DEPARTMENT OF EPIDEMIOLOGY (GRAD)

Contact Information
Department of Epidemiology
Visit Program Website (http://sph.unc.edu/epid)
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Til Stürmer, Chair

The Department of Epidemiology, which is housed in the Gillings School of Global Public Health, is one of the world’s leading academic departments in epidemiology. Renowned faculty members provide students with training in effective research practices and methods. The department conducts innovative research and provides classroom and real-world educational interdisciplinary opportunities that emphasize the integration of substantive area knowledge and cutting-edge epidemiologic methods. It also works with students to apply their epidemiology research to a variety of health problems in North Carolina and across the world. Research resources include diverse studies of disease endpoints (cancer, cardiovascular, infectious disease, injury, and reproductive/perinatal/pediatric epidemiology) and factors and methods that impact patterns of disease and population health (environmental, occupational, pharmacoepidemiology, genetic, social, and methods).

Degrees and Certificates
The Department of Epidemiology offers master’s degrees and a doctoral degree, and cosponsors a certificate. The master’s and doctoral programs offer a body of research skills together with the opportunity to work closely with faculty on key research questions, and to share the challenge and rewards that epidemiology provides.

Master of Public Health (M.P.H.)
The M.P.H. is a terminal degree program for physicians and other doctoral-level professionals. The M.P.H. degree requires a minimum of 42 semester hours of credit, and is designed as a two-year program.

Master of Public Health Program (M.P.H.) with a Veterinary Epidemiology Concentration
The Department of Epidemiology, in collaboration with the North Carolina State University College of Veterinary Medicine, jointly sponsors a targeted curriculum opportunity for veterinarians interested in careers in public health. This two-year program requires a minimum of 56 total credit hours. The unique program is designed to provide graduate training for veterinarians interested in pursuing public health service-oriented careers with local, state, federal, and international public health and animal health agencies.

Master of Science in Clinical Research (M.S.C.R.)
The M.S.C.R. program is an interdisciplinary research degree program housed within the Department of Epidemiology in the Gillings School of Global Public Health but jointly sponsored by the TraCS (http://tracs.unc.edu) (North Carolina Translational and Clinical Sciences) Institute in the UNC School of Medicine. The program is designed to develop the skills necessary for a successful career as a principal investigator and collaborator in clinical/translational research. The M.S.C.R. requires a minimum of 36 semester hours of credit and is designed as a two-year program with at least two full semesters in residence. The program may be completed on either a part-time or full-time basis.

Doctor of Philosophy (Ph.D.)
The doctor of philosophy (Ph.D.) in epidemiology prepares students for careers in research and teaching, often at a university, federal, or state agency, or private research institution. Students develop research and teaching skills in epidemiology through coursework and practice opportunities. The doctoral program includes coursework, preliminary doctoral examinations, and doctoral research. Students who have already earned a relevant master’s or professional degree (M.D., D.D.S., D.V.M., etc.) typically complete the doctorate in three to five years after admission.

Students who have not earned a relevant master’s or professional degree may still be admitted to the doctoral program; however, these students are required to complete the master of science in public health (M.S.P.H.) in the Department of Epidemiology before they begin their doctoral coursework. This may add one to two years to the program. These applicants should still apply directly to the Ph.D. program.

Certificate in Field Epidemiology
The Certificate in Field Epidemiology (http://sph.unc.edu/phlp/phlp-degrees-and-certificates/certificate-in-field-epidemiology) is cosponsored by the Department of Epidemiology and the Public Health Leadership Program. The program is specifically designed for working practitioners and emphasizes practical, applied skills.

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.

Distinguished Professors
Adaora Adimora (241), Infectious Disease Epidemiology
Myron "Mike" Cohen, Infectious Disease Epidemiology
Michael Emch (234), Spatial Epidemiology, Medical Geography, Infectious Diseases, Neighborhoods and Health
Gerardo Heiss (41), Cardiovascular Epidemiology
David M. Margolis (220), Infectious Disease Epidemiology
Andrew F. Olshan (147), Cancer Epidemiology, Reproductive/Perinatal Epidemiology
Robert S. Sandler (73), Cancer Epidemiology
H. June Stevens (172), Nutritional Epidemiology, Obesity Epidemiology
Til Stürmer (224), Pharmacoepidemiology, Methodology

Professors
Allison Aiello (240), Social Epidemiology
Ralph S. Baric (142), Public Health Virology, Molecular Virology
Maurice Alan Brookhart (228), Pharmacoepidemiology, Methodology
Stephen R. Cole (225), Methodology, Infectious Disease Epidemiology
Julie Daniels (206), Environmental Epidemiology, Reproductive/Perinatal/Pediatric Epidemiology
Stephanie Engel (231), Reproductive/Perinatal Epidemiology, Environmental Epidemiology
Marilie D. Gammon (195), Cancer Epidemiology
Stephen W. Marshall (199), Injury Epidemiology, Methodology
Steven R. Meshnick (200), Infectious Disease Epidemiology
Kari North (205), Cardiovascular Epidemiology, Genetic Epidemiology
Audrey Pettifor (215), Infectious Disease Epidemiology
Wayne D. Rosamond (162), Cardiovascular Epidemiology
Jennifer S. Smith (212), Infectious Disease Epidemiology, Cancer Epidemiology
Melissa A. Troester (226), Cancer Epidemiology
Annelies Van Rie (202), Infectious Disease Epidemiology
David J. Weber (96), Infectious Disease Epidemiology

