M.S. in Statistics

Program Guidelines

The Master of Science degree in Statistics at Montana State University gives students a solid background in the applications as well as the theory of Statistics. Students in this program prepare either for further graduate work or for academic, industrial, business, or government employment. The program contains a research component as all students create original research either through a thesis or writing project. Upon entrance, each student meets with the department's Graduate Program Committee to discuss career objectives and first year course work. During the second semester in the program, each student forms a MS Graduate Committee and together they outline the student's degree program.

Program Admission Requirements

An undergraduate GPA of at least 3.00 (on a 4.00 scale) is required for admission. The prerequisites for the master's degree program in Statistics consist of the following semester courses or their equivalent:

1. Multivariable Calculus (M 273),
2. Linear or Matrix Algebra (M 221),
3. Methods of Data Analysis (STAT 411 and STAT 412),
4. Probability (STAT 421 (http://catalog.montana.edu/search/?P=STAT%20421)), and
5. Mathematical Statistics (STAT 422 (http://catalog.montana.edu/search/?P=STAT%20422)).

Students who have not completed these courses may be accepted into the master's program with the understanding they should make up these courses by adding one or two additional semesters to their program of study.

International Students: Please refer to The Graduate School's page describing the International Application Process (http://www.montana.edu/gradschool/policy/admissions_intl.html) for a detailed description of additional requirements for admission including those on how to provide evidence of English proficiency.

- In order to be eligible for admission to the program, the department requires that the applicant demonstrate a minimum score on one of the following TOEFL (http://www.toefl.org/): 80-internet-based [iBT] or 550-PBT, IELTS (http://www.ielts.org/): 6.5: 54, or Duolingo (http://englishtest.duolingo.com/): 120.
- In order to be eligible for a GTA position, the applicant must provide documentation of a minimum score of TOEFL (http://www.toefl.org/): 93-internet-based [iBT] or 550-PBT, IELTS (http://www.ielts.org/): 7.0: 65, or Duolingo (http://englishtest.duolingo.com/): 135

Program Requirements

The program is research-based, but there are two options: either a thesis (thesis and 20 credits of course work) or a writing project (writing project and 26-28 credits of course work). In either case, all courses on a graduate program of study must be numbered 400 or higher and STAT rubric courses must be numbered 431 or higher. For co-convened undergraduate and graduate courses (such as STAT 441 and STAT 541), the 500-level course must be taken. The specific program of study depends on the student's previous training and experience. Regardless of the plan chosen, (i) at least half of the required non-thesis credits must be STAT courses, (ii) at least two-thirds of the required non-thesis credits must be numbered 500 or higher, and (iii) the following core course credits are required.

M.S. in Statistics Required Courses (30 semester credits)

STAT 501 & STAT 502	Intermediate Probability and Statistics and Intermediate Mathematical Statistics	6
STAT 505 & STAT 506	Linear Models and Advanced Regression Analysis	6
Statistical Consulting Seminar (STAT 510); take two semesters (1 credit a semester)		2
Elective Course Work		16
Total Credits		**30**

Additional requirements

1.   The M.S. in Statistics degree requires completion of either a thesis or a writing project.

a.   Thesis: The thesis option typically requires at least 450 hours of work. The student must register for at least 10 credits of Master's Thesis (STAT 590 (http://catalog.montana.edu/search/?P=STAT%20590)) in addition to the required 20 credits of course work. The student must give an oral defense of his/her thesis.

b.   Writing Project: The writing project typically requires at least 90 hours of work, for which the student must take 2 credits of Professional Paper and Project (STAT 575 (http://catalog.montana.edu/search/?P=STAT%20575)). With permission from the student's committee, up to 4 credits of STAT 575 (http://catalog.montana.edu/search/?P=STAT%20575) (corresponding to 180 hours of work) may be earned. Students should enroll in STAT 575 (http://catalog.montana.edu/search/?P=STAT%20575) in their final Spring semester, and must submit a written project report and give a presentation on the writing project before graduating.

