health
David Tate, School of Medicine
Ivana Vuletic, Slavic Languages and Literatures

Assistant Professors
Chad Bryan, History
Suzanne Gulledge, School of Education
Zlatako Mese, Religious Studies
Graeme Robertson, Political Science
Mark Sorenson, Anthropology
Silvia Tomasikova, Anthropology
Milada Vachudova, Political Science
Jonathan Weiler, Russian and East European Studies
Irene Zipper, School of Social Work

Lecturer
Eleonora Mazoomdina, Slavic Languages and Literatures

Professors Emeriti
Joseph Andere, History
Samuel H. Baron, History
Paul Debroteny, Slavic Languages and Literatures
Vasa D. Mihailovich, Slavic Languages and Literatures
Anthony R. Oberschall, Sociology
Robert Rupen, Political Science
James D. Stasheff, Mathematics
Chuck Stone, School of Journalism and Mass Communication

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 or Eastern language (Bulgarian, Czech, Hungarian, Macedonian, Polish, Russian, or Serbo-Croatian).
- Completion of HIST 785, RUES 710, and RUES 730.
- 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 the thesis project.

Further information may be obtained from Robert Jenkins, Director, 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: rjenkins@email.unc.edu. Web: www.unc.edu/depts/slavic.

Courses for Graduates and Advanced Undergraduates

RUES 468 [168] CONFLICT AND INTERVENTION IN THE FORMER YUGOSLAVIA (PWAD 469) (3). Focuses on ethnic and political conflicts in the former Yugoslavia and efforts by the international community to end conflict and promote peace and reconstruction.

RUES 694 [098] HONORS IN RUSSIAN AND EAST EUROPEAN STUDIES (3). Independent research and writing of an honors thesis for students majoring in Russian and East European studies.

RUES 710 [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.

RUES 730 [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 Eastern European countries and successor states of the former Soviet Union in their transition from communism to democracy. Spring. Jenkins, Robertson.


RUES 991 [299] INDEPENDENT STUDY IN RUSSIAN AND EAST EUROPEAN STUDIES (Var). Allows students to undertake advanced research under the supervision of a faculty member. Fall, spring, and summer. Staff.

RUES 993 [393] MASTER'S THESIS (3). Fall, spring, and 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. Janda (8) West Slavic Literatures and Cognitive Linguistics

Associate Professors
Lawrence Feinberg (3) Slavic Linguistics, Poetics
Christopher Putney (12) Russian Literature, Medieval Slavic Culture
Ivana Vulicic (13) Serbian and Croatian Language and Literature, Russian Literature

Assistant Professor
Radislav Lapushin (14) Russian Literature

Lecturer
Eleonora Magomedova, Russian Language

Professors Emeriti
Paul Debecancy
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 proseminars, SLAV 700 (one credit hour); register for three credits of SLAV 993 (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: a) take one course in either medieval or eighteenth-century Russian literature and culture; and b) take four courses to be distributed, with graduate advisor supervision, in nineteenth- and twentieth-century Russian literature and culture. S/he must also take two courses in Slavic linguistics, Evolution of Russian (RUSS 400), and Structure of Russian (RUSS 405), and pass or place out of Fourth-Year Russian Conversation and Reading (RUSS 412).

The master's candidate in comparative Slavic and East European literatures and cultures is required to: a) take three courses in Russian literature and culture; and b) take two comparative Russian and Slavic/East European literature and culture courses, or two exclusively non-Russian Slavic/East European literature and culture courses. S/he must also take two courses in Slavic linguistics, Evolution of Russian (RUSS 400) or Structure of Russian (RUSS 405) 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.

The master's candidate in Slavic linguistics is required to take: (1) at least three courses in Slavic linguistics, including Evolution of Russian (RUSS 400) and Structure of Russian (RUSS 405); (2) two courses (one year) in a modern Slavic/East European language other than Russian; and (3) at least two courses in Russian or another Slavic/East European literature. S/he must take at least one course outside the department in linguistics, normally Introduction to Historical and Comparative Linguistics (LING 525) or Linguistic Phonetics (LING 520). A master's candidate in Slavic linguistics must also either pass or place out of Fourth-Year Russian Conversation and Reading (RUSS 412). 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 or comparative Slavic and East European literatures and cultures.

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 provide a satisfactory comprehensive examination, which must be taken 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 960 (research and writing of the dissertation proposal).

Students must register for at least six credits of SLAV 994 (dissertation). The final step after writing the dissertation under the supervision of a faculty advisor 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 Medieval and Baroque Russian Literature (RUSS 859) 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.

BULGARIAN


403, 404 [103, 104] INTERMEDIATE BULGARIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Bulgarian. Fall and spring. Staff.

405, 406 [105, 106] ADVANCED BULGARIAN (3 each). Advanced readings and discussion in Bulgarian in humanities and social science topics. Staff.

411 [111] BULGARIAN LITERATURE (3). Introduction to Bulgarian literature in English translation. Some readings in Bulgarian for students who can read the language. Staff.
CZECH


411 [111] CZECH LITERATURE (3). Introduction to Czech literature in English translation. Some readings in Czech for students who can read the language. Staff.

HUNGARIAN


403, 404 [103, 104] INTERMEDIATE HUNGARIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Hungarian. Staff.

425 [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


403, 404 [103, 104] INTERMEDIATE MACEDONIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Macedonian. Fall and spring. Staff.

405, 406 [105, 106] ADVANCED MACEDONIAN (3 each). Advanced readings and discussion in Macedonian in humanities and social science topics. Staff.

POLISH


RUSSIAN

400 [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.


406, 407 [105, 106] ADVANCED RUSSIAN GRAMMAR (3). Prerequisite, RUSS 204. A comprehensive review of Russian grammar on an advanced level, emphasizing reading and writing skills. Fall and spring. Staff.

411, 412 [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.

413 [207] RUSSIAN STYLISTICS (3). Prerequisite, RUSS 412. 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.

414 [208] RUSSIAN STYLISTICS. Second semester. Prerequisite, RUSS 413. Continuation of RUSS 413 at a more advanced level. Spring. Magomedova.

425 [125] TOPICS IN RUSSIAN LITERATURE (3). Material not presently covered in any course. The specific topic is announced in advance. Staff.


435 [135] LITERATURE AND MUSIC IN RUSSIA (3). Explores the use that 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 an art form. Spring. Feinberg.


464 [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.

465 [165] CHEKVH (3). Study of major works of Chekhov and a survey of contemporary authors and literary trends relevant to his creative career. Readings in Russian for majors, in English for nonmajors, Spring. Holmgren, Putney.

471 [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.

475 [175] LITERATURE OF RUSSIAN TERRORISM: ARSON, BOMBS, MAYHEM (PWAD 475) (3). Literary representations of Russian revolutionaries and terrorists in the nineteenth and early twentieth centuries. Readings by
Dostoevsky, Chernyshevsky, Bel'k, Joseph Conrad, and by some of the terrorists themselves. Fall. Levine.

479 [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.

486 [186] CONTEMPORARY RUSSIAN WOMEN'S WRITING (WMST 486) (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.

493 [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.

511 [211] RUSSIAN MASS MEDIA. Prerequisites, RUSS 411, RUSS 412 or equivalent. Module 1. Fifth-year Russian - to expand and master the knowledge of the language necessary for understanding the ongoing changes in different spheres of Russian society (political, social, economical, cultural, etc.).

512 [212] RUSSIAN MASS MEDIA. Prerequisites, RUSS 411, RUSS 412 or equivalent. Module 2. Fifth-year Russian - to expand and master the knowledge of the language necessary for understanding the ongoing changes in different spheres of Russian society (political, social, economical, cultural, etc.).

560 [160] RUSSIAN SENTIMENTALISM AND ROMANTICISM (3). Prerequisite, RUSS 307 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.


851 [251] PUSHKIN (3). Study of major works of Pushkin. Fall. Staff.

859 [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 the Kievan Rus' down to Grand Muscovy. Readings in English for non-Slavic concentrators. Putney.


866 [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.

867 [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.


950 [350] SEMINAR IN RUSSIAN LITERATURE (3). Prerequisite, permission of the instructor. Seminar on selected topics in Russian literature.

403, 404 [103, 104] INTERMEDIATE SERBIAN AND CROATIAN (3 each). Continuation of the proficiency-based instruction begun in Elementary Serbian and Croatian. Vuletic.

405, 406 [105, 106] ADVANCED SERBIAN AND CROATIAN (3 each). Advanced readings and discussion in Serbian and Croatian in humanities and social science topics. Vuletic.

411 [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

405 [105] INTRODUCTION TO SLAVIC LINGUISTICS (3). The phonological and grammatical history of Slavic languages from the late Indo-European to the split of the Common Slavic linguistic unity. Spring. Feinberg, Janda.


425H (125H) TOPICS IN SLAVIC LITERATURE (3).


464 [164] IMAGINED JEWS; JEWISH THEMES IN POLISH AND RUSSIAN LITERATURE (JWST 464) (3). "Imagined Jews" explores the fictional representation of Jewish life in Russia and Poland by Russian, Polish, and Jewish authors from the eighteenth century to the present. Holmgren, Levine.


467 [167] LANGUAGE AND POLITICAL IDENTITY (PWAD 467) (3). The role of linguistic controversies in the polarisation of ethnic relations in the former Yugoslavia. Topics: the Yugoslav idea, language and nationalism, ethnic tension, and the unleashing of ethnic conflicts. Janda.

469 [169] SLAVIC IMMIGRANT EXPERIENCE IN LITERATURE (JWST 469) (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. Fall and spring. Holmgren, Levine.

470 [170] TWENTIETH-CENTURY RUSSIAN AND POLISH THEATER (3). A comparative survey of the major trends in twentieth-century Russian and Polish dramaturgy and theatrical production, with attention to aesthetic, professional, and political connections between the two. Holmgren.

490 [125] TOPICS IN SLAVIC LITERATURE (3). Material not presently covered in any course. The specific topic is announced in advance. Staff.


