

PhD in PUBLIC HEALTH SCIENCES

Academic Year 2014-2015

Biostatistics

Program Profile

The PhD program in Public Health Sciences prepares professionals for research, teaching, and service with the overall objective of improving the health of populations. To meet this objective, all students in the program pursue excellence in conducting research and disseminating knowledge. The primary focus is on research that advances knowledge and facilitates discovery regarding etiology, interventions, and policies that promote health at the individual, population, societal, and/or global levels. Biostatistics focuses on the reasoning and methods for using data as evidence to address public health and biomedical questions. It is an approach and a set of tools for designing studies, analyzing data, quantifying evidence, and making decisions. The Ph.D. curriculum prepares the student for three roles (researcher, collaborator/communicator, and educator) which are commonly expected of a Biostatistician.

Role as a researcher: Research in biostatistics is characterized by a commitment to statistical science where foundations, methodology, and applications to the solution of public health and biomedical problems are mutually supportive. The goals of foundational research are in the development of better strategies, or ways of reasoning, for empirical studies. The goals of methodological research are in the creation of new tools or techniques for drawing inferences from data. The goals of application research are in the implementation of the aforementioned foundations and methodologies.

Role as a collaborator/communicator: Collaboration is characterized by a responsibility to ensure that researchers from various other disciplines have access to statistical knowledge, resources, and support which enhance the quality, integrity, and validity of their studies or projects. Communication is characterized by a demonstration of skills in written, oral, and graphical translation of statistical ideas, methods, and results in non-statistical terminology.

Role as an Educator: Scholarship is characterized by the dissemination of gained knowledge to public health students, professionals, and scientists.

Curriculum

The Ph.D. curriculum requires a minimum of 90 semester credit hours (SCH) in courses and dissertation. A student may apply up to 45 SCH of previously taken graduate level courses toward the completion of the Ph.D. coursework (transfer and advanced standing). All such courses are subject to approval by the advisor.

PhD Core Competencies:

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| • Research Theories: synthesize historical, contemporary, and emerging theories and paradigms of significance to public health. |
| • Critical Analysis: Critically evaluate the strengths and weaknesses of existing research evidence and identify significant gaps in knowledge. |
| • Research Methodology: Comprehend, design and apply relevant and advanced research methods based on rigorous standards of evidence. |
| • Scientific Communications: Develop professional skills in scientific and grant writing, oral communication, and teaching. |
| • Ethics: Uphold the highest ethical standards in all professional endeavors, including the design and implementation of research and the participation of human subjects. |
| • Discovery and Translational Theory: Conduct investigative research, including areas that facilitate the translation and application of discovery to practice. |

Concentration Competencies:

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| • Perform independent research where original/new biostatistical foundations, methodologies, or applications are developed. |
| • Review and synthesize literature and proposals critically from a biostatistical point of view in preparation for future peer-reviewed publications and grant proposals. |
| • Adapt and apply existing statistical methods as dictated by the needs of a particular study or project as it relates to, but not limited to, study design and analysis. |
| • Effectively translate biostatistical ideas, methods, and results to collaborating colleagues. |
| • Identify biostatistical concepts and methods needed by a specified group of people. |
| • Disseminate the said concepts and methods effectively through lectures and written materials. |

Coursework

Course	Credit Hours	Course was taken...
PhD Core		
BACH 5300 Theoretical Foundations of Individual and Community Health	3	
BIOS 5301 Foundations of Biostatistics	3	
EPID 5300 Principles of Epidemiology	3	
HMAP 5300 Introduction to Health Management & Policy	3	
EOHS 5300 Environmental Determinants of Health	3	
BIOS 5311 Regression and ANOVA	3	
BIOS 6300 Advanced Methods in Biostatistics	3	
HMAP 6360 Ethical Issues in Public Health	3	
PHED 6118 Methods for Public Health Studies II	1	
PHED 6220 Scientific and Grant Writing	2	
PHED 6321 Pedagogy in Public Health	3	
PHED 6314 Methods for Public Health Studies I	3	
Culminating Experience		
BIOS 6395 Doctoral Dissertation	12	

Required		
BIOS 6314 Categorical Data Analysis	3	
BIOS 6320 Biostatistical Research and Consulting	3	
BIOS 6322 Longitudinal Data Analysis	3	
BIOS 6324 Survival Analysis	3	
EPID 5313 Database Management & SAS	3	
BIOS 6310 Probability and Statistical Inference	3	
BIOS 6311 Linear Models	3	

BIOS 6312 Methods of Survey Sampling	3	
BIOS 6326 Methods of Clinical Trials	3	
EPID 5310 Intermediate Epidemiology	3	
EPID 5312 Survey Research & Questionnaire Design	3	

Electives

BIOS 6390* Advanced Topics in Biostatistics	3	
BIOS 6399 Doctoral Independent Study in Biostatistics	3	
EPID 6310 Advanced Methods in Epidemiology I	3	
EPID 6325 Secondary Data Analysis	3	

*May be repeated for credit provided the topics are different