Associate Professors
Christy L. Avery (233), Cardiovascular Epidemiology, Genetic Epidemiology
Larry Engel (232), Environmental Epidemiology, Cancer Epidemiology
Emily Gower (243), Ocular Epidemiology, Infectious Disease Epidemiology
Joanna "Asia" Maselko (242), Social Epidemiology, Mental Health Epidemiology
Brian W. Pence (236), Infectious Disease Epidemiology, Mental Health Epidemiology, Implementation Science Research, Quantitative Epidemiologic Methods
Charles L. Poole (193), Epidemiology
David B. Richardson (213), Environmental Epidemiology, Occupational Epidemiology
Whitney R. Robinson (229), Social Epidemiology, Cancer Epidemiology, Nutrition, Methodology
Victor J. Schoenbach (64), Behavioral Epidemiology, Infectious Disease Epidemiology (Primarily STDs), Cancer Control (Primarily Smoking Cessation)
Lois V. Stamm (145), Public Health Bacteriology, Molecular Cloning, Pathogeneics of Infectious Disease
James C. Thomas (127), Infectious Disease Epidemiology, Social Epidemiology
Daniel J. Westreich (235), Infectious Disease Epidemiology, Methodology, Reproductive and Perinatal Epidemiology, Pharmacoepidemiology

Assistant Professors
Yvonne Golightly (244), Injury Epidemiology, Osteoarthritis
Jennifer L. Lund (238), Cancer Survivorship and Outcomes, Pharmacoepidemiology, Healthcare Database Utilization
Hazel B. Nichols (239), Cancer Epidemiology, Women's Health
Kimberly A. Powers (237), Infectious Disease Epidemiology, Global Health

Clinical Associate Professors
Lorraine Alexander, Public Health Preparedness, Distance Education
Karim Yachts, Environmental Epidemiology

Clinical Assistant Professor
Patricia Basta, Cancer Epidemiology

Research Professors
John Baron, Cancer Etiology and Prevention, Clinical Epidemiology
Kelly R. Evenson (209), Cardiovascular Epidemiology, Physical Activity

Research Associate Professors
Sylvia Becker-Dreps, Evaluation of Immunization Programs, Rotavirus Vaccines, Pneumococcal Vaccines
Jeannette Bensen, Cancer Epidemiology, Molecular Epidemiology
Kathleen C. Dorsey, Cancer Epidemiology
Nora Franceschini, Cardiovascular Epidemiology
Michele Jönsson Funk (216), Infectious Disease Epidemiology, Pharmacoepidemiology
Sonia Naprawnik (223), Infectious Disease Epidemiology
Amy Sims, Infectious Disease Epidemiology
Eric A. Whitsel (221), Cardiovascular Epidemiology

Research Assistant Professors
Christopher Baggett, Chronic Disease Epidemiology
Tania Desrosiers, Reproductive/Perinatal Epidemiology; Birth Defects
Andrew Edmonds, Infectious Disease Epidemiology
Jess Edwards, Infectious Disease Epidemiology, Methodology, Global Health
Mariela Graff, Genetic Epidemiology
Rachel Grahan, Public Health Virology, Molecular Virology
Lisa Gralinski, Public Health Virology, Infectious Disease Epidemiology
Alex Keil, Environmental Epidemiology, Occupational Epidemiology
Anna Kucharska-Newton, Cardiovascular Epidemiology
Laura R. Leohr (227), Cardiovascular Epidemiology, Clinical Epidemiology
Shabbar Ranpurwala, Injury Epidemiology
Timothy Sheahan, Public Health Virology, Infectious Disease Epidemiology, Genetic Epidemiology
Xuezheng "Amy" Sun, Cancer Epidemiology, Molecular Epidemiology, Genetic Epidemiology
Anissa Vines, Social Epidemiology, Health Care Epidemiology
Sharon S. Weir, Infectious Disease Epidemiology
Kristin Young, Genetic Epidemiology, Health Disparities, Obesity Epidemiology

Clinical Professors
Timothy S. Carey (138), Clinical Epidemiology
David F. Ransohoff (160), Health Care Epidemiology
Ross Simpson Jr., Cardiovascular Epidemiology, Clinical Epidemiology
Ronald Strauss, Dental Epidemiology, Social Impacts

Clinical Associate Professor
Mary "Bonnie" Rogers (187), Occupational Epidemiology

Adjunct Professors
Naomar Almeida-Filho, Psychosocial Epidemiology
Donna D. Baird (104), Reproductive Epidemiology
James D. Beck (167), Dental Epidemiology
Douglas Bell, Cancer Epidemiology
Dan German Blazer (108), Psychosocial and Aging Epidemiology
Donald Budenz
Gregory L. Burke, Cardiovascular Epidemiology
Leigh Callahan, Chronic Disease Epidemiology, Health Care Epidemiology
Dennis A. Clements (152), Infectious Disease Epidemiology
Joseph Cook, Infectious Disease Epidemiology, Parasitology
Joan Cornoni-Huntley (04), Aging, Physical, Cognitive, and Social Functioning
John Dement, Environmental Epidemiology, Occupational Epidemiology
Nancy Dreyer, Pharmacoepidemiology
Jeffrey Engel, Infectious Disease Epidemiology
Joseph Eron Jr., Infectious Disease Epidemiology
Paul J. Feldblum (186), Infectious Disease Epidemiology
Robert Fletcher (45), Health Care Epidemiology
Suzanne Fletcher (46), Health Care Epidemiology
Bradley Gaynes, Psychiatric Epidemiology
Paul A. Godley (181), Cancer Epidemiology
Laura Hanson, Clinical Epidemiology, Geriatrics
Katherine E. Hartmann (196), Reproductive Epidemiology, Women's Health
William Jenkins, Social Epidemiology
Joanne Jordan, Chronic Disease Epidemiology
Jay Kaufman, Methodology, Social Epidemiology
Stephen Kritchevsky, Aging Epidemiology
Peter Leone, Infectious Disease Epidemiology
Jay Levine, Veterinary Epidemiology
Stephanie London, Cancer Epidemiology
Matthew Longnecker, Environmental and Occupational Epidemiology
Dana P. Loomis, Environmental and Occupational Epidemiology
Timothy Mastro, Infectious Disease Epidemiology
Melinda S. Meade (58), Medical Geography
Pauline Mendola, Environmental Epidemiology, Reproductive Epidemiology
Kenneth A. Munt, Occupational Epidemiology
Warren P. Newton, Health Care Epidemiology
David Peden, Environmental and Occupational Epidemiology
Miquel Porta, Cancer Epidemiology, Clinical Epidemiology, Pharmacoepidemiology
Dale Sandler (90), Environmental Epidemiology
Joellen M. Schildkraut (126), Cancer Epidemiology
Nicholas Shaheen, Health Care Epidemiology
Mark Sherman
Ilene C. Siegler (148), Aging
Gary Slade, Oral Epidemiology
Betsy Sleath, Pharmacoepidemiology, Outcomes Research
Jeffrey S. A. Stringer, Global Women’s Health, HIV/AIDS in Women and Child Health
Jack A. Taylor, Environmental and Occupational Epidemiology
John Thorp Jr., Reproductive Epidemiology
Hugh H. Tilson (87), Pharmacoepidemiology
Clarice Weinberg, Environmental and Reproductive Epidemiology
Allen J. Wilcox (61), Reproductive Epidemiology