560 [160] READING OTHER CULTURES: ISSUES IN LITERARY TRANSLATION (CMPL 560) (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.
SCHOOL OF SOCIAL WORK

JACK M. RICHMAN, Dean

Distinguished Professors
Oscar A. Barbarin Ill (380) 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
Mark W. Fraser (229) Children and Families at Risk, Substance Abuse and Other Forms of Antisocial Behavior, Research Training and Scholarship
Maeda J. Galinsky (355) Social Group Work Practice, Theory and Research, Development and Evaluation of Social Intervention, Multicultural Practice
Charles L. Ubel (227) Social Program Evaluation, Quantitative Research Methods, Human Services Management

Marie O. Winfield (95) Community Practice, Social Administration, Services to Families and Children, Community Development, Social Work and the Law

Professors
Iris B. Carlin-DeNey (239) Social Welfare History (Especially African Americans and the Progressive Era), Rural Elderly African American Women and Social Support
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
Kimberly J. Stutte-Guertler (354) Managed Care, Professional Ethics, Social Work Education, Bereavement
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 Professor
Nancy S. Dickinson (304) 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
Shey Zuo (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 Chemical 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

Clinical Associate Professors
Katherine M. Dunlap (54) Preschool Education, Empowerment of Parents and Parent Education, Medical Social Work, Violence Prevention
George M. Gottfried (018) Native Americans, Residential Institutions for Children, Birth Order
Kelly B. Reath (107) Rural Human Services, Policy Implementation, Distance Education
Mary Anne P. Salmon (219) Aging Issues (with Focus on Underserved Populations), Survey Development, Aging and Demographics, Family Caregiving
Anna M. Scheyett (222) Severe Mental Illnesses, Mental Health Consumers, Case Management, Mental Health Policy
Florence G. Sollohs (104) Frail Elders, Clinical Interdependence, Community Organizational Planning, Nursing Homes and Other Institutional Settings, Home Health
Evelyn S. Williams (105) Child Abuse Prevention; Domestic Violence; Cultural Competence; Staff Development, Training, and Supervision; Organizational Change
Research Assistant Professor
Irene Nathan Zipper (271) Early Childhood Intervention, Family Support, Children’s Mental Health Services, Service Coordination/Case Management, Service Integration

Research Associate Professors
Dean F. Duncan III (280) Program Evaluation, Management of Human Services Agencies, Research Methods, Community Collaboration, Achievement Gap
Roderick A. Rose (424) Research Methods, Program Evaluation, Academic Success, Technology in Human Services

Assistant Professors
Mimi V. Chapman (413) Social Work Practice, Child Abuse and Neglect, Children’s Health and Mental Health, Immigration, Acculturation, Mental Health
Michal Grinstein-Weiss (443) Asset Development Policies for Low-income Families, Saving Social and Economic Development, Program Evaluation, Poverty and Inequality
Rebecca J. Macy (421) Interpersonal and Relationship Violence, Coping with Personal Threats and Trauma, Prevention and Practice Interventions
Susan 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

Clinical Assistant Professors
Deborah A. Barrett (425) Clinical Practice: Health, Illness, and Disability; Reproductive Policy; Social Movements: Global Culture
Rebecca B. Brigham (426) Child Welfare and Public Policy, Foster Care and Adoption, Adult Learning Theory
Jean L. Byassee (291) Children’s Mental Health, Parent/Provider Partnerships, Learning and Attention Disorders in Children and Adults
Joanne S. Cate (260) Child Welfare, Family-Centered Practice, Adolescence, Work with Foster Care and Adoptive Parents, Effects of Disasters on Families and Children
Lane G. Cooke (360) Family-Centered Services/Home-Based Services Delivery Systems in Communities and Neighborhoods, Family Preservation Programs, Child Abuse/Neglect, Family Violence, Rapid Assessment and Planning
Gregory S. Cooper (427) Social Work Education Administration, Educational Outreach Programs for At-Risk Youth, Gender Roles, Health Disparities
Melissa D. Grady (428) Mental Health, Clinical Practice, Sexual Violence/Trauma, Clinical Theory
Sherry M. Haynsworth (275) Substance Abuse, Women's Issues, Spirituality and Psychotherapy, Experiential Therapies, Self-Psychology, Autism Spectrum Disorders
Anne C. Jones (429) Women's Health Issues, International Social Work
John D. McPherson (397) Family and Children’s Services, Child Welfare, Improving Outcomes for Families
Margaret L. Morse (398) Aging, Computer-Based Training, Web Site Design
Wanda F. Reeves (418) Public Child Welfare, Family-Based Service, Public Human Services Management/Leadership
Tina M. Souders (431) Professional Ethics, Social Work and the Law, Child/Adolescent Mental Health, Nonprofit Law
Cynthia M. Wiford (420) Addiction, Distance Learning, Program Consultation

Research Assistant Professors
Hye-Chung Kim (432) Program Evaluation, Management of Human Services Agencies, Research Methods, Community Collaboration, Social Welfare Policy and Program Analysis
Andrea Y. Meier (382) Multi-Method Intervention Research Methodologies, Therapeutic Applications of the Internet, Prevention and Treatment of Depression/Substance Abuse, Social Support Groups
Laurie J. Self-Campbell (419) Community-Based Services, Mental Illness and Identity, Early Intervention, Children’s Mental Health, Activity-Based Therapies, Intervention Design and Evaluation

Clinical Instructors
Lynden W. Bolton (294) Substance Abuse Services, Mental Health
Carolyn S. Butler (433) Addiction, HIV/AIDS, Homelessness, Non-Profit Management
Steven H. Day (387) Program Evaluation, Delinquency Prevention, Community Planning and Development
Jordon A. Flick (298) Clinical Safety, Suicide, Mental Health, Child Welfare
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
John L. Hughes (435) Mental Health, Substance Abuse, Children’s Mental Health, Child and Adolescent Development, Parenting, Crisis Intervention
Aaron H. Jackson (396)
Kathy D. Johnson (437) Child Sexual Abuse, Forensic Interviewing, Child Pornography, Dynamics of Incestuous Families, Multidisciplinary Teams, Developing Protocols, Multivictim/Multiparperpetrator Day Care Investigations, Effects of Child Maltreatment on Brain Development
Kathleen N. Lowe (438) Older Adults, End of Life Issues, Doctor-Patient Relationships, Long-Term Care
Ronald L. Mangum (439)
Deborah G. Wall (441)
Martha A. Weems (442) Clinical Practice, Substance Abuse, Mental Health, Crisis Intervention
Anne S. Worth (405) Substance Abuse, Mental Health, Human Resource Management, Workplace Violence Prevention
Ronni L. Zuckerman (444) Program Evaluation, Adolescent Pregnancy Prevention, Women’s Health Issues

Research Instructor
Harlene Gogan (391) Child Welfare, Foster Care, Child Abuse and Neglect, Data Analysis

Lecturer
Barbara L. Leach (395) Mental Illness, Children’s Issues, Family Advocacy

Professors Emeriti
Philip W. Cooke
S. Rachel Dedmon
Andrew W. Dobekstein
H. Carlisle Henley Jr.
Albert L. Johnson
Albert W. King
Heretessa K. McClinton
Morton I. Teicher
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 prepares students for advanced practice with a particular population and social unit. It includes three fields of practice: aging, health/mental health, and families and children. The Management and Community Practice Concentration prepares students for working in social work administration, management, and community practice and includes four fields of practice: aging, broad-based human services, health/mental health, and families and children.

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 use elective credits to 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 (GRE) 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 the humanities.

Part-time programs are located in Durham and Asheville. The first year of graduate professional education in these programs is taken on a part-time basis over two consecutive 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 as a full-time student on the Chapel Hill campus.

The normal time period for degree completion is four semesters of full-time study. However, graduates of undergraduate social work programs which are accredited by the Council on Social Work Education and who meet specific course and admissions requirements are eligible to apply for either full-time or part-time advanced standing programs. In the full-time advanced standing program at Chapel Hill, students fulfill the degree requirements in 12 months through summer sessions and two semesters. A part-time advanced standing program is located in Winston-Salem, North Carolina, and allows students to complete degree requirements in 18 months through two summer sessions and three semesters. The undergraduate major course work is considered approximately equivalent to the first year of full-time 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 (GRE) 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

400 [106] RACISM IMPLICATIONS FOR HUMAN SERVICES (AFAM 400) (3). This course’s organizing focus will be how to work with minority groups, especially African Americans. The conceptual framework will be directed toward relationships building to enhance service delivery.

401 [129] MANAGING THE EFFECTS OF DISASTERS ON FAMILIES AND CHILDREN (3). Designed to examine the effects that disasters have on children, their families, and on communities, this course gives students an understanding of how to deal with survivors’ reactions to trauma and the likelihood of long-term damage when disasters strike.

402 [198] FOUNDATIONS OF FAMILY BEHAVIOR (3). Review of family research and interventions that serve as a foundation for promoting constructive family development and interactions.

409 SPECIAL TOPICS IN PRE-PROFESSIONAL HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT (1-6).

469 SPECIAL TOPICS IN PRE-PROFESSIONAL DIRECT PRACTICE (1-6).

490 [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. Includes a service learning requirement.

491 [151] ADVOCACY STRATEGIES FOR SOCIAL CHANGE (4). Course examines different types of advocacy strategies and their use in efforts to enhance the delivery of services to disadvantaged populations and to promote social change in communities.

499 SPECIAL TOPICS IN PRE-PROFESSIONAL MACRO PRACTICE (1-6).

Courses for Graduates

500 [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.


510 [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.

520 [220] SOCIAL WORK PRACTICUM I (3). 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.)

521 [221] SOCIAL WORK PRACTICUM II (3). A continuation of SOWO 520, providing opportunities for students to demonstrate increased ability to assess, plan, administer, and evaluate appropriate social work practice interventions. (Field fee: $300.)

522 [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. Serves to bridge the BASW practicum with advanced concentration practicum. (Field fee: $300.)

523 [217] FOUNDATION FIELD SEMINAR I (1). Course is designed to assist students in integrating and applying classroom learning with the direct experience of the foundation field practicum. Opportunities are provided for discussion, support, and skills practice.

524 [218] FOUNDATION FIELD SEMINAR II (1). Course is designed to assist students in integrating and applying classroom learning with the direct experience of the foundation field practicum. Opportunities are provided for discussion, support, and skills practice.

530 [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.

540 [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.

570 [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.


6071 [266] AGING AND PUBLIC POLICY (DENT 607) (DPET 607) (FMME 607) (HMSC 951) (HPAA 916) (MED 607) (NURS 783) (PSYC 907) (3). Prerequisite: SOWO 530. 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.

6131 [613] INTERMEDIATE SPANISH FOR HEALTH CARE I (MEI 613) (NURS 613) (DENT 613) (PHCY 613) (PUH 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.

6141 [614] INTERMEDIATE SPANISH FOR HEALTH CARE II (MEI 614) (NURS 614) (DENT 614) (PHCY 614) (PUH 614) (AHSC 614). A continuation of SOWO 613, an intermediate-level Spanish course designed to help students and practicing health professionals develop oral proficiency skills as well as cultural awareness.

6151 ADVANCED SPANISH FOR HEALTH CARE (MEI 615) (NURS 615) (DENT 615) (PHCY 615) (PUH 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 [278] ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): BIO-MEDICAL BASIS (3). Prerequisite or corequisite, SOWO 700. This course covers the biomedical basis of substance related disorders. Students will develop a broad scientific perspective on different classes of substances of abuse and the biological basis of substance dependence.

702 [276] AFRICAN AMERICAN WOMEN'S HEALTH ISSUES (WMST 702) (3). Explores selected health issues confronting African American women and identifies race, gender, age, and class variables that impact health.

703 [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.

709 [381] SPECIAL TOPICS IN HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT (1-6).

719 [384] SPECIAL TOPICS IN RESEARCH (1-6).

720 [320] INDIVIDUALIZED FIELD PRACTICUM (1-6). (Field fee: $300.)

730 [281] SOCIAL WORK AND THE LAW (3). Course provides familiarity with legal processes, legal research, and legal analysis within the context of sociolegal issues important to social work practice.

731 [701] SOCIAL WELFARE POLICY ANALYSIS (PLCY 731) (3). Review of developments in U.S. welfare policy and economics, and social and political forces underlying reform initiatives since the 1960s. Analysis of data on impacts of welfare policies and programs.

739 [383] SPECIAL TOPICS IN POLICY (1-6).

760 [277] ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): CLINICAL PRACTICE (3). Prerequisites or corequisites, SOWO 700 and SOWO 540, equivalent courses, or permission of the 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.

761 [279] ALCOHOL, TOBACCO, AND OTHER DRUGS (ATOD): SOCIAL WORK PRACTICE WITH CULTURALLY DIVERSE POPULATIONS (3). Prerequisites or corequisites, SOWO 700 and SOWO 540, equivalent courses, or permission of the 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.

