

*Department of  
Epidemiology and Biostatistics*

**Graduate Student Handbook  
2013-2014**



*Arnold School of Public Health  
University of South Carolina*

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NOTE: The academic bulletin and this student handbook are for information purposes only and do not constitute any contractual agreement between a student and the University of South Carolina. The University reserves the right to make changes in curricula, degree requirements, course offerings, or academic regulations at any time when, in the judgment of the faculty, the president, or the Board of Trustees, such changes are in the best interest of the students and the University.

# OVERVIEW

## *The University of South Carolina*

Committed to becoming one of the finest universities in the United States, USC Columbia is dedicated to achieving and maintaining nationally recognized excellence in its student population, faculty, academic programs, living and learning environment, technological infrastructure, library resources, research and scholarship, public and private support, and endowment. The University is further resolved to enhance the industrial, economic, and cultural potential of the state so that South Carolina and the University can prosper together. USC Columbia recognizes its historic responsibility to achieve overall excellence and to provide South Carolina's citizens a university as good as any in the nation.

One of the oldest and most comprehensive public universities in the United States, the University of South Carolina Columbia is the major research center of the University and its largest campus, enrolling over 27,000 students in 2008, including more than 10,000 students in graduate and professional programs. From its location in the state capitol, the University offers a range of excellent programs and activities designed to enhance the intellectual, cultural, physical, and social development of its diverse student body. Additional opportunities for personal and career development are provided to the citizens of South Carolina through outreach and continuing education activities. USC Columbia offers the most comprehensive array of educational programs in the state.

Students at USC Columbia come from various backgrounds, with different career goals and levels of aspiration. The distinctiveness of USC Columbia lies in the conspicuous diversity that nurtures and stimulates students, faculty, and constituents. USC Columbia aspires to national and international stature as it provides equitable access to the full range of its opportunities, resources, and activities.

USC Columbia seeks to attract inquisitive, energetic people who are committed to learning, who are capable of self-discipline, and who wish to benefit from the variety of experiences provided by a major university with students, faculty, and staff drawn from throughout South Carolina, the nation, and the world. The University strives to educate graduates who are capable of excelling in their chosen fields, who are dedicated to learning throughout their lives, and who are responsible citizens in a complex society requiring difficult ethical and value-related decisions. By offering its students reasonable freedom to select from among the many experiences available in liberal arts, the natural sciences, the social sciences, the performing and creative arts, and the professions, USC Columbia encourages students to seek their full potential in the broad array of endeavors associated with our various schools and colleges. To advance knowledge and enrich our cultural heritage, the University supports a faculty actively engaged in research and creative activity in a breadth of disciplines including those listed above. The University engages the considerable resources of the institution in service to the state and society for the purposes of cultural enrichment, the dissemination of knowledge, and the enhancement of the overall quality of life. USC Columbia's teaching, research, and service programs affect every part of life in South Carolina.

# *The Arnold School of Public Health*

The USC Arnold School of Public Health (ASPH) was established in 1974 and reorganized into its present form in 1989. The ASPH was first accredited in 1979 by the Council on Education for Public Health; this accreditation was most recently renewed in 2010. The Vision Statement of the Arnold School of Public Health is “Improving people’s health, statewide and worldwide.” The mission of the School is to expand, disseminate and apply the body of knowledge regarding prevention of disease, disability and environmental degradation; promotion of health and well-being in diverse populations; and provision of effective, efficient and equitable health services.

An integral part of the training of students at the School is participation in research activities. Since the state is experiencing rapid demographic and economic changes, health problems range from those of a traditional rural setting (e.g., high infectious disease and infant mortality rates, limited access to health care) to those of a modern industrial and technological setting (e.g., the impact of new industries on air and water quality, workplace safety, and problems related to increasingly sedentary lifestyles). The School has been committed to “action research” since its inception and fosters close working relationships with human service programs, health care facilities, and governmental agencies throughout the state and region. The School of Public Health is comprised of six departments: Communication Sciences and Disorders; Environmental Health Sciences; Epidemiology & Biostatistics; Exercise Science; Health Promotion, Education and Behavior; and Health Services Policy and Management. The School also contains several specialized research centers (see <http://www.sph.sc.edu/centers/default.htm> for details):

- The CDC-funded [Prevention Research Center](#)
- The [Center for Health Services and Policy Research](#), dedicated to research that will improve health care services and inform public policy;
- The [Center for Research on Nutrition and Health Disparities](#), conducts research on the role of nutrition in reducing health disparities;
- [South Carolina Rural Health Research Center](#), whose mission is to shed light on persistent inequities in health status in rural US with an emphasis on factors related to socioeconomic status, race and ethnicity, and access to healthcare services;
- The CDC-funded USC [Center for Public Health Preparedness](#), part of a network of Academic Centers for Public Health Preparedness created to help prepare the nation’s public health workforce to recognize and respond to acts of bioterrorism.
- Office for the Study of Aging (OSA) advancing research and education in aging issues.
- [Children's Physical Activity Research Group \(CPARG\)](#)
- [Community Disaster Response Services](#)
- [Consortium for Latino Immigration Studies](#)
- [Institute for Partnerships to Eliminate Health Disparities](#)
- [South Carolina Cancer Disparities Community Network \(SCCDCN\)](#)
- [South Carolina Public Health Consortium \(SCPHC\)](#)
- [TB Photovoice Project](#)
- [Turning Point](#)
- [USC Speech and Hearing Center](#)

# Department Contact Information

## *Communication*

E-mail is the official means of communication at the Arnold School of Public Health. You are also assigned a mailbox which is located outside the department's office. This will be used to communicate items such as notes, invitations, deadlines for various events, mail from your professor, etc. It is the student's responsibility to check your email and mailbox regularly for important information.

The following are individuals with whom you will become familiar while you are a student here. Their contact information is given below.

### Student Services

Dana Barker

[dbarker@mailbox.sc.edu](mailto:dbarker@mailbox.sc.edu)

803-777-7353

### Graduate Assistantships

Stephanie Kline

[sdriver@mailbox.sc.edu](mailto:sdriver@mailbox.sc.edu)

803-777-5876

### Graduate Director-Epidemiology

Dr. Linda Hazlett

[ljhazlet@mailbox.sc.edu](mailto:ljhazlet@mailbox.sc.edu)

803-777-6653

### Graduate Director-Biostatistics

Dr. Robert Moran

<mailto:rrmoran@mailbox.sc.edu>

803-777-8615

# Facilities

## *Libraries*

Thomas Cooper Library serves as the main library for the University of South Carolina's Columbia campus. The library houses over 3.6 million books, provides access to over 14,000 current periodicals with access to over 30,000 journals electronically and is a repository library for government documents. The Library Web Page <http://guides.library.sc.edu/graduate> is a starting point for graduate students who want to learn about using the USC library. There is also a USC LibGuide just for students and faculty in the Department of Epidemiology and Biostatistics. This URL is: <http://guides.library.sc.edu/epid>.

The Library provides reference help in person, online, and via e-mail. Patrons may search over 200 online databases and indexes to periodical literature at: <http://library.sc.edu/er/>. Materials not held in USC Libraries are often available from other institutions through the Interlibrary Loan service at: <http://guides.library.sc.edu/interlibraryloanhome>. This service is available to faculty staff and students. Librarians are available to assist faculty members in their teaching and research by offering Bibliographic Instruction and Information Literacy sessions for classes, and consulting on research resources. Instruction contacts for subject areas are listed at: <http://www.sc.edu/library/training.html>. School of Medicine Library at: <http://uscm.med.sc.edu/> provides additional information resources for the School of Public Health.

## *Information Technology*

Computer services for academic and research programs are provided to faculty members and students by the University Technology Services (UTS). ASPH Office of Information Technology provides computer support for faculty, staff and the Health Sciences Computer Lab for students. UTS provides all other support for students, including campus network and email-related issues. For more information visit <http://www.uts.sc.edu/>.

The Health Sciences Computer Lab within the Arnold School of Public Health provides support for teaching and research activities. The center maintains state-of-the-art equipment including a network linking all faculty and staff in the School of Public Health to the University's main network and to the Internet. The center also provides access to software, including several statistical packages, word processing, spreadsheets, and data entry packages. Developing the skills necessary to collect, manipulate and analyze information on human disease is an integral part of the Department of Epidemiology and Biostatistics program. During the course of study, students learn general principles of computerized data analysis as well as specific computer applications.

## *Information for International Students*

Welcome to our international students! International student services is located in the Byrnes Building, 901 Sumter Street which is just one block from HESC. The school's website for international students is <http://iss.sc.edu/>.

## *Carolina Card*

CarolinaCard is located in the basement of the Russell House on Greene Street, across from the student post office. Your first student Carolina Card (your permanent ID card) is issued at no cost. To verify your identity, you must provide one of the following at the time your card is made: US driver's license, Military ID, or passport. Your CarolinaCard is also a flexible-spending declining balance card. Each time you make a purchase, the amount of the purchase is deducted from your accounts' balance. You will be able to your use CarolinaCard at the Russell House Bookstore, the Thomas Cooper Library for copies, at the Student Health Center when you buy prescriptions or pay other fees, at most Coke machines, the Post Office, Quick Copy, the RH Gameroom, and at all Carolina Dining locations. You can add money to your CarolinaCard using VIP.

## *Mental Health Services*

While academic achievement is the outcome every graduate student wants, making it happen can be a challenge. A new town, friends, and lifestyle, coupled with studies, can create a stressful environment for your body, as well as your mind. Take advantage of Student Health Services while you are a student at USC. Visit the Counseling Center (7<sup>th</sup> floor of Byrnes Building, across from the Horseshoe: <http://www.sa.sc.edu/shs/chdc/>) before stress gets to you. Learn how to protect your body. The Counseling Center is there for you to build a solid foundation of health while you are in graduate school.

## *Discrimination and Harassment*

Discrimination and harassment are against the law and against University policy. The University policy strictly prohibits acts of discrimination against or harassment of students based on age, race, color, sex, gender, religion, national origin, disability, genetics or veteran status. Any student with a complaint of discrimination or harassment should contact the University Office of Equal Opportunity Programs (EOP) at (803) 777-3854 for assistance. For more information, go to: <http://www.sc.edu/eop/>.

## *Student Grievances, Academic and Non-Academic*

The grievance policy of the Arnold School of Public Health follows the procedures set out in the "Carolina Community Student Handbook and Policy Guide". In addition, the ASPH follows two relevant policies, policy STAF 6.30, Grievance Policy and policy STAF 6.27 Student Grievance Policy – Non-Academic. The website which discusses these grievance procedures can be found

at [www.sph.sc.edu/currentstudents/grievances.html](http://www.sph.sc.edu/currentstudents/grievances.html).



# The Department of Epidemiology and Biostatistics

The contributions of public health rest largely on its capacity to identify and solve community-wide health problems. As measurement and research sciences, epidemiology and biostatistics serve as basic tools for public health action. Both disciplines are part of the scientific core of public health and are included in the training of every public health professional. The Department of Epidemiology and Biostatistics is a community of scholars characterized by an atmosphere of collaboration, collegiality, and mutual respect.

## *Vision, Mission, and Values*

Mindful of the complex webs of causality in space and over time, our vision is to improve public health through the application of methods and approaches in Epidemiology and Biostatistics.

Our mission is to:

- Generate new knowledge that can lead to improvements in health, with a special emphasis on identifying emerging areas of enquiry, especially those that cross disciplinary boundaries;
- Disseminate and apply existing and new knowledge in the training of health professionals who will engage directly with populations at highest risk of poor health, or will conduct research in epidemiology and biostatistics, or both; and
- Serve the larger communities in which we live and work, by using our special skills and knowledge.

In all of our work, we will strive to integrate epidemiologic and biostatistical research, teaching, and service through collaboration with colleagues in various disciplines, students, and community partners. We will endeavor to remain mindful of our commitment to the larger population we serve, who look to us for technical expertise and advocacy, and who support us in conducting our work.

In all our activities, we will strive to express the values we hold to be at the heart of our professional commitment including: honesty, trust, generosity, consistency, sincerity, fairness, compassion, respect, humility, openness, and a commitment to balance.

## *Goals*

*Education:* Doctoral and Master's students in the programs of the Department of Epidemiology and Biostatistics will gain state-of-the-art knowledge and develop skills in both areas that will enable them to use these concepts and skills effectively and appropriately in the identification, evaluation, and solution of public health problems. Upon completion of the program, the student will be able to demonstrate:

- A knowledge base of the various processes relating to disease, disability, and other

- health conditions;
- An ability to apply epidemiologic and biostatistical methods in identifying the determinants of disease, and other health conditions;
- Understanding of the design and conduct of research in public health; and
- Skill in data analysis and interpretation of research results in the context of prevention and improvements in human health.

*Research:* The research goals of the Department stress contributions to the field of public health through the development of new knowledge related to chronic or infectious diseases or health conditions, and through the application of this knowledge to address current public health issues and problems. Broad objectives are targeted toward:

- Impact on public health;
- Ability to identify and respond to emerging health problems; and
- Partnerships with other organizations such as South Carolina Department of Health and Environmental Control, the Centers for Disease Control and Prevention and the National Institutes of Health.

*Service:* The service goals of the Department are to contribute to the University, the public and the health profession through the direct involvement of the faculty, staff, and students in a range of activities. Service goals are geared:

- To the University through participation in governance and contributions to institutional development;
- To the public through continuing education, demonstration projects, consulting and other advisory services, augmentation of local resources, and support in the diffusion of applied technology in the field of public health; and
- To the health profession through contributions to the literature, participation in professional and scientific forums and organizations, and assistance to health-related program personnel and policy-makers in their efforts to keep abreast of new knowledge.

## *Degree Programs*

The Department includes two major disciplines, epidemiology and biostatistics, and offers Master's and doctoral degrees in each.

The major in *epidemiology* is designed for students pursuing careers in the study of patterns of diseases, disabling conditions and other indicators of health in human populations. The field of epidemiology involves research into factors that influence human health states or events and evaluation of prevention and treatment interventions. Epidemiologists attempt to establish the causes of health problems by describing the genetic, biological, environmental, social and behavioral factors affecting illness and premature death as well as factors that contribute to health and well-being. Descriptive and analytic techniques are used to gather information on disease occurrence, extend basic knowledge about the biologic, physical, mental and social processes affecting health, develop effective disease control measures, and examine health services, treatments and intervention programs. The products of such inquiries also are used in the development of health programs and formulation of health policy. Epidemiologic studies

often require innovative approaches to study design and exposure assessment in order to identify representative samples and to allow for assessment of the associations of various factors with development or progression of the disease or health condition of interest. Because of the important connection to the human condition, the discipline has an interest in ensuring adherence to ethical standards of practice with regard to persons' participation (both access to and right to refuse) in research as well as to the design, implementation, analysis, and reporting of epidemiologic investigations. Epidemiologists work closely with other public health practitioners, physicians, environmental health personnel, behavioral and basic scientists, microbiologists, demographers, biostatisticians, and administrators of health agencies.

The major in *biostatistics* is designed for students pursuing careers in community health measurement, design and management of health data systems, and the development and application of quantitative methods to health problems. Biostatisticians apply statistical theory, methods, and techniques to the planning, development, and evaluation of health programs and problems. They collect and analyze various types of information such as: demographic and vital statistics, social and business data, health resources statistics, and other forms of social and economic data that are relevant to modern health problems. Biostatisticians design experiments and observational studies, use various computer operating systems and software packages to store and analyze information, develop methods to compare population groups, and prepare inferential and probabilistic statements based on biological, social, and environmental data. Biostatisticians are the theoretical researchers and applied statisticians of public health.

The **Master of Public Health (M.P.H.)** degree is designed for experienced health professionals who wish to extend their analytic and investigative abilities. The M.P.H. with a major in epidemiology focuses on application of epidemiologic skills in a public health setting, while the M.P.H. with a major in biostatistics emphasizes statistical skills with public health applications.

The **Master of Science in Public Health (M.S.P.H.)** degree is designed for those who wish to acquire skills necessary for doing research in public health. The M.S.P.H. with a major in epidemiology focuses on development of basic research skills for the study of correlates and determinants of disease and other health conditions. The M.S.P.H. with a major in biostatistics prepares researchers to apply statistical techniques to health problems and issues.

The **Doctor of Philosophy (Ph.D.)** is an advanced graduate degree for those who intend to pursue teaching and research careers. The major objective of the Ph.D. degree in Epidemiology is to prepare an individual to pursue original epidemiologic investigation of diseases and develop novel methodological approaches. The major objective of the Ph.D. degree in Biostatistics is to prepare an individual to develop and apply biostatistical principles and methods to public health problems.

The **Doctor of Public Health (Dr.P.H.)** degree in Biostatistics is an advanced degree for experienced health professionals. It is designed to prepare practicing professionals in the application of research methods and to provide them with a broad knowledge base for solving public health problems. Students in this degree program will have an application area in which to apply biostatistical methods. The program requires a minimum of 60 credit hours beyond the Master's degree.

## ***Dual Ph.D. Program in Epidemiology and Environmental Health***

Given the increasingly prominent role of the environment in determining human health, and the unique set of requirements in relation to study design and measurement of both environmental exposures and environment-related health outcomes, we have established a program that will provide students the opportunity to obtain a dual Ph.D. in Epidemiology and Environmental Health Sciences. To be admitted to this dual degree program students must meet all entrance requirements of each department and have been accepted as a student in each. We recognize that few students will have Master's degrees in both environmental health sciences and epidemiology; so we anticipate that most successful applicants will have substantial prerequisite work to complete in one if not both disciplines. Students currently enrolled in either program may enter the dual degree program and apply for appropriate credit granted by both programs. Any student enrolled in the dual degree program must meet all academic requirements applicable at the time of enrollment to remain in the dual degree program. For more information about this dual degree program and its requirements, please see the Graduate Director in either department.

# General Policies

## *Academic Integrity*

The academic standards set forth in the following paragraphs pertain to all work done by students for submission to instructors (i.e., exams, homework, projects, papers, theses, dissertations, etc). Students are expected to know and understand the Honor Code of the University of South Carolina. It is:

“It is the responsibility of every student at the University of South Carolina Columbia to adhere steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any academic program. Any student who violates this Honor Code or who knowingly assists another to violate this Honor Code shall be subject to discipline.”

All work submitted by a student is expected to be that student’s own work **unless the instructor specifically states that students may work together on the assignment/homework/project, etc.** If permitted by the instructor, students may use their notes and books and other references for take-home examinations, but cannot consult with each other.

