

MATHEMATICAL SCIENCES M.S.

All students must meet the Requirements for the Master's Degree (<http://catalogue.uvm.edu/graduate/degreerequirements/requirementsforthemastersdegree/>)

OVERVIEW

The Department of Mathematics and Statistics offers programs towards the Master of Science (the Mathematical Sciences M.S. degree). Students are encouraged to take courses in both pure mathematics and applied mathematics, thereby gaining an appreciation of the connections between theory and applications. Each student declares a major subject, which may be algebra, analysis, applied mathematics, or discrete mathematics. Within this major, the student may pursue either course work or a thesis.

Opportunities for research arise from the research interests of the department faculty, which include analysis, algebra, arithmetic geometry, biomathematics, combinatorics, complex systems, computational social science, differential equations, fluid mechanics, graph theory, mathematics education, modeling, network science, and number theory.

See the Department of Mathematics and Statistics website for further details. The department also offers the Ph.D. in Mathematical Sciences.

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Master of Science

Because of the breadth of pure and applied mathematics, it is recognized that applicants for admission will have diverse backgrounds. Admission requirements are therefore flexible. Applicants should have demonstrated strength in either pure or applied mathematics, a bachelor's degree with a major in mathematics or a closely related discipline, and satisfactory recommendations.

Minimum Degree Requirements for the Degree