762 [380] RURAL HEALTH: AN INTERDISCIPLINARY APPROACH (3). This multidisciplinary course in health, pharmacy, dentistry, and social work provides a knowledge base and a forum for discussing issues in rural health. Provides training in problem solving by means of an interdisciplinary team approach.

763 [385] INTERDISCIPLINARY TEAMWORK IN GERIATRICS (MEI 765) (AHSC 765) (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.

769 [382] SPECIAL TOPICS IN DIRECT PRACTICE (1-6).

769.1 [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.
769.2 [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 relationships.

769.3 [370.7] PSYCHODRAMATIC METHODS IN CLINICAL PRACTICE (1.5). This course will provide students with a foundation for using experiential techniques. Students will learn basic strategies for facilitating psychodrama groups, experiential family therapy, and skills training sessions.

779 [370] SPECIAL TOPICS IN MACRO PRACTICE (1-6).

799.1 [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.

799.2 [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.

799.3 [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.

800 [230] ADULT HEALTH AND MENTAL HEALTH (3). Prerequisite, SOWO 500. This course examines adult health and mental health conditions and focuses on the impact these have on individual and family development and functioning.

801 [234] CHILD AND ADOLESCENT HEALTH AND MENTAL HEALTH (3). Prerequisite, SOWO 500. Reviews theories and research that serve as a foundation for assessing and serving children with serious health problems, physical disabilities, and mental disorders.

802 [233] FAMILY STRESS: COPING AND SOCIAL SUPPORT (3). Prerequisite, SOWO 500. 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.

803 [236] HUMAN BEHAVIOR OF AGING (3). Prerequisite, SOWO 500. 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.

804 [239] ORGANIZATIONAL AND COMMUNITY BEHAVIOR (3). Prerequisites, SOWO 500 and SOWO 570. Explores theories and models for understanding the political, economic, and institutional environment for community planning and the development and management of human services policies and programs.

810 [292] EVALUATION OF SOCIAL INTERVENTIONS (3). Prerequisite, SOWO 510. Students develop knowledge of the purposes of evaluation research and the approaches and methodologies necessary to evaluate social work interventions.

820 [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.)

821 [223] SOCIAL WORK PRACTICUM IV (6). A continuation of SOWO 820, 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.)

830 [267] HEALTH AND MENTAL HEALTH POLICY (3). Prerequisite, SOWO 530. 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.

831 [262] CHILDREN'S SERVICES POLICIES AND PROGRAMS (3). Prerequisite, SOWO 530. 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.

832 [264] FAMILY POLICY (3). Prerequisite, SOWO 530. 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.

834 [269] POLICY PRACTICE (3). Prerequisite, SOWO 530. This course focuses on analysis and skills development in administrative/legislative policy, lobbying, and advocacy at multiple levels. Policy practice roles in a range of student interest areas will be emphasized.

840 [267] HEALTH AND MENTAL HEALTH PRACTICE WITH ADULTS (3). Prerequisite or corequisite, SOWO 800. Seminar on clinical health and mental health social work practice with adults. Covers assessment and a wide range of theoretically based interventions. Course includes lectures and experiential exercises.

841 [248] HEALTH AND MENTAL HEALTH PRACTICE WITH CHILDREN AND ADOLESCENTS (3). Prerequisite or corequisite, SOWO 801. 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.

842 [242] FAMILY-CENTERED SOCIAL WORK PRACTICE (3). Prerequisite or corequisite, SOWO 802. 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.

843 [246] DIRECT PRACTICE WITH AGING POPULATIONS (3). Prerequisite or corequisite, SOWO 803. 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.

850 [199] SCHOOL SOCIAL WORK POLICY/PRACTICE (3). Prerequisite, SOWO 540, equivalent course, or permission of the 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.

851 [228] SOCIAL WORK PRACTICE WITH GROUPS (3). Prerequisite or corequisite, SOWO 540, equivalent course, or permission of the 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.

852 [243] SOCIAL WORK PRACTICE WITH COUPLES (3). Prerequisite, SOWO 540, equivalent course, or permission of the instructor. A clinical seminar that analyzes the operations and character of couples counseling as a human services technique.

853 [244] APPROACHES TO BRIEF TREATMENT (3). Prerequisite, SOWO 540 or permission of the instructor. Clinical seminar introduces students to various types of brief treatment, including crisis intervention, psychodynamic, cognitive, behavioral, and solution-focused therapies.

854 [255] ANTISOCIAL BEHAVIOR IN CHILDHOOD AND EARLY ADOLESCENCE: THEORY AND PRACTICE (3). Prerequisite, SOWO 540, equivalent course, or permission of the 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 multi-systemic service strategies.
855 [282] THE NATURE, DYNAMICS, AND TREATMENT OF FAMILY VIOLENCE (3). Prerequisite, SOWO 540, equivalent course, or permission of the 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.

856 [283] CARE OF THE DYING AND BEREAVED (3). Prerequisite, SOWO 540, equivalent course, or permission of the instructor. This interdisciplinary clinical course addresses issues and practice models related to terminal illness and bereavement faced throughout the life span. Co-taught by social work and nursing faculty.

857 [245] CLINICAL PRACTICE WITH FAMILIES (3). Prerequisite, SOWO 540, equivalent course, or permission of the instructor. This practice course is devoted to intervention with families. Intervention methods will be applied to families coping with major life stressors and relational problems. Family therapy models are covered.

860 [257] CHILD WELFARE PERSPECTIVES AND PRACTICES (3). Focus on the knowledge, skills, and critical thinking necessary for effective practice in child welfare. Students examine their own perspectives regarding pertinent research, current events, and initiatives in the state.

862 [272] SERVICES FOR PERSONS IN GRIEF (3). Course will help students to: understand the dynamics of the grieving process and the impact of bereavement on individuals/families; examine various determinants of loss and issues of complicated grief; and identify strengths-based clinical interventions.

874 [249] MANAGEMENT AND COMMUNITY PRACTICE (3). Prerequisite or corequisite, SOWO 804. Examines social work leadership in management and community practice within complex political and economic environments, emphasizing social work values and intervention methods.

880 [238] SUSTAINABLE DEVELOPMENT (3). Prerequisite, SOWO 570, equivalent course, or permission of the instructor. Examines perspectives and models of sustainable development. Students will analyze a project and present a participatory plan for engaging in sustainable development work.

881 [250] COMMUNITY PRACTICE AND PLANNING (3). Prerequisite, SOWO 570, equivalent course, or permission of the 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 areas.

882 [251] CITIZEN PARTICIPATION AND VOLUNTEER INVOLVEMENT (3). Prerequisite, SOWO 570, equivalent course, or permission of the instructor. Examines role of grassroots organizations in advocacy, self-help, and social development; the involvement of citizens in public planning; and the development of volunteer programs.

883 [254] MARKETING AND FUNDRAISING FOR NONPROFIT ORGANIZATIONS (3). Prerequisite, SOWO 570, equivalent course, or permission of the instructor. This course helps students to develop skills and practices associated with marketing and fundraising strategies for nonprofit organizations at the macro level.

884 [256] EXECUTIVE LEADERSHIP IN NONPROFIT ORGANIZATIONS (3). Prerequisite, SOWO 570, equivalent course, or permission of the 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.

885 [702] FINANCIAL MANAGEMENT OF NONPROFIT ORGANIZATIONS (PUBA 702) (3). Prerequisite, SOWO 570, equivalent course, or permission of the 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

900 [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.

910 [303] RESEARCH METHODS IN SOCIAL INTERVENTION (3). Prerequisites, SOWO 510 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.

911 [304] INTRODUCTION TO SOCIAL STATISTICS AND DATA ANALYSIS (3). Prerequisite, SOWO 510 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 an introduction to the use of computer programs.

912 [305] RESEARCH PRACTICUM I (3). Prerequisite, SOWO 911. Students develop independent research competence through work on a research project under the direction of an experienced researcher.

913 [313] ADVANCED RESEARCH METHODS IN SOCIAL INTERVENTION (3). Prerequisites, SOWO 900, 940. 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.

914 [314] MEASUREMENT IN SOCIAL INTERVENTION RESEARCH (3). Prerequisites, SOWO 910, 911. Course deals with quantitative and qualitative measurement strategies. Readings focus on theoretical and conceptual foundations of qualitative and quantitative measurement. Students develop skill through two field studies.

915 [315] RESEARCH PRACTICUM II (Var.). Continuation of Research Practicum I. (On request.)

919 [399] SPECIAL TOPICS IN DOCTORAL RESEARCH.

919 [384] STRUCTURAL EQUATION MODELING (3). In this course, students will learn fundamental concepts and skills to conduct Structural Equation Modeling and will learn how to apply these techniques to social work research. 919.001 [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.

940 [312] DEVELOPMENT OF SOCIAL INTERVENTION MODELS (3). Prerequisite, SOWO 900. 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.

941 [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.

994 [394] DOCTORAL DISSERTATION (Var.). Dissertation work. (On request.)

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 Entwisle (48) Social Demography, Methods, Community, Environment
Larry Griffin (69) Cultural Sociology, Race Ethnic/Minority Relations, Quantitative Methodology
Guang 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
Seryl 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
Peggy Thoits (70) Mental Health, Medical Sociology, Social Psychology, Emotions
Peter Uhlenberg (20) Demography, Family, Aging

Associate Professors
Phillip Cohen, (71) Gender, Stratification, Work and Family, Work and Occupations
Jacqueline Hagan, (72) Migration, Religion, Race and Ethnicity
Charles Kurzman (37) Political Sociology, Social Movements, International Development, Comparative and Historical, Social Theory, Islamic Studies
Ted Mouw (58) Social Stratification, Demography, Economic Sociology
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
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 (52) Human Ecology, Urban Sociology, Public Policy
J. Richard Udry (19) Demography, Family

Adjunct Faculty
M. Richard Kramer, Internat’l Relations and Religion
William A. Darity Jr., Racial and Economic Equality across Countries, Interdisciplinary Studies
Anne S. Hasings, Race and Ethnicity, Social Stratification, Family
Gail Henderson, Medical Sociology (including Social and Economic Determinants of Health and Health Services Utilization), Health and Health Care in China, Social Contexts and Foci Related to Research Ethics
James Johnson, Public Policy, Urban Sociology, Social Geography
Robert Miles, Comparative Sociology/Historical Sociology, Racialized and Minority Relations, Mobility and Immigration
Norman A. Peart, American Society, Race and Ethnic Relations
Christian Smith (54) Sociology of Religion, Culture Sociology, American Adolescents, Social Movements, Mixed Methods
John D. Stephens, Political Sociology, Political Economy, Comparative and Historical
Catherine Zimmer, Quantitative Methodology, Formal Organizations and Sociology of Work

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 coursework 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 available 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, and stratification and complex organizations.

A large proportion of first-year students (as well as more advanced students) receive financial assistance. Sources of aid include teaching assistantships, research assistantships, and non-service 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 also sponsors and edits Social Forces, a national sociological journal.

Courses for Graduates and Advanced Undergraduates

390 [109] SOCIOLOGICAL ANALYSIS: SPECIAL TOPICS (3). Examines selected topics from a sociological perspective. The course description for a particular semester is available in the departmental office. Staff

410 [110] FORMAL ORGANIZATIONS AND BUREAUCRACY (MNGT 410) (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, Blau.

411 [111] SOCIAL MOVEMENTS AND COLLECTIVE BEHAVIOR (3). Study of nonroutine collective action such as demonstrations, strikes, riots, social movements, and revolutions, with an emphasis on recent and contemporary movements. Kurzman, Nielsen.