If a student is using other sources to include in his/her work, all sources must be cited. If the sources are cited verbatim, the words must be in quotation marks. If the sources have been paraphrased, the sources still must be cited. A paper submitted for one class may not be submitted for a subsequent class, unless a student has the express permission of the professor of the subsequent class. This might happen if the current work builds upon previous work.

These rules are not meant to cover all circumstances. If any questions arise, please discuss them with your advisor or Graduate Director. Plagiarism and other violations of the Honor Code are serious offenses and will be taken up with the Office of Academic Integrity. For more information, visit the Office of Academic Integrity website at: <http://www.housing.sc.edu/academicintegrity/>.

Additional information about the University’s academic responsibility policy can be found in *Carolina Community*, published by the Office of Student Affairs and available at <http://www.sa.sc.edu/carolinacommunity/>. Students should be aware of and abide by the Carolinian Creed, which appears on the next page.

## *The Carolinian Creed*

The Carolinian Creed was authored by a group of students, faculty, and staff and approved by the Faculty Senate, Student Senate, and the USC Board of Trustees.

**The community of scholars at the University of South Carolina is dedicated to personal and academic excellence. Choosing to join the community obligates each member to a code of civilized behavior. As a Carolinian...**

...this introduction submits that membership in the Carolina community is not without its stewardship obligations. It is assumed or understood that joining is evidence of a subscription to certain ideals, civil discourse and an agreement to strive for the level of achievement and virtue suggested by the following...

**I will practice personal and academic integrity;**

...a commitment to this ideal is inconsistent with cheating in classes, in games, or in sports. It should eliminate the practice of plagiarism or borrowing another student's homework, lying, deceit, excuse-making, and infidelity or disloyalty in personal relationships. ..

**I will respect the dignity of all persons;**

...a commitment to this ideal is inconsistent with behaviors which, compromise or demean the dignity of individuals or groups, including hazing, most forms of intimidating, taunting, teasing, baiting, ridiculing, insulting, harassing, and discriminating...

**I will respect the rights and property of others;**

...a commitment to this ideal is inconsistent with all forms of theft, vandalism, arson, misappropriation, malicious damage to, and desecration or destruction of property. Respect for others' personal rights is inconsistent with any behavior which violates their right to move about freely, express themselves in a civil manner, and to enjoy privacy...

**I will discourage bigotry, while striving to learn from differences in people, ideas and opinions;**

...a commitment to this ideal pledges affirmative support for equal rights and opportunities for all students regardless of their age, sex, race, religion, disability, international/ethnic heritage, socioeconomic status, political, social or other affiliation or disaffiliation, or affectional preference...

**I will demonstrate concern for others, their feelings, and their need for conditions which support their work and development.**

...a commitment to this ideal is a pledge to be compassionate, civil and considerate, to avoid behaviors which are insensitive, inhospitable, or incitant, or which unjustly or arbitrarily inhibit others' ability to feel safe or welcomed in their pursuit of appropriate academic goals...

**Allegiance to these ideals requires each Carolinian to refrain from and discourage behaviors which threaten the freedom and respect every individual deserves.**

...this last clause reminds community members that they are not only obliged to avoid these behaviors, but that they also have an affirmative obligation to confront and challenge, to respond to, or report the behaviors whenever or wherever they are encountered.

## *Academic Progress*

A student must complete all courses listed on the approved Program of Study with an average of at least B (GPA 3.00). The average on all courses numbered 700 and above must also be B or above. All courses taken for graduate credit at USC within the ten years preceding award of a doctorate must average B or above, whether listed on the program or not.

It should be noted that the following departmental policy is more stringent than the general policy for the University. Any student receiving grades below “B” on nine (9) or more graduate credit hours taken at the University within a six-year period at the Master’s level and ten-year period at the Doctoral level will result in the dismissal of the student from the Department of Epidemiology and Biostatistics Graduate Program and disqualification for a graduate degree in Epidemiology or Biostatistics. This rule applies to all graduate courses taken at the University of South Carolina whether or not they are included on the student’s program of study; it also applies to courses taken in two or more degree programs. A grade of “U” earned in any course will be treated as a grade below “B”.

Additionally, for Master’s students, grades below “B” on six (6) or more graduate credit hours in the Department’s core courses (BIOS 701, BIOS 710, BIOS 757, EPID 701, and EPID 741) will result in the dismissal of the student from the Department of Epidemiology and Biostatistics Graduate Program and disqualification for a graduate degree in Epidemiology or Biostatistics.

## *Advisement*

After admission to the Department of Epidemiology and Biostatistics, each student will be assigned an academic advisor from the faculty of the department. Generally, this advisor will work with the student throughout the course of the program. Students are advised as to appropriate courses, sequencing of courses, independent study topics, thesis/dissertation topic, public health practice, and any additional work appropriate to preparing the student to meet career objectives. Students meet with their advisors before each semester to fill out advisement forms. In the advisor’s absence, the form can be signed by the Graduate Director. This form must be filled out and turned in to the Office of Student Services before a student can register for classes. The student may request the Graduate Director for a change of academic advisor.

## *Seminar Attendance*

Students are strongly encouraged to attend as many departmental seminars as possible. Departmental seminars include thesis, dissertation and practicum presentations, as well as outside speakers brought to the School and sponsored or cosponsored by the Department of Epidemiology and Biostatistics. All upcoming seminars are announced in a prominent location and/or included on the student listserv. There are also course offerings in seminars with varied requirements for each degree.

## *Revalidation of out-of-date courses*

Master's students are required to complete their degree in 6 years, and doctoral students are required to complete their degree in 10 years. The Graduate School enforces this by requiring that the Program of Study not have any courses at the time of graduation that are older than 6 years for Master's students and 10 years for doctoral students. If, however, these deadlines are not met, it is possible to revalidate courses that are more than 6 years or 10 years old respectively. The form (PRE-Permit for Revalidation Examination) is available on the Graduate School Forms Library website (<http://gradschool.sc.edu/DocLibrary>). The requirement for revalidation of the courses will be left up to the discretion of the faculty member who originally taught the student. In the event the instructor is no longer on the faculty, a faculty member who currently teaches the class will be responsible for validating the course work.



# Master's Programs – Important Dates and Forms

- In order to be eligible for In-State tuition rate, out-of-state & foreign students must secure an assistantship no later than 30 days into the semester
- 1<sup>st</sup> Year – Complete Program of Study (MPOS) form before taking the Progression Exam
  - Any changes to the POS form should be submitted using the Request for Adjustment in Graduate Program form (GS-43 or POSA)
- 1<sup>st</sup> Year – Progression Exam – 1<sup>st</sup> Friday of Maymester
  - Progression Re-take (if necessary) – Friday before the Fall semester begins
- 2<sup>nd</sup> Year – Comprehensive Exam – 3<sup>rd</sup> Friday of Spring Semester
- Graduation Application – submitted no later than 15 days after the *beginning* of the term in which graduation is expected.
- Thesis Proposal – at least three months prior to the thesis defense.
- First Draft of Thesis – submitted to the Thesis Committee at least 2 weeks before the defense (6 weeks before the date of graduation), or earlier if specified by the committee.
- Thesis Format Check - submitted to the Graduate School at least 5 weeks before the date of graduation.
- Thesis Defense – at least one week prior to final thesis submission (4 weeks before the date of graduation). An announcement must be posted & sent out on the EPID-BIOS listserv 1 week prior to defense.
- Final Thesis – submitted to the Graduate School at least 20 days before the date of graduation.
- A hard copy of the Master's Thesis Signature Form, *with original signatures*, must be submitted to the Graduate School after the defense.

## *Program of Study*

**The student and advisor will develop a program of study during the student's first year in school. All course work taken by the student must be approved by the academic advisor and Graduate Director.** A student's Program of Study must be filed with The Graduate School no later than one (1) year after being fully admitted. Further registration will be blocked if the Program of Study is not on file by that time. Students will not be allowed to take the Progression Exam until this program of study has been filed. There is no foreign language requirement. Courses taken for undergraduate credit can never be on any graduate Program of Study, master's or doctoral.

## *Transfer Credits*

The Program of Study may include graduate credits transferred from another USC program, or another institution. To be accepted for transfer credit, the courses must:

- Be relevant to the program into which they are transferred.
- Have course content equivalent to similar courses at USC, and a level of instruction equivalent to that of the Arnold School of Public Health.
- Have a grade of "B" or better from an accredited institution.
- Be completed within the six year period for courses used in the Master's program.

Transfer credit is at the discretion of the department, and must be approved by the Graduate Director. The student may be required to provide course syllabi (including course schedule) and transcript verifying grade received prior to approval of transfer credits. No more than 12 hours of graduate credit can be transferred to Master's programs in Epidemiology and Biostatistics. A maximum of 9 semester hours of graduate credit that is part of a **completed** Master's degree or graduate certificate program at USC or elsewhere may be applied to another USC Master's degree program.

## *Departmental Core Courses*

BIOS 701, EPID 701, BIOS 710, and BIOS 757 are considered departmental core courses for all students in the Master's programs. For epidemiology majors, EPID 741 is also considered a core course.

## *Examinations (Progression and Comprehensive)*

In addition to the course work, each student must pass two examinations, the Progression Examination and the Comprehensive Examination. At the end of the Spring semester during which the departmental core courses are completed, each student must take the Progression Examination (given on the first Friday of Maymester). This exam must be passed before continuation in the program and before registering for practicum or thesis. At or near completion of required departmental course work (i.e., on program of study), each student must satisfactorily complete a Comprehensive Exam, which is normally given the third Friday of the Spring semester.

## *Progression Examination*

The Progression Examination will be taken at the time of completion of the department core courses. Material from STAT 512 (Mathematical Statistics) may also be included for Biostatistics students. The Progression Examination will be offered after the end of each spring semester on the first Friday of Maymester. A student must register with his or her advisor's approval to take the Progression Examination. If a student completing the department core courses in the spring semester does not take the exam, it will count as a failed first attempt unless she/he has made prior arrangements with the Graduate Director due to emergency circumstances. (Note: Students must earn at least a "B" in BIOS 701 and EPID 701 to progress to BIOS 757 and EPID 741, respectively. The grade of "B" or better in EPID 741 and BIOS 757 is not required to take the progression exam. However, a student with a lower than "B" grade is expected to retake the class prior to graduation, regardless of performance on the Progression Exam.)

The Progression Examination is prepared by a committee of at least four members of the Department faculty (at least two Epidemiology and two Biostatistics). At least two faculty members will grade each question independently. The Progression Examination retake could be the entire exam or a portion of the exam, which is at the discretion of the Examination Committee and the appropriate Graduate Director.

The Progression Examination will be given in a classroom setting. The exam will be closed book, but students will be provided with a formula sheet of the relevant formulas needed for the exam content. Students may use a calculator but are not allowed to use any software beyond output provided with the examination.

Students taking the Examination will be notified in writing of the results as soon as possible after faculty evaluation of the Examination. Faculty members will not discuss exam results with any individual student until all students have received official notification. A debriefing session will be held after examination results are released to students. A student also may meet with his or her academic advisor to discuss performance on the exam.

If a student does not pass the Progression Examination during the spring administration, he or she will be allowed to take a second exam in August the Friday before fall semester classes begin. A student who must repeat the Progression Examination may take one or more courses (with the exception of practicum or thesis) during the Summer sessions but will not be allowed to register for classes in a major semester (fall or spring) until a satisfactory performance on the exam is recorded. If a student does not pass the Progression Examination on the second attempt, he or she will not be allowed to continue in the program.

## *Comprehensive Examination*

A Comprehensive Examination is required by the University for all Master's students. The purpose of the exam is to evaluate the knowledge acquired by the student in the core and major courses, and to evaluate mastery of the major concepts and methodologies in the discipline. The examination must be completed no sooner than three months after passing the progression exam, but not more than two calendar years after the date on which all other degree requirements are met.

The Comprehensive Examination is normally offered on the third Friday of each spring semester. This will in most instances be taken upon completion of the majority of major course work, defined as satisfactory completion or current enrollment in all departmental courses listed on the student's program of study (or within at least 3 credit hours thereof), excluding thesis preparation or public health practice. Thus, Master's students will generally take this exam during their second year in the program. All students should be ready to begin or be currently working on a thesis or practicum when taking the Comprehensive Examination.

After obtaining advisor's approval, students must register with the Student Services Program Coordinator to take the Comprehensive Examination. Registration is open from one month prior to one week prior to the exam. If a student registers to take the Comprehensive Examination and does not take it, this will count as one attempt unless the registration is canceled at least one week prior to the examination date.

The Comprehensive Examination is distinct for epidemiology students and biostatistics students. The exams are prepared by a committee of at least two members of the Department faculty in that discipline. The committee evaluates the results and determines the outcome. The Comprehensive Examination will be evaluated as a whole; the student will either pass or not pass the entire Examination.

For Epidemiology students, the examination will focus on design and methodology issues and content areas. Advanced material from EPID 701 and EPID 741 can be reflected on the examination. The exam may include reading a published manuscript (distributed prior to the exam) and responding to conceptual, design and methodological questions related to this publication or its subject matter. No software can be used and no further research can be done (e.g., via e-mail or the Internet).

For Biostatistics students, the examination will focus on the theory and methodologies presented in the various Biostatistics and Statistics courses, possibly including more advanced concepts from BIOS 701, BIOS 757, and STAT 512. Students will be given a set of questions based on required and elective courses; each individual will be allowed to choose a subset of these questions to answer, based on courses he or she completed. Biostatistics students will complete the examination using pen/pencil and paper. Students will be allowed to use a calculator but not any statistical software. They will be given a sheet of relevant formulas, as in the Progression Exam.

Students taking the Examination will be notified of the results in writing as soon as possible after faculty evaluation of the Examination. Faculty members will not discuss exam results with any individual student until all students have received official notification. A debriefing session will be held after examination results are released to students. The student also may meet with his or her advisor to discuss performance on the exam.

Each student is allowed two attempts at the Comprehensive Examination. If the second attempt is required, it should occur at the next administration of the exam, on the Friday before the beginning of fall semester. Because the student has essentially completed his or her program of study, he or she may take additional elective courses during this time. If a student does not pass the examination on the second attempt he or she is not allowed to continue in the program.

A student who passes the comprehensive examination and is accepted into a doctoral program in this department in the same discipline within three years may request waiver of at least part of the doctoral Qualifying Exam. This request will be evaluated on an individual basis.

## ***Goals and Learning Outcomes for the M.P.H. in Epidemiology***

The primary goal of the Master of Public Health degree in epidemiology is to prepare students with prior public health experience to apply epidemiologic skills in a practice setting. Students with prior public health experience will demonstrate appropriate application of descriptive and analytic epidemiologic and basic statistical methodology to investigate various health conditions and to evaluate public health practice programs. Specifically, a student who successfully completes this degree will:

**Goal #1.** MPH program graduates will understand concepts of epidemiology relating to study design, implementation and evaluation of investigations.

- Learning outcome #1. Students will demonstrate knowledge of the basic epidemiology of a common or important disease.
- Learning outcome #2. Students will differentiate between various study designs, relying upon learned concepts.
- Learning outcome #3. Students will understand basic ethical principles pertaining to public health research and practice.

**Goal #2.** MPH program graduates will be proficient in information technologies and data management necessary for manipulation of epidemiologic data in public health settings.

- Learning outcome #1. Students will create and manipulate datasets and analyze data using appropriate statistical methods and software packages
- Learning outcome #2. Students will create tables and reports using appropriate software packages.

**Goal #3.** MPH program graduates will be proficient in statistical procedures required to analyze epidemiologic data in public health practice settings.

- Learning outcome #1. Students will demonstrate the ability to calculate and interpret measures of association.
- Learning outcome #2. Students will correctly interpret results from statistical analyses.

**Goal #4.** MPH program graduates will have effective written and oral communication skills for presenting public health information and epidemiologic data.

- Learning outcome #1. Students will design a research project which is presented orally in class.
- Learning outcome #2. Students will write an abstract of sufficient quality for submission to a professional meeting.
- Learning outcome #3. Students will demonstrate the ability to synthesize knowledge of a

specific problem and critically evaluate methods and findings by writing a critique and presenting it orally in class.

**Goal #5.** MPH program graduates will gain basic understanding in diversity and culture, program planning and systems thinking.

- Learning outcome #1. Students will describe the roles of history, power, privilege and structural inequality in producing health disparities.
- Learning outcome #2. Students will explain how the findings of a program evaluation can be used.
- Learning outcome #3. Students will explain how systems (e.g. individuals, social networks, organizations, and communities) may be viewed as systems within systems in the analysis of public health problems.

# Degree Requirements for the M.P.H. in Epidemiology

## Summary of Degree Requirements for M.P.H. in Epidemiology

SPH Core	9 hours
Department Core	19 hours
Major Courses	6 hours
Elective	3 hours
Practice	<u>6 hours</u>
Total	43 hours

### School of Public Health Core (9 hours)

ENHS 660	(3)	Concepts of Environmental Health Sciences
HSPM 700	(3)	Approaches and Concepts of Health Administration
HPEB 700	(3)	Concepts and Methods in Health Promotion

### Department Core (19 hours)

BIOS 701	(3)	Concepts and Methods of Biostatistics
EPID 701	(3)	Concepts and Methods of Epidemiology
BIOS 710	(3)	Effective Data Management in Public Health
BIOS 757	(3)	Intermediate Biometrics
EPID 741	(4)	Epidemiologic Methods I
EPID 745	(2)	Seminar in Epidemiology
BIOS 745	(1)	Seminar in Biostatistics

### Major Courses (6 hours)

EPID 730	(3)	Public Health Surveillance Systems
EPID 758	(3)	Application of Epidemiology in Public Health

### Elective (3 hours)

Electives may be chosen from epidemiology, or from courses in the University that support the overall educational goals of the student. The Faculty Advisor must approve all elective courses. Typical courses are listed below:

EPID 725	(3)	Biologic Basis of Public Health
EPID 744	(3)	Cardiovascular Disease Epidemiology
EPID 746	(3)	Cancer Epidemiology
EPID 747	(3)	Environmental Epidemiology
EPID 749	(3)	Investigative EPID: Infectious Diseases
EPID 751	(3)	Sexually Transmitted Diseases: Their Epidemiology and Control
EPID 755	(3)	Emerging Infectious Diseases: Epidemiology & Pathobiology
EPID 763	(3)	Nutritional Epidemiology
EPID 765	(3)	Reproductive Epidemiology
EPID 768	(3)	Psychiatric Epidemiology
EPID 769	(3)	Clinical Effectiveness
EPID 770	(3)	Social Epidemiology
EPID 777	(3)	Genetic and Epigenetic Epidemiology
EPID 790	(3)	Independent Study
EPID 800	(3)	Epidemiologic Methods II
EPID 801	(3)	Epidemiologic Methods III
EPID 820	(3)	Seminar in the Epidemiology of Health Effects of Physical Activity

### Practice (6 hours)

EPID 798	(6)	Public Health Practice
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### Suggested Course Load

We generally advise students to register for no more than 10 credits during each of the first two semesters of the Master's curriculum. Most students find the graduate curriculum to be considerably more demanding and time-consuming than their undergraduate experiences.