Adjunct Associate Professors
Elizabeth B. Andrews (140), Pharmacoepidemiology
Wendy Brewster, Women’s Health
Patricia Chang, Cardiovascular Epidemiology
Benjamin H. Chi, Clinical Epidemiology, Global Health, Reproductive Health
Thomas B. Cole, Public Health, Violence, Medical Editing
Martin Crane, Chronic Disease Epidemiology, Reproductive Epidemiology
Evan Dellen, Health Care Epidemiology
Kimon Divaris, Oral Epidemiology
Nancy Dole, Reproductive Epidemiology
Bruce Duncan, Cardiovascular Epidemiology
Sara Ephross, Chronic Disease Epidemiology
Cynthia Girman, Pharmacoepidemiology
Debra E. Irwin (176), Cancer Epidemiology, Reproductive Epidemiology
Michael Kappelman, Clinical Epidemiology, Pharmacoepidemiology
Duanping Liao (189), Cardiovascular Epidemiology
Pia MacDonald, Applied Epidemiology
Prema Menezes, Infectious Disease Epidemiology
Patricia Moorman, Cancer Epidemiology
Lucas Neas, Environmental Epidemiology
Matthew E. Nielsen, Clinical Epidemiology and Health Services, Cancer Outcomes
Maria Schmidt, Chronic Disease Epidemiology
Arlene Sena-Soberano, Infectious Disease Epidemiology
Paul E. Stang (163), Chronic Disease Epidemiology
Anthony J. Viera, Hypertension, Cardiovascular Disease Prevention
Emmanuel Walter, Infectious Disease Epidemiology
Suzanne West (207), Health Care Epidemiology, Pharmacoepidemiology
Alice D. White (117), Cardiovascular Epidemiology
David Wohl, Infectious Disease Epidemiology

Adjunct Assistant Professors
Jane H. Brice, Clinical Epidemiology, Cardiovascular Epidemiology
Lori Carter Edwards (192), Cardiovascular Epidemiology
Remy Coeux, Health Care Epidemiology
Kourtney Davis, Pharmacoepidemiology
Mohamed El Hag Ahmed, Environmental/Occupational Epidemiology, Injury Epidemiology
Alan Ellis
Aaron Fleischauer, Applied Epidemiology, Surveillance, Preparedness and Response
Satish Gopal
Louise Henderson, Health Services Research, Cancer Epidemiology
Jane Hoppin, Environmental Epidemiology
Jennifer A. Horney, Applied Epidemiology
Jonathan Juliano, Molecular Epidemiology and Genetics of Malaria
Thomas Luben, Environmental Epidemiology, Adverse Reproductive Outcomes
Christina Mack, Pharmacoepidemiology, Comparative Effectiveness
William C. Maier, Pharmacoepidemiology
Edmond Malka
Ann M. McNeill, Cardiovascular Epidemiology
Lynne Messer, Social Epidemiology
David Miller, Pharmacoepidemiology, Molecular Epidemiology
Victoria Mobley
Keri Monda, Genetics, Obesity Epidemiology
Sarah Nyante
Scott Proescholdbell, Injury Epidemiology
Williams Saunders, Psychosocial Epidemiology
Pamela Schwingl, Chronic Disease Epidemiology, Reproductive Epidemiology
Sumitra Shantakumar, Pharmacoepidemiology
Markus Steiner, Methodology
Steve M. Taylor, Malaria, Tropical Disease Epidemiology, Hemoglobin Disorders
Vani Vannappagari, Infectious Disease Epidemiology
Emily Vavalle, Infectious Disease Epidemiology
Andres Villaveces, Injury Epidemiology
Catherine Vladutiu, Perinatal Epidemiology, Injury Epidemiology, Cardiovascular Epidemiology
Timothy Wade, Environmental Epidemiology
Rachel E. Williams, Health Care Epidemiology
Christopher Woods, Infectious Disease Epidemiology
Jose Zevallos, Cancer Epidemiology

Adjunct Instructor
Amy Ising, Public Health Informatics, Public Health Surveillance, Syndemic Surveillance

Professors Emeriti
Wilfrida Behets
Barbara S. Hulka
Michel A. Ibrahim
Berton H. Kaplan
J. Richard Seed
Carl M. Shy
EPID

Advanced Undergraduate and Graduate-level Courses

EPID 600. Principles of Epidemiology for Public Health. 3 Credits.
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.
Grading status: Letter grade.