412 [112] SOCIAL STRATIFICATION (MNGT 412) (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.

414 [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, social turmoil, unemployment, fiscal problems, suburbanization, and urban public policy. Blau.

415 [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.
419 [119] SOCIOLOGY OF THE ISLAMIC WORLD (3). Investigates issues such as tradition and social change, religious authority and contestation, and state building and opposition in Muslim societies in the Middle East and around the world. Kurzman.

420 [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. Pittin.

422 [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. Thriss.

423 [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.

424 [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.


428 [128] SOCIOLOGY OF ART (3).

429 [121] RELIGION AND SOCIETY (RELI 429) (3). Sociological analysis of group beliefs and practices - both traditionally religious and secular - through which fundamental life experiences are given coherence and meaning. Staff.

431 [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.

439 [118] COMPARATIVE EUROPEAN SOCIETIES (POLI 439) (3). Examination of commonalities and differences of European societies and of the tensions and difficulties attending the European integration process. Nielsen, Marks.

442 [148] CONFLICT AND BARGAINING (PWAD 442) (3). Conflict and conflict-resolution behavior. Application to labor-management relations, family, sports, community politics, and international relations. Staff.

444 [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 role decisions and working-class women make sense of their experiences at work and within the family. Kleinman.

445 [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.

450 [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.

453 [153] SOCIAL CHANGE IN LATIN AMERICA (3). Introduction to Latin American ideologies and values; economic and demographic changes; major pressure groups (old elites, entrepreneurs, peasants and working classes, military and intellectuals); and relations with the United States. Staff.


468 [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. Includes a service-learning component. Full: Harris.

469 [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 how it 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. Thriss.

481 [281] MANAGING INTERNATIONAL CONFLICT (3).

Courses for Graduates

700 [200] HISTORY OF SOCIAL THOUGHT (3). Prerequisite, graduate standing in sociology or written permission of the instructor. Historic social ideas of Western culture are considered against a background of general cultural analysis in terms of systematic theory. Required of all graduate degree candidates in Sociology. Kurzman, Smith.

707 [207] MEASUREMENT AND DATA COLLECTION (POLI 778) (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. Entwisle.


709 [209] LINEAR REGRESSION MODELS (HPPA 882) (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; heteroskedasticity; and autocorrelation. The final section introduces path analysis, recursive models, and nonrecursive systems. Bollen, Guo, Nielsen.

711 [211] ANALYSIS OF CATEGORICAL DATA (HPPA 881) (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.

715 [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.

717 [317] STRUCTURAL EQUATIONS WITH LATENT VARIABLES (3). Prerequisites, SOCI 708 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, and multiple indicators. Bollen.

718 [318] LONGITUDINAL AND MULTILEVEL DATA ANALYSIS (3). Prerequisites, SOCI 709, 711, 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.

720 [320] SYSTEMATIC METHODS OF QUALITATIVE RESEARCH (3). Course designed to teach methods of data collection and analysis for qualitative research. Kleinman, Tyson.
753 [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.

754 [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.

760 [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.

761 [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.

762 [252] CASE STUDIES IN SURVEYS (3). A number of external speakers from government and industry will describe various problems they encounter in surveys. Students will be challenged to develop proposals for addressing the problem. Staff. (Undergraduate only.)

763 [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.


801 [215] EVOLUTIONARY THEORY (3). Introduction to the new evolutionary theory and associated research. Staff.

802 [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.


804 [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.

806 [204] PRINCIPLES OF THEORIZING (3). This course in meta-theory analyzes methods of theorizing. It examines 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.

807 [202] MAJOR SOCIOLOGICAL THEORIES (2-3). Examination of selected writing, concepts, and issues of a major sociological theory or theoretical approach. Staff.

808 [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; and (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.


811 [311] SEMINAR IN POLITICAL SOCIOLOGY (POLI 811) (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. Kurzman, Stephens.

812 [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.

813 [221] COMPARATIVE WELFARE STATES (POLI 813) (3). This course examines the development, achievements, present crisis, and likely future of welfare states in advanced industrial democracies. Stephens.

814 [308] SEMINAR IN COMPARATIVE AND HISTORICAL SOCIOLOGY (3). Prerequisite, permission of the instructor. Examination of issues involved in societal 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.

816 [220] INFLUENTIAL WORKS IN DEMOCRACY (POLI 816) (3). The course covers the major traditions of democratic thought from ancient Greece to the present, ethnographies on political organization, and nineteenth- and twentieth-century observations on democracy. Bollen, Staff.

821 [270] THE LIFE COURSE (3). Provides an intense introduction to the life course as a theoretical orientation and methodology (logic of inquiry). Elder.


822 [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 the historical development of the field, and considers the nature of theory development. Marshall.

830 [212] DEMOGRAPHY: THEOREY, 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. Entwistle, Harris, Pearce, Rindfuss, Uhlenberg.

831 [213] DEMOGRAPHY: THEOREY, SUBSTANCE, TECHNIQUES, PART II (3). A continuation of SOCI 830. Materials covered include: population growth and stable population theory; migration and distribution; population policy; and population estimates and projections. Entwistle, Moul, Rindfuss, Uhlenberg.

832 [287] MIGRATION AND POPULATION DISTRIBUTION (3). Treats migration patterns, 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.

833 [289] SOCIOECONOMIC FACTORS IN FERTILITY (3). Study of fertility differentials by social and economic factors, changes over time, the manner in which these factors affect fertility, and the implications thereof for fertility-control programs. (On demand.) Entwistle, Rindfuss.

835 [290] MORTALITY: SOCIAL DEMOGRAPHIC PERSPECTIVES (3). Prerequisite, SOCI 830 or equivalent, or permission of the 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.

836 [263] SOCIAL GERONTOLOGY (3). Prerequisite, permission of the instructor. The study of the aged in our society. Uhlenberg.

840 [223] SOCIAL ATTITUDES (3). Basic theories and methods of attitude research, with special attention to attitude dynamics and social relations. Staff.

841 [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.
842 [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.

843 [314] SEMINAR IN SOCIAL CONTROL AND DEVIANCCE (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.

850 [230] SOCIAL STRATIFICATION (3). Prerequisite, SOCI 420 or equivalent. Analysis of major theories and approaches 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 worldwide inequality. Mouw, Nielsen.


852 [268] ETHNICITY, RACE, AND EDUCATION (Var.). Emerging theory and research paradigms in the sociology of education are reviewed. The course covers the following: racial and ethnic variation, parenting, contextual variation, peer influence, and school variation. Blau, Tyson.

853 [232] JUSTICE AND INEQUALITY: SELECTED TOPICS (Var.). Prerequisite, permission of the instructor. Examination of selected issues regarding societal, economic, and political inequality and questions of justice in the United States and Western Europe. Staff.

854 [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.

855 [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, and welfare reform and social policy. Harris.


863 [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. Thoits.

870 [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. Blau.

871 [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. Full. Staff.

872 [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.

901 [321] FIELD RESEARCH (3 each semester). Registration by permission of the instructor.

905 [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.

950 [326] SEMINAR IN SELECTED TOPICS (3). The course description for a particular semester is available in the departmental office. Registration by permission of the instructor. Staff.

960 [300] TRAINING PROGRAM SEMINARS (1). Continuing seminars in selected topics. Staff.

961 [301] READING AND RESEARCH (1-3). Registration by permission of the instructor.

962 [302] 963 [303] ADVANCED READING. Library research or field research on a selected topic under guidance of the instructor. Staff.

970 [315], 971 [316] READING AND RESEARCH IN METHODOLOGY (3 each semester). Registration by permission of the instructor. Special work on selected problems of research methodology. Staff.

980 [380] SEMINAR ON THE TEACHING OF SOCIOLOGY (3). Prerequisite, doctoral candidacy in sociology or permission of the instructor. Examines the teacher's role and the teaching process: planning a course and constructing syllabi; testing for teaching or grading; evaluating teacher performance; and the needs of different student populations. Altdorf.

993 [393] MASTER'S THESIS (3 or more). Individual research in a selected field under the direction of a member of the department. Staff.

994 [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


DIVISION OF SPEECH AND HEARING SCIENCES

JACKSON ROUSH, Director

Professors
Elizabeth R. Cris (48) Language Development and Disorders in Infants, Toddlers, and Preschoolers: Working with Families in Early Intervention
Melody Harrison (49) Early Speech, Language, and Auditory Development in Children with Hearing Loss

Nancy Helm-Estabrooks (69) Aphasia, Cognition in Presence of Aphasia
Lee McLean, Early Intervention and Language Development in Children
Patricia Porter, Augmentative and Alternative Communication (AAC), Speech/Language of Persons with Developmental Disabilities, Public Policy.
J. Jackson Routh (59) Pediatric Audiology, Early Intervention.
David E. Yoder (47) Language, Augmentative Communication, Literacy

**Associate Professors**
Karen Erickson (45) Assessment of Reading and Writing, Literacy Instruction.
Katarina L. Haley (41) Speech Perception and Production, Neurogenic Communication Disorders.
Linda R. Watson (67) Language Disorders in Young Children, Autism, Emerging Literacy.
David Zajac, Speech Aerodynamics, Developmental Aspects of Speech Production.
Cleft Palate Research.

**Assistant Professors**
Lisa Hamnett, (64) Early Literacy and Child Language Research.
Lori Leibold, Developmental Psychoacoustics, Pediatric Audiology.
Brenda Mitchell, Adult Neurogenic Disorders, Community Re-Entry for Adults, Clinical Supervision.
Martha Mundy, Educational and Pediatric Audiology, Otiris Media Research.
Debra R. Reinhardt, Augmentative Communication, Low-Incidence Disabilities.
Stephanie Sjoblad, Aural Rehabilitation, Hearing Aids and Assistive Devices.
Debra Weisleder, Pediatric and Educational Audiology, Hearing Aids.
Sharon Williams (74) Geriatrics, Communication Disorders of Older Adults.
Multicultural Issues, Counseling.

**Research Professors**
Joseph W. Hall (53) Audiology and Psychoacoustics Research.
Charles Finley, Cochlear Implant Processing Strategies.
Joanne E. Roberts (50) Early Language Development and Disorders, Otiris Media.
John H. Gruse, Audiology and Psychoacoustics Research.

**Instructors**
Laurie Cochenou, Early Intervention in Childhood Hearing Loss.
Kathleen Davis, Child Language.
Lisa Domby, Phonology, Speech-Language Pathology.

**Adjunct Associate Professor**
Carolyn M. Mayo, Multicultural Issues, Adult Language Disorders, Prevention of Communication Disorders.

**Adjunct Assistant Professors**
Mark M. Haythorn, Diagnostic Audiology.
Holly Teagle, Cochlear Implants in Children.

**Adjunct Clinical Instructors**
Carolyn Brown, Cochlear Implants in Children.
Brian Karapkey, Dysphagia, Neurogenic Speech Disorders.
Holly Teagle, Cochlear Implants in Children.

The Division of Speech and Hearing Sciences in the School of Medicine’s Department of Allied Health Sciences provides academic and professional education for speech-language pathologists and audiologists. Programs of study are available at the master’s and doctoral levels in speech language pathology. Both clinical (AuD) and research (PhD) doctoral degrees are offered in audiology. The study of speech and hearing requires knowledge in both normal and abnormal speech, hearing, and language. The speech and hearing sciences curriculum provides a multifaceted learning environment including classroom, 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. All the programs are interdisciplinary, involving clinical and research activities with other University departments and institutions, in addition to the Division of Speech and Hearing Sciences.