We also suggest a maximum of 12 credit hours in any semester for all students.

# ***Goals and Learning Outcomes for the M.S.P.H. in Epidemiology***

The primary goal of the Master of Science in Public Health degree in Epidemiology is to prepare students for involvement in epidemiologic research that addresses the distribution and determinants of disease and other health conditions and behaviors promoting health. Students will demonstrate appropriate application of descriptive and analytic epidemiologic and basic statistical methodology to investigate various health conditions and to evaluate public health practice programs. Specifically, a student who successfully completes this degree will:

**Goal #1.** MSPH program graduates will know the various processes relating to disease, disability and other health conditions.

- Learning outcome #1. Students will demonstrate knowledge of the basic epidemiology of a common or important disease.

**Goal #2.** MSPH program graduates will demonstrate an ability to apply epidemiological methods in identifying the determinants of disease and other health conditions.

- Learning outcome #1. Students will differentiate between various study designs, relying upon learned concepts.
- Learning outcome #2. Students will understand basic ethical principles pertaining to public health research and practice.
- Learning outcome #3. Describe the roles of history, power, privilege and structural inequality in producing health disparities.
- Learning outcome #4. Explain how the findings of a program evaluation can be used.
- Learning outcome #5. Explain how systems (e.g. individuals, social networks, organizations, and communities) may be viewed as systems within systems in the analysis of public health problems.

**Goal #3.** MSPH program graduates will be competent in information technologies and data management necessary for successful completion of epidemiologic studies.

- Learning outcome #1. Students will create datasets and manipulate datasets using appropriate statistical methods and software packages
- Learning outcome #2. Students will create tables and reports using appropriate software packages.

**Goal #4.** MSPH program graduates will have adequate knowledge in biostatistical procedures required to analyze epidemiologic data in descriptive and etiologic research.

- Learning outcome #1. Students will demonstrate the ability to calculate and interpret measures of association.
- Learning outcome #2. Students will correctly interpret results from statistical analyses-

**Goal #5.** MSPH program graduates will have effective written and oral communication skills



for presenting public health information and epidemiologic data to the scientific community.

- Learning outcome #1. Students will design a research project which is presented orally in class.
- Learning outcome #2. Students will write an abstract of sufficient quality for submission to a professional meeting.
- Learning outcome #3. Students will demonstrate the ability to synthesize knowledge of a specific problem and critically evaluate methods and findings by writing a critique and presenting it orally in class.

# Degree Requirements for the M.S.P.H. in Epidemiology

## Summary of Degree Requirements for M.S.P.H. in Epidemiology

SPH Core	3 hours
Department Core	22 hours
Major Courses	9 hours
Electives	3 hours
Thesis	<u>6 hours</u>
Total	43 hours

## School of Public Health Core (3 hours)

One of the following:

ENHS 660 (3)	Concepts of Environmental Health Sciences
HSPM 700 (3)	Approaches and Concepts of Health Administration
HPEB 700 (3)	Concepts and Methods in Health Promotion

## Department Core (22 hours)

BIOS 701 (3)	Concepts and Methods of Biostatistics
EPID 701 (3)	Concepts and Methods of Epidemiology
BIOS 757 (3)	Intermediate Biometrics
BIOS 710 (3)	Effective Data Management for Public Health
EPID 741 (4)	Epidemiologic Methods I
EPID 745 (2)	Seminar in Epidemiology
BIOS 745 (1)	Seminar in Biostatistics
BIOS 754 (3)	Discrete Data Analysis

## Major Courses (9 hours)

EPID 758 (3)	Application of Epidemiology in Public Health
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**Plus two of the following:**

EPID 725 (3)	Biologic Basis of Public Health
EPID 730 (3)	Public Health Surveillance Systems
EPID 744 (3)	Cardiovascular Disease Epidemiology
EPID 746 (3)	Cancer Epidemiology
EPID 747 (3)	Environmental Epidemiology
EPID 749 (3)	Investigative EPID: Infectious Diseases
EPID 751 (3)	Sexually Transmitted Diseases: Their Epidemiology and Control
EPID 755 (3)	Emerging Infectious Diseases: Epidemiology & Pathobiology
EPID 769 (3)	Clinical Effectiveness
EPID 760 (3)	Epidemiological Methods in Clinical Trials
EPID 763 (3)	Nutritional Epidemiology
EPID 765 (3)	Reproductive Epidemiology
EPID 768 (3)	Psychiatric Epidemiology
EPID 770 (3)	Social Epidemiology
EPID 777 (3)	Genetic and Epigenetic Epidemiology
EPID 790 (3)	Independent Study
EPID 800 (3)	Epidemiologic Methods II
EPID 801 (3)	Epidemiologic Methods III
EPID 820 (3)	Seminar in the Epidemiology of Health Effects of Physical Activity

## Electives (3 hours)

Electives are chosen from courses in the University that support the overall educational goals of the student. The Faculty Advisor must approve all elective courses. Typically, the elective course is chosen from the list above, in addition to the two major courses.

## Thesis (6 hours)

EPID 799 (6)	Thesis Preparation
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### Suggested Course Load

We generally advise students to register for no more than 10 credits during each of the first two semesters of the Master's curriculum. Most students find the graduate curriculum to be considerably more demanding and time-consuming than their undergraduate experiences.

We also suggest a maximum of 12 credit hours in any semester for all students.

*Usual Course sequence for MPH & MSPH EPID students*  
**MPH**

Semester	1	2		3	4
	Fall	Spring	Summer	Fall	Spring
<b>DEPT</b>	EPID 701	EPID 741			
<b>CORE</b>	EPID 745	EPID 745			
<b>(19)</b>	BIOS 701	BIOS 757			
	BIOS 710	BIOS 745			
<b>MAJOR (6)</b>				EPID 758	EPID 730
<b>SPH CORE (9)</b>			SPH1	SPH2	SPH3
<b>ELECT (3)</b>				ELECT 1	
<b>PRACTICE (6)</b>				PRACTICE (1 credit)	PRACTICE (5 credits)
<b>Credits (43)</b>	10	9	3	10	11

*Note: Students admitted to either the MPH or the MSPH program who do not have academic or professional experience that provides a strong understanding of the biologic basis of public health are required to select EPID 725, based on discussion with the student's advisor.*

**MSPH**

Semester	1	2		3	4
	Fall	Spring	Summer	Fall	Spring
<b>DEPT</b>	EPID 701	EPID 741		BIOS 754	
<b>CORE</b>	EPID 745	EPID 745			
<b>(22)</b>	BIOS 701	BIOS 757			
	BIOS 710	BIOS 745			
<b>MAJOR (9)</b>				EPID 758 MAJOR2	MAJOR3
<b>SPH CORE (3)</b>			SPH1		
<b>ELECT (3)</b>					ELECT 1
<b>THESIS (6)</b>				THESIS (3 credits)	THESIS (3 credits)
<b>Credits (43)</b>	10	9	3	12	9

*Note: Students admitted to either the MPH or the MSPH program who do not have academic or professional experience that provides a strong understanding of the biologic basis of public health are required to select EPID 725, based on discussion with the student's advisor.*

# ***Goals and Learning Outcomes for the M.P.H. in Biostatistics***

The goal of the Master of Public Health degree in Biostatistics is to prepare students with prior public health experience, through quality lecture and field practice experiences and other research opportunities, to apply analytical and investigative biostatistical skills in a public health setting. Specifically, a student who successfully completes this degree will:

**Goal #1.** MPH program graduates of this program will demonstrate an understanding of the history and fundamental concepts constituting the breadth of public health, with the goal of developing an interdisciplinary approach to public health practice.

- Learning outcome #1. Students will demonstrate an understanding of a) fundamental principles and practices in health promotion, education, and behavior; b) organization, principles, and practices in health administration; c) principles and practices in epidemiology, and tools for translating epidemiological findings into public health action; d) public health statistical applications; and e) environmental health from the perspective of the earth as a complex, dynamic system.

**Goal #2.** MPH program graduates of this program will demonstrate a mastery of biostatistical techniques, know which of these is most appropriate in a given situation, and know how to perform and interpret the analyses of these techniques.

- Learning outcome #1. Students will demonstrate the ability to evaluate a given health related problem, and to identify the most appropriate statistical technique (e.g., t-test, contingency table, correlation) for analysis.
- Learning outcome #2. Students will display a mastery of a variety of traditional and newly developed statistical techniques, including multivariable methods for continuous and categorical data analysis.
- Learning outcome #3. Students will demonstrate the ability to apply analytic epidemiologic methods used to investigate health conditions.
- Learning outcome #4. Students will understand knowledge of academic and non-academic issues and problems in epidemiology and biostatistics.
- Learning outcome #5. Students will demonstrate the ability to interpret the results of a statistical analysis, and to communicate such interpretations in an easily comprehensible manner.

**Goal #3.** MPH program graduates of this program will demonstrate the ability to use a variety of statistical software packages to obtain, manage, and analyze public health data.

- Learning outcome #1. Students will demonstrate the ability to structure available data in an easily useable form, using a variety of data management software tools.
- Learning outcome #2. Students will demonstrate the ability to use a variety of statistical software packages, to create and maintain databases, and to analyze data.

**Goal #4.** MPH program graduates of this program will be exposed to and demonstrate an understanding of a variety of public health areas, and will perform well when tested on competencies as defined by the Association of Schools of Public Health Master's Degree in Public Health Core Competency Development Project.

- Learning outcome #1. Students will gain exposure to a wide variety of public health topics, and develop a basic understanding of the philosophy of public health practice.

**Goal #5.** MPH program graduates of this program will effectively communicate with both biostatisticians non-biostatisticians explain methodology and interpret results of analyses.

- Learning outcome #1. Students will demonstrate the ability to interpret the results of a statistical analysis, and to explain those results in understandable terms to public health practitioners.
- Learning outcome #2. Students will display the ability to apply an existing statistical technique to a current problem or question faced by a health agency, and to be able to explain the details of the analysis approach.

## ***Degree Requirements for the M.P.H. in Biostatistics***

A minimum of 45 credit hours is required for the Master of Public Health with a major in Biostatistics. Students are required to have two semesters of calculus and an introductory course or its equivalent in matrix algebra, or will be expected to make up the deficit beyond the minimum program of study. Additional courses may be required to meet prerequisites or to accommodate electives. All department core courses must be passed with a grade of “B” or better. Failure to do so will necessitate repeating the course; these courses can only be repeated once. Course requirements are given below and on the next page.

### **Summary of Degree Requirements for M.P.H. in Biostatistics**

SPH Core	9 hours
Department Core	18 hours
Major Courses	12 hours
Practice	<u>6 hours</u>
Total	45 hours

### **School of Public Health Core (9 hours)**

ENHS 660 (3) Concepts of Environmental Health Sciences  
HSPM 700 (3) Approaches and Concepts of Health Administration  
HPEB 700 (3) Concepts and Methods in Health Promotion

### **Department Core (18 hours)**

BIOS 701 (3) Concepts and Methods of Biostatistics  
EPID 701 (3) Concepts and Methods of Epidemiology  
BIOS 757 (3) Intermediate Biometrics  
EPID 741 (4) Epidemiologic Methods I  
EPID 745 (1) Seminar in Epidemiology  
BIOS 745 (1) Seminar in Biostatistics  
BIOS 710 (3) Effective Data Management in Public Health

### **Major Courses (12 hours)**

BIOS 758 (3) Advanced Biometrics  
BIOS 759 (3) Biostatistical Methods for Rates and Proportions  
STAT 512 (3) Mathematical Statistics  
**Plus one of the following:**  
BIOS 751 (3) Health Data Systems  
BIOS 752 (3) Vital Records and Health Survey Data Analysis  
BIOS 760 (3) Biostatistical Methods in Clinical Trials  
BIOS 765 (3) Research Design in the Biomedical Sciences  
BIOS 770 (3) Applied Longitudinal Data Analysis  
BIOS 775 (3) Biostatistical Aspects of Bioinformatics  
BIOS 805 (3) Categorical Data Analysis  
BIOS 808 (3) Environmetrics I  
BIOS 809 (3) Environmetrics II  
BIOS 810 (3) Survival Analysis  
BIOS 815 (3) Generalized Linear Models  
BIOS 820 (3) Bayesian Biostatistics and Computation  
BIOS 825 (3) Public Health Applications of Multivariate Methods  
STAT 513 (3) Theory of Statistical Inference  
STAT 518 (3) Nonparametric Statistical Methods  
STAT 519 (3) Sampling

### **Practice (6 hours)**

BIOS 798 (6) Public Health Practice

### **Suggested Course Load**

**We generally advise students to register for no more than 10 credits during each of the first two semesters of the Master’s curriculum. Most students find the graduate curriculum to be considerably more demanding and time-consuming than their undergraduate experiences.**

**We also suggest a maximum of 12 credit hours in any semester for all students.**

*Usual Course sequence for MPH BIOS students*

**MPH**

<b>Semester</b>	<b>1</b>	<b>2</b>		<b>3</b>	<b>4</b>
	<b>Fall</b>	<b>Spring</b>	<b>Summer</b>	<b>Fall</b>	<b>Spring</b>
<b>SPH CORE (3)</b>			SPH1 (3) SPH2 (3)	SPH3 (3)	
<b>DEPT</b>	EPID 701 (3)	EPID 741 (4)			
<b>CORE</b>	EPID 745 (1)	BIOS 757 (3)			
<b>(18)</b>	BIOS 701 (3) BIOS 710 (3)	BIOS 745 (1)			
<b>MAJOR</b>		STAT 512(3)		BIOS 759 (3)	BIOS 758 (3)
<b>COURSES</b>				ELECTIVE (3)	
<b>(12)</b>					
<b>PRACTICE (6)</b>				BIOS 798 (1)	BIOS 798 (5)
<b>Credits (45)</b>	10	11	6	10	8

*STAT 512 is also offered in the first Summer session, so students could take it then.*

# ***Goals and Learning Outcomes for the M.S.P.H. in Biostatistics***

The goal of the Master of Science in Public Health degree in biostatistics is to prepare students, through quality lecture and practical experiences and other research opportunities, for involvement in biostatistical research, including application of existing statistical theory to health problems, formulation of designed experiments, and adaptation of existing statistical theory for emerging health related problems. Specifically, a student who successfully completes this degree will:

**Goal #1.** MSPH program graduates of this program will demonstrate a mastery of biostatistical techniques, know which of these is most appropriate in a given situation, and know how to perform and interpret the analyses of these techniques.

- Learning outcome #1. Students will demonstrate the ability to evaluate a given health related problem, and to identify the most appropriate statistical technique (e.g., t-test, contingency table, correlation) for analysis.
- Learning outcome #2. Students will demonstrate the ability to interpret the results of a statistical analysis, and to communicate such interpretations in an easily comprehensible manner.
- Learning outcome #3. Students will understand knowledge of academic and non-academic issues and problems in epidemiology and biostatistics.
- Learning outcome #4. Students will display a mastery of a variety of traditional and newly developed statistical techniques, including multivariable methods for continuous and categorical data analysis.

**Goal #2.** MSPH program graduates of this program will demonstrate the ability to use a variety of statistical software packages to obtain, manage, and analyze public health data.

- Learning outcome #1. Students will demonstrate the ability to structure available data in an easily useable form, using a variety of data management software tools.
- Learning outcome #2. Students will demonstrate the ability to use a variety of statistical software packages, to create and maintain databases, and to analyze data.

**Goal #3.** MSPH program graduates of this program will effectively communicate with both biostatisticians and non-biostatisticians to explain methodology and interpret results of analyses.

- Learning outcome #1. Students will demonstrate the ability to work independently on a research problem, outside of the classroom setting..
- Learning outcome #2. Students will demonstrate the ability to modify and extend existing statistical techniques to answer questions posed by health related situations, and to synthesize such research results into acceptable research papers.



## ***Degree Requirements for the M.S.P.H. in Biostatistics***

A minimum of 44 credit hours is required for the Master of Science in Public Health with a major in Biostatistics. Students are required to have two semesters of calculus and an introductory course or its equivalent in matrix algebra, or will be expected to make up the deficit beyond the minimum program of study. Additional courses may be required to meet prerequisites or to accommodate electives. All department core courses must be passed with a grade of “B” or better. Failure to do so will necessitate repeating the course; these courses can only be repeated once. Course requirements are below.

### **Summary of Degree Requirements for M.S.P.H. in Biostatistics**

SPH Core	3 hours
Department Core	17 hours
Major Courses	15 hours
Electives	3 hours
Thesis	<u>6 hours</u>
Total	44 hours

### **School of Public Health Core (3 hours)**

One of the following:

- ENHS 660 (3) Concepts of Environmental Health Sciences
- HSPM 700 (3) Approaches and Concepts of Health Administration
- HPEB 700 (3) Concepts and Methods in Health Promotion

### **Department Core (17 hours)**

- BIOS 701 (3) Concepts and Methods of Biostatistics
- EPID 701 (3) Concepts and Methods of Epidemiology
- BIOS 757 (3) Intermediate Biometrics
- EPID 745 (1) Seminar in Epidemiology
- BIOS 745 (1) Seminar in Biostatistics
- BIOS 710 (3) Effective Data Management in Public Health
- BIOS 810 (3) Survival Analysis

### **Major Courses (15 hours)**

- BIOS 758 (3) Advanced Biometrics
- BIOS 759 (3) Biostatistical Methods for Rates and Proportions
- STAT 512 (3) Mathematical Statistics
- STAT 513 (3) Theory of Statistical Inference
- Plus one of the following:**
- BIOS 751 (3) Health Data Systems
- BIOS 752 (3) Vital Records and Health Survey Data Analysis
- BIOS 760 (3) Biostatistical Methods in Clinical Trials
- BIOS 765 (3) Research Design in the Biomedical Sciences
- BIOS 770 (3) Applied Longitudinal Data Analysis
- BIOS 775 (3) Biostatistical Aspects of Bioinformatics
- BIOS 805 (3) Categorical Data Analysis
- BIOS 808 (3) Environmetrics I
- BIOS 809 (3) Environmetrics II
- BIOS 815 (3) Generalized Linear Models
- BIOS 820 (3) Bayesian Biostatistics and Computation
- BIOS 825 (3) Public Health Applications of Multivariate Methods
- EPID 741 (4) Epidemiologic Methods I
- STAT 518 (3) Nonparametric Statistical Methods
- STAT 519 (3) Sampling

### **Suggested Course Load**

**We generally advise students to register for no more than 10 credits during each of the first two semesters of the Master’s curriculum. Most students find the graduate curriculum to be considerably more demanding and time-consuming than their undergraduate experiences.**

**We also suggest a maximum of 12 credit hours in any semester for all students.**

**Electives (3 hours)**

Electives are chosen from courses in the University which support the overall educational goals of the student. The Faculty Advisor must approve all elective courses.

