STATISTICS (PHD)

The Department of Statistics offers programs leading to Master of Science (M.S.) in Statistics and Doctor of Philosophy (Ph.D.) degrees. (The Department also offers a Professional M.S. in Biostatistics). All programs include training in statistical application and theory, and give students sufficient flexibility to pursue their special interests as well as time to take courses in other departments at the University of Connecticut.

Location

- Storrs Campus

Modality

- In Person

Requirements
Doctor of Philosophy

The Ph.D. program emphasizes development of the ability to generate novel results in statistical methods, statistical theory, or probability. Individuals with a Bachelor's degree in any major, with a background in mathematics and statistics are encouraged to apply. The course work typically consists of at least 16 graduate level courses that cover a wide range of topics, including mathematical statistics, linear models, statistical inference, applied statistics, real analysis, and probability. After completing the necessary course work and a sequence of examinations, a Ph.D. candidate must complete a dissertation that makes an original contribution to the field of statistics or probability. The dissertation may be predominantly development of novel statistical methodology for an area of application.

Doctor of Philosophy Requirements

For students entering the program after a Bachelor's Degree, typically 16 to 18 courses are required. An individual plan of study is developed by the student and their Advisory Committee. Knowledge of a sequence of core courses is required for all Ph.D. students. These courses are:

Course	Title	Credits
STAT 5091	Statistics Internship	1
or STAT 5094	Seminar in Statistics	
STAT 5505	Applied Statistics I	3
STAT 5515	Design of Experiments	3
STAT 5545	Mathematical Statistics I	3
STAT 5555	Mathematical Statistics II	3
STAT 5605	Applied Statistics II	3
STAT 5725	Linear Models I	3
STAT 5735	Linear Models II	3
STAT 6315	Statistical Inference I	3
STAT 6325	Advanced Probability	3
STAT 6515	Statistical Inference II	3
STAT 6894	Seminar in the Theory of Probability and Stochastic Processes	3
Total Credits		**34**

Additional credits can be earned from the list of elective courses. In general, Ph.D. students are required to elect one to two courses from other departments. However, it is sufficient to take one graduate level course from the Department of Mathematics. Each elected course must be approved by the major advisor of a student. Under certain circumstances, the major advisor can exempt the student from the above requirement, if the student has had internships or Research Assistantships in interdisciplinary areas. The Department has no requirement on foreign languages. The first formal requirement for the Ph.D. degree is passing the Ph.D. Qualifying Examination which is a written test on certain basic courses. The second requirement is passing the General Examination that consists of an oral test on aspects of Applied Statistics, Linear Models, Probability Theory and Statistics and a presentation of a thesis research proposal. The preparation of a dissertation then follows which must present an original contribution to the general area of Statistics and/or Probability. The final requirement is a defense of the Ph.D. dissertation before an audience of interested members of the Department. The Department expects every Ph.D. student to strive to finish their study within four years. For students arriving without a M.S. degree in Mathematics or Statistics, the Department may provide up to five years of financial support. For those arriving with such a degree, the Department may provide up to four years of financial support.

Learning Objectives

1. Knowledge: Students must demonstrate appropriate breadth and depth of knowledge and comprehension of the major topics, theories, and issues in the field of Statistics by successfully completing all required courses and passing the PhD Qualifying Exam and the General Exam. Students must also demonstrate sufficient specialized knowledge of a sub-field of Statistics to carry out substantive independent research.
2. Applied and computational skills: Students must demonstrate proficiency in applying statistical methods and techniques ethically and professionally to data analysis in real-world problems. They must do so via internships, supervised field studies, consulting services, and research activities in applied fields. Statistical computing is a critical part of data analysis. Students must demonstrate proficiency in advanced statistical programming via designing and writing code to perform data analysis.
3. Communication: Students must demonstrate proficiency in communicating to specialists or non-specialists in Statistics structured and coherent academic presentations, representations, or arguments that cogently summarize their research in Statistics, relevant literature, and the significance of the research at the level appropriate to the PhD degree.
4. Research: Students must demonstrate proficiency in carrying out independent research by using specialized knowledge of a sub-field of Statistical ethically and professionally, to create new knowledge, methods, and techniques and achieve scientific advancement in the sub-field. Students must do so by completing a PhD dissertation at the minimum.