2.   Experience in data collection – either through a course such as Sampling (STAT 446 (http://catalog.montana.edu/search/?P=STAT%20446)) or Experimental Design (STAT 541 (http://catalog.montana.edu/search/?P=STAT%20541)), or a course taken in a former degree program, or real-life experience.

3.   For either the thesis or writing project, the student must pass a comprehensive examination. Historically, most students complete the writing project.

M.S. in Statistics Comprehensive Exam

The M.S. comprehensive exam consists of a written exam over material from Intermediate Probability and Statistics (STAT 501 (http://catalog.montana.edu/search/?P=STAT%20501)), Intermediate Mathematical Statistics (STAT 502 (http://catalog.montana.edu/search/?P=STAT%20502)), Linear Models (STAT 505 (http://catalog.montana.edu/search/?P=STAT%20505)), and Advanced Regression Analysis (STAT 506 (http://catalog.montana.edu/search/?P=STAT%20506)).

The exam is typically given in August with the specific date determined by the department. Examinees will be informed of the results within five working days of taking the exam. Two attempts to pass the comprehensive exam are allowed.

Accelerated M.S. Plan in Statistics

The Accelerated M.S. Program (AMSP) is designed to provide MSU undergraduates a path to earning both the B.S. and the M.S. in Statistics in a total of five years. Undergraduate students earning a B.S. in Mathematics with the Statistics Option at Montana State University may accelerate their program through any combination of Advanced Placement Credit, transfer credit, and higher semester credit loads so that they may receive their B.S. degree after four years and their M.S. degree after the fifth year. The undergraduate student can complete specific graduate level course work during year 4 of the undergraduate program. These courses can be **reserved for graduate credit** towards the M.S. degree. With careful planning by the student and the academic advisor, this can compress the time required to fulfill requirements of both the B.S. and M.S. degrees to a total of five

years. The M.S. degree is typically the writing project based degree, and **all M.S. requirements described must be fulfilled,** unless otherwise approved by the student's graduate committee.

AMSP Application and Timeline Information

Students typically apply to the AMSP program during spring term of the third year of the B.S. degree program. A minimum of 90 undergraduate credits must be completed at the time of application. Normally the B.S. in Mathematics with the Statistics option will be awarded at the end of the student's senior (transition) year, and enrollment in the M.S. program in Statistics will commence at the start of the fifth (graduate) year. All M.S. program admission prerequisites listed above and all application procedures required by both the Department of Mathematical Sciences and the Graduate School apply. This includes the application fees.

Students apply to the AMSP program by applying to the Graduate School and selecting the term that they intend to start their graduate program, i.e. the term after they finish their undergraduate degree.

Reserved Credits: Students planning to apply to the AMSP program should seek permission to register in graduate level courses during the second semester of their third year. In total, a student at MSU may take up to fifteen graduate level credits to reserve towards a graduate degree. **The coursework used for reserved credits may not be counted toward the B.S. degree requirements.** In order to obtain permission to register in graduate level courses and to reserve credits toward the M.S. degree, the student must request approval through the department's advisor overseeing the AMSP. The Advisor must approve the request and document the specific courses to be reserved within DegreeWorks.

AMSP Program Requirements

- The AMSP degree requirements are exactly the same as those described above.
- Prospective students are required to keep their undergraduate coursework cumulative GPA at 3.3 or higher and their graduate coursework cumulative GPA at 3.0 or higher in order to be admitted to the AMSP.
- If accepted into the AMSP program, students will be granted graduate status and be eligible for graduate assistantships and tuition waivers only after completing all B.S. degree requirements and undergraduate degree conferment.
- At least 15 credits of graduate level coursework must be taken once the student obtains graduate status.

Participation in the AMSP requires significant planning of coursework and application procedures. Interested students should discuss this option with their undergraduate academic advisor within the Department of Mathematical Sciences as early as the first year of the B.S. degree program.   Students must also consult the Graduate Program Coordinator and the Statistics Faculty member on the Graduate Program Committee within the department as early as possible.

For more information, refer to the Department of Mathematical Sciences (http://www.math.montana.edu/).