**Thesis (6 hours)**

BIOS 799 (6) Thesis Preparation

*Usual Course sequence for MSPH BIOS students*

**MSPH**

<b>Semester</b>	<b>1</b>	<b>2</b>		<b>3</b>	<b>4</b>
	<b>Fall</b>	<b>Spring</b>	<b>Summer</b>	<b>Fall</b>	<b>Spring</b>
<b>SPH CORE (3)</b>			SPH1 (3)		
<b>DEPT</b>	EPID 701 (3)	BIOS 757 (3)			
<b>CORE</b>	EPID 745 (1)	BIOS 745 (1)			
<b>(17)</b>	BIOS 701 (3)	STAT 512(3)			
	BIOS 710 (3)				
<b>MAJOR</b>		ELECTIVE (3)		BIOS 759 (3)	BIOS 758 (3)
<b>COURSES</b>				BIOS 810 (3)	
<b>(15)</b>				STAT 513(3)	
<b>ELECTIVES (3)</b>				ELECTIVE (3)	
<b>THESIS (6)</b>				BIOS 799 (1)	BIOS 799 (5)
<b>Credits (44)</b>	10	10	3	13	8

For those who can skip BIOS 701, BIOS 757 could be taken in the Fall, which would leave an opening in the Spring for another major course elective.

STAT 512 is also offered in the first Summer session, so students could take it then.

Many times, students like to take thesis hour(s) in the fall of their second year.

# Practicum Information

## *Practicum Requirements for the M.P.H.*

Every MPH student must complete a public health practicum. The academic advisor does not automatically serve as the practicum advisor. The student may select this person from among the faculty in the department. Minimum course prerequisites for the practice experience: completion of at least one of the School of Public Health core courses and the department core. **Students must pass the progression examination before beginning the practice.**

Public Health in the United States is practiced in diverse settings that include both public and private agencies. Regardless of the type of agency in which it is practiced, public health includes a philosophy of social justice, concepts of community, and population perspectives. The range of public health activities in populations include preventing epidemics and the spread of disease, protecting against environmental hazards, preventing injuries, promoting and encouraging healthy behaviors, responding to disasters and assisting communities in recovery and assuring quality and accessibility of health services (Public Health in America, APHA, 1995). For epidemiologists and biostatisticians, one important aspect of public health practice is learning to bridge the gap between data collection/analysis and decision-making in addressing the goals of public health.

## *Selection of appropriate practice setting, mentor and faculty advisor*

A variety of public agencies offer practice opportunities for students. Mentors for the practice experience are in most instances individuals whose daily activity focuses primarily on public health practice, such as those who develop, manage, or evaluate programs at the SC Department of Health and Environmental Control. Faculty research projects are not appropriate for the practice experience. Faculty with joint appointments in the School of Public Health and a practice setting may serve as Mentors as long as the practice experience is clearly situated in the practice setting and has a practice focus, and the Mentor is functioning, for the purposes of the student's practice experience, primarily in his or her practice capacity. See below: Developing a Work Task. Assistantships will not be offered to satisfy any academic requirements, including practice requirements and thesis/dissertation research.

## *Academic Credit*

Students in the M.P.H. program must satisfactorily complete a total of six credit hours in Public Health Practice. Practice can be taken in more than one semester, and credit hours assigned are variable depending upon the nature and extent of the work tasks undertaken. Three hours of practice work in a regular semester (Fall or Spring terms) requires an average

of 10 hours of actual work each week including writing the final report, or 20 hours per week for six credits. In a summer term, three hours of credit would require 20 hours per week and six hours of credit would require 40 hours per week. **Students can sign up for practicum hours only if approved by their Practicum Faculty Advisor, and if actively working on the practicum that semester.**

## *Ethics and professional standards*

Public Health Practice combines the accomplishment of a task with intentional learning on the part of a student. In Public Health Practice, students are responsible for initiating their work and establishing learning objectives. In Public Health Practice, the student's work is for the host organization's benefit, and must not be used outside its purview without specific permission, usually in writing. The results of this work are "controlled" by the host organization or its representative.

Professional conditions of confidentiality are to be honored according to prevailing practice of the sponsoring organization. In general, information received from an individual or organization belongs to that individual or organization and recipients (i.e., students) are not free to pass along this information to other parties without the consent of the individual or organization.

All practice projects involving human subjects must be reviewed and approved by the appropriate ethics review committee. Research qualifying for exemption (typically secondary data analysis of existing data, observational studies with adults, or evaluation of service/public activities) can be approved by the University Institutional Review Board. The IRB application must be completed online at <https://sam.research.sc.edu/uscera/TilesDefinition.do?definition=loginForm>. It will be necessary to register the first time you enter the site. Some projects must also be approved by the agency review committee at which the practicum is conducted. Any necessary approvals must be obtained prior to beginning work on the defined practicum tasks. Some practicum activities related to an ongoing research project may be covered under that project's IRB approval; this should be discussed with the project PI and/or practicum advisor; in most situations, notification of the IRB of a change in protocol is sufficient.

## *Financial support*

If financial resources are required for doing a Public Health Practice activity, the responsibility for negotiating these arrangements rests with the sponsoring agency and the student. These costs and responsibilities for coverage are included in the practice proposal. Responsibilities of a graduate assistantship cannot be used to satisfy practice requirements.

## *Participant roles in EPID 798 or BIOS 798*

### Students are expected to:

- Take initiative and responsibility in defining competence to be developed, arranging or selecting an appropriate setting for practice activity, developing clear work and learning objectives and completing work and learning tasks by the dates agreed upon.
- Arrange appropriate meetings with Faculty Advisor and Mentor, including the final oral presentation.

### Faculty Advisors are expected to:

- Advise students in developing work and learning proposals.
- Advise students regarding ethics review required of the practice project.
- Participate in meetings with student and Mentor at the location of student's practice.
- Provide ongoing expert advice and guidance as needed or requested.
- Assess learning outcomes and assign pass/fail grade at appropriate times.
- Attend final oral presentation by student.

### Mentors are expected to:

- Assist SPH staff and students to define short-term tasks of potential use to his or her organization.
- Review student's "proposal" for usefulness to organization, determine limits of Mentor's role with student, and provide on-site direction to the work component of the practice.
- Provide student logistical support (arranging space, equipment, use of phones, use of computer and/or computer software, secretarial help, making introductions, providing data or helping gain access to it, and general advice within the organization.
- Assist with assessment of student's work and growth in competence during the practice.
- Attend final oral presentation by student.

## *Developing a work task*

For some students, a work task may be defined and negotiated for a practice activity prior to establishing specific learning objectives. In this case, discovering the learning potential of a given work task is required. For others who have developed and articulated learning objectives, the requirement is to locate and determine experiences that will enable the student to develop the specified skills.

There is no single proper way to find the "right" setting and task. The challenge is to locate something that needs to be done that some organization and persons within the organization care about, and then determine if that task can be done in the time you have available and if it allows you to pursue your learning objectives.

Experience with organizations that have sponsored SPH students suggests that if six major conditions are present, a sound practice activity can be developed. The conditions are:

1. An organization wants or needs something done, and it “controls” or “owns” the work results.
2. The student has some previously developed competence or experience that indicates the potential for contributions to the organization and citizenry. This includes knowledge gained in prerequisite courses.
3. The student has well thought out and communicated learning objectives that can be pursued in the framework of doing the task.
4. The student demonstrates a comprehensive understanding of what is to be done and is able to identify a supportive network of people.
5. A Mentor is identified who both wants the work done and wants to assist the student in pursuing the designated learning objectives.
6. The student seeks advice and monitoring from his/her Faculty Advisor.

The draft Work Task Proposal contains a minimal checklist of items that are considered important in preparing a work task proposal for Public Health Practice. Complete this draft first and discuss it with your Practice Faculty Advisor. The Public Health Practice Agreement form should be completed before the start of the practicum.

Individual sessions should be arranged by the student as needed with the Faculty Advisor or Mentor. It is recommended that the student schedule regular conferences with the Faculty Advisor.

### *Final report and oral presentation*

The student must write a final report on his/her practice experience and give an oral presentation based on this report. The report should address the objectives set down in the student's practice plan. The faculty and the Mentor must approve the final version of the Practice Report. The student should provide a spiral bound copy of the report to the faculty, Mentor, and the department (a formal copy is not submitted to the Graduate School).

The student is responsible for arranging the time and place of the oral presentation. The Faculty Advisor and Mentor must be present at the presentation. The student should make a general announcement in the School of Public Health at least a week before the presentation so that anyone who wishes can attend the oral presentation.

# Thesis Information

## *Purpose of the Master's Thesis*

All M.S.P.H. students must complete a research project culminating in a thesis. The purpose of the Master's Thesis is to apply the principles and methods learned during coursework and demonstrate competence of basic epidemiologic research. At the end of the thesis, the student should be able to demonstrate the ability to:

- Develop a testable research question of public health significance;
- Review the current literature as context for the research question;
- Describe the research design and analytic strategy;
- Conduct analyses appropriate for the research question;
- Present and interpret the results clearly;
- Discuss the findings in context of the current knowledge literature and implications for public health and future research.

## *Thesis Committee*

Students must pass the progression examination before forming the Thesis Committee and beginning thesis work. The student, in consultation with the Academic Advisor, will select a Thesis Director from the faculty of the department. The selection of the Thesis Director should reflect the general area of research interest to the student. The Thesis Director has the primary responsibility for advising and mentoring the student throughout the thesis. The Thesis Director and student will work together to identify members for the Thesis Committee. The student is expected to be actively involved in assembling the committee, asking each prospective faculty member if he or she would be willing to serve. The committee will consist of a minimum of three members, including the Thesis Director and at least one other faculty member of the Department whose interests are related to the student's research goals. The third member may be from any other academic department who has an interest in the research area of the student. Additional members having special expertise may serve at the student's and Thesis Director's discretion. Once the members of the committee are decided, the student completes a Master's Thesis Committee Appointment Form (see appendix) submits it to the Department office to be filed.

## *Registering for Thesis Hours*

Students can register for thesis credit hours (EPID 799) only if approved by the Thesis Director and actively working on the thesis. A total of 6 thesis credit hours are required for graduation. Students typically register for 3 credit hours each semester.

If a student completes the requisite 6 thesis credit hours and has not defended and submitted the thesis, the student must register for at least one thesis credit hour each semester working



on the thesis.

## *Ethics and professional standards*

In consultation with the Thesis Director, the student must obtain IRB approval. All thesis research involving human subjects must be reviewed and approved by the appropriate ethics review committee. Research qualifying for exemption (typically secondary data analysis of existing data, observational studies with adults, or evaluation of service/public activities) should be approved by the SPH Institutional Review Board Liaison. The IRB application must be completed online at <http://orc.research.sc.edu/irb.shtml>. It will be necessary to register the first time you enter the site. Some projects must also be approved by the review committee at the agency where the research is conducted. Any necessary approvals must be obtained prior to beginning work on the defined thesis tasks. Some thesis activities related to an ongoing research project may be covered under that project's IRB approval. This should be discussed with the project principal investigator and/or practicum advisor. In most situations, notification of the IRB or IRB liaison of a change in protocol is sufficient.

## *Deadlines*

The complete thesis must be read, critically evaluated, and approved by all members of the Thesis Committee. In accordance with [Graduate School guidelines](#), the following deadlines must be met.

- a. Initially, the student **must prepare a written thesis proposal and conduct a presentation** to the Thesis Committee for approval. Typically, the thesis proposal consists of the introduction, literature review, and methodology that the student intends to use for the thesis. In many cases, this forms the basis of the first three chapters of the final thesis. The proposal approval form must be submitted to the Graduate Director (see appendix). The presentation of the proposal should be no less than 3 months prior to the thesis defense.
- b. First Draft of Thesis should be submitted to the Thesis Committee at least 2 weeks before the defense (6 weeks before the date of graduation), or earlier if specified by the committee.
- c. The final copy is to be submitted to each committee member at least 30 days prior to the end of the semester (see time table for approximate dates) or at least two weeks prior to the thesis defense, whichever is earlier.
- d. The thesis defense should be scheduled after all members of the Thesis Committee receive the final copy of the thesis. The Graduate Director must approve the scheduled time.

Announcements of the presentation should be posted at least one week prior to the defense. The thesis defense should be scheduled in an available classroom and not during the scheduled class time of any department core course.

There are two phases of the thesis defense: public presentation and the oral comprehensive exam. The candidate must publicly present the thesis in a 30-45 minute presentation. Also, the candidate must pass an oral comprehensive examination, which shall be administered immediately following the presentation and evaluated by the Thesis Committee. This examination will focus on the technical and scientific aspects and the scholarly delineation of the thesis topic and may cover any other subject matter relevant to the student's field of study. One of three decisions may be reached at the end of the thesis defense: 1) accepted as is; 2) accepted on the condition that certain changes are made within a specified time frame; 3) rejected.

Not later than five weeks before graduation, the thesis draft should be submitted via the electronic thesis and dissertation (ETD) process to the Graduate School for preliminary thesis format check. You can view the format guide, ETD samples, templates and submit your document at the Thesis & Dissertation portal. Students are responsible for making sure the thesis meets the Graduate Schools' requirement (<http://gradschool.sc.edu/students/thesisdiss.asp>).

All Thesis Committee members must approve the final version and sign the Thesis Signature and Approval form (<http://gradschool.sc.edu/forms/G-TSF.pdf>). The hard copy of the signed form is submitted to the Graduate School.

- e. The student should provide each Thesis Committee member a PDF copy of the thesis as submitted to the Graduate School or in a manner agreed upon by the committee member. Final approval is given by the Graduate School via the ETD process. The final approved Thesis must be submitted via the ETD process no later than 20 days before graduation.

In accordance with Graduate School guidelines, the following deadlines must be met.

Task	For graduation in		
	May	August	December
<b>Thesis proposal defense</b>	January 15th	March 15th	July 15th
<b>First complete version to committee</b>	March 15th	June 15th	October 15th
<b>Thesis defense deadline</b>	April 15th	July 15th	November 15th
<b>Thesis format and check deadline</b>	April 15th	July 15th	November 15th
<b>Final approved thesis submitted via ETD</b>	April 20th	July 20th	November 20th

\*\*Please note that these dates are only approximations of the actual dates. It is your responsibility to check the updated school calendar regarding the actual dates.

## *Thesis Defense and Final Version*

- a. The candidate must publicly present the thesis in a 30-45 minute presentation. Announcements of this presentation should be posted at least one week before the defense. The thesis defense should be scheduled in an available room and not during the scheduled class time of any department core course.
- b. The candidate must pass an oral comprehensive examination, which shall be administered immediately following the presentation and evaluated by his or her Thesis Advisory Committee. This examination will focus on the technical and scientific aspects and the scholarly delineation of the thesis topic and may cover any other subject matter relevant to the student's field of study.
- c. All Thesis Committee members must approve the final version of the thesis and sign the Master's Thesis Signature Form. Students are responsible to make sure the thesis meets the Graduate School's requirements (see: [http://www.usc.edu/schools/GraduateSchool/current\\_thesis\\_dissert.html](http://www.usc.edu/schools/GraduateSchool/current_thesis_dissert.html)). The student should provide each Thesis Committee member a copy of the thesis as submitted to the Graduate School, bound in a manner acceptable to the committee member.

## *Master's Thesis FAQs*

- **When should I start working on my master's thesis?**

The process should begin as soon as the student starts the program. Students are encouraged to discuss ideas with faculty advisors. Informal ways to begin the thesis include reading and research topics that you find interesting, working as a graduate research assistant. Additionally attending departmental, research center/institute, school-wide, and university seminars to learn about the research of faculty members or emerging topics in the field may help one develop a topic.
- **Should I collect my own data for the master's thesis?**

No! Master's students are not expected to undertake their own original research because it may be difficult to complete original research within the time frame of a master's program. Students are strongly encouraged to use data already.
- **How can I find a dataset to analyze for my master's thesis?**

There are several publicly available datasets (e.g. BRFSS, NHANES, and NHIS). Additionally students can get access to datasets that a faculty may have. However, written permission from whoever controls that dataset must be obtained.

- **What are the roles of the thesis committee members?**

The Thesis Director has the primary responsibility for advising you throughout the entire process of the thesis. This person helps you to form the thesis committee, provides close guidance and feedback (i.e. help to refine research question, identify sources of data), convenes and chairs meetings of the committee, helps student to troubleshoot issues, develop high quality first and second drafts.

The other committee members may advise on the designing the project, analysis of data, and interpreting the results. Provides comments and lends expertise on the development of your thesis and reviews drafts.

- **What are acceptable formats for an epidemiology thesis?**

There are several acceptable formats for the epidemiology thesis. The most common format entails testing one or more hypotheses about the relationship between exposure (s) and health related outcomes (s). Other acceptable formats include validation of a measurement or screening test, a formal systematic review or meta-analysis.

- **What are acceptable formats for a biostatistics thesis?**

Acceptable formats include the development of a new data analytic method, detailed study of an existing method or comparison of performance of various methods (e.g. simulation study), a review or synthesis of a new or emerging area of statistical methodology or application

- **Am I required to publish my master's thesis?**

Publishing the master's thesis is not a requirement for award of the master's degree. However, the thesis should be suitable in scale and content to serve as the basis for publication in peer-reviewed journal or presentation at a meeting or conference. A master's thesis will usually contain substantially more detail than is appropriate for journal publication. If you are deciding to continue into a doctoral program you are strongly encouraged to publish your thesis. This will make you committee extremely happy!

- **How many pages is the thesis proposal? The thesis?**

This depends on the nature and scope of the project proposed.