EPID 625. Injury as a Public Health Problem. 3 Credits.
This course examines unintentional injuries from a public health perspective. The course covers core concepts in injury prevention and control, including the epidemiology of unintentional injury, prevention strategies, behavioral models, child and adolescent injury, messaging framing, the Haddon matrix, and injury surveillance.
Requisites: Corequisite, EPID 600.
Grading status: Letter grade.

EPID 626. Violence as a Public Health Problem. 3 Credits.
This course covers core concepts in violence prevention and control, including the epidemiology of violence, prevention strategies for interpersonal and intra-personal violence, behavioral models that describe power structures that reinforce personal and societal factors affecting self-harm and violence towards others, and violence directed towards children and adolescents.
Requisites: Prerequisite, EPID 625.
Grading status: Letter grade.

EPID 695. Research in Epidemiology. 1-3 Credits.
Permission of the instructor. A course for undergraduate students who wish to conduct research as part of an ongoing epidemiology project or as an independent activity.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics; 3 total credits. 3 total completions.
Grading status: Letter grade.

EPID 696. Problems in Epidemiology. 1-3 Credits.
A course for undergraduate students who wish to make an intensive study of some special problems in epidemiology.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics; 3 total credits. 3 total completions.
Grading status: Letter grade.

EPID 700. SAS and Data Management. 3 Credits.
An introduction to statistical analysis, programming, and data management, using the SAS programming language. Two lecture hours and two lab hours per week.
Grading status: Letter grade.

EPID 705. Introduction to Deductive and Probability Logic in Epidemiology. 2 Credits.
Permission of the instructor for nonmajors. Covers properties of logical relations, truth tables and Euler diagrams, valid and fallacious arguments, cognitive heuristics and biases, interpretations of probability, the probability calculus, Bayes’ theorem, binomial and normal distributions, applications of probability logic and probabilistic fallacies, all in an epidemiologic context.
Grading status: Letter grade.

EPID 710. Fundamentals of Epidemiology. 5 Credits.
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.
Requisites: Corequisite, BIOS 600.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.
Grading status: Letter grade.

EPID 711. Clinical Measurement/Evaluation. 3 Credits.
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.
Grading status: Letter grade.

EPID 715. Theory and Quantitative Methods in Epidemiology. 4 Credits.
Required preparation, competence in SAS. 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 hours per week.
Requisites: Prerequisites, EPID 705, EPID 710 or 711; Corequisite, BIOS 545; Permission of the instructor required for nonmajors.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.
Grading status: Letter grade.

EPID 716. Epidemiologic Data Analysis. 3 Credits.
Required preparation, documented SAS proficiency. This course is a combined lecture/lab format where students get hands-on experience in the analysis and interpretation of data from cohort and case-control studies.
Requisites: Prerequisites, EPID 705, 710 or 711. Corequisite, EPID 715.
Grading status: Letter grade.

EPID 718. Analytic Methods in Observational Epidemiology. 3 Credits.
Required preparation, demonstrated experience with computer-based data analysis. Concepts and applications, including logistic regression, binomial regression, model building strategy, additive and multiplicative interaction, and graphical exploration. Includes computer-based experience with real data. Two lecture and one lab hours per week.
Requisites: Prerequisites, EPID 715 and EPID 716; Permission of the instructor for nonmajors.
Grading status: Letter grade.

EPID 719. Readings in Epidemiologic Methods. 1 Credit.
EPID 722 (spring). A discussion in journal-club format of readings in general epidemiologic methods, from problem conceptualization to application of results.
Requisites: Co-requisite, EPID 718 (fall);
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.
Grading status: Letter grade.

EPID 722. Epidemiologic Analysis of Time-to-Event Data. 4 Credits.
Required preparation, SAS software expertise. Course covers epidemiologic analysis of time-to-event data and emphasizes weighing threats to the accuracy of inferences. Class time is spent discussing weekly readings and homeworks.
Requisites: Prerequisite, EPID 718.
Grading status: Letter grade.
EPID 725. Research Planning Workshop. 1 Credit.
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. Open only EPID majors in 2nd year (or greater) of the PhD program or 3rd year (or greater) of the MSPH/PhD program.
Requisites: Prerequisite, EPID 715 and 716; corequisite, EPID 718.
Repeat rules: May be repeated for credit.
Grading status: Letter grade.

EPID 726. Epidemiologic Research Methods. 3 Credits.
Minimum second-year standing in doctoral program or permission of the instructor. Majors only. 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.
Requisites: Prerequisites, EPID 715 and 725.
Grading status: Letter grade.

EPID 731. Systematic Review and Meta-Analysis. 1 Credit.
This seminar provides training in systematic review and meta-analysis. Topics include problem definition, literature search, extraction of results and study characteristics, publication bias and funnel plot analysis, analysis overall heterogeneity, and stratified and meta-regression analysis of study and population characteristics.
Grading status: Letter grade.

EPID 733. Clinical Trials in Epidemiology. 3 Credits.
Grading status: Letter grade.

EPID 735. Cardiovascular Epidemiology. 3 Credits.
Review of cardiovascular health and disease in populations and their population determinants. Topics include epidemiologic methods, risk factors, strategies for prevention, and a student research project. Three lecture hours per week.
Grading status: Letter grade.

EPID 738A. Methods and Applications of Cardiovascular Disease Surveillance. 1 Credit.
This course helps students gain experience critiquing and interpreting national and international cardiovascular disease (CVD) surveillance programs, evaluate recommendations for future CVD surveillance research and policy, and to explore CVD surveillance data sources with hands-on experience with practical aspects of study conduct.
Requisites: Prerequisite, EPID 735.
Grading status: Letter grade.

