# BIOSTATISTICS PhD

The Biostatistics (BIO) PhD prepares graduates to conduct original research, collaborate and consult with biomedical researchers, implement and disseminate results of this research, and teach and mentor others in the field. Students may enter the PhD program with or without a degree in Statistics or Biostatistics; year one coursework will depend on previous statistical education. Students must complete a minimum of 53 credits. To complete program requirements, students will choose electives, in consultation with their academic advisor, which may include credits towards a minor.

## CORE REQUIREMENTS

19 CREDITS

**PubH 6250** Foundations of Public Health (2 cr)
**PubH 7450** Survival Analysis (3 cr)
**PubH 8401** Linear Models (4 cr)
**PubH 8403** Biostatistical Research Mentoring (1 cr)
**PubH 8412** Advanced Statistical Inference (3 cr)
**PubH 8432** Probability Models (3 cr)
**PubH 8442** Bayesian Decision Theory (3 cr)

Preliminary Written Exam to be taken mid-August after completion of Biostatistics Core Courses.

## THESIS CREDITS

**PubH 8888** Thesis Credits (24 cr)

## ELECTIVES

MINIMUM 9 CREDITS

**PubH 7420** Clinical Trials (3 cr)
**PubH 7465** Biostat Consulting (3 cr)
**PubH 8422** Modern Non-parametrics (3 cr)
**PubH 8445** Statistics for Human Genetics (3 cr)
**PubH 8446** Advanced Statistical Genetics & Genomics (3 cr)
**PubH 8452** Longitudinal Data Analysis (3 cr)
**PubH 8462** Advanced Survival Analysis (3 cr)
**PubH 8472** Spatial Biostatistics (3 cr)
**PubH 8475** Statistical Learning and Data Mining (3 cr)
**PubH 8482** Sequential Clinical Trials (3 cr)
**PubH 8485** Methods for Causal Inference (3 cr)
**PubH 8492** Richly Parameterized Linear Models (3 cr)
**Other 8000-level** Biostatistics or School of Statistics courses that are not in the core curriculum

## HEALTH SCIENCE ELECTIVES

MINIMUM 1 CREDIT

One additional health science course must be selected from PubH 6xxx, 7xxx, 8xxx level courses offered by the School of Public Health or other Health Science programs.

## COURSEWORK FOR STUDENTS ENTERING WITHOUT STAT/BIOSTAT MASTERS DEGREE

Students entering the program without a statistics or biostatistics master's degree may need to complete additional preparatory coursework in their first year, selected in consultation with the advisor and Biostatistics director of graduate studies upon admission. Students who have not taken a real analysis course may need to complete MATH 4603 Advanced Calculus. Those who have taken a real analysis course are strongly encouraged, but not required, to take MATH 5615H. Preparatory coursework cannot be applied toward degree requirements. The following coursework must be completed in the first year and students then follow the same PhD program curriculum as students entering the program with an MS in Statistics or Biostatistics.

**MATH 5615H** Introduction to Analysis I (4 cr)
**PubH 7405** Biostatistical Inference I (4 cr)
**PubH 7406** Biostatistical Inference II (3 cr)
**STAT 8101** Theory of Statistics I (3 cr)
**STAT 8102** Theory of Statistics II (3 cr)

Year 1 Written Exam to be taken after Spring Semester finals.

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