# Doctoral Programs – Important Dates and Forms

- In order to be eligible for In-State tuition rate, out-of-state & foreign students must secure an assistantship no later than 30 days into the Fall semester.
- Form an Advisory Committee (Faculty Advisor and another faculty member) during the first term of enrollment and draft a Program of Study.
- Qualifying Exam – Friday before the beginning of Fall Semester, after either first or second year of coursework.
  - Qualifying Exam Re-take the following Spring Semester (if necessary)
- Program of Study Form (DPOS) must be approved by the Doctoral committee and Graduate School. This form is abbreviated DPOS in the Graduate School Forms Library.
  - Any changes to the POS form should be submitted using the Program of Adjustment Form, (POSA)
- Admission to Doctoral Candidacy requires **both** passing the Qualifying Exam **and** having an approved Program of Study and must be one full academic year prior to graduation.
- Submit a Doctoral Committee Appointment Request (G-DCA) to form the committees needed for the comprehensive exam and dissertation. Typically, the same individuals serve on both these committees.
- Dissertation Proposal – at least 6 months prior to the dissertation defense.
- Doctoral Comprehensive Exam – completed at least 60 days before the date of graduation. The PhD Examination Verification Form must be completed and sent in to the Graduate School.
  - The oral component of the exam should follow within one month of the written exam
- Graduation Application (Form AS-126)– submitted no later than 15 days after the beginning of the term in which candidate expects to graduate
- Dissertation Draft – Within 15 days after the start of the final term of study, submit draft of dissertation to advisor and committee members (or earlier if requested by the committee) and schedule dissertation defense. Submit a Dissertation Defense Announcement, using the Graduate Management System (GMS).

- Dissertation Format Check - submitted to the Graduate School via ETD process no later than 5 weeks before the date of graduation.
- Dissertation Defense – at least one week prior to final dissertation submission. An announcement must be posted & sent out on the EPID-BIOS listserv 1 week prior to defense. A hard copy of the Dissertation Signature and Approval Form, *with original signatures*, must be submitted to the Graduate School after the defense.
- Final Dissertation – submitted to the Grad School via ETD no later than 20 days before the date of graduation.

## *Program of Study*

As early in the program as possible, in consultation with the Advisory Committee and/or Dissertation Committee, a doctoral student should file a program of study. This Program of Study includes any cognates that are related to the student's dissertation research interests. The DPOS form must be submitted and approved for admission to doctoral candidacy, typically at the end of the student's first year. Occasionally, changes in the Program of Study need to be made. In this case, a Program of Study Adjustment Form (POSA) needs to be filed with the Graduate School. Extra courses taken, which are not required for graduation, should not be listed on the Program of Study.

## *Transfer Credit*

No program prerequisite courses (such as those required in our Master's degree programs) can be used on the Program of Study to complete department requirements. Admission to any of the doctoral programs requires prior completion of a Master's degree, but courses from a prior Master's degree can be included on a doctoral Program of Study as described below. The department minimum requirements for the various doctoral degree programs range from 51-60 credit hours. However, the Graduate School requires a minimum of 60 post-baccalaureate hours for the doctoral Program of Study, regardless of department requirements. Additional courses to complete this 60 hour requirement can include courses specified as prerequisites or conditions of admission, and courses taken as part of a Master's program, regardless of calendar date. Doctoral degree credits are governed as follows:

- Credits transferred from another program or institution may not constitute more than 12 hours of the Doctoral Program of Study. Transfer credits must be approved by the student's Doctoral Advisory Committee and the program's Graduate Director. The student may be required to provide course syllabi and/or other supporting documentation prior to approval of transfer credits.

- To be listed on the doctoral Program of Study, transfer courses must have been completed at an accredited institution, with a grade of “B” or better, within ten years preceding the date of doctoral graduation.
- Courses taken to fulfill prerequisites for doctoral study (such as EPID 701, EPID 741, BIOS 701, BIOS 710, BIOS 757, or any courses that cover equivalent material) can only be used or transferred to count toward the additional course credits to fulfill the 60 hour Graduate School requirement (EPID PhD – 6 credits, BIOS PhD – 9 credits).
- BIOS students cannot transfer any hours for STAT courses below the 700 level to the doctoral Program of Study.
- USC courses at the 500 and 600 level (which can be graduate or undergraduate), and any other such courses taken at other institutions, may be acceptable if they are out of the student’s discipline, but still applicable to the student’s area of study (e.g., a 500 level STAT class for an EPID major, or a 500 level GEOG course for a student working with GIS as part of the dissertation).
- Courses taken for undergraduate credit can never be on any graduate Program of Study, master's or doctoral.

## *Annual Academic Review of Ph.D. Students*

Each Ph.D. student's academic progress must be evaluated annually by the student’s academic advisor and by the Department’s Leadership Team, which includes Division Directors and Graduate Program Directors for each program. These reviews should be completed after the first semester of enrollment and then annually thereafter. Forms will be distributed to students from the department and an announcement/reminder of this requirement will be made each spring. There are two parts to the evaluation and review: a part completed by the student and a part completed by the student’s advisor.

The annual report covers the following information:

1. A current CV reflecting activities and accomplishments related to the discipline
2. Academic record including
  - a) the overall grade point average;
  - b) any incomplete courses;
  - c) overall progress toward completing the coursework phase of the program.
3. Progress in completing or preparing for the Qualifying exam
4. Submission of an approved Doctoral Program of Study form
5. Discussion of progress in acquiring research experience (including citations for participation in conference presentations and peer-reviewed publications)

6. Formation of dissertation committee
7. Development of the dissertation proposal and planning for presentation of the proposal
8. Progress toward degree completion.

Students determined to be making unsatisfactory progress must meet with their academic advisor and Graduate Director to discuss plans for improving progress.

## *Qualifying Examination*

The Qualifying Examination is normally offered on the third Friday of each Spring Semester, usually the second or fourth semester of the student's residency. Passing the Qualifying Exam is one of the requirements for admission to doctoral candidacy.

The intent of the Qualifying Exam is to measure potential for doctoral study and to assess the student's basic technical and professional knowledge. Doctoral students who completed a Master's degree in Epidemiology or Biostatistics at the University of South Carolina are encouraged to take the Qualifying Examination following their first year in the doctoral program. Students admitted from Master's programs at other universities may wait to take the Qualifying Examination until after their fourth semester of doctoral studies. All students are expected to take the exam no later than the administration after their fourth semester of doctoral studies. This exam must be passed before admission to doctoral candidacy and continuation in the program, and must be completed at least one full academic year prior to the date the doctoral degree is awarded.

A student must register with his or her advisor's approval to take the Qualifying Examination. The deadline for this registration is posted as soon as the examination date is set, and is generally one week prior to the examination date. If a student registers to take the Qualifying Examination and does not take it, this will count as one failed attempt unless the registration is canceled at least one week prior to the examination date.

The Qualifying Examination is distinct for epidemiology students and biostatistics students. The exams are prepared by a committee of at least two members of the Department faculty in that discipline. The committee evaluates the results and determines the outcome. The Qualifying Examination will be evaluated as a whole; the student will either pass or not pass the entire Examination.

The Examination will consist of two parts, for which all students will need to appear. The first part is in the morning, generally from 9:00 AM to 12:00 Noon, and the second part is in the afternoon, after a break for lunch. Both parts will be considered together to determine the overall performance on the examination.

For Epidemiology students, the examination will focus on design and methodology issues and on content areas. Advanced material from EPID 701, EPID 741, EPID 800, BIOS 701 and BIOS 757 may be reflected on the examination. The exam may include reading a published manuscript and responding to conceptual, design and methodological questions related to this publication or its subject matter. Student will be allowed to use a calculator; however, no software can be used



and no further research can be done (e.g., via e-mail or the Internet).

For Biostatistics students, the examination will focus on the theory and methodologies presented in the various Biostatistics and Statistics courses, possibly including more advanced concepts from BIOS 701, BIOS 757, and STAT 512. Students will be given a set of questions based on required and elective courses; each individual will be allowed to choose a subset of these questions to answer, based on courses he or she has completed. Biostatistics students will complete the examination using pen/pencil and paper. Students will be allowed to use a calculator but not any statistical software. They will be given a sheet of relevant formulas.

Students taking the Examination will be notified of the results in writing as soon as possible after faculty evaluation of the Examination. Faculty members will not discuss exam results with any individual student until all students have received official notification. A debriefing session will be held after examination results are released to students. The student may also meet with his or her Faculty Advisor to discuss performance on the exam.

Examinations are graded by multiple faculty members. Exam responses earning a score of 80% or above will be considered “Passing” and no Oral Examination will be required. Exam responses earning scores from 70%-79% will be considered “Passing” only upon successful completion of an additional Oral Examination. Exam responses earning scores below 70% will be considered “Failing”; students who fail the qualifying examination on the first attempt will receive feedback on gaps in mastery of material identified on the exam.

The oral examination is conducted by at least three faculty members and focuses on areas of the written exam that may have been unclear, incomplete, or otherwise of concern. Following the oral exam, students will be determined to have either passed or failed the Qualifying Examination.

Each student is allowed two attempts at the Qualifying Examination. If the second attempt is required, it should occur at the next administration of the exam in the following spring. The scoring and administration of the second attempt will follow the same process as the first, including the Oral Examination for those scoring in the range 70%-79%. If a student does not pass the examination on the second attempt, he or she is not allowed to continue in the program.

A student who passes the Master’s comprehensive examination and is accepted into a doctoral program in this department in the same discipline within three years may request waiver of at least part of the doctoral Qualifying Exam. This request will be evaluated on an individual basis.

## *Doctoral Candidacy*

Admission to doctoral candidacy and continuation in the program require passing the Qualifying Exam and filing an approved doctoral Program of Study (POS). Admission to Candidacy must be one full academic year prior to graduation, so students should plan for admission to candidacy no later than the end of the second year of study.

## *Residency*

The intent of doctoral residency is to ensure that doctoral students benefit from and contribute to the complete spectrum of educational and professional opportunities provided by the graduate faculty of a comprehensive university. When establishing residency, the student should interact with faculty and peers by regularly attending courses, conferences, and seminars, and utilize the library and library facilities and resources needed to support excellence in graduate education.

The granting of a doctoral degree by the University of South Carolina presupposes a minimum of three full years of graduate study (or equivalent) and a minimum of 30 graduate hours of study after admission to the doctoral program. The doctoral residency requirement may be satisfied only after admission to a doctoral degree program and must be fulfilled by enrollment in at least 18 graduate credit hours within a span of three consecutive semesters (excluding summers). Enrollment in a summer term is not required to maintain continuity, but credits earned during summer terms will count towards residency.

In the Department of Epidemiology and Biostatistics, dissertation hours (BIOS 899 or EPID 899) will not count toward the minimum residency requirement. Additionally, seminars (BIOS 845 or EPID 845) will normally not count toward the minimum residency requirement.

## *Teaching and Consulting Experiences*

Doctoral students are expected to participate in a consulting and teaching practicum. These are recorded as Independent Studies and require a contract with the advising faculty. The teaching practicum usually occurs in a departmental core course and has to be supervised by a full-time member of the faculty. In this setting, doctoral students will serve as junior colleagues to the course instructor, develop and present at least one formal lecture, support all grading, hold office hours, read all materials, and support preparation and posting of class material.

The consulting practicum, a requirement for the Ph.D. degree, is designed so that the student acquires some real world experience collaborating with a health agency or institution. This typically involves an individual outside of the department, often at a state health agency, who acts as a mentor, and for whom consulting services are performed on a project of interest to the mentor. In rare cases this mentor may be a faculty member in the department, but if so the project must not be related to the student's dissertation or assistantship duties.

The student, academic advisor, and mentor should agree upon the services to be performed for the consulting practicum. An independent study form that outlines what the consultation entails and what resulting end-products are expected should be filed at the beginning of the semester during which the consulting is done. At a minimum, the student would present a report of the results of the consultation to the mentor and academic advisor at the end of the consultation period (typically one semester). In some situations additional requirements may be made; these would be agreed upon at the outset.

Depending on the nature of the internship, an internship could be used in lieu of the consulting practicum, but needs to be agreed upon by the Advisor and the Program's Graduate Director. A student can either sign up for EPID/BIOS 890 or take another course to satisfy this course

requirement.

## *Doctoral Committees*

Within the first term of enrollment, the student should form a Doctoral Advisory Committee. This committee should have two or more members, including the student's academic advisor. This committee will help draft the student's Program of Study.

When appropriate, three other committees must be formed – the Written and Oral Comprehensive Examination Committee, the Dissertation Committee, and the Dissertation Defense Committee and is subject to approval by the Dean of the Graduate School. The Doctoral Committee Appointment Request Form (G-DCA), found on the Graduate School website in the forms library should be submitted to the Graduate School. Typically, the same individuals serve on all three committees and the chair is the student's dissertation advisor. The committee must consist of a minimum of four faculty members at least one of which must be from another USC Department or another institution. At least two of the members of the committee must be tenured or tenure-track faculty. The student is expected to be actively involved in assembling the committee, asking each prospective faculty member if he or she would be willing to serve on the committee. The committee guides the student's work, offer advice on the program of study and determine whether a foreign language is appropriate. The student's final program of study must be approved by the committee and filed prior to the beginning of the semester during which the student plans to graduate. There are specific guidelines for approval of outside members of the doctoral committees who are not tenure-track graduate faculty at U.S.C. If a student wants to have more than one outside member on a dissertation committee, this can be requested by way of a letter of justification from the Program's Graduate Director and is subject to approval by the Graduate School.

## *Doctoral Comprehensive Examination*

The purpose of the Comprehensive Exam is to evaluate in-depth knowledge acquired by the student in the major area of concentration and in the cognate area. The exam is taken after the completion of doctoral course work, and is scheduled for the individual student. The exam will contain written and oral components. It is prepared and administered by the Written and Oral Comprehensive Exam committee.

This committee is responsible for choosing the format of the Comprehensive Examination. The oral component of the exam should follow within one month of the written examination. The examination committee will prepare the oral component based on the student's performance on the written component and on material not covered on the written component. As in the written component, any topic on the student's program of study could be represented in the oral component.

The committee evaluates both the written and oral components of the exam to determine whether the exam has been passed. Since the two components of the exam are evaluated together, the committee is not expected to give any response concerning the written component to the student before the oral component. If a student does not perform satisfactorily, both components must be repeated. The student is allowed two attempts to pass the examination. If a student does not

pass the examination on the second attempt, he or she is not allowed to continue in the program. The examination must be completed at least 60 days before the date of graduation. The Comprehensive Examination Verification Form must be completed and sent in to the Graduate School upon completion of the examination.

## Ph.D. in Epidemiology

### *Goals and Learning Outcomes for the Ph.D.*

**Goal #1.** PhD program graduates will have mastery of the epidemiologic concepts, methods, and their application in health outcomes and health promoting behaviors and be able to communicate that understanding to others both inside and outside the field.

- Learning outcome #1. Each doctoral student will demonstrate mastery of biological concepts and epidemiologic methods relevant for estimating the association between at least one exposure and one outcome.
- Learning outcome #2. Each doctoral student will translate epidemiologic methods learned into solving an epidemiologic problem.
- Learning outcome #3. Each doctoral student will build upon statistical methods learned during his/her masters program to solve more complex statistical questions.

**Goal #2.** PhD program graduates will demonstrate the ability to teach Epidemiologic methods in a formal classroom setting.

- Learning outcome #1. Each doctoral student will exhibit the ability to teach basic epidemiologic methods .

**Goal #3.** PhD program graduates will demonstrate the ability to perform epidemiologic consulting, including methods development and interpretation of analysis results.

- Learning outcome #1. Each doctoral student will exhibit the ability to consult with clients outside the university setting, and provide them with epidemiological assistance on a health related problem.

**Goal #4.** PhD program graduates will develop skills in research planning, implementation, interpretation and dissemination.

- Learning outcome #1. Each doctoral student will conduct rigorous and original epidemiologic research resulting in publishable manuscripts.

Students admitted to either the Ph.D. program in epidemiology who do not have academic or professional experience that provides a strong understanding of the biological basis of public health are strongly encouraged to take EPID 725 or select courses that will provide this understanding.

## *Degree Requirements for the Ph.D. in Epidemiology*

Course work for the Ph.D. assumes that the applicant has taken sufficient courses in the biological or social sciences, and has solid preparation at the Master's level in Epidemiology.

Generally, if a student enters the program with a master's degree in Epidemiology received within the last few years, that student can automatically register for EPID 800 without having to take EPID 701 or EPID 741. For students holding a master's degrees in a discipline other than Epidemiology, preparatory course requirements may be set by the academic advisor. As a minimum, applicants must master the content and skills taught in the following basic courses: EPID 701, EPID 741, BIOS 701, BIOS 710, and BIOS 757. The departmental faculty also may require other extra courses on a case-by-case basis.

The Graduate School requires that the Program of Study show a minimum of 60 hours post-baccalaureate. With approval of the academic advisor and Graduate Director, the student may use courses taken in a previous graduate degree program to fulfill the Graduate School's requirements for coursework beyond the Department's required 54 hours post-baccalaureate. These additional courses beyond the Department's degree requirements are not restricted by the maximum ten years allowed to complete a doctoral program of study. Course requirements are given below.

### **Degree Requirements for the Ph.D. in Epidemiology**

<u>COURSES</u>	<u>HOURS</u>
EPID 800, Epidemiologic Methods II	3
EPID 801, Epidemiologic Methods III	3
EPID 845, Seminar (1 credit per semester, for 3 semesters) <sup>(1)</sup>	3
EPID 890, Teaching Practicum	3
EPID 890, Consulting Practicum	3
Other courses from Epidemiology	9
Biostatistics courses	9
Cognates (electives)	9
Dissertation (EPID 899)	<u>12</u>
<b>Department Required total:</b>	<b>54<sup>(2)</sup></b>
Additional courses to fulfill 60 hour Graduate School requirement*	6 <sup>(3)</sup>
<b>TOTAL required for graduation:</b>	<b>60</b>

<sup>(1)</sup>One credit hour of BIOS 845 may be substituted.

<sup>(2)</sup>With the exception of Master's core courses (EPID 701, EPID 741, BIOS 701, BIOS 710, and BIOS 757, and their equivalents), up to 12 hours may be transferred from previous graduate coursework, with the approval of the student's advisor and the Graduate Director. Also see the sections on "Program of Study" and "Transfer Credit".

<sup>(3)</sup>May include the Master's core courses listed above.