EPID 738B. Epidemiology of Stroke. 1 Credit.
This course helps students become familiar with physiologic and pathologic aspects of cerebrovascular diseases, provides opportunity to explore research findings regarding major risk factors for stroke and evidence for prevention strategies, and offers a guided experience in critiquing, synthesizing, and communicating stroke related research findings.
Requisites: Prerequisite, EPID 735.
Grading status: Letter grade.

EPID 738C. Contemporary Issues in Hypertension Research. 1 Credit.
In this seminar, we examine several contemporary issues related to hypertension research, particularly pertaining to measurement of blood pressure. Each session will begin with an overview, likely didactic, followed by more in-depth discussion of the topics.
Requisites: Prerequisite, EPID 735.
Grading status: Letter grade.

EPID 742. Biomarkers in Population-Based Research. 2 Credits.
This course surveys the major issues relevant to the application of biomarkers in epidemiological research, including the logistical hurdles in biospecimen collection and storage, assessments of biomarker quality, analytic issues, and the interpretation of quantitative estimates.
Grading status: Letter grade.

EPID 743. Genetic Epidemiology: Methods and Applications. 3 Credits.
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 nonhuman systems. Three lecture hours a week.
Requisites: Prerequisites, BIOS 545 and EPID 715; permission of the instructor for students lacking the prerequisites.
Grading status: Letter grade.

EPID 750. Fundamentals of Public Health Surveillance. 3 Credits.
This course provides the conceptual foundations and practical skills for designing and implementing surveillance systems, for using surveillance data for the conduct and evaluation of public health programs and research.
Grading status: Letter grade.

EPID 751. Emerging and Re-Emerging Infectious Diseases. 3 Credits.
Basic principles of infectious diseases, focusing on emerging and re-emerging disease agents that affect public health. Includes an introduction to the biology of viruses, bacteria, and eukaryotic parasites.
Grading status: Letter grade.

EPID 753. Prevention and Control of Infectious Diseases at the Level of the Community. 3 Credits.
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.
Grading status: Letter grade.

EPID 754. Advanced Methods in Infectious Disease Epidemiology. 3 Credits.
This course covers theories, concepts, study designs, and analytical methods of particular importance in studying infectious outcomes. Teaching methods include lectures, hands-on computer practicals, article discussions, and written assignments.
Requisites: Prerequisites, EPID 715 and 716.
Grading status: Letter grade.

EPID 755. Introduction to Infectious Disease Epidemiology. 3 Credits.
Permission required for non-majors. Objectives of the course are to: (1) understand the general principles of infectious disease epidemiology; (2) understand surveillance, prevention and control of infectious diseases; and (3) apply principles to specific infectious diseases. Course is part lecture and part group projects/discussion period per week.
Grading status: Letter grade.
EPID 756. Control of Infectious Diseases in Developing Countries. 3 Credits.
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.
Requisites: Prerequisite, EPID 600.
Grading status: Letter grade.

EPID 757. Epidemiology of HIV/AIDS in Developing Countries. 3 Credits.
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.
Requisites: Prerequisite, EPID 600.
Grading status: Letter grade.

EPID 758. Methods and Principles of Applied Infectious Disease Epidemiology. 3 Credits.
This course will cover the interaction between an infectious agent, host, and environment; modes and dynamics of transmission; the role of immunity in infectious disease epidemiology; and disease elimination strategies. Three lecture hours per week.
Requisites: Prerequisite, EPID 600.
Grading status: Letter grade.

EPID 759. Methods in Field Epidemiology. 3 Credits.
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.
Grading status: Letter grade.

EPID 760. Vaccine Epidemiology. 3 Credits.
An overview of vaccinology principles, mechanisms of action, and herd protection, and statistical considerations. Students will obtain understanding of how vaccines are produced by industry, undergo preclinical evaluation, and evaluated for efficacy in clinical trials.
Grading status: Letter grade.

EPID 764. Hospital Epidemiology. 1-2 Credits.
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.
Requisites: Prerequisite, EPID 710; Permission of the instructor required.
Grading status: Letter grade.

EPID 765. Methods and Issues in Pharmacoepidemiology. 3 Credits.
Required preparation, 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.
Grading status: Letter grade.

EPID 766. Epidemiologic Research with Healthcare Databases. 3 Credits.
Required preparation, competency in data management with SAS (BIOS 511, EPID 700, or equivalent). Learn how healthcare utilization data are generated and use databases to identify study populations and conduct epidemiologic analysis of the utilization and comparative effectiveness/safety of prescription drugs and healthcare services.
Requisites: Prerequisite, EPID 600.
Grading status: Letter grade.

EPID 770. Cancer Epidemiology and Pathogenesis. 3 Credits.
Equivalent experience for students lacking EPID 710. Undergraduate major or strong preparation in the biological sciences required. Permission of the instructor for nonmajors. Emphasis on integration of epidemiologic data with laboratory and clinical research findings. Issues in epidemiologic research design, analysis, and interpretation are presented within the context of substantive epidemiology. Three lecture hours a week.
Requisites: Prerequisites, BIOS 600 and EPID 710.
Grading status: Letter grade.

EPID 771. Cancer Epidemiology: Survivorship and Outcomes. 3 Credits.
Students will evaluate the strengths and weaknesses of data sources common to cancer survivorship and outcomes studies, focusing on epidemiologic study designs. The course addresses cancer detection, treatment strategies, medical surveillance, and personal behaviors as determinants for prognosis, late effects, and the long-term health of cancer survivors.
Requisites: Prerequisite, EPID 710 or 711.
Grading status: Letter grade.