The entrance, academic, and residence requirements for the MS and PhD degrees correspond to those of The Graduate School. Applicants to the AuD program follow the guidelines established by the School of Medicine. All students enrolled in professional tracks (MS and AuD) 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 on the Web at www.med.unc.edu/ahs/sphs.

**Courses for Graduates and Advanced Undergraduates**

530 [130] **INTRODUCTION TO PHONETICS (COMM 530)** (3). Analysis, description, and classification of speech sounds. Broad and narrow phonetic transcription. Fall. Staff.


583 [183] **INTRODUCTION TO COMMUNICATION DISORDERS**. Introduction to diagnosis and treatment of communication disorders, including articulation, fluency, voice, and language, and those resulting from autism and hearing loss. Spring. Mitchell.

**Courses for Graduates**

701 [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 subject. Spring. Hamnett.

704 [304] **CLINICAL ISSUES AND EXPERIENCE IN SPEECH-LANGUAGE PATHOLOGY (1-3)**. Permission of practicum coordinator. Supervised clinical experience and professional issues. May be repeated for credit. Fall, spring, and summer.

706 [306] **CLINICAL PRACTICUM IN AUDIOLOGY (1-3)**. Prerequisite, permission of practicum coordinator. Supervised clinical experience. May be repeated for credit. Fall, spring, and summer. Weisleder.


710 [310] **AUDIOLOGIC EVALUATION I (3)**. Prerequisite, SPHS 582 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.
712 [312] CHARACTERISTICS OFAMPLIFICATION SYSTEMS (3).
Amplification options for the hearing-impaired; specifically, hearing aid, electroacoustics, and earmold technologies. Additionally, hearing aid selection procedures are presented. Spring, Weisleder.

717 [317] PROFESSIONAL CONSIDERATIONS IN SPEECH AND HEARING (3). To provide the student with information about current issues facing professionals. Issues include changing delivery systems, leadership, treatment efficacy and quality, reimbursement, and ethics. Spring, Staff.

721 [221] PHYSIOLOGICAL AND PSYCHOLOGICAL BASES OFHEARING (3). Auditory function; anatomy and physiology of the auditory system; auditory processing at the psychoacoustic level. Spring, Grote.

725 [225] HEARING DISORDERS (2). Prerequisite, SPHS 582 or equivalent. Diseases and disorders of the auditory system and their management. Spring, Roush.

726 [326] CLINICAL ISSUES AND EXPERIENCES IN AUDIOLOGY (1). Online course covering universal precautions, privacy regulations, clinical practice with diverse cultural groups, report writing, and other aspects of audiology practice. Fall, summer. Weisleder, Mundy.

733 [283] AUDITORY STRATEGIES FOR SPOKEN LANGUAGE IN DEAF CHILDREN (1). Instructed application of a variety of topics demonstrating the use of auditory techniques and strategies to promote the use of spoken language in children with hearing loss. Erickson, Spring.

737 [337] NORMAL ASPECTS. This course provides an overview of normal development of speech, language, and audition for children from birth to 8 years old. It will also address the impact of hearing loss on these domains.

740 [240] COMMUNICATION DEVELOPMENT (3). Predominant theoretical models of communicative development are the basis for investigating how linguistic and nonlinguistic development and environmental influences affect communication development. Fall, Watson.

741 [241] NEUROANATOMY (3). Prerequisite, SPHS 570 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.

742 [342] APHASIA (3). Prerequisite, SPHS 570 or equivalent. Discussion of adult aphasia and its clinical management, including assessment, diagnosis, prognosis, counseling, and treatment. Combined lectures and laboratories. Spring, Helm-Estabrooks.

743 [343] PHONOCARDIOVASCULAR ASSESSMENT AND MANAGEMENT (3). Prerequisites, SPHS 530, SPHS 570. 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. Spring, Domy.

744 [344] MOTOR SPEECH DISORDERS (3). Prerequisites, SPHS 540, SPHS 570. Assessment and treatment of adults presenting with disorders of motor speech control due to, e.g., dysarthria, anarthria, and apraxia of speech. Fall, Haley and Hammet.

745 [345] PRINCIPLES OF DIAGNOSIS AND INTERVENTION (3). Diagnostic procedures focusing on interviewing, counseling, report writing, and standard measures. Intervention procedures focusing on establishing goals, criteria for success, documentation of progress, discharge planning, and therapy strategies. Fall, Domy.

748 [348] VOICE AND FLUENCY DISORDERS (2-4). Prerequisites, SPHS 540, SPHS 570. Assessment and management of children and adults with voice disorders (including laryngectomy). Spring, Staff.

749 [349] EVALUATION AND CLINICAL MANAGEMENT OF PERSONS WITH ORAL-FACIAL ANOMALIES (3). Prerequisites, SPHS 540, SPHS 570. In-depth analysis of the embryologic and physiologic bases of oral-facial anomalies and the team approach to assessment and habilitation. Particular emphasis placed on the following specialties: genetics, plastic surgery, prosthodontics, orthodontics, cosmetology, and speech-language pathology. Spring, Zajac.

752 [352] COGNITIVE LINGUISTIC PROCESSING DISORDERS INADULTS (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, Helm-Estabrooks.

754 [354] DYSPHAGIA (3). Prerequisite, SPHS 742. Discussion of the development of the normal swallow, anatomy and physiology of the swallowing mechanism, and assessment and team management of swallowing disorders. Spring, Kasupkey.

760 [260] ADULT COMMUNICATION DISORDERS (3). Overview of communication disorders commonly seen in adult populations. These include disorders of language, cognition, speech and motor control, voice and fluency. Fall. Helm-Estabrooks.

761 [261] CHILD COMMUNICATION DISORDERS (3). Disorders of child speech and language development, as a prerequisite for advanced specialized coursework and supervised clinical practicum. Fall, Domy.

762 [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. Spring, Hammert.

765 [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. Fall, Erickson.

802 [302] PROBLEMS IN SPEECH AND HEARING SCIENCES (1-3). May be repeated for credit. Fall, spring, and summer. Staff.

803 [203] AUDIOLOGIC REHABILITATION FOR CHILDREN (3). Prerequisite, SPHS 582. 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.

804 [204] AUDIOLOGIC REHABILITATION FOR ADULTS (3). Theoretical bases and history of audologic 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, Sjoblad.

806 [206] COMMUNICATION ASSESSMENT AND INTERVENTION WITH CHILDREN BIRTH TO FIVE (3). Stages of communication development of children from birth to five years old; clinical issues related to the assessment tools and intervention and planning for children with disabilities and their families. Fall, Craig.


813 [313] FITTING AND DISPENSING OF AMPLIFICATION SYSTEMS (3). Prerequisite, SPHS 712 or equivalent. Theoretical and practical approaches to fitting amplification systems and the procedures for dispensing amplification systems to the hearing-impaired. Fall, Sjoblad.

814 [314] AUDITORY EVOKED POTENTIALS I (3). Prerequisites, SPHS 721 and SPHS 710. This course explores the field of electrophysiologic responses within
the auditory and vestibular systems. Auditory brainstem response (ABR), electrocochleography (ECoG), electroencephalography (EEG), and otosaccoustic emissions (OAE) are covered. Spring. Grose.

815 [315] AUDIOLOGY FOR SPECIAL POPULATIONS (3). Prerequisite, SPHS 582 or equivalent. Advanced principles of pediatric audiology and intervention strategies for hearing-impaired children. Procedures for counseling and case management. Spring of even-numbered years (beginning in 2008).

816 [316] INDUSTRIAL AUDIOLOGY AND HEARING CONSERVATION (2). Prerequisite, SPHS 582 or equivalent. Military and industrial audiology and hearing conservation, including physiological and psychological factors. Spring. Staff.


819 [319] EDUCATIONAL AUDIOLOGY (3). Examines the provision of services to school age children, with special focus on ALDs used by hearing impaired students in school settings and the assessment of central auditory perception. Spring. Mundy.


821 [321] SEMINAR IN AUDIOLOGY. Special topics and significant literature in the field of audiology. (On demand.) Staff.

822 [322] SPECIAL TOPICS IN AUDIOLOGY (2). Examines the impact of genetics, pharmacology, intraoperative monitoring, hair cell regeneration, imaging, and recent amplification technologies on current and evolving audiology practice. Fall. Mundy.

823 [323] BUSINESS MANAGEMENT AND PROFESSIONAL ISSUES (2). Examine healthcare and business models that impact audiology practice. Personed management, marketing, quality assurance, and service reimbursement for audiology practices will be covered. Spring. SPHS 333. Spring.

824 [324] AUDIOLOGY GRAND ROUNDS (1). Examines clinical cases from the perspective of presenting symptoms, test results, and clinical outcomes. Spring. Mundy.

830 [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.

832 [332] SPEECH ACOUSTICS. This course provides information on the fundamentals of speech production, including the articulatory characteristics of normal and disordered speech. Prerequisite. SPHS 333. Spring.

833 [333] SPECIAL TOPICS. This is the foundation course in a series related to providing services to children with hearing loss. Six units focus on: working with families, speech acoustics, audiological interpretation, instrumentation, foundations of speech and language, and early literacy. Spring.

834 [334] COUNSELING AND COMMUNICATION DISORDERS (3). This course focuses on providing a broad overview of contemporary counseling issues in communication disorders. The course will promote an understanding of the ways that interviewing and counseling skills appropriate to the age, life-course, and cultural background of the client and family can facilitate the adjustment of individuals and families. Spring. Williams.

840 [340] AGING AND COMMUNICATION DISORDERS (3). This course focuses on medical, psychological, and social theories and aspects of aging as they relate to communication processes and disorders. Fall. Williams.

841 [341] SEMINAR IN SPEECH-LANGUAGE PATHOLOGY (Var). Special topics and significant literature in the field of speech pathology. (On demand.) Staff.

855 [355] NEUROPSYCHOLOGY FOR SPEECH-LANGUAGE PATHOLOGISTS. The study of brain/behavior relationships as it relates to adults with acquired neurologic communication disorders: the domains of cognition most likely to be affected in those with various disorders; the impact of spared and impaired cognitive skills on natural recovery, treatment, and management of adult neurologic communication disorders. Spring. Helen-Estabrooks.

861 [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.


865 [365] DOCTORAL SEMINAR IN GRANT WRITING.

381 SEMINAR IN HEARING SCIENCE (3). May be repeated for credit. Advanced special topics and current research in hearing science. Fall of alternate years. McLean.

870 [370] RESEARCH EXPERIENCE. This course gives enrolled audiology graduate students an opportunity to pursue research supervised by one or more faculty members culminating in a document, project, or presentation (1-3). Fall and spring. Staff.

871 [371] TEACHING AND SUPERVISION (2). Course regarding teaching of skills and supervision of individuals conducting screening programs. Introduction to teaching and development of assessment tools provides a background for the teaching lab associated with this course. Fall. Weisleder.

871L [371L] TEACHING AND SUPERVISION LAB (1). Experience developing and delivering training module, instructional module, and supervising new trainees. Fall and spring. Weisleder.

881 [381] SEMINAR IN HEARING SCIENCE (1-3). May be repeated for credit. Advanced special topics and current research in hearing science. (On demand.) Staff.

882 [382] SEMINAR IN SPEECH SCIENCE (1-3). May be repeated for credit. Advanced special topics and current research in speech science. (On demand.) Staff.