# Ph.D. in Biostatistics

## *Goals and Learning Outcomes for the Ph.D.*

The Doctor of Philosophy prepares students, through quality lecture and practical experiences and other research opportunities, for involvement in teaching and independent and collaborative biostatistical research; and trains researchers to teach and to pursue original research on analytical approaches to investigating health conditions, and to develop novel biostatistical approaches. The following objectives are premised upon having successfully met all of the objectives delineated previously that are common to the MPH and MSPH degrees.

**Goal #1.** PhD program graduates of this program will demonstrate a mastery of biostatistical techniques well beyond that required of an MPH or MSPH degree, and will also demonstrate the ability to develop original methodological approaches.

- Learning outcome #1. Students will display command of a wide variety of biostatistical techniques, as well as have a deeper understanding of these techniques than someone at a Masters level.
- Learning outcome #2. Students will demonstrate the ability to create a new biostatistical technique, which may involve merging existing statistical theories, which will produce results that add to the body of biostatistical knowledge.

**Goal #2.** PhD program graduates of this program will demonstrate the ability to teach topics in Biostatistics in a formal classroom setting.

- Learning outcome #1. Students will demonstrate the ability to present basic statistical material in a formal classroom setting.

**Goal #3.** PhD program graduates of this program will demonstrate the ability to perform biostatistical consulting, including data analysis and interpretation.

- Learning outcome #1. Students will demonstrate the ability to consult with clients outside of the university setting, and provide them with statistical assistance on a health related problem.

**Goal #4.** PhD program graduates of this program will publish material from their dissertations in peer-reviewed professional journals in the areas of Biostatistics or Statistics.

- Learning outcome #1. Students will communicate results of newly developed techniques through publications and teaching.

# Degree Requirements for the Ph.D. in Biostatistics

Course work for the Ph.D. is predicated upon the applicant having college level courses in calculus and matrix algebra and solid preparation at the Master's level in biostatistics. Additional scientific background in the social or biological sciences is desirable.

For applicants holding Master's degrees in disciplines other than Biostatistics, preparatory course requirements will be set at the discretion of the faculty. As a minimum, applicants should have: a) completed the equivalent of 1-1/2 years of University level calculus, i.e. through multivariable calculus (equivalent courses at USC include MATH 141, MATH 142, MATH 241); b) completed an introductory course or its equivalent in matrix algebra, including matrix operations and solutions of matrix equations; c) completed a year of mathematical statistics, the equivalent of STAT 512 and STAT 513; d) have mastered the knowledge and skills taught in the following basic courses: EPID 701, BIOS 701, and BIOS 757. Applicants without evidence of the above knowledge base will be expected to take the necessary basic courses immediately upon entry. The preparatory course requirements as specified by faculty are in addition to the minimal 51 hours of doctoral requirements.

The Graduate School requires that the Program of Study show a minimum of 60 hours post-baccalaureate. With approval of the academic advisor and Graduate Director, the student may use courses taken in a previous graduate degree program to fulfill the Graduate School's requirements for coursework beyond the Department's required 51 hours post-baccalaureate. These additional courses beyond the Department's degree requirements are not restricted by the maximum ten years allowed to complete a doctoral program of study.

## Degree Requirements for the Ph.D. in Biostatistics

<u>COURSES</u>	<u>HOURS</u>
800 level Biostatistics courses	9
STAT 712, STAT 713, STAT 714, and STAT 715 <sup>(1)</sup>	12
BIOS 845, Seminar (1 credit per semester, for 3 semesters) <sup>(2)</sup>	3
BIOS 890, Teaching Practicum	3
BIOS 890, Consulting Practicum	3
Other courses from Biostatistics or Statistics	6
Cognates (electives)	3
Dissertation (BIOS 899)	<u>12</u>
<b>Department Required total:</b>	<b>51<sup>(3)</sup></b>
Additional courses to fulfill 60 hour Graduate School requirement***	9 <sup>(4)</sup>
<b>TOTAL required for graduation:</b>	<b>60</b>

<sup>(1)</sup>Another advanced Statistics course may be substituted for STAT 715.



<sup>(2)</sup>One credit hour of EPID 845 may be substituted.

<sup>(3)</sup>With the exception of Master's core courses (EPID 701, BIOS 701, BIOS 710, and BIOS 757, and their equivalents), up to 12 hours may be transferred from previous graduate coursework, with the approval of the student's advisor and the Graduate Director. Also see the sections on "Program of Study" and "Transfer Credit".

<sup>(4)</sup>May include the Master's core courses listed above.

## **Dr.P.H. in Biostatistics**

### *Goals and Learning Outcomes for the Dr. P.H.*

The Doctor of Public Health program in Biostatistics prepares students, through quality lecture and extensive practical experience, to assume leadership roles in disseminating the culture and practice of biostatistics in the application area designated in their program. A candidate should show an established interest in both biostatistics and the application area. This degree is not intended for the student who plans an academic career in Biostatistics, for which the PhD would be the more appropriate degree, but rather for the student who intends to continue research and/or administration in the application area. The following objectives are premised upon the student having successfully acquired the competencies spelled out in the objectives stated for the M.P.H. degree.

**Goal #1.** DrPH program graduates of this program are prepared to offer transformative leadership in public health research and practice.

- Learning outcome #1. Students will lead the process of creating an organization's vision, mission and goal-setting for the organization, guide decision-making, influence and advise others in a way that benefits the organization, and build capacity to successfully carry out the mission of the organization.
- Learning outcome #2. Students will influence policy and opinions on health issues and, by using effective communication strategies, be able to persuasively argue for policies that improve the health of the public.
- Learning outcome #3. Students will develop and implement formative, process, impact and outcome evaluations for the performance of a specific program or of the organization in relation to its vision and mission.
- Learning outcome #4. Students will conduct various types of research studies, interpret and communicate study results, synthesize information from multiple studies, assess the merits of research done elsewhere, and determine how research results can be applied to the organization.
- Learning outcome #5. Students will demonstrate integration of the DrPH core competencies and expertise in their specific specialization through the Doctoral Public Health Practicum.

**Goal #2.** DrPH program graduates of this program will demonstrate a mastery of biostatistical techniques well beyond that required of an MPH degree.

- Learning outcome #1. Students will demonstrate command of a wide variety of biostatistical methods, particularly a strong, thorough knowledge of those methods that are most relevant to the application area.
- Learning outcome #2. Students will demonstrate familiarity with the culture and parlance of both biostatistics and the application area, in order to foster interdisciplinary research and improve communication between the two areas.
- Learning outcome #3. Students will demonstrate leadership and communication skills in detailing the benefits of biostatistical methods.
- Learning outcome #4. Students will manage the successful dissemination and use of biostatistical methods by implementation of programs that use biostatistics in an organization.

**Goal #3.** DrPH program graduates of this program will publish material from their dissertations in professional journals relevant to their application areas, as well as in journals more directly related to biostatistics.

- Learning outcome #1. Students will communicate results of newly developed techniques, or a novel application of an existing technique, through publications in the application area.

# Degree Requirements for the Dr.P.H. in Biostatistics

Course work for the Dr.P.H. is predicated upon the applicant having at least two semesters of college level calculus, two semesters of graduate level biostatistics or statistics, and an MD or Master's degree in an area where biostatistical concepts can be applied. Course requirements are given below:

## Degree Requirements for the Dr.P.H. in Biostatistics

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<u>COURSES</u>	<u>HOURS</u>
Dr.P.H. Core Courses HSPM 820, HPEB 820, HPEB 818 or HSPM 818, and BIOS 765	12
800 level Biostatistics courses	9
Other courses from Biostatistics or Statistics	12
Advanced Practicum (BIOS 898) <sup>(1)</sup>	6
Application area courses <sup>(2)</sup>	9
Dissertation (BIOS 899)	<u>12</u>
<b>Department Required total:</b>	<b>60</b>

<sup>(1)</sup> The advanced practicum is the mechanism by which the student displays the ability to disseminate the culture of biostatistics into their chosen application area. The specific way in which this is done would depend on the concentration area of the student, and the workplace at which the practicum is done, but would include at least some of the following:

- Discover areas where biostatistics could be used, but is not currently being used, in the workplace;
- Explain to appropriate people in the workplace why using biostatistical methods would be potentially beneficial;
- Plan ways to incorporate appropriate methodology;
- Provide training (perhaps a series of short lectures) on examples of how biostatistics has been used in similar settings, and how it could be used in this workplace;
- Provide training to interested individuals as to how to perform the studies and analyses needed to address specific problems; and
- Interpret results of studies done in the workplace, and demonstrate how these have been of benefit.

<sup>(2)</sup> The application area may be from a specific department (e.g. Epidemiology, Environmental Health) or a topic that spans across departments (e.g., a specific disease, nutrition, exercise). At least one member of the dissertation committee would be from outside Biostatistics and would represent this application area.

# Dissertation Requirements

All doctoral students must complete a research project culminating in a dissertation. The dissertation must be based on original research, typically addressing a basic research problem. Students must pass the Qualifying Examination before enrolling in dissertation hours (EPID or BIOS 899). The student, in consultation with the Academic Advisor, will select a Dissertation Director from the faculty of the department. The Dissertation Director has primary responsibility for advising the student regarding technical work on the dissertation. **Students can sign up for dissertation hours only if approved by their Dissertation Director, and if actively working on the dissertation that semester.**

The first step in that process is the development of the dissertation proposal, and its oral defense before the student's doctoral committee. The committee must approve the proposal in writing before the student can proceed with the research. Manuscripts for inclusion in the dissertation and have been submitted and/or published cannot precede the dissertation proposal defense.

## *Ethics and Professional Standards*

All dissertation research involving human subjects must be reviewed and approved by the appropriate ethics review committee. Research qualifying for exemption (typically secondary data analysis of existing data, observational studies with adults, or evaluation of service/public activities) can be approved by the SPH Institutional Review Board Liaison. The IRB application must be completed online at <https://sam.research.sc.edu/uscera/TilesDefinition.do?definition=loginForm/>. It will be necessary to register the first time you enter the site. Some projects must also be approved by the review committee at the agency where the dissertation research is conducted. Any necessary approvals must be obtained prior to beginning work on the defined research. Some dissertation activities related to an ongoing research project may be covered under that project's IRB approval; this should be discussed with the project PI and/or dissertation advisor; in most situations, notification of the IRB or IRB liaison of a change in protocol is sufficient.

## *Deadlines*

The dissertation must be read, critically evaluated, and approved by all members of the Dissertation Committee. In accordance with graduate School guidelines, the following deadlines must be met. The specific dates for a semester are available on the U.S.C. Graduate School home page <http://www.gradschool.sc.edu>.

- a. Initially, the student **must prepare a written dissertation proposal and conduct a presentation** to the Dissertation Committee for approval. The presentation of the proposal should be no less than 6 months prior to the dissertation defense.

- b. The first complete draft of the dissertation must be in the hands of the Dissertation Committee at least 60 days before the end of the semester (Graduate Studies Bulletin); the approximate dates are October 15, March 15, and June 15 for fall, spring and summer sessions respectively. This is approximately six weeks before the filing date for the dissertation, and should be at least one month before the scheduled defense. The dissertation defense should be scheduled at this time.
- c. The final copy is to be submitted to each committee member at least 30 days prior to the end of the semester (Graduate Studies Bulletin) or at least one week prior to the dissertation defense, whichever is earlier.
- d. The dissertation defense must be held at least one week before the Graduate School filing date, which is 20 days before the end of the semester.
- e. The student must file the final dissertation by the filing date. Final approval is given by the Graduate School via the ETD process.

## *Dissertation Proposal*

The first step in the dissertation process is the development of the dissertation proposal, and its oral defense before the student's doctoral committee. The committee must approve the proposal in writing before the student can proceed with the research. Manuscripts for inclusion in the dissertation and have been submitted and/or published cannot precede the dissertation proposal defense. Typically, the dissertation proposal consists of the introduction, literature review, and methodology that the student intends to use for the dissertation. In many cases, this forms the basis of the first three chapters of the final dissertation. The proposal approval form must be submitted to the Graduate Director (see appendix). The presentation of the proposal should be no less than 6 months prior to the dissertation defense.

## *Dissertation Defense*

The candidate must publicly present the results of the dissertation research in a 45-60 minute presentation.. Announcements of this presentation should be made at least one week before the defense and must include posting it on the Graduate School website (<http://gradschool.sc.edu/students/thesisdiss.asp?page=td>). The dissertation defense should not be scheduled during the scheduled class time of any department core course.

The candidate must also pass an oral comprehensive examination that shall be administered immediately following the presentation and evaluated by his/her Dissertation Examination Committee. This examination will focus on the technical and scientific aspects of the dissertation topic and the scholarly delineation of the dissertation topic, and may cover any other subject matter relevant to the student's field of study.

If the student should choose the dissertation style of three manuscripts, the manuscripts must tie

together and a comprehensive, cumulative reference list is required. Evidence of approval to use articles which have been published or accepted for publication must be included for the Graduate School. It is the student's responsibility to secure copyright releases prior to document submission to the Graduate School. The Graduate School will accept a letter or email from the publisher.

All Dissertation Committee members must approve the final version of the dissertation and sign the Dissertation Signature and Approval form. This form, with committee member names typed on the form, must be turned in along with the dissertation. Students are responsible to make sure the dissertation meets the Grad School's requirements (see: <http://gradschool.sc.edu/students/thesisdiss.asp?page=td>). The student should provide each Dissertation Committee member a copy of the dissertation as submitted to the Graduate School, in a manner acceptable to the committee member.

# Financial Assistance and Graduate Assistantships

In addition to financial aid and fellowship information provided in the Graduate Studies Bulletin, there are a limited number of traineeships and assistantships available. Faculty will nominate outstanding applicants for highly competitive fellowships offered through the Graduate School. The University of South Carolina Office of Student Financial Aid provides access to a variety of grants and loans for students in the Graduate School. For further information and application forms for all types of financial aid, contact them at (803) 777-8134 or go to [http://www.sc.edu/financialaid/contact\\_us.html](http://www.sc.edu/financialaid/contact_us.html)

## *U.S.P.H.S. Traineeships*

Both new and continuing full-time students with *outstanding* academic credentials are eligible for U.S. Public Health Service Traineeships. These traineeships may provide tuition and/or stipends for qualified students. The Public Health Service has stated two objectives in providing financial support for students engaged in graduate and professional training: 1) to provide enough support so that students will not have to engage in outside employment or prolong their studies because of inadequate financial support; and 2) to motivate students to pursue areas of specialized graduate or professional training when the national interest requires more professionals with this training.

### Eligibility Requirements:

- a. Applicants must be United States citizens or must have a visa permitting permanent residence in the United States.
- b. Applicants must be enrolled (or be applying) as degree candidates at the University of South Carolina in the School of Public Health and taking (or be planning to take) at least six credit hours per semester (nine credit hours per semester is required to receive a stipend).
- c. Applicants must not be Federal employees, unless they will be on leave of absence without pay at the time of enrollment.

Traineeship awards will be based on a detailed review of the applicant's file and application forms by the Traineeship Committee. No additional traineeship application is required. The decision to award will be primarily based upon a number of factors including previous academic performance, Graduate Record Examination scores (or other standardized test scores), financial need, and potential contributions to the field of public health. Traineeship awards may include tuition and/or a stipend.

## *Behavioral-Biomedical Interface Program (BBIP)*

BBIP is a special training opportunity funded by a T32 training grant from the National Institute for General Medical Sciences (NIH/NIGMS). The purpose of BBIP is to prepare behavioral scientists through their training exposure to biomedical/biological training so that they can contribute effectively to interdisciplinary teams addressing complex biomedical research problems.

BBIP applicants can be prospective applicants to the PhD program or first year PhD students who wish to begin the program in their 2<sup>nd</sup> year of study. Trainees typically receive an annual stipend of \$21,000/year and coverage of tuition and health insurance. For further information or to apply for this training grant, see the website at <http://bbip.sc.edu/>.

## *Assistantships*

### *Purpose*

A limited number of graduate assistantships are available for full-time students. These assistantships provide in-state tuition rate and a stipend in return for 10-20 hours of work per week for faculty of the Department of Epidemiology and Biostatistics or in other departments on campus. A graduate assistant is a student who assists, under faculty supervision, functions related to teaching, research or other services that would otherwise be performed by regular faculty and staff members. In so doing, graduate assistants receive valuable, practical experience in preparation for future teaching, research, or administrative responsibilities.

Some employing units, programs, projects, or agencies also provide a tuition supplement. The Department recommends a supplement of \$320 per credit hour for a 20 hour assistantship, up to a maximum of \$3,200. Supplements are prorated for assistantships less than 20 hours. Assistantships funded by nonprofit organizations or State agencies other than USC must be approved by the Dean of the Graduate School. Students appointed to such positions work for the sponsoring organizations, but are under the general supervision of their departmental faculty. When faculty identify positions in other agencies they try to see that the major duties are related to academic skills that are a part of the discipline.

### *Requirements*

- Must be fully admitted to a degree program and enrolled in The Graduate School.
- Must maintain a 3.0 GPA, and generally good academic standing.
- Must register for an ongoing training course, GRAD 701 – Teaching Assistant Development
- International students are required to attend two additional sessions: International Student Services' Orientation and English Programs for Internationals (ITA) training sessions.
- Must be registered for a minimum of six (6) semester hours in the Fall and Spring semesters. If a student is registered for fewer than six (6) semester hours in the Fall or Spring semesters, the student will not be eligible for a graduate assistantship, unless they are finished with their course work and has filed an exemption (Z-status) at the Graduate School.



- Must adhere to the work schedule determined jointly by the supervisor (faculty or agency supervisor) and student.
- All assistantships are arranged through the Directors of Graduate Studies.
- Once a signed commitment to an assistantship position has been made, no change in position can be made without discussion by and approval of the Directors of Graduate Studies.