EPID 772. Cancer Prevention and Control Seminar. 3 Credits.
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 management. Appropriate research design and methodologies are covered.
Grading status: Letter grade
Same as: HPM 765, HBEH 765.

EPID 775. Advanced Cancer Epidemiology: Classic and Contemporary Controversies in Cancer Causation. 2 Credits.
Readings and discussions on classic and contemporary controversies in cancer causation. Two seminar hours per week.
Requisites: Prerequisites, EPID 715, 718, and 770 or 771; Permission of the instructor for students lacking the prerequisites.
Grading status: Letter grade.

EPID 780. Occupational Epidemiology. 3 Credits.
Required preparation, 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.
Grading status: Letter grade.

EPID 785. Environmental Epidemiology. 3 Credits.
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.
Requisites: Prerequisites, EPID 710 and BIOS 600.
Grading status: Letter grade.

EPID 786. Community-Driven Epidemiology and Environmental Justice. 2 Credits.
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.
Grading status: Letter grade.
EPID 787. Advanced Environmental Epidemiology. 2 Credits.
Discussion of the epidemiology of environmentally-related disease and
the application of epidemiologic concepts/methods to protecting public
health from environmental hazards. Examples illustrate discussions
regarding exposure assessment, dynamic nature of environments,
regulation/assessment of environmental hazards, and methods used for
environmental hazard identification and risk assessments.
Requisites: Prerequisite, EPID 785.
Grading status: Letter grade.

EPID 790. Intervention Epidemiology. 2 Credits.
Epidemiologic methods for evaluating interventions, primarily in
infectious disease epidemiology and injury epidemiology. Covers
randomized designs, such as community trials, and evaluation of non-
randomized interventions, such as policies and laws.
Requisites: Co-requisites, EPID 705 and 710.
Grading status: Letter grade.

EPID 795. Data in Public Health. 3 Credits.
This course provides students with an overview of public health
informatics and includes in-depth discussions on informatics approaches
used in developing the public health information systems in use today.
Grading status: Letter grade.

EPID 799A. Special Studies in Epidemiology I. 1 Credit.
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. One credit option.
Repeat rules: May be repeated for credit; may be repeated in the same
term for different topics; 3 total credits. 3 total completions.
Grading status: Letter grade.

EPID 799B. Special Studies in Epidemiology II. 2 Credits.
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. Two credits option.
Repeat rules: May be repeated for credit; may be repeated in the same
term for different topics; 6 total credits. 3 total completions.
Grading status: Letter grade.

EPID 799C. Special Studies in Epidemiology III. 3 Credits.
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. Three credits option.
Repeat rules: May be repeated for credit; may be repeated in the same
term for different topics; 9 total credits. 3 total completions.
Grading status: Letter grade.

EPID 801. Data Analysis in Oral Epidemiology. 2-3 Credits.
Required preparation, basic knowledge of SAS. Permission of the
instructor. 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.
Grading status: Letter grade.

EPID 802. Clinical Research Skills I: Basics. 2 Credits.
Includes basic development of research ideas, manuscript writing,
manuscript review.
Requisites: Co-requisite, EPID 711 or PUBH 760.
Grading status: Letter grade.

EPID 804. Design of Clinical Research Studies. 4 Credits.
Clinical research majors only. The goals of this course are to develop
a strong fundamental understanding of the design of clinical research
studies; to understand selection of study populations, exposure
and outcome measurement, and choice of appropriate measures; to
understand ethical oversight, project management and quality control.
Requisites: Prerequisite, EPID 711.
Grading status: Letter grade.

Credits.
This course will address the process for proposal development for
clinicians with an emphasis on the initial stages including development
of the research questions, specific aims, and significance.
Requisites: Co-requisites, EPID 711 and PUBH 741 or permission of
instructor.
Grading status: Letter grade.

EPID 806. Clinical Research Skills IV -- Proposal Development. 2 Credits.
Proposal writing and study implementation skills. Emphasis is given to
NIH style proposals for clinical and translational research.
Requisites: Prerequisites, EPID 805, EPID 711, PUBH 741; permission of
the instructor for students lacking the prerequisites.
Grading status: Letter grade.

EPID 810. Physical Activity Epidemiology and Public Health. 3 Credits.
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.
Requisites: Prerequisite, EPID 600.
Grading status: Letter grade
Same as: NUTR 810.

EPID 813. Nutritional Epidemiology. 3 Credits.
This course introduces basic methods of dietary assessment, reviews
various topics in nutrition epidemiology, and teaches the skills needed for
critical evaluation of the nutritional epidemiologic literature.
Requisites: Prerequisites, BIOS 600, and EPID 600 or 710.
Grading status: Letter grade
Same as: NUTR 813.

EPID 814. Obesity Epidemiology. 3 Credits.
Examines epidemiology research on the causes, consequences, and
prevention of obesity. Emphasis on methodological issues pertinent to
obesity research.
Requisites: Prerequisites, BIOS 545, EPID 715, 716 and PUBH 600 or
NUTR 812 or EPID 813.
Grading status: Letter grade
Same as: NUTR 814.

EPID 818. Analytical Methods in Nutritional Epidemiology. 3 Credits.
Skills and techniques to study how dietary exposures, physical activity,
and anthropometric status relate to disease outcomes. Focus is
hands-on data analysis using STATA, and interpretation of results from
statistical analysis.
Requisites: Prerequisites, BIOS 545, EPID 600 or 710, and NUTR 813.
Grading status: Letter grade
Same as: NUTR 818.
EPID 825. Social Determinants of Health: Theory, Method, and Intervention. 3 Credits.
Discussion and readings will focus on population vs. individual perspectives on health, risk conditions vs. risk factors, concepts of causation, and knowledge development as a historic and social process. Course will also examine macro-level determinants of population health.
Requisites: Prerequisite, EPID 600.
Grading status: Letter grade
Same as: HBEH 802.