897 [307] AUTISM SEMINAR (3). Participants develop knowledge of the major neuropsychological theories of autism and methodological issues in autism research through reading and discussion of literature; participate in developing and presenting autism research projects individually or in groups. Spring of alternate years. Watson.

898 [338] LITERACY. This course provides an overview of literacy development for children birth to 8 years old. It will also address the impact of hearing loss on the development of literacy. Spring.

950 [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. Fall. Rouch.

993 [393] MASTER'S THESIS (3 or more). Fall, spring, and summer. Staff.

994 [394] DISSERTATION (3 or more). Fall, spring, and summer.
DEPARTMENT OF STATISTICS AND OPERATIONS RESEARCH

VIDYADHAR KULKARNI, Chair

Professors

Amitava Banerjee (6) Probability and Stochastic Processes, Stochastic Control and Filtering, Large Deviations, Stochastic Networks
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
Douglass G. Kelly (4) 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 Marron (24) [Amos Hawley Distinguished Professor] Nonparametric Inference, Asymptotic Theory
Andrew Nobel (1) Nonparametric Statistics, Pattern Recognition
J. Scott Provan (20) Networks, Computational Complexity, Combinatorial Optimization
David S. Rubin (3) [Professor, Kenan-Flagler Business School] Integer Programming, Networks
Pranab Kumar Sen (13) [Cary C. Bogner Professor of Biostatistics] Nonparametric Methods, Multivariate Analysis, Sequential Analysis
Richard L. Smith (27) [Reed Distinguished Professor] Extremal Value Theory, Time Series, Statistical Inference, Environmental Statistics
Jayanthan Swaminathan (22) [Benjamin Cone Research Professor, Kenan-Flagler Business School] Supply Chain, Stochastic Models
Jon W. Tolle (6) Optimization Theory

Associate Professor

Chunshu Ji (26) Statistical Modeling and Computing in Materials Science, Image Analysis, Quantitative Finance

Assistant Professors

Yufeng Liu (18) [Carolina Center for Genome Sciences] Machine Learning, Design of Experiments, Bioinformatics
Gabor Paraki (21) Convex Programming, Combinatorial Optimization, Integer Programming
Vladas Pipiras (11) Long-Range Dependence, Self-Similarity, Heavy-Tails, Fractional Calculus, Wavelets, Applications to Telecommunications
Haiping Shen (12) Call Center Analysis, Queueing, Internet Traffic
Zhengzhu Zhu (15) Spatial Sampling Designs, Space-Time Modeling, Network Traffic
Sethan Zya (28) Stochastic Models, Pricing in Congestion Systems

Lecturers

Charles Dunn, Actuarial Models
Mihail R. Rou, Introduction to Statistics

Adjunct Professors

Robert J. Adler (5) Stochastic Processes, Random Fields
Joseph Babu, SAMSI-Astrostatistics
Kenneth A. Bollen, Comparative Political Structures, Statistics, International Development
George Christakos, Environmental Sciences and Engineering
Jianqing Fan (9) Nonparametric Functional Estimation, Statistical Inference
Ronald Gallant (29) Econometrics, Nonlinear Models, Non-Parametric Inference
Mark E. Hartmann, Combinatorial Optimization, Integer Programming, Polyhedral Combinatorics
Harry L. Hund, Stochastic Processes, Statistical Inference
Valen Johnson, Image Analysis, Bayesian Statistics, Binary Data
Vijay Marathe, Decision Models for Business
Randy Martens, Introduction to Decision Sciences

Subhiel Nastar, NISS/IBM
Karl Petersen, Ergodic Theory
Eric Renault, Econometrics, Finance
Sidney Resnick, Risk Management
Robert Rodrigues, Statistical Quality Improvement, Statistical Graphics
David S. Rubin (3) [Professor, Kenan-Flagler Business School] Integer Programming, Networks
Pranab Kumar Sen (13) [Cary C. Bogner Professor of Biostatistics] Nonparametric Methods, Multivariate Analysis, Sequential Analysis
Jayanthan Swaminathan (22) [Benjamin Cone Research Professor, Kenan-Flagler Business School] Supply Chain, Stochastic Models
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)
Gordon D. Simons
Walter L. Smith
Shaler Sidharm 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 MS and PhD degrees in Operations Research, and MS 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.

Further information on either program can be obtained from the department's home page on the Web 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 e-mailing stat-or@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 then 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 queueing 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 three semesters, it more typically requires four semesters. The PhD program, including the dissertation, generally requires four or five years beyond 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, 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# 3260, Smith Building, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3260, or by e-mailing stat-or@unc.edu.

Courses for Graduates and Advanced Undergraduates

305 [140] DECISION MAKING USING SPREADSHEET MODELS (3). Prerequisite, STAT 155 or MATH 152. 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 software packages. Fall.

372 [161] LONG-TERM ACTUARIAL MODELS (3). Prerequisites, MATH 232 or 215, and STAT 155. 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.

415 [181] DETERMINISTIC MODELS IN OPERATIONS RESEARCH (3). Prerequisite, MATH 547. Linear, integer, nonlinear and dynamic programming, classical optimization problems, network theory. Fall. Provan, Tollie.

445 [183] STOCHASTIC MODELS IN OPERATIONS RESEARCH (3). Prerequisite, BIOS 660 or STAT 435. Introduction to Markov chains, Poisson process, continuous-time Markov chains, renewal theory. Applications to queuing systems, inventory, and reliability, with emphasis on systems modeling, design, and control. Spring. Kulkarni, Stidham.


472 [162] SHORT TERM ACTUARIAL MODELS (3). Prerequisite, STAT 435. 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.

496 [090] INDEPENDENT STUDY. Prerequisite, permission of the instructor. This course is intended primarily for students working on honors projects.

497 [090] INDEPENDENT STUDY. Prerequisite, permission of the instructor.

515 [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.

582 [085] NEURAL NETWORK MODELS FOR THE DECISION AND COGNITIVE SCIENCES. Prerequisites, MATH 231 or STAT 155 or STOR 215 and permission of the instructor.

Courses for Graduates

612 [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, Wagnor.

614 [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 Karush-Kuhn-Tucker conditions. Spring. Provan, Rubin.


705 [350] OPERATIONS RESEARCH PRACTICE (3). Prerequisites, OR 614, 641, 762, and permission of the instructor. Gives students an opportunity to work on an actual operations research project from start to finish under the supervision of a faculty member. Intended exclusively for Operations Research students. Spring.
712 [312] MATHEMATICAL PROGRAMMING I (3). Prerequisites, OR 614 and either OR 515 or MATH 661 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 specially structured problems. Spring. Tolle.

713 [313] MATHEMATICAL PROGRAMMING II (3). Prerequisite, OR 712 or permission of the instructor. Advanced theory for nonlinear optimization. Algorithms for unconstrained and constrained problems. Fall. (Alternate years.) Tolle.

722 [314] INTEGER PROGRAMMING (3). Prerequisite, OR 614 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.

724 [315] NETWORKS (3). Prerequisite, OR 614 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.

743 [322] STOCHASTIC MODELS IN OPERATIONS RESEARCH III (3). Prerequisite, OR 642 or equivalent. Intermediate queuing theory, queueing networks, Reliability, Diffusion processes and applications. Markov decision processes (stochastic dynamic programming); finite horizon, infinite horizon, discounted and average-cost criteria. Fall. Tekin, Ziya.


762 [323] DISCRETE EVENT SIMULATION (COMP 762) (3). Prerequisites, STAT 555 and OR 641, 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.

772 [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.


822 [316] TOPICS IN DISCRETE OPTIMIZATION (COMP 822) (3). Prerequisites, OR 712 and permission of the instructor. Topics may include polynomial algorithms, computational complexity, matching and matroid problems, and the traveling salesman problem. (Alternate years.) Provan.

824 [217] COMPUTATIONAL METHODS IN MATHEMATICAL PROGRAMMING (3). Prerequisites, OR 712 and permission of the instructor. Advanced topics such as interior point methods, parallel algorithms, branch and cut methods, and subgradient optimization. (Alternate years.) Provan.


892 [351] SPECIAL TOPICS IN OPERATIONS RESEARCH AND SYSTEMS ANALYSIS (Var.). Prerequisite, permission of the instructor. Fall and spring. Staff.

910 [321] DIRECTED READING IN OPERATIONS RESEARCH AND SYSTEMS ANALYSIS (Var.). Prerequisite, permission of Operations Research faculty member. Fall and spring. Staff.

922 [392] MASTER'S SUBSTITUTE FOR THESIS (Var.). Prerequisite, permission of the student's adviser. Fall and spring.

993 [393] MASTER'S THESIS (3 or more). Prerequisite, permission of the student's adviser. Fall. Staff.

994 [394] DOCTORAL DISSERTATION (3 or more). Prerequisite, permission of the student's adviser. Fall and spring. Staff.

Graduate Program in Statistics

Courses for Graduate Students Not Majoring in Statistics

The Statistics program offers a variety of courses of potential value to students majoring in other disciplines. The basic ideas of statistics are taught in STAT 355 and 356. Somewhat more theoretical and mathematical than STAT 355 and 356 are STAT 435 and 555.

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 visit the department's Web page at www.stat-or.unc.edu.

Graduate Degrees in Statistics

The department offers both M.S. and Ph.D. degrees in statistics. Students who plan to teach 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 M.S. degree in statistics complete the M.S. program without delaying their Ph.D. work.

The philosophy of the statistics program is that its Ph.D. graduates should be broadly trained in statistical theory and practice and also be able to conduct basic research in some special area. Students in the first year typically take STAT 624-5, 654-5, and 664-5, and possibly other courses chosen from STAT 734-5 and 756-5. 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 at neighboring universities in the Research Triangle area, North Carolina State University in Raleigh and Duke University in Durham.

The Mathematics-Physics-Statistics Library, located in nearby Phillips Hall, maintains an extensive collection of books and journals pertaining to statistics.

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. An online application is also available through the Web site of The Graduate School at gradschool.unc.edu. Applicants are required to submit scores for both the Aptitude and Advanced Mathematics portions of the Graduate Record Examination (GRE) in support of their application, and a supplementary sheet providing brief course descriptions (including text title where available) or previous undergraduate and graduate courses in mathematics and statistics.

Applicants for financial aid are considered for assistantships within the department, and as well as 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 advising instructors. Other awards include merit assistantships, University Graduate and Alumni Fellowships, George E. Nicholson Jr. Fellowships, Pogue Fellowships, and Morehead Fellowships. Stipends range from $13,000 to $17,000 for the academic year, with tuition included with fellowship awards.

Application for admission and financial aid may be made simultaneously 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

355 [101] STATISTICAL METHODS I (3). Prerequisite, STAT 155. 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, Nobeld, Zhu.

356 [102] STATISTICAL METHODS II (3). Prerequisite, STAT 355. Topics selected from: design of experiments; sample surveys; nonparametrics; time-series; multivariate analysis; contingency tables; logistic regression; simulation. Use of statistical software packages. Spring. Marron, Pipiras, Smith.

358 [104] SAMPLE SURVEY METHODOLOGY (BIOS 664) (3). Prerequisite, STAT 355 or equivalent. Fundamental principles and methods associated with survey sampling, giving primary attention to nonparametric tests as possible a treatment of simple random sampling, stratified sampling, and cluster sampling. Also, techniques of questionnaire design, the problems of nonresponse, and sources of nonresponse errors. Practice experience in the applied aspects of sampling is provided by student participation in the design, execution, and analysis of an actual survey. Spring. Kalsbeek.