### *Hours, Fees and Other Issues of Employment*

- Graduate assistants are special part-time employees of the University and should treat the assistantship as they would a professional job.
- Graduate assistants are expected to devote full-time effort to their studies and their assistantship responsibilities. They are discouraged from having additional employment, on or off campus, during the term for which they are appointed. It is University policy that no student shall be permitted to hold more than the equivalent of one University half-time assistantship.
- The student is expected to work 10-20 hours per week (depending on their assistantship appointment) with pay appropriate to the total hours worked. Stipends vary according to the requirements of the position, but are paid a minimum of \$4,200 for Master's students and \$4,400 for Doctoral students per semester for a 20 hour assistantship.
- Students with graduate assistantships qualify for in-state (resident) tuition and program fees (see the Bursar's website: <http://www.sc.edu/bursar/fees.shtml>). Tuition supplements are available for some Graduate Assistants either paid by department funds or contracts, on a sliding scale based on the number of credit hours taken and the number of hours of the assistantship. The amount of the supplement is prorated for fewer hours worked or fewer course credits taken. Graduate assistantships outside the Department may not include a tuition supplement or may supplement at a different rate.
- Assistants appointed after the first 30 days of a semester (10 days of a summer term), whose duties terminate before the midterm date, or whose duties terminate before they earn the minimum stipend amount will be billed for full term tuition.
- Students will be evaluated on their performance in their assistantship at the end of every semester. Assistants who fail to perform their duties satisfactorily may be terminated from their appointment. The Department is not obligated to offer assistantships in succeeding semesters for students terminated from an assistantship for this reason.
- Assistants do not accrue sick leave, so work missed due to illness should be made up.
- Graduate assistants are normally not expected to work during official school holidays or between semesters. Students requesting time off for quizzes, examinations or extended holidays may be required to make this time up. Official school holidays are Labor Day Holiday, Fall Break, Election Day (every other year), Thanksgiving Holiday, Spring Break, Easter Holiday, and Independence Day Holiday. However, some assistantships may require work during the holidays and between semester periods. Work schedules should be arranged with the supervisor at the beginning of each semester.

## *Placement in Assistantships*

The Department makes every reasonable effort to place students in assistantships that are consistent with the students' academic interests. However, the Department is not obligated to identify an assistantship that perfectly matches the student's interests in every instance. Also, in some instances it may be necessary to place a student in an assistantship designed primarily to fulfill the Department's current needs. These positions will be consistent with the Department's goal of developing the student's abilities through the assistantship experience. Students who do not complete assigned assistantships satisfactorily are not guaranteed additional assistantships in succeeding semesters, even if this has been previously promised.

## *Time Limitation of Assistantships for Master's Students*

The Department is committed to supporting students who are honored with guaranteed assistantships. For students in Master's degree programs who have been guaranteed an assistantship, this commitment will last for a maximum of five semesters. Following the fifth semester of assistantship support, students may be considered for additional assistantships at the Department's discretion. In these instances, however, the student will have lower priority for Department funding than will students in their first through fifth semesters. Students should recognize that they may not be funded for assistantships beyond the fifth semester, and plan accordingly. This time limitation applies only to Master's students who are offered guaranteed assistantships when admitted; the Department is not obligated to ensure that assistantships will be arranged for other Master's students who desire them, although we make every reasonable effort to assist these students to obtain assistantships. Successful placement in an assistantship for those not receiving a guaranteed placement does not obligate the Department to fund these students in succeeding semesters.

## *Time Limitation of Assistantships for Doctoral Students*

Doctoral students are typically supported through research assistantships or teaching assistantships. These assistantships are an integral part of the student's doctoral preparation. They also provide the student with useful professional contacts, often forming the basis of research collaborations leading to publications and other benefits, and for letters of recommendation that are critical elements of the student's application for professional positions following graduation. While the Department is pleased to honor its doctoral students with this support, doctoral students should recognize that the period of guaranteed support is limited to 4 years. Thereafter, some students who continue to work actively on degree studies may receive continued support if it is available through sponsored research funds. However, the Department is not obligated to provide continued funding to students beyond the fourth year after admission to the doctoral program. Doctoral students should recognize that they may not be funded for assistantships beyond the fourth year of doctoral study, and plan accordingly.

## Other

- Assistantships are usually for a set time commitment. **Any student considering a change in assistantship before the end of the agreed time period must consult with his/her academic advisor and the Graduate Director.**
- Some assistantships may require the student to adhere to a dress code commensurate with the respective assignment.
- Some assistantships may require travel, work at odd hours, or flexibility of hours. A graduate assistant should be very clear with his or her supervisor about the time he or she can be available.
- No graduate assistant is expected to work more than the agreed upon hours. However, graduate assistants are encouraged to look for opportunities to attend meetings, seminars, etc., which will enhance his or her learning or development of specific skills. These activities may or may not be included in the paid hours of the assistantship.
- Open communication is a key to good working relationships as a graduate assistant. Supervisors are willing to accommodate assistant needs, but must be aware of the needs. Remember, supervisors of students are in charge and are responsible for setting graduate assistant work schedules.
- Assistantships will not be offered to satisfy any academic requirements, including practice requirements and thesis/dissertation research.

# DESCRIPTION OF COURSES

- ENHS 660 Concepts of Environmental Health Science. (3) Environmental health sciences presenting the earth as a complex system in which people, plants, animals and non-living physical-chemical components interact.
- HSPM 700 Approaches and Concepts for Health Administration. (3) An interdisciplinary perspective on the field of health administration. Philosophy, concepts, and skills of community health services implementation, management and evaluation are presented and discussed. Principles in the practice of health administration are applied to identified problems and situations.
- HPEB 700 Concepts & Methods in Health Promotion. (3) The socioepidemiologic foundations of health education. Assessment of educational needs at the community, institution, and individual level. Planning, implementing, and evaluating health education programs in a variety of settings aimed at developing and reinforcing positive health practices.
- EPID 410 Principles of Epidemiology. (3) (Required for Public Health undergraduate majors at USC. Prereq or Coreq: college-level introductory statistics course or STAT 205 and PUBH 102 or equivalent). The objective of this course is to develop an understanding of fundamental concepts and methods of the epidemiologic approach, including epidemiologic terminology, study design, and basic measures used in public health practice and research.
- EPID 661 Parasitology. (4) The parasites of vertebrates, emphasizing human parasites of biological, medical, and public health importance. Through studying the biology and life habits of these parasites, this course covers diagnosis, pathogenesis, and treatment of parasitic diseases. In addition the impact of parasitic diseases, with respect to individuals and populations is assessed. Social, political and environmental issues important in both the spread of and the control of important parasitic diseases of humans are discussed.
- EPID 700 Introduction to Epidemiology. (3) (Prereq or Coreq: BIOS 700) Principles of epidemiology with examples of selected health problems. Health status of populations and conceptual tools for translating epidemiologic findings into public health action.
- EPID 701 Concepts and Methods of Epidemiology. (3) (Prereq or Coreq: BIOS 701) Conceptual foundation of epidemiologic research, quantitative methods, and epidemiologic study design. Intended for those who will be involved in epidemiologic research.

- EPID 707 Ethical Issues in Health Care and Research [=HSPM 707] (3) The ethical dimensions of decision making in health care delivery, administration, and epidemiologic research. Provides ethical foundations for discussion of topics in health related research and practice.
- EPID 711 Epidemiologic Research Methods. (3) (Prereq: EPID 700) Theoretical and practical aspects of epidemiologic research methods.
- EPID 725 Biologic Basis of Public Health. (3) Survey of the biology of human disease processes at cellular, tissue and body system levels with the emphasis on the application of biological principles to contemporary public health problems.
- EPID 730 Public Health Surveillance Systems. (3) (Prereq or Coreq: EPID 700/701) Introduction to the concepts, implementation and evaluation of surveillance systems to monitor the health of human populations.
- EPID 741 Epidemiologic Methods. (4) (Prereq: EPID 701, BIOS 710; Coreq: BIOS 757) Application of epidemiologic methods to current health problems through analysis of secondary data. Strategies for investigating etiologic hypotheses, assessment and control of confounding.
- EPID 742 Epidemiological Concepts in Selected Disease or Health Conditions. (3) (Prereq: EPID 700 or can be taken concurrently) The study of selected diseases or health conditions illustrative of the interaction between host/agent/environment and the factors involved; and the application of epidemiologic methods to the investigation of such events. Two lecture and three laboratory hours per week.
- EPID 743 Nosocomial Disease Control. (3) (Prereq: EPID 700, EPID 742, BIOS 700 or permission of instructor) Specialization in the identification of potential or existing health hazards in institutional settings of the health care system; and includes instruction in the application of scientific knowledge to the daily routines in the implementation of appropriate control behaviors. Two lecture and three laboratory hours per week.
- EPID 744 Investigative Epidemiology: Cardiovascular Disease. (3) (Prereq: EPID 700) Epidemiology of selected groups of cardiovascular diseases (CVD) including etiology, pathophysiology, identification, and description of events of CVD, and outcomes. Two lecture and three laboratory hours per week.
- EPID 745 Seminar in Epidemiology. (1) Analysis of current and prospective issues in epidemiology, including historical foundations. Includes student exploration and critical consideration of current research and unsolved problems in epidemiology. (Pass/Fail grading)

- EPID 746 Investigative Epidemiology: Cancer. (3) (Prereq: EPID 700) Epidemiology of selected cancers in humans, including etiology, pathophysiology, identification and description of events of cancer and outcomes.
- EPID 747 Investigative Epidemiology: Environmental Factors and Human Health (3) (Prereq: EPID 700, BIOS 700) emphasis on the epidemiology of selected environmental factors which may affect human health including the identification of health hazards and methods of investigation. Two lecture and three laboratory hours per week.
- EPID 748 Epidemiologic Evaluation of Preventive and Personal Health Care. (3) (Prereq: EPID 700, BIOS 700) Emphasis is on the use of epidemiologic methods in the selection, design, and implementation of evaluation strategies in health service practice areas.
- EPID 749 Investigative Epidemiology: Infectious Diseases. (3) (Prereq: EPID 700 and BIOS 700, or consent of instructor) Covers bacterial, viral, parasitic and fungal diseases of public health importance. Emphasis on epidemiologic methods basic to investigation, prevention and control of infectious diseases.
- EPID 750 Methods in Infectious Disease Epidemiology. (3) (Prereq: EPID 701, 741, 749, BIOS 701, and 757 or permission of the instructor. Introduction to quantitative methods specific or critical to the study of infectious disease dynamics, including study design and analysis, mathematical modeling, computer simulation, and phylogenetic inference.
- EPID 751 Sexually Transmitted Diseases: Their Epidemiology and Control. (3) (Prereq: EPID 700 and BIOS 700, or consent of instructor) A study of the epidemiology of the various sexually transmitted diseases and their complications with emphasis on their prevention and control.
- EPID 752 Epidemiology and Control of Parasitic Diseases of Public Health Importance. (3) (Prereq: EPID 700 and BIOS 700, or consent of instructor) Study of major parasitic diseases of public health importance. Emphasis on epidemiologic principles and patterns of human morbidity and mortality. Analyzes and evaluates various approaches in prevention and control programs.
- EPID 753 AIDS: Epidemiology and Control. (3) A study of the epidemiology of Acquired Immunodeficiency Syndrome (AIDS) and its various implications and issues with emphasis on its prevention and control.
- EPID 755 Emerging Infectious Diseases: Epidemiology & Pathobiology. (3) (Prereq: EPID 749) Principles and factors in emerging infectious diseases with emphasis on epidemiology, pathobiology, prevention and control.

- EPID 757 Epidemiologic Applications to Occupational Health: (3) (Prereq: Introductory course in Epidemiology, such as Epid 700 or Epid 701), This course provides an introduction to clinical and epidemiologic aspects of occupational health and recognition and prevention of occupational diseases and injury. Case study approaches are used to learn about applications to occupational health.
- EPID 758 Application of Epidemiology in Public Health: (3) (Prereq: EPID 701 and EPID 741) The purpose of this course is to develop applied research skills in epidemiology in the context of public health research and practice. Covers methods focusing on competencies, skills, and characteristics essential to the practice of public health.
- EPID 760 Epidemiological Methods in Clinical Trials. (3) (Prereq: EPID 700, BIOS 700, EPID 741) This course will cover the fundamental and practical issues related to the design, conduct, analysis and interpretation of results of clinical trials.
- EPID 763 Nutritional Epidemiology. (3) (Prereq: EPID 701 or 700 and BIOS 701 or 700) Covers methodology for investigating nutrition's role in health, including nutritional assessment and the design and interpretation of research studies. Substantive issues emphasize major public health concerns of the 21<sup>st</sup> century.
- EPID 765 Reproductive Epidemiology. (3) (Prereq: EPID 701/700, BIOS 701/700, or permission of instructor) Epidemiology of major reproductive outcomes in humans with emphasis on pathophysiology, risk factors, analytic methods of investigation and surveillance/monitoring of reproductive events.
- EPID 768 Psychiatric Epidemiology. (3) (Prereq: EPID 700 or 701 or permission of department) Methodologic issues in the epidemiologic study of psychiatric disorder, the epidemiology of major psychiatric outcomes, and issues in the study of special populations.
- EPID 770 Social Epidemiology. (3) (Prereq: EPID 700 or EPID 701 or equivalent) Influence of social factors and the distribution of those factors on patterns of health and disease. Including individual-level examinations of the role of social determinants in producing health, as well as more macro-level examinations of patterns of social disparities in health status.
- EPID 777 Genetic and Epigenetic Epidemiology. (3) (Prereq: EPID 700 or 701 or BIOS 700 or 701) An introduction to genetic and epigenetic epidemiology and application of epidemiologic tools, including statistical analyses to the study of the genome and epigenome in human populations.
- EPID 790 Independent Study. (1-6) (Prereq: permission of instructor) Directed research on a topic to be developed by M.P.H. or M.S.P.H. student and instructor. May be repeated.
- EPID 794 Special Topics in Epidemiology. (1-6)

- EPID 798 Public Health Practice. (1-6) (Prereq: 9-10 hours of specified courses including EPID 700, EPID 741, BIOS 700) Performance of a limited work of service project in a public need setting, pursuit of planned learning objectives related to previously identified aspects of the student's chosen role. Self-monitoring and regular seminars focusing on learning accomplishments. (Pass/Fail grading)
- EPID 799 Thesis Preparation. (1-9)
- EPID 800 Epidemiologic Methods II. (3) (Prereq: EPID 741 or permission of instructor) Advanced quantitative methods and strategies in the design of epidemiologic studies. Multivariable risk models, exposure-time relationships, interactions between causes and interpretation of findings.
- EPID 801 Epidemiologic Methods III. (3) (Prereq: EPID 800 or permission of instructor) Extension of research design and development issues with focus on grant writing.
- EPID 802 Advanced Analytical Methods in Epidemiology. (3) (Prereq: EPID 741 and BIOS 757 or equivalent courses) Application of advanced analytical methods, relying heavily on problem solving, data analysis and interpretation.
- EPID 810 Seminar in the Epidemiology of Trauma. (3) (Prereq: EPID 741, BIOS 759) Seminar presentation and group discussion on the major issues in the study of trauma associated with accidents, injuries or violence.
- EPID 820 Seminar in the Epidemiology of Health Effects of Physical Activity. (3) (Prereq: EPID 741, BIOS 759) Seminar presentation and group discussion on the major issues in the study of physical activity and exercise and its impact on health.
- EPID 830 Seminar in the Epidemiology of Aging. (3) Exploration in depth of theories, current health problems, research and methodological issues in the epidemiology of aging.
- EPID 845 Doctoral Seminar. (1-3) (Prereq: complete at least one semester of course work and consent of instructor) May be repeated for credit. (Pass/Fail grading)
- EPID 890 Independent Study. (1-3) (Prereq: permission of instructor) Directed research on a topic to be developed by doctoral student and instructor.
- EPID 894 Special Topics in Epidemiology. (3) Discussion on current and emerging issues in epidemiology. May be repeated for credit.
- EPID 899 Dissertation Preparation. (1-12) (Prereq: one full year (18 hrs.) of graduate study beyond the Master's level.



- BIOS 650 Quantitative Methods in the Health Sciences. (3) (Prereq: STAT 201 or consent of instructor) Designed for professionals and preprofessionals who wish to utilize quantitative methods in public and private decision-making: exploratory data analysis, research methods in natural and controlled environments and elementary biostatistical methods.
- BIOS 700 Introduction to Biostatistics. (3) Health related statistical applications. Descriptive statistics, probability, confidence intervals, hypothesis testing, regression, correlation, ANOVA. May not be used for graduate credit in epidemiology or biostatistics.
- BIOS 701 Concepts and Methods of Biostatistics. (3) Descriptive and inferential statistical applications to public health. Probability, interval estimation, hypothesis testing, measures of association. For students planning further study in epidemiology or biostatistics.
- BIOS 710 Effective Data Management for Public Health. (3) (Co-req: BIOS 700 or equivalent) Statistical data management techniques. Microcomputer applications, communication between microcomputers and mainframe, tape and disk storage, access to large health-related databases.
- BIOS 745 Seminar in Biostatistics. (1-2) Analysis of current and prospective issues in biostatistics, including historical foundations. Includes student exploration of unsolved problems and examination of central issues in biostatistics. (Pass/Fail grading)
- BIOS 751 Health Data Systems. (3) (Prereq: HSPM 700, BIOS 700) Origin and operation of databases serving governmental and institutional policy and management of programs.
- BIOS 752 Vital Record and Health Survey Data Analysis. (3) (Prereq: BIOS 700, BIOS 710, EPID 700) Assessing, managing, analyzing, and interpreting results from state and national vital records and health survey data sets. Common problems, programming techniques, and analytic considerations.
- BIOS 753 Community Health Studies. (3) (Prereq: EPID 700, BIOS 700, consent of instructor) Process, skills, and management of undertaking health studies in the human community.
- BIOS 754 Discrete Data Analysis. (3) (Prereq: BIOS 700 or 701, EPID 700 or 701) Analysis of discrete data in public health studies. Relative risk, odds ratio, rates and proportions, contingency tables, logistic regression, introduction to other advanced topics. Not for Biostatistics majors.
- BIOS 757 Intermediate Biometrics. (3) (Prereq: A course in introductory statistics) Public health applications of correlation, regression, multiple regression, single and multi-factor analysis of variance and analysis of covariance.

