

**University of South Florida, College of Public Health
Department of Epidemiology and Biostatistics**

PhD: Biostatistics

The goal of the PhD Program in Biostatistics is to provide students advanced training and research opportunities in statistical theory, biostatistical methods, and their applications in a wide spectrum of health research fields including epidemiology, mental health prevention, environmental health, clinical trials, and health services research. With a curriculum that is both interdisciplinary and adaptive to individual student needs and interests, the program prepares students for a research career as a methodologist in academia, government, pharmaceutical industry, and health care organizations. The students should have a strong quantitative background and interests in pursuing a research career as a biostatistician. Through advanced coursework and dissertation, students develop mastery of select statistical theories and methods related to their dissertation research area.

Competencies: In addition to the overall **Doctor of Philosophy** degree competencies, upon graduation a student with a PhD in Biostatistics should be able to.....

1. General knowledge of public health, health policy, healthcare management, and delivery
2. In depth knowledge of epidemiology, evaluation of healthcare outcome and system; Special knowledge in a chosen field of public health where the student has interests in conducting biostatistical applications;
3. In depth knowledge of the history of biostatistics with respect to its role in public health
4. Able to conduct public health literature search and review to understand substantive research questions;
5. Able to conduct literature review on biostatistical methods to understand the limitations and strengths of key methods;
6. Able to articulate research needs for developing new methods and improving on existing methods;
7. Able to formulate a substantive research questions into statistical questions and identify biostatistical methods to address them;
8. Be able to design a research plan to develop, evaluate, and compare biostatistical methods;
9. Develop and carry out an analysis plan for an application project;
10. Understand study design, data structure, and be able to create datasets in an application context;
11. Understand the role a Biostatistician plays in ensuring scientific integrity with respect to data collection, analysis, reporting, and interpretation;
12. Gain substantial experience in conducting consultation and collaborative research to provide biostatistical support;
13. Develop effective communication capability with researchers from different disciplines;
14. Develop leadership skill in a team environment;
15. Participate in manuscripts preparation as a collaborator contributing mostly on data analysis and interpretation;
16. Prepare manuscripts as a leader author emphasizing method development and application;
17. Working knowledge of funding source from federal, local governments, and non-profit source;
18. Experience in writing applications for pre- or post-doctoral fellowship;
19. Working with faculty advisor or mentor to participate grant writing, focusing on study design and analysis plan;
20. Experience as a teaching assistant for master's level course;
21. Experience in lecturing undergraduate course;
22. Experience in presenting research findings at professional conferences and seminars in either poster or oral presentation;
23. Conduct consultation sessions.

Association between courses and the competencies for the Ph.D. in Public Health (Biostatistics Focus)

| Courses | Competency | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | |
| PHC 7935:Probability Model | | | √ | | √ | √ | √ | | | | | | | | | | | | | | | | | |
| PHC 7058: Biostatistical Inference II | | | √ | | √ | √ | √ | | | | | | | | | | | | | | | | | |
| PHC 6061: BCC Studies II | √ | √ | √ | √ | √ | | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | | | | | √ |
| PHC 7053: Generalized Linear Models | | | √ | | √ | √ | √ | | √ | √ | | | | | | | | | | | | | | |
| PHC 7059: Advanced Survival Analysis | | √ | √ | | √ | √ | √ | √ | √ | √ | √ | | | | | | | | | | | | | |
| PHC 7056: Longitudinal Data Analysis | | √ | √ | | √ | √ | √ | √ | √ | √ | | | | | | | | | | | | | | |
| PHC 7931: Interdisciplinary Seminar | √ | √ | √ | √ | | | | | | | √ | | √ | √ | | | | | √ | | | | | |
| PHC7980: Dissertation | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | √ | | √ | | √ | √ | | | √ | | | | √ | |
| Elective Courses | | | | | | | | | | | | | | | | | | | | | | | | |
| PHC 7055: Biostatistical Computing | | | √ | | √ | √ | √ | √ | √ | √ | | | | | | | | | | | | | | |
| PHC 7703: Advanced Epidemiologic Method | √ | √ | √ | √ | | | | | √ | | | √ | | | | | | | | | | | | |
| Statistical Analysis for Educational Research (EDU) | | √ | | | | | | | | | | | | | | | | | | | | | | |
| Application of Structural Equation Modeling (EDU) | | | √ | | | | | | √ | | | | | | | | | | | | | | | |
| PHC 7054: Selected Topics in Advanced Biostatistical Methods | | √ | √ | √ | | | √ | √ | √ | | | | | | | | | | | | | | | |
| PHC 7028: Advanced Clinical Trials | √ | √ | √ | | √ | √ | √ | | √ | √ | | √ | | | | | | | | | | | | |
| PHC 6056: Survey and Sampling for Health Sciences | √ | √ | √ | √ | | | √ | | | √ | | | | | | | | | | | | | | |
| PHC 6054: Design and Analysis of Experiments for Health Studies | √ | √ | √ | √ | | | √ | | | √ | | | | | | | | | | | | | | |
| Teaching Assistantship | | | | | | | | | | | | | | | | | | | | | √ | √ | | |
| Research Assistantship and Consultancy Internship | | | | | | | | | | | | | | | | | | | | | | | √ | √ |

The courses for PhD with concentration in Biostatistics

| Reference | College Core Courses | 9 |
|---------------------------|--|---|
| PHC6000 | Epidemiology | 3 |
| PHC6050 | Biostatistics I | 3 |
| And one of the following: | | |
| PHC6102 | Principles of Health Policy and Management | 3 |
| PHC6357 | Environmental and Occupational Health | 3 |
| PHC6410 | Social and Behavioral Sciences Applied to Health | 3 |

| Reference | Required Courses of Biostatistics Concentration | Credit |
|-----------|---|--------|
| PHC 7935 | Probability Model | 3 |
| PHC 7058 | Biostatistical Inference II* | 3 |
| PHC 6060 | Biostatistics Case Studies & Collaboration I* | 3 |
| PHC 6061 | Biostatistics Case Studies & Collaboration II* | 3 |
| PHC 7065 | Generalized Linear Models* | 3 |
| PHC 7059 | Advanced Survival Analysis* | 3 |
| PHC 7056 | Longitudinal Data Analysis* | 3 |
| PHC 7931 | Interdisciplinary Seminar | 1-3 |
| | Qualifying Exam | |

| Reference | Elective Courses of Biostatistics Concentration | Credit |
|--------------|---|--------|
| PHC 7055 | Biostatistical Computing* | 3 |
| PHC 7935 | Advanced Epidemiologic Methods | 3 |
| EDC 7484 | Statistical Analysis for Educational Research ² | 3 |
| EDC 7931 | Application of Structural Equation Modeling | 3 |
| PHC 7054 | Selected Topics in Advanced Biostatistical Methods* | 3** |
| PHC 7935-003 | Case Studies in the Quantitative Analysis of Public Health Data | 3 |
| PHC 7708 | Applied Research in Community and Family Health | 3 |
| PHC 7017 | Advanced Clinical Trials | 3 |
| PHC 6056 | Survey and Sampling for Health Sciences | 3 |
| PHC 6054 | Design and Analysis of Experiments for Health Studies | 3 |
| PHC 6055 | Survival Data Analysis | 3 |