EPID 826. Introduction to Social Epidemiology. 2 Credits.
This course provides an overview of key concepts, methods and findings in research on social determinants of population health. Classes will consist of a didactic presentation followed by in-class group work modules and large group summary discussion.
Requisites: Pre- or corequisite, EPID 600.
Grading status: Letter grade.

EPID 827. Social Epidemiology: Design and Interpretation. 2 Credits.
Approaches to social epidemiologic research, with a focus on study design and interpretation of analytic techniques common in social epidemiology. Topics include causal inference for socially patterned exposures, racial equity research, and place effects on health.
Requisites: Prerequisite, EPID 710; corequisite, EPID 715 or 716.
Grading status: Letter grade.

EPID 851. Reproductive and Perinatal Epidemiology. 3 Credits.
Equivalent experience for students lacking the co-requisites. 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.
Requisites: Co-requisites, BIOS 600 and EPID 600;
Grading status: Letter grade
Same as: MHCH 851.

EPID 853. Advanced Topics in Perinatal and Pediatric Epidemiology. 2 Credits.
Critical review of current topics in, and methods for, perinatal and pediatric epidemiology.
Requisites: Prerequisites, EPID 710 and 851; Permission of the instructor for master's level students.
Grading status: Letter grade
Same as: MHCH 853.

EPID 883. Teaching Experience in Epidemiology. 1-4 Credits.
Open to EPID majors, 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.
Grading status: Letter grade.

EPID 886. Readings in Epidemiology. 1-3 Credits.
Permission of the instructor required. Independent reading and tutorial guidance in special areas of epidemiology.
Grading status: Letter grade.

EPID 888. Topics in Epidemiology Seminar. 1 Credit.
EPID majors only. 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.
Requisites: Prerequisite, EPID 710.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.
Grading status: Letter grade.

EPID 889. Topics in Epidemiology Seminar. 1 Credit.
EPID majors only. 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.
Requisites: Prerequisite, EPID 710.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.
Grading status: Letter grade.
EPID 910. Research in Epidemiology. 1-9 Credits.
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.
Repeat rules: May be repeated for credit; may be repeated in the same term for different topics.
Grading status: Letter grade.
EPID 992. Master’s (Non-Thesis). 3 Credits.
EPID 994. Doctoral Research and Dissertation. 3 Credits.

Master of Public Health (M.P.H.) Applied Epidemiology Concentration Description
In the Applied Epidemiology concentration (https://sph.unc.edu/resource-pages/master-of-public-health-2/applied-epidemiology-concentration), students will learn to apply epidemiologic tools and approaches to describe patterns of disease or public health issues affecting diverse populations using an epidemiologic framework and, in turn, help drive solutions to problems. Examples of recent public health topics that our students have explored include HIV, cardiovascular disease, environmental exposures, the opioid epidemic, suicide rates, HPV vaccine, efficacy of cancer treatments, and the role of nutrition, among others.

Requirements
Requirements for the M.P.H. degree in the Applied Epidemiology concentration

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tr>
<td></td>
<td><strong>MPH Integrated Core</strong></td>
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<tr>
<td>SPHG 711</td>
<td>Data Analysis for Public Health</td>
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<td>EPID 711</td>
<td>Clinical Measurement/Evaluation</td>
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<tr>
<td>SPHG 713</td>
<td>Understanding Public Health Issues</td>
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<td>SPHG 721</td>
<td>Conceptualizing Public Health Solutions</td>
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<td>SPHG 722</td>
<td>Developing, Implementing, and Evaluating Public Health Solutions</td>
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<td></td>
<td><strong>MPH Concentration</strong></td>
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<tr>
<td>EPID 750</td>
<td>Fundamentals of Public Health Surveillance</td>
<td>3</td>
</tr>
<tr>
<td>EPID 716</td>
<td>Epidemiologic Data Analysis</td>
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<tr>
<td>EPID 759</td>
<td>Methods in Field Epidemiology</td>
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<tr>
<td>Graduate-level epidemiology course TBD</td>
<td>2</td>
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<tr>
<td>EPID 795</td>
<td>Data in Public Health</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>MPH Practicum</strong></td>
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<tr>
<td>SPHG 701</td>
<td>MPH Practicum Preparation</td>
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<tr>
<td>Practicum: 200 minimum hours Summer 1</td>
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<tr>
<td>SPHG 702</td>
<td>MPH Practicum Reflection</td>
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<td></td>
<td><strong>MPH Electives</strong></td>
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<td><strong>MPH Culminating Experience</strong></td>
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<tr>
<td>EPID 992</td>
<td>Master’s (Non-Thesis)</td>
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Total Hours 42

Competencies
Students will develop the following Applied Epidemiology competencies, building on the foundational public health knowledge they attain in the Gillings M.P.H. Integrated Core courses.

EPID01. Evaluate critically the relevant body of the scientific literature, considering the perspectives of relevant community stakeholders.
EPID02. Understand surveillance systems and how they can be applied to a disease or condition of public health importance, using evolving technologies and data linkages.
EPID03. Recommend specific epidemiologic study designs – including appropriate study populations, strategies of data collection – to identify or monitor public health problems, investigate etiologic and preventive relations, and provide epidemiologic input for program evaluation.
EPID04. Create or implement data collection tools and linkages, with adequate consideration of ethical and privacy considerations, data management principles, data security, quality control, and oversight.
EPID05. Conduct and interpret data analyses of epidemiologic data, including datasets made available by governmental and other organizations, to address research questions, taking account of data quality, measurement error, and potential for bias, including confounding.
EPID06. Communicate epidemiologic concepts and findings to a wide range of stakeholders, from lay to professional audiences.