- BIOS 758      Advanced Biometrics. (3) (Prereq: BIOS 757) Additional topics in analysis of health data including regression diagnostics, multicollinearity of observational data, ridge/nonlinear regression, principal components, random/missed effects, unbalanced designs, repeated measures, and sampling and design effects.
- BIOS 759      Biostatistical Methods for Rates and Proportions. (2-3) (Prereq: EPID 701 and BIOS 757) The concepts, principles and biostatistical techniques necessary to analyze categorical epidemiological data including dose response curves, life tables and discrete measures of association. Estimation of parameters for logistic and other commonly used epidemiological models.
- BIOS 760      Biostatistical Methods in Clinical Trials. (3) (Prereq: EPID 700, BIOS 700, EPID 741, BIOS 757) This course will cover the basic and advanced statistical techniques necessary for the design, conduct, analysis and interpretation of results of clinical trials.
- BIOS 765      Research Design in the Biomedical Sciences. (3) (Prereq: BIOS 757) Fundamentals of constructing, analyzing, and interpreting biomedical studies; internal and external validity, sample size determination, completely random designs, blocking, crossover designs, confounding, nested designs, repeated measure designs.
- BIOS 770      Applied Longitudinal Data Analysis [= STAT 771]. (3) (Prereq: BIOS 757 or STAT 701 or STAT 705). Modern methods for the analysis of repeated measures, correlated outcomes, and longitudinal data, including repeated measures ANOVA, generalized linear models, random effects, and generalized estimating equations.
- BIOS 775      Biostatistical Aspects of Bioinformatics. (3) (Prereq: BIOS 757) Bioinformatics analyses related to public health and biomedical research. Gene-gene and gene-environment interaction, phylogeny analysis in disease classification, and clustering for expression data. Data analyses, simulation studies, algorithms, and interpretation of health data.
- BIOS 790      Independent Study. (1-6) (Prereq: permission of instructor) Directed research on a topic to be developed by M.P.H. or M.S.P.H. student and instructor. May be repeated.
- BIOS 794      Special Topics in Biostatistics. (1-6)
- BIOS 798      Public Health Practice. (1-6) (Prereq: 9-10 hours of specified courses including EPID 700, EPID 741, BIOS 700) Performance of a limited work of service project in a public need setting, pursuit of planned learning objectives related to previously identified aspects of the student's chosen role. Self-monitoring and regular seminars focusing on learning accomplishments. (Pass/Fail Grading)
- BIOS 799      Thesis Preparation. (1-9)

- BIOS 805 Categorical Data Analysis. [=STAT 770] (3) (Prereq: BIOS 759 or STAT 704 and consent of instructor) Advanced methods for analysis of discrete data. Higher order contingency tables, log-linear and other generalized linear models. Multivariate methods for matched pairs and longitudinal data.
- BIOS 808 Environmetrics. [=STAT 708] (3) (Prereq: BIOS 757 or STAT 705) Statistical methods for environmental and ecological sciences, including nonlinear regression, generalized linear models, spatial analyses/kriging, temporal analyses, meta-analysis, quantitative risk assessment.
- BIOS 809 Environmetrics II [=STAT 709] (3) (Prereq: BIOS 809 or STAT 708; STAT 714) A continuation of STAT 708/BIOS 808 with emphasis on theoretical underpinnings of environmetrics. Topics include spatial statistics, temporal and longitudinal analysis of environmental data, hierarchical modeling, and Bayesian inference.
- BIOS 810 Survival Analysis. (3) (Prereq: BIOS 757 or equivalent) Methods for the analysis of survival data in the biomedical setting. Underlying concepts; standard parametric and nonparametric methods for one or several samples; concomitant variables and the proportional hazards model.
- BIOS 811 Survival Analysis II. (3) (Prereq: BIOS 810) Parametric survival analysis, accelerated failure time model, frailty model, competing risk model and multi-state model. Techniques motivated by applications in epidemiology and clinical medicine research, applications demonstrated using public health data sets.
- BIOS 815 Generalized Linear Models [=STAT 775] (3) (Prereq: STAT 713 or STAT 513, and STAT 705 or BIOS 757. Statistical theory and applications extending regression and analysis of variance to non-normal data. Encompasses logistic and other binary regressions, log-linear models, and gamma regression models.
- BIOS 820 Bayesian Biostatistics and Computation [=STAT 745] (3) (Prereq: BIOS 757 or STAT 705) Bayesian methodology for randomized trials, epidemiology, survival, bioassay, logistic and log-linear regression modeling, longitudinal data, classification and bioinformatics, advances in computational methods.
- BIOS 822 Statistical Methods in Spatial Epidemiology. (3) (Prereq: BIOS 757 and 759) A comprehensive introduction to the statistical methods used in the analysis of geo-referenced spatial health data. Topics range from disease mapping to prospective surveillance.
- BIOS 825 Multivariate Biostatistics. (3) (Prereq: STAT 516 or BIOS 757) Analysis of multivariate data as found in biomedical studies; multivariate linear models, principal components analysis, factor analysis, discriminant and cluster analysis. Other special multivariate topics such as principal components regression.

- BIOS 845      Doctoral Seminar. (1-3) (Prereq: complete at least one semester of course work and consent of instructor) May be repeated for credit. (Pass/Fail grading)
- BIOS 890      Independent Study. (1-3) (Prereq: permission of instructor) Directed research on a topic to be developed by doctoral student and instructor. May be repeated.
- BIOS 894      Special Topics in Biostatistics. (3) Discussion on current and emerging issues in biostatistics. May be repeated for credit.
- BIOS 898      Doctor of Public Health Practicum. (1-6)
- BIOS 899      Dissertation Preparation. (1-12) (Prereq: one full year (18 hrs.) of graduate study beyond the Master's level.

# Faculty

## *Full-time Faculty:*

**Swann A. Adams**, Ph.D., University of South Carolina, 2003

Assistant Professor, College of Nursing and Department of Epidemiology and Biostatistics and the Cancer Prevention and Control Program

Research interests: cancer epidemiology, physical activity, breast cancer, and ethnic disparities in cancer

**Cheryl L. Addy**, Ph.D., Emory University, 1988

Associate Professor and Senior Associate Dean for Academic Affairs

Research interests: categorical data analysis, survey data analysis, epidemiologic methods, physical activity and public health, psychiatric epidemiology, maternal and child health

**Daheia J. Barr-Anderson**, Ph.D., University of Maryland, College Park, 2006

Assistant Professor

Research interests: community and home-based interventions, physical activity epidemiology, obesity and physical activity among African Americans, particularly adolescent girls, social and environmental factors.

**Steven N. Blair**, P.E.D., Indiana University, Bloomington, IN, 1968

Professor, Department of Epidemiology and Biostatistics and Department of Exercise Science

Research interests: Physical activity epidemiology and exercise science.

**Jim Burch**, PhD., Colorado State University, 1997

Associate Professor

Research Interests: Molecular Epidemiology, Cancer Epidemiology, Environmental and Occupational Health

**Bo Cai**, Ph.D., University of Auckland, NZ, 2003

Associate Professor

Research interests: Bayesian random effects selection, nonparametric modeling, multivariate analysis, mixture models, and the relevant application area including human reproductive study, child health and toxicology. Computational statistics, Markov chain Monte Carlo methods, sampling methods based on Markov chain.

**Hrishikesh Chakraborty**, DrPH, University of North Carolina, Chapel Hill, 2000

Associate Professor; Director, Biostatistics Collaborative Research Core

Research interests: statistical methods for problems in the areas of clinical trials, cluster randomized studies, infectious disease including HIV/AIDS, maternal and child health research.

**Jan Eberth**, Ph.D., University of Texas Health Science Center, 2011

Assistant Professor

Research Interests: Cancer screening and prevention, social epidemiology and health disparities, medical geography and GIS applications, access, utilization and quality of cancer screening and treatment services.

**Nancy Fleischer**, Ph.D., University of Michigan, 2010

Assistant Professor

Research interests: social and environmental determinants of health, health disparities, global noncommunicable diseases and epidemiologic methods.

**Melinda Forthofer**, Ph.D., University of Michigan, 1996

Associate Professor, Division Head for Epidemiology

Research interests: Social epidemiology, Prevention science methodology, and Community-based health promotion.

**James W. Hardin**, Ph.D., Texas A&M University, 1992

Associate Professor, Division Head for Biostatistics, Director, Biostatistics Collaborative Unit; Affiliate Faculty, Institute for Families in Society

Research interests: applied research in behavior outcomes (risky sexual behavior, smoking cessation, etc), applied research in health outcomes (orthopedics, cancer and nutrition), network analysis, correlated data analysis, structural equation modeling

**Linda J. Hazlett**, Ph.D., M.T., (ASCP), University of South Carolina, 2004

Clinical Assistant Professor, Graduate Director for Epidemiology

Research Interests: Clinical epidemiology, cancer, public health advocacy

**James R. Hebert**, Sc.D., Harvard University, 1984

Health Sciences Distinguished Professor; Director, Cancer Prevention and Control Program

Research interests: dietary assessment, diet and physical activity interventions, measurement bias, nutritional epidemiology, cancer epidemiology, complementary and alternative medicine

**James R. Hussey**, Ph.D., Virginia Polytechnic Institute and State University, 1983

Clinical Associate Professor, Department Chair

Research interests: experimental design, mixed models, longitudinal data analysis

**Angela D. Liese**, Ph.D., University of North Carolina, 1996

Professor, Director, Center for Research in Nutrition and Health Disparities

Research interests: dietary assessment, epidemiology of obesity, diabetes and cardiovascular disease, emphasis on children and youth

**Jihong Liu**, Sc.D., Harvard University, 2003

Associate Professor

Research interests: children and adolescents' health epidemiology, reproductive epidemiology, social determinants of health, population health measurements, international health, survey data collection and analysis

**Alex McLain**, Ph.D., University of South Carolina, 2008

Assistant Professor.

Research interests: survival analysis, joint modeling of longitudinal and survival data, multiple testing, fecundity modeling, prediction of survival outcomes, and mixed effects models.

**Anwar Merchant**, Sc.D., Harvard University, 2001

Associate Professor; Director of Curriculum Development

Research interests: improving health and preventing disease through lifestyle changes; possible effects of lifestyle on disease, and societal and personal factors influencing lifestyle; relation between infection and chronic disease.

**Robert Moran**, Ph.D., University of South Carolina, 2004

Clinical Assistant Professor; Graduate Director,

Research interests: nutritional instruments; data management

**Andrew Ortaglia**, Ph.D., University of South Carolina, 2012

Clinical Assistant Professor

Research interests: semi-parametric models, survival analysis, health aspects of physical activity.

**Harris Pastides**, Ph.D., Yale University, 1980

Professor and President, University of South Carolina

Research interests: health disparities research, occupational and environmental epidemiology, international health, and applied research in developing country environmental health issues

**Susan E. Steck**, Ph.D., University of North Carolina at Chapel Hill, 1999

Associate Professor

Research interests: nutrition and cancer prevention and survivorship, gene-diet interactions in cancer etiology, health disparities, carotenoids

**Myriam E. Torres**, Ph.D., MSPH, University of South Carolina, 2001

Clinical Assistant Professor, Director, Consortium for Latino Immigration Studies

Research interests: Hispanic/Latino health issues, perinatal issues among Latinas, HIV/AIDS among Latino populations, bi-national research.

**Kellee White**, PhD, Columbia University, 2008

Assistant Professor

Research interests: Residential segregation, racial discrimination and health status, aging and the accumulation of social and economic disadvantage, sexual health prevention strategies among drug users

**Edith Williams**, Ph.D, State University of New York at Buffalo, 2007

Research Assistant Professor, Institute for Partnerships to Reduce Health Disparities

Research interests: health disparities, women's health, cardiovascular disease, and lupus

**Jiajia Zhang**, Ph.D., Memorial University of Newfoundland, 2007

Associate Professor

Research interests: accelerated failure time model, frailty model, mixture cure model, statistical computation, semiparametric estimation method

**Guang Zhao**, Ph.D., Michigan Technological University, 1998.

Associate Professor;

Director, Office of Public Health Statistics and Information Services, SC DHEC.

Research interests: Public health surveillance, vital records, public health statistics, health information systems, GIS, spatial epidemiology

### *Emeritus Faculty:*

**J. Wanzer Drane**, P.E., Ph.D., Emory University, 1967

Distinguished Professor Emeritus

Research interests: space-time statistics, biometric modeling of mammalian biology, nonlinear regression, statistics of geographical information systems, mail-back questionnaires, community trials, and improving biostatistics in developing countries

**Robert E. McKeown**, Ph.D., University of South Carolina, 1991; Ph.D., Duke University, 1976  
Distinguished Professor Emeritus; Interim Director, Institute for Advancement of Health Care;  
Co-Director, Research Consortium on Children and Families, President, American College of Epidemiology

Research interests: psychiatric epidemiology, perinatal epidemiology, child and adolescent health, public health ethics; social capital and faith communities

### *Adjunct Faculty*

**Omar Bagasra**, M.D., Ph.D., Adjunct Professor; Professor and Director, South Carolina Center for Biotechnology, Claflin University.

Research interests: molecular basis of infectious diseases and cancer immunology.

**Eric Brenner**, M.D., Adjunct Associate Professor; Consulting Medical Epidemiologist, EpiTIPs (WHO, UNICEF, ICRC, PAHO, USAID, IUATLD, and other agencies and organizations), Chargé de Cours, Institut de Médecine Sociale et Préventive (IMSP), University of Geneva School of Medicine, Geneva, Switzerland, and Medical Epidemiologist (part-time), Division of Disease Control and Epidemiology, South Carolina Department of Health and Environmental Control.

Research interests: communicable disease control programs, tuberculosis and vaccine preventable diseases.

**Steven P. Cuffe**, M.D., Adjunct Professor; Professor and Chair, Department of Psychiatry, University of Florida, College of Medicine, Jacksonville.

Research interests: child psychiatry, adolescent depression, and childhood sexual abuse.



**Virginie Daguise**, Ph.D., Adjunct Assistant Professor; Epidemiologist at the South Carolina Cancer Association.

Research interests: cancer epidemiology.

**James E. Ferguson**, Dr.P.H., Adjunct Assistant Professor; Deputy Director, Public Health Statistics and Information Systems, South Carolina Department of Health and Environmental Control.

Research interests: community health, epidemiologic methods, and vital statistics methods.

**Abdul Ghaffar**, Ph.D., Adjunct Associate Professor; Associate Professor, Department of Microbiology & Immunology, USC School of Medicine.

Research interests: macrophage immunobiology in health and disease (stress, infection, and cancer).

**J. Jerome Gibson**, M.D., Adjunct Professor; Director, Bureau of Disease Control, South Carolina Department of Health and Environmental Control.

Research interest: epidemiology of sexually transmitted diseases.

**Prakash C. Gupta**, Sc.D., Adjunct Professor; Senior Research Scientist, Tata Institute of Fundamental Research, Mumbai, India.

Research interests: tobacco control epidemiology, cancers of the oral cavity and oral pharynx, upper aerodigestive tract cancers, and cancer prevention and control.

**Khosrow Heidari**, MA, MA, MA, Adjunct Instructor, Director of the Office of Chronic Disease Epidemiology at DHEC.

**Sue Heiney**, Ph.D., Adjunct Assistant Professor; College of Nursing, University of South Carolina.

Research interests: psychosocial care of cancer patients, specifically group interventions.

**William J. M. Hrushesky**, M.D., Adjunct Professor; Senior Clinician Investigator, Dorn V.A. Medical Center; and VA Research Professor of Cell, Molecular and Developmental Biology and Anatomy, USC Medical School.

Research interests; chronobiology, oncology.

**Michael J. LaMonte**, Ph.D., M.P.H., Adjunct Associate Professor, University of New York at Buffalo, Department of Social and Preventive Medicine.

Research interests: physical activity and health outcomes.

**Caroline A. Macera**, Ph.D., Adjunct Professor; Professor of Epidemiology, Department of Epidemiology and Biostatistics, Graduate School of Public Health, San Diego State University.

Research interests: health effects of physical activity among women and low SES groups; women's health; and factors influencing independent functioning among the elderly.

**Charles E. Matthews**, Ph.D., Adjunct Assistant Professor; Investigator National Cancer Institute - Epidemiology & Genetics, Nutritional Epidemiology Branch.

Research interests: physical activity and disease prevention, cancer epidemiology, energy balance, physical activity assessment and interventions

**Godwin Mbamalu**, Ph.D. FAIC, Adjunct Professor, Distinguished Professor of Chemistry at Benedict College.

Research interests: environmental and analytical chemistry and health disparities.

**Rebecca A. Meriwether**, MD, MPH, Adjunct Associate Professor, Associate Professor of Family and Preventive Medicine.

Research interests: Physical Activity, and the influence of built environment and policy on health.

**Daniela K. Nitcheva**, Ph.D., Adjunct Assistant Professor

Research interests: environmental toxicology, quantitative risk assessment, hierarchical models, generalized linear models, branching processes.

**Richard M. Schulz**, Ph.D., Adjunct Professor; Professor, SC College of Pharmacy.

Research interests: pharmacoepidemiology, quality of life assessment, and patient adherence to pharmacotherapy.

**John E. Vena**, Ph.D., Adjunct Professor; Professor and Head, Department of Epidemiology and Biostatistics, College of Public Health, University of Georgia.

Research interests: Environmental epidemiology including persistent environmental pollutants, air and water pollution, coastal environments; environmental justice; community -based research; cancer epidemiology; reproductive and developmental health; occupational epidemiology.

# FORMS

Forms Available Online at the Graduate School Website

<http://gradschool.sc.edu/DocLibrary/>

1. Application for Graduation (AS-126)
2. Comprehensive Exam Verification
3. Course Change Proposal
4. Course Overload Enrollment Authorization (CEO)
5. Dissertation Signature and Approval Form (G-DSF)
6. Doctoral Committee Appointment Request (G-DCA)
7. Doctoral Program of Study (DPOS)
8. Extension of Incomplete Authorization (EIA)
9. Graduate Level Syllabus Template
10. Independent Study Contract (G-ISC)
11. Master's Comprehensive Exam Verification
12. Master's Program of Study (MPOS)
13. Qualifying Exam Verification Permit for Course Revalidation Examination (PRE)
14. Program of Study Adjustment Form (POSA)
15. Qualifying Exam Verification
16. Request for Transfer of Graduate Credit (GRTC)
17. Request for Special Enrollment (Z-status)
18. Special Topics Graduate Course Approval (STC)
19. Thesis Defense Signature and Approval Form (G-TSF)

Forms Available Online at the EPID/BIOS Website

[http://www.sph.sc.edu/epid\\_bios/facultystaff-forms.htm](http://www.sph.sc.edu/epid_bios/facultystaff-forms.htm)

1. Advisement Form
2. PhD Comprehensive Exam Verification
3. PhD Dissertation Proposal (Department form)
4. Doctoral Qualifying Exam Verification
5. Doctoral Program of Study
6. Doctoral Committee Approval Form
7. Doctoral Dissertation Signature Form (replaces signatures on title page)
8. Independent Study Contract Form
9. Master's Thesis Signature Form (replaces signatures on title page)
10. Master's Committee Appointment form (Department form)
11. Master's Thesis Proposal Form (Department form)

Forms Available in the Main Office (Room 206)

1. Request Purchase Approval
2. Request Travel Authorization
3. Request Travel Reimbursement (also available online)