

# STATISTICAL SCIENCE, PHD

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The PhD in Statistical Science represents the highest academic attainment for a statistician and, as such, requires in-depth knowledge of modern statistical theory and practice. The degree program is a hybrid of mathematical theory, computation, and data analysis; and students are expected to be proficient in all three. Current research areas of key department faculty in the program include biostatistics, statistical genetics, statistical graphics, data confidentiality, networking analysis, and data analytics.

## Admissions & Policies

### Admissions

Students should have a master's degree in a mathematically-intensive discipline with a minimum 3.50 GPA. Students entering with a master's degree are expected to have completed coursework equivalent to STAT 544 Applied Probability, STAT 554 Applied Statistics I, STAT 652 Statistical Inference, and STAT 654 Applied Statistics II with exceptional performance. The program also requires a course in advanced calculus, MATH 315 Advanced Calculus I or equivalent, with a B or better. In exceptional circumstances, talented students with a mathematically-intensive undergraduate degree may be admitted.

Specific application deadlines and requirements ([https://admissions.gmu.edu/grad/application-deadlines-and-requirements/?academicUnit=VS&\\_ga=1.107632321.273102085.1480697294](https://admissions.gmu.edu/grad/application-deadlines-and-requirements/?academicUnit=VS&_ga=1.107632321.273102085.1480697294)) are available through the Office of Graduate Admissions.

### Policies

#### Reduction of Credit

Students must complete a minimum of 72 graduate credits, which may be reduced by a maximum of 24 credits with a master's degree in statistics, mathematics, or similar discipline, or by 30 credits with a Master's degree from the George Mason University Department of Statistics. Reduction of credit requires the approval of the program director or designee and the dean or designee of the school. They determine whether the credits are eligible for reduction of credit and applicable to the degree program and the number of credits to be reduced.

## Requirements

### Degree Requirements

Total credits: 72

The 72 hours of required doctoral-level credits typically consist of 48 credits of regular coursework and 24 credits of dissertation research. The following degree plan is based on a student who receives a 24 credit reduction. Students who receive more or less than a 24 credit reduction should consult with their advisor.

### Doctoral Coursework

Students are required to complete 24 credits of advanced emphasis coursework, including four core courses:

Code	Title	Credits
STAT 778	Algorithms and Simulation for Statistics in C	3
STAT 971	Probability Theory	3
STAT 972	Mathematical Statistics I	3
STAT 973	Mathematical Statistics II	3
The remaining four courses are selected and approved by the doctoral supervisory committee and the PhD Program Director and should be numbered 600 or above. <sup>1</sup>		12
Total Credits		24

<sup>1</sup> STAT 652 Statistical Inference and STAT 654 Applied Statistics II do not count toward advanced emphasis coursework, if a student has received a 24 credit reduction.

### Qualifying Exam

Written qualifying exams will be taken in the following areas:

- Applied Probability
- Applied Statistics
- Statistical Inference

Qualifying exams are offered in August and January. Students are required to take the qualifying exams within one year of admission. Supported students entering with a Master's degree are required to take the qualifying exams within one semester of admission. Students who do not pass all three exams in two consecutive exam periods are terminated from the program.

### Dissertation Research

In order to advance to candidacy, students must complete all coursework, pass the qualifying and comprehensive examinations, and defend a dissertation proposal.

Code	Title	Credits
Select 24 credits from the following:		24
STAT 990	Dissertation Topic Presentation (required)	
STAT 998	Doctoral Dissertation Proposal	
STAT 999	Doctoral Dissertation (must complete a minimum of 12 credits)	
Total Credits		24

### Doctoral Committee Selection

Following successfully passing the qualifying exams, students should select a dissertation director and a doctoral studies committee. The chair of the doctoral studies committee must be a member of the graduate faculty with a regular appointment in the Department of Statistics, and will typically be the dissertation director. The doctoral studies committee consists of a chair, two members of the graduate faculty who hold regular appointments in the Department of Statistics, and an external member. The doctoral studies committee must be approved by the director of the doctoral program in statistical science.

## **Advancement to Candidacy**

Admission to candidacy is acquired on completion of an oral comprehensive exam administered by the doctoral supervisory committee, covering the four core courses and four advanced emphasis courses, and a dissertation proposal. A student who fails the oral comprehensive exam may take it a second time, within six months. If the student fails a second time, the student is terminated from the program. A student must wait at least six weeks after passing the oral comprehensive exam before the dissertation proposal. A student who fails the dissertation proposal may take it a second time, within six months. If the student fails a second time, the student is terminated from the program.

## **Doctoral Defense**

The dissertation defense serves as the student's final examination and is conducted by the doctoral supervisory committee. Both the comprehensive exam and final exam are scheduled on approval of a written request to the department chair.