

# Ph.D. in Statistics

## Ph.D. in Statistics Program Requirements

The Ph.D. program in Statistics at Montana State University prepares students for academic, industrial, business, or government employment. To earn a Ph.D. in Statistics, a student must pass a qualifying exam, pass written and oral Ph.D. comprehensive exams, and write and defend a Ph.D. dissertation. The exams are described below. The dissertation must be an original contribution to statistical science and must include new material worthy of publication.

A Ph.D. student typically takes at least 30 credits of STAT rubric courses numbered 500 and higher (excluding STAT 511/512). Credits from graduate courses taken from another department can be included in the Program of Study with the approval of the student's Ph.D. Graduate Committee. Additional course work in statistics and/or mathematics may be necessary, depending on the candidate's chosen area of specialization and background. For example, a Ph.D. student is expected to have completed all courses required for the M.S. degree in Statistics and may need to make-up one or more of these courses if deficient.

It is expected a Ph.D. student will participate in the Statistical Consulting Seminar (STAT 510). Through this participation, the student will gain important experience in practical problem solving, computational statistics and statistical report writing. A minimum of two credits of Statistical Consulting Seminar (STAT 510) are required, which can be satisfied as part of the MS degree in Statistics at MSU.

Also, it is required that a Ph.D. student will take a directed study course in Doc Reading & Research (STAT 689) in his/her area of specialty before taking the written and oral comprehensive exams, followed by Doctoral Thesis (STAT 690) credits after passing the comprehensive exams.

1. The status of provisional admission is assigned prior to passing the Ph.D. qualifying exam and choosing a Ph.D. advisor. Once admitted to the Ph.D. program, the Ph.D. student must form a Ph.D. Graduate Committee and complete a Program of Study within two semesters.

2. Students may also elect to focus on Statistics Education for the Ph.D. in Statistics which is designed for students with research interests focused on the teaching and learning of Statistics. The Ph.D. in Statistics with a specialization in Statistics Education incorporates coursework in Statistics, Statistics Education, Mathematics Education, and Education, as approved by a student's Ph.D. Graduate Committee to provide the required background to do research in Statistics Education.

## Qualifying Exam

The Ph.D. qualifying exam is identical to the statistics M.S. comprehensive exam. A student who earned an M.S. in Statistics from MSU need not take the Ph.D. qualifying exam. Other prospective students are expected to take the Ph.D. qualifying exam as soon as relevant course work has been completed. Two attempts to pass the qualifying exam are allowed. Attempts taken while in the M.S. program will be counted towards these two attempts.

## Comprehensive Exam

The Ph.D. comprehensive exam has two components: written and oral. The topics and format of the written comprehensive exam for the Ph.D. in Statistics will be determined by the student's Ph.D. Graduate Committee. They are given at a specific date determined by the student's Ph.D. Graduate Committee. The student has two attempts to pass each exam.

The written part of the Ph.D. comprehensive will consist of several components. These will typically include:

- Providing a general review/summary related to the proposed research area.
- Critiquing and addressing questions related to at least one journal article in the proposed research area.
- Performing a data analysis with a written summary. The data analysis will be related to coursework taken by the student.
- Demonstrating competency in mathematical statistics, bayesian statistics, and possibly other relevant coursework determined by the student's Ph.D. Graduate Committee.

The student will be given one week to submit her/his written summaries. Once the written comprehensive examination has been passed, the student must pass the oral comprehensive examination.

Each student must devise a research area of concentrated study. The requirements associated with each component of the Ph.D. comprehensive exam are flexible, however the concentration area(s) must be approved by the student's Ph.D. Graduate Committee. An area could involve course material or research from a discipline outside the department. The Ph.D. Graduate Committee will determine the exact details of each component with the goal of assessing the student's potential for performing independent research in the proposed research area.