435 [126] INTRODUCTION TO PROBABILITY (MATH 435) (3). Prerequisite, MATH 253. 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, and statistical applications. Fall and spring. Budhiraja, Kelly, Nobeld.

496 [090] INDEPENDENT STUDY. Prerequisite, permission of the instructor. This course is intended primarily for students working on honors projects.

555 [127] MATHEMATICAL STATISTICS (3). Prerequisite, STAT 435 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. Carlestein, Kelly, Simons.


664 [174] APPLIED STATISTICS I (3). Prerequisite, STAT 555 or equivalent. Introduction to linear models and multiple regression; introduction to statistical computing; statistical data analysis and visualization. Fall. Smith, Marron.


734 [184] STOCHASTIC PROCESSES (3). Prerequisite, STAT 435 or equivalent. Discrete and continuous parameter Markov chains, Brownian motion, stationary processes. Fall, alternate years. Leadbetter, Nobel, Jr.

754 [185] TIME SERIES AND MULTIVARIATE ANALYSIS (3). Prerequisites, STAT 435 and 555 or equivalents. 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.

756 [194] DESIGN AND ROBUSTNESS (3). Prerequisite, STAT 555 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.


765 [190] STATISTICAL CONSULTING (3). Application of statistics to real problems presented by researchers from the University and local companies and institutes. (Taught over two semesters.) Fall and spring. Marron, Smith.

Courses for Graduates


763 [205] STATISTICAL QUALITY IMPROVEMENT (3). Prerequisites, STAT 655, 664, or equivalent. Methods for quality improvement through process control, graphical methods, designed experimentation, Shewhart charts, control schemes, methods for autocorrelated multivariate process data, process capability analysis, factorial and response surface designs, attribute sampling. Rodriguez.

831 [231] ADVANCED PROBABILITY (3). Prerequisites, STAT 634 and 635, or equivalents. Advanced theoretic course, covering topics selected from: weak convergence theory, central limit theorems, laws of large numbers, stable laws, in-
nily divisible laws, random walks, martingales. Staff.

832 [232] STOCHASTIC PROCESSES (3). Prerequisites, STAT 634 and 635, or equivalents. Advanced theoretic course including topics selected from: foundations of stochastic processes, renewal processes, Markov processes, martingales, point processes. Staff.

833 [233] TIME SERIES ANALYSIS (3). Prerequisites, STAT 634 and 635, or equivalents. Analysis of time series data by means of particular models such as autoregressive and moving average schemes. Spectral theory for stationary processes and associated methods for inference. Stationarity testing. Leadbetter.

834 [234] EXTREME VALUE THEORY (3). Prerequisites, STAT 635 and 654, or equivalents. Classical asymptotic distributional theory for maxima and order statistics from i.i.d. sequences, including extremal type theorems, domains of attraction, Poisson properties of high level exceedances. Stationary stochastic sequences and continuous time processes. Leadbetter.


836 [236] STOCHASTIC ANALYSIS (3). Prerequisite, STAT 634 and 635, or equivalents, or permission of the instructor. Advanced course covering topics selected from: semimartingale theory, stochastic integrals, homogeneous 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, Budhiraja.

851 [221] SEQUENTIAL ANALYSIS (3). Prerequisites, STAT 634 and 635, 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. Staff.

852 [222] NONPARAMETRIC INFERENCE: RANK-BASED METHODS (3). Prerequisites, STAT 635 and 635. 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 multivariate problems. Sen.


854 [224] STATISTICAL LARGE SAMPLE THEORY (3). Prerequisites, STAT 635 and 635, or equivalents. Asymptotically efficient estimators; maximum likelihood estimators. Asymptotically optimal tests; likelihood ratio tests. Staff.


857 [262] NONPARAMETRIC MULTIVARIATE ANALYSIS (3). Prerequisite, STAT 852. Nonparametric MANOVA. Large sample properties of the tests and estimates. Robust procedures in general linear models, including the growth curves.

Nonparametric classification problems. Sen.

Advanced Graduate Level Courses*

890, 891 [321, 332] SPECIAL PROBLEMS (3). Prerequisite, permission of the instructor.

930, 950 [331, 332] ADVANCED RESEARCH (3). Prerequisite, permission of the instructor.

940, 960 [310, 311] SEMINAR IN THEORETICAL STATISTICS (3). Prerequisite, STAT 655.

993 [392] MASTER'S PAPER (Var.). Prerequisite, permission of the student's advisor. Fall and spring. Staff.

994 [394] DOCTORAL DISSERTATION (Var.). Prerequisite, permission of the student's advisor. Fall and spring. Staff.

* These 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 MODELING 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. Wall, Metabolism and Genotoxicity of Environmental Xenobiotics
Thomas W. Boudin, Neuropathology, Ocular Pathology, and Neurotoxicology
Kim Rowe Brouwer, Pharmacokinetics, Hepatic Transport, Hepatobiliary Disposition, Biliary Excretion, Hepatotoxicity
Stephen G. Chaney, DNA Repair and Platinum Anticancer Drugs
Manlio Cordeiro-Stone, DNA Repair and Replication in Human Cells, Mechanisms of Response to DNA Damage
Fulton T. Crews, Neurodegeneration and Chronic Drug-Induced Changes in Brain Signaling Pathways
Channing J. Det, Ras Protein Superfamily, Signal Transduction and Oncogenesis
Avram Gold, Structure-Reactivity Relationships in Metabolism and Mutagenicity of Polycyclic Aromatic Hydrocarbons
Mihai J. Hazucha, Health Effects of Air Pollutants, Human Studies, Mechanisms of Response
David J. Holbrook Jr., Biochemical Toxicology, Xenobiotic Metabolism
David G. Kaufman, DNA Replication, Chemical Carcinogenesis
William K. Kaufmann, DNA Metabolism in Radiation and Chemical Carcinogenesis
Jean M. Lauder, Developmental Neurobiology, Developmental Biology.
Neurotoxicology
Terry Magnuson, Mammalian Genetics, Genomics and Development
Richard B. Mallman, Parkinson's Disease, CNS Toxicology
Patricia A. Maness, Axon Guidance and Signal Transduction in Nervous System Development
A. Leslie Morrow, Neurotoxicology and Excitotoxicity of Alcohol
David Peden, 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
Aziz Sancar, DNA Repair and Cancer; Structure and Function of DNA Repair Enzymes and Reaction Mechanism of Human Blue-Light Photoreceptor
Kathleen K. Sulik, Developmental Toxicology; Embryology
James A. Sweeney, Carcinogenesis, DNA and Protein Adducts, Cell Proliferation, Risk Assessment
Bernard E. Weissman, Chromatin Remodeling and Epigenetic Alterations in Human Cancer
Elizabeth M. Wilcox, Androgen Receptor Regulation of Gene Expression; Environmental Androgens and Antiandrogens; Androgen Receptor Regulation of Prostate Cancer

Associate Professors
Christoph H. Borcherd, Proteomics, Protein-Protein, and Protein-Ligand Interaction by Mass Spectrometry
William B. Coleman, Hepatocarcinogenesis, Tumor Suppressor Genes, Biology of Liver Stem Cells, Cancer Epigenetics
Lee M. Graves, Protein Kinases and Cell Signaling, Regulation of Cell Metabolism and Toxicity
Robert C. Millikan, Cancer, Genetic and Molecular Epidemiology
Leena A. Nylander-Hyde, Development of Methods to Monitor and Assess Dermal Exposure to Chemical Carcinogens and Contact Sensitizers
Dale A. Ramsden, V(DJ) Recombination and DNA Double Strand Break Repair
Philip C. Smith, Toxicokinetics and Xenobiotic Metabolism, Pesticide Analysis and Disposition
David Thrash, Mammalian Genetics, Systems Genetics, Toxicogenomics, Genome Environment Interactions, Cancer Susceptibility

Assistant Professors
Mohit P. Deshmukh, Molecular Mechanisms of Apoptosis in Neurons and Other Postmitotic Cells
Jeffrey M. Macdonald, Metabolomics and Fluxomics Using NMR Spectroscopy and Imaging and Tissue Engineering
Charles M. Perou, Characterize and Classify Human Breast Tumors into Subtypes of Biological and Clinical Importance
Ivan Russin, Environmental Genomics

Research Associate Professor
Miroslav Syrbo, Metabolism and Biological Effects of Essential and Toxic Metals and Metalloids

Research Assistant Professor
Ilona Jassem, Cellular Mechanisms of Air Pollutant Toxicity

Adjunct Professors
Melvin E. Andersen, Pharmacokinetic and Pharmacodynamic Modeling of Environmental Compounds
Linda S. Birnbaum, Chemical Disposition of Xenobiotics, Mechanistic Toxicology, Dose-Response and Risk Assessment
John A. Cidlowski, Apoptosis, Steroids, Glucocorticoid Receptors, Hormone Action, Nucleases, Gene Regulation
Daniel L. Costa, Cardiopulmonary and Inhalation Toxicology; Health Effects of Air Pollutants
Robert B. Devlin, Pulmonary Toxicology, Molecular Biology

Steven R. Klebeberger, Genetic Determinants of Environmental Lung Disease
Stephanie Patilla, Behavioral Toxicology and Neurotoxicology
Michael D. Waters, Mutagenesis and Carcinogenesis, Toxicogenomics

Adjunct Associate Professors
James W. Allen, Genetic Toxicology, Toxicogenomics and Epigenetic Mechanisms in Chemical Carcinogenesis
David C. Dorman, Experimental Neurotoxicology, Nasal Toxicology, Pharmacokinetics
Ronald P. Mason, Free-Radical Intermediates in the Metabolism of Toxic Chemicals
John M. Rogers, Developmental Toxicology, Teratology, Developmental Biology, Embryology, Nutrition
James M. Santer, Inflammatory Responses to Pollutant Inhalation; Cytokines; Eicosanoids
Mary Jane K. Selgrade, Immunotoxicology
Robert Sills, Molecular Pathology
Ralph J. Smalowicz, Immunotoxicology (with a Focus on the Developing Immune System)
Raymond W. Tennant, Transgenic Animals in Carcinogenesis Studies
Hugh A. Tillson, 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
Hugh A. Barton, Xenobiotics Metabolism, Pharmacokinetics, Physiologically-Based Pharmacokinetic (PBPK) and Pharmacodynamic Modeling
Ronald E. Cannon, Cancer Biology, Transgenic Mouse Models
Kevin M. Crofton, Understanding the Consequences of Endocrine Disruption on Neurodevelopment
Michael DeVito, Development of Models for Cumulative Risk to Endocrine Disruptors
Suzanne Fenlon, Environmental Effects of Mammary Gland Development and Function
Ian Gilmour, Experimental Toxicology
G. Jean Harry, Developmental Neurotoxicology, Molecular Neuro/Immunotoxicology
Yuh-Chin T. Huang, Genomics and Oxidative Stress in Vascular Reactivity
E. Sidney Hunter, Mechanisms of Developmental Toxicity, Oxidative Stress, Embryonic Stem Cells in Developmental Toxicity
Edward L. LeCluyse, Cellular/Molecular Mechanisms Regulating Liver Cytochrome P450 Enzymes Expression
Michael C. Madden, Air Pollution Toxicology, Lung Oxidative Stress and Inflammation
Michael G. Nazarely, Developmental Toxicology, Pregnancy Maintenance and Parturition
Nigel Walker, Risk Assessment, Receptor-Mediated Toxicants, Environmental Contaminants and Mechanisms of Carcinogenesis

The Curriculum
The Curriculum in Toxicology administers degree programs leading to the award of the PhD in Toxicology in 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 training faculty also includes scientists at government laboratories on campus or in the Research Triangle Park (e.g., EPA, NIEHS). 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 emphasis is 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), chemistry (including analytical and organic), and 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 (GRE) 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 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 January and for the spring semester by September.