Master of Public Health (M.P.H.) Health Equity, Social Justice, and Human Rights Concentration Description
Students in the interdisciplinary Health Equity, Social Justice, and Human Rights (EQUITY) concentration (https://sph.unc.edu/resource-pages/master-of-public-health-2/health-equity-social-justice-and-human-rights-concentration) develop the skills to improve population health through identifying health inequities and eliminating them with innovative approaches. Graduates possess a foundational understanding of how social determinants contribute to health inequities and have hands-on experience applying strategies, methods, and interventions to advance social justice and human rights.

Requirements
Requirements for the M.P.H. degree in the Health Equity, Social Justice, and Human Rights concentration

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<tr>
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<td>Issues of Race and Class</td>
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<td>ENVR 784</td>
<td>Community-Driven Research and Environmental Justice</td>
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<td>HBEH 700</td>
<td>Foundations of Health Equity</td>
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<td>EPID 826</td>
<td>Introduction to Social Epidemiology</td>
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<td>PUBH 748</td>
<td>Leadership in Health Policy for Social Justice</td>
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<td>Interdisciplinary Seminar in Health Disparities</td>
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**Total Hours**: 41

### Competencies

Students will develop the following **Health Equity, Social Justice, and Human Rights competencies**, building on the foundational public health knowledge they attain in the Gillings M.P.H. Integrated Core courses.

**HSH01.** Critically evaluate the ways in which current and historical policies, institutions, and groups influence social determinants of health and contribute to inequities in health across the life course.

**HSH02.** Integrate relevant strategies, methodologies, and measures for research, practice, and policies that advance health equity, social justice, and human rights.

**HSH03.** Interpret data to identify the systemic inequities across multiple sectors, such as health, education, criminal justice, business, housing, and economic development.

**HSH04.** Critique multilevel, structural, and systems approaches to public health research and practice using principles of health equity, social justice, and human rights.

**HSH05.** Evaluate how health programs and policies address health equity, social justice, and human rights.

**HSH06.** Incorporate cultural humility principles in public health research, practice, and policy.

### Admissions

Please visit Applying to the Gillings School (https://sph.unc.edu/students/how-to-apply) first for details and information. Application to the residential M.P.H. is a two-step process. Please apply separately to (1) SOPHAS and (2) UNC-Chapel Hill (via the Graduate School application). Visit https://gradschool.sites.unc.edu/master-of-public-health/ for more details. If you are interested in the online M.P.H., please visit the M.P.H.@UNC (https://onlinemph.unc.edu) Web site and fill out an inquiry form.

### Practicum

This 200 (minimum) hour planned, mentored, and evaluated work experience (paid or unpaid) gives students the real-world opportunity to integrate and apply knowledge, skills, and values from Year One of their Gillings M.P.H. training in a professional public health setting such as a nonprofit organization, hospital, local or state health department, or for-profit firm (public or private sectors). Please visit the M.P.H. Practicum Web site (https://sph.unc.edu/resource-pages/master-of-public-health-2/mph-practicum) for additional information. In order to meet graduation requirements, a Gillings M.P.H. practicum must:

1. Occur after a student has completed the Gillings M.P.H. Core courses, the M.P.H. practicum preparation course (SPHG 701), and at least one concentration-required course from the student’s declared concentration. In extenuating circumstances and with the approval from the student’s declared concentration, some exceptions may apply.

2. Yield a least two student-generated products, produced in the practicum setting for the practicum setting, that allow for attainment of at least three (CEPH) M.P.H. Foundational and two concentration-specific competencies (Appendix A). In extenuating circumstances and with the approval from the concentration, students can petition to substitute up to two CEPH Foundational competencies for the concentration-specific competencies.

3. Be mentored by a supervisor (preceptor) with an advanced degree in public health or equivalent experience with expertise in the practicum project area.

4. Comprise a minimum of 200 hours (equivalent to five weeks of full-time work) in a location approved for student travel (UNC Travel Policy (https://global.unc.edu/files/2018/02/UNC-Travel-Policy-Final.pdf)), and the student must complete UNC Gillings International Pre-Departure Travel Requirements prior to travel.

### Culminating Experience

Each student completes a 3-credit culminating experience and produces a high-quality written product that is completed near the end of the program of study. This culminating experience ideally is delivered in a manner that is useful to external stakeholders, such as nonprofit or governmental organizations, and could take the form of a course-based capstone project or master’s paper, but will be tailored to the concentration a student chooses.

### Academic Advising and Faculty Mentoring

We are committed to providing quality academic advising and mentoring for all students. We ensure that M.P.H. students get the guidance.
they need with several components: 1) an orientation program that provides an overview of the types and sources of M.P.H. advising; 2) cohort advising sessions to disseminate information that is relevant to course planning and registration; 3) faculty mentoring that provides students with tailored support for their academic, professional, personal development, and practicum support.

M.P.H. students will complete a 2-semester, 12-credit-hour Integrated Core taught by an interdisciplinary team of instructors. The 6-credit first semester (fall) focuses on understanding public health issues, and the second semester (6-credit spring courses) focuses on creating solutions to those issues.

All M.P.H. students take COMPASS (Core Online Modules to Promote and Accelerate Student Success). These brief, self-paced online modules are open for students prior to their first academic year. Students can complete any and all parts of COMPASS up to and including the first week of class.

Electives: For the remaining 9 credits, students are free to choose elective courses from any of the 12 concentration areas listed above or from other courses in the Gillings School.

For information on policies and procedures, please visit the Gillings School Student Handbook (https://sph.unc.edu/students/gillings-school-student-handbook) Web site.