Courses for Graduates and Advanced Undergraduates

423 [123] DEVELOPMENTAL TOXICOLOGY AND TERATOLOGY (CBIO 423) (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).

442 [142] BIOCHEMICAL AND MOLECULAR TOXICOLOGY (BIOC 442) (ENVR 442) (3). Prerequisites: any combination of two courses in biochemistry, molecular biology, cell biology, or cell physiology (or permission of the course director). Development of a comprehensive understanding of biochemical and molecular actions of environmental chemicals and toxins, 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

702 [202] PRINCIPLES OF PHARMACOLOGY AND TOXICOLOGY (PHCO 702) (3). Prerequisites: PHCO 701 or approval of the instructor. Introduces the major areas of pharmacology and toxicology and serves as a basis for more advanced courses. Three lecture hours per week. Spring. Pharmacology faculty: Parise (course director).

707 [207] ADVANCED TOXICOLOGY (PHCO 707) (ENVR 707) (3). Prerequisite: PHCO 702 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).

715 [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).

720 [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: Padilla (course director).

721 [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: Padilla (course director).

722 [222] TOXICOLOGY SEMINAR III (ENVR 722) (1). Presentations by 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).

750 [250] DATA ANALYSIS (PATH 750) (PHCO 750) (CBIO 750) (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 PHCO/TOX/PATH graduate students. Permission of the instructor is required for other students. Fall. Nicholas (course director).

760 [260] TOXICO 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. (2007 and alternate years.) Brouwer, Pollack (course co-directors).

792 [292] SEMINAR IN CARCINOGENESIS (PATH 792) (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).

901 [301] RESEARCH IN TOXICOLOGY (Vac.). May be repeated for credit. Hours and credits to be arranged. Fall, spring, and summer. Toxicology faculty.

993 [393] MASTER'S THESIS (Vac.). May be repeated. Hours and credits to be arranged. Fall, spring, and summer. Toxicology faculty.

994 [394] DOCTORAL DISSERTATION (Vac.). May be repeated. Hours and credits to be arranged. Fall, spring, and summer. Toxicology faculty.
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 (hereafter referred to as "the manual"). This manual and other information concerning the application of this law are available for inspection in the Admissions Office 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. The manual is also available online at regweb.unc.edu/residency. It is a reader-friendly version, written for laypeople rather than for legal personnel.

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 applicant 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 more 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 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 student supplies sufficient information to allow the admissions officer to classify him or her as a resident for tuition purposes, the person will be classified as a nonresident for tuition purposes. A residence classification once assigned (and confirmed pursuant to any appeal process invoked) may be changed thereafter (with a corresponding change in billing rates) only at intervals corresponding with the established primary division 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. A student or prospective student, who wants the University to consider his or her "resident" classification by another North Carolina public higher education institution, must include, with his or her application for resident status, copies of all the information that was before the other institution at the time that institution classified the student a resident for tuition purposes.

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 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: Any student who is uncertain about the accuracy of his or her current residence classification for tuition purposes 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 complete and correct 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 statute, visit the Web site regweb.unc.edu and click on "residency."
**Fraudulent Applications.** If a student is classified as 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 examine any application suspected of being fraudulent and, if warranted, will change the student’s 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 a minor, 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 not a legal resident of North Carolina unless he or she has lived in this state the five consecutive years prior to enrolling or reenrolling. To overcome this prima facie showing of nonresident, 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 clarifying institution notifies 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 in a 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; 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 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 on that committee or 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 transmittal to the State Residence Committee.

**Tuition Payment.** 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 abiding in the United States under a visa conditioned at least in part upon intent not to abandon a foreign domicile (e.g., B, F, J, P, Q, and S visas) cannot be classified a resident. An alien abiding 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 (e.g., 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. Aliens should also provide a copy of the front and back of the document(s) that they claim allow them to remain in the United States and establish a legal residence. 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 North Carolina resident status for tuition purposes statute provides a special provision for legal residents who are married. This provision is called the “spouse-pair” provision.

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 the domicile of the student’s 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 supplemental spousal residency application should be filed at the same time as the marriage certificate and the residency form is submitted. The spousal residency application should be filed after an admissions officer’s initial decision if the student seeks to appeal that decision. The admission office residency decision letter provides instructions on where to file the appeal (with or without a spousal residency application). Residency applications of persons who are married and claiming the North Carolina “spouse-pair” provision are not to be submitted to the admissions office. They should be filed to the Residence Status Committee Office/Married Student Residency Classification Office located in the University Registrar’s Office on campus. Applications are available online at regweb.unc.edu/residency.

**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 Benefit 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. 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, the common law presumptions do not absolutely control on the issue of the minor’s domicile, but they continue to be very strong evidence thereof.

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 qualified 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 of 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 N.C. Gen. Stat. Sect. 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 the in-state tuition rate.

Students or prospective students who believe that they are entitled to be classified 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.

New Benefit for UNC Employees and Related Persons

A new subsection (m) has been added to the NC residency statute G.S. 116-143.1 that provides new employment-connected benefit.

In the new subsection, full-time employees of UNC who are legal residents of North Carolina qualify for the in-state tuition rate even if they do not meet the 12-month requirement.

Further, this new classification category includes spouses and dependent children of the employee. The employee must be full-time and a legal resident of North Carolina. Further, if it is a child who seeks to qualify, the child must be a dependent (as defined by tax dependency law). Finally, if the person qualifies for this benefit, there is no limit on the number of type of courses for which the classification will apply. The effective date of this provision was July 1, 2005.

Please visit regweb.unc.edu/residency to learn more about residence status for tuition purposes.

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 04, (2) A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter 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. Please refer to the Web site at regweb.unc.edu/residency for the most recent amendments to the Military Tuition Benefit Law.

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 N.C. Gen. Stat. Sect. 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 United States Armed Forces. To be eligible for this military tuition benefit, the individual must be on active duty and a member of the United States Military, 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 in good standing 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.

Please note: There are special exceptions to military personnel and their dependents if the military person is reassigned outside of North Carolina or retires in North Carolina. Please visit regweb.unc.edu/residency to see the most updated requirements to maintain military tuition benefit eligibility (for both active duty military/National Guard, and their dependents).

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
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 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 unmarried 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 North Carolina 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 Admission/Office must be in writing and should be made by the applicant and must be filed by the applicant with admissions officer within fifteen working days after the applicant receives notice of the eligibility determination. The appeal is submitted to the Admissions Committee by that officer, 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 Admissions Committee must give written notice of that fact to the chairman of the Admissions Committee within ten days of receipt of the committee's decision. The chairman will promptly process the appeal for transmission to the State Admissions 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-third 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 records to be inaccurate, misleading, or otherwise in violation of the student's privacy rights, the student may request amendment of the record. FERPA also provides that a student's personally identifiable information may not be released to anyone else unless (1) the student has given 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 inspected 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 the 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; others may be found in the University's FERPA policy and accompanying regulations.

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 Honor Code that constitutes a crime of violence or a nonferocible 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 will release information from a student's education records to UNC-Chapel Hill school officials (including teachers, officials, and employees) who have a legitimate educational interest in the information. A school official has a "legitimate educational interest" if it is in the educational interest of the student in question for the official to have the information, or if it is necessary or desirable for the official to obtain the information in order to carry out his or her official duties or to implement the policies of the University of North Carolina.

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/billing addresses); student e-mail address; telephone listing (local and grade/billing 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 some or all directory information restricted, or to remove some or all student data from the Web, must either set the appropriate access on the Web at Student Central (studentcentral.unc.edu), notify the Office of the University Registrar in writing, or go to 105 Hanes Hall to complete the appropriate form. The Office of the University Registrar will accept requests and update the student's listing in the online Campus Directory at any time; however, to affect the listing in the printed Campus Directory students must submit the request to the Office of the University Registrar by the last day to register in the fall semester. For more information contact the Office of the University Registrar.

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. Honor thesis 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 removal 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 (CB# 9105). The University's FERPA policy and the text of the federal FERPA regulations are available on the Web at www.unc.edu/policies/ferpspol.pdf.

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 Student 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 other members of the University community, or University property;

C. Students or applicants who have been arrested and charged with a serious crime of a violent or dangerous nature, or a serious crime that involved placing another person in fear of imminent physical injury or danger, where, in the judgment of the committee, if the students are found guilty, their presence in the University would pose a serious threat of disruption of the academic process or a continuing danger to other members of the University community, or University property;

D. Students, charged by the University with a violation of policies concerning illegal drugs, whose continued presence within the University community would, if the charges are true, constitute a clear and immediate danger to the health or welfare of other members of the University community.

E. Students whose behavior on or off campus is such that, in the judgment of the committee, they pose a danger to themselves.

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/tpedec98.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 until 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, slingshot, loaded 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.

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 90 of the North Carolina General Statutes. Any member of the University community who violates that law 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 safe-
guards 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.D. 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 by 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 expulsion from enrollment and discharges from 
employment. However, the following minimum penalties shall be imposed for 
the particular offenses described.

Trafficfickling in Illegal Drugs

a. For the illegal manufacture, sale or delivery, or possession with intent to manu-
facture, sell or deliver, of any controlled substance identified in Schedule I, 
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 posses-
sion with intent to manufacture, sell or deliver, of any controlled substance 
identified in Schedules III through VI, N.C. Gen. Stat. 90-91 through 90-94, 
(including, but not limited to, marijuana, anabolic steroids, pentoobarbital, 
codine), 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 sus-
pension without pay that is permitted by State Personnel Commission regula-
tions, 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 
Stat. 90-50, 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 

b. For a first offense involving the illegal possession of any controlled substance 
identified in Schedules III through VI, N.C. Gen. Stat. 90-91 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 unexpired balance of the pre-
scribed period of probation. (If this balance for an employee subject to the 
State Personnel Act exceeds one week, that employee shall be discharged.)

c. For second or other subsequent offenses involving the illegal possession of con-
trolled substances, progressively more severe penalties shall be imposed, includ-
ing 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 cam-
pus 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

Possession and use of alcoholic beverages is substantially regulated by federal, 
state, and local laws and ordinances. Within this legal framework, the University's 
Policy on Student Possession and Consumption of Alcoholic Beverages in Facilities 
of the University of North Carolina at Chapel Hill sets out the conditions under 
which alcoholic beverages may be used on University property.

According to North Carolina law:

A. Generally persons twenty-one or older may purchase or consume alcoholic bever-
ages 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 pos-
sessing 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 or by a performing arts center with 
permits for malt beverages and unfortified wine. 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 following the law, the University's Policy on Student Possession 
and Consumption of Alcoholic Beverages in Facilities of the University of North 
Carolina at Chapel Hill sets out special rules about 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 be 
accessed on the World Wide Web at the following address: www.unc.edu/campus/
policies/studentalcohol.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. Student groups 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 Emergency Evaluation and Action Committee, and/or state and federal authorities.

**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.

**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.

**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 2004-2005, the completion or graduation rate for undergraduates who entered the University of North Carolina at Chapel Hill in 1999 on a full-time basis was 83.8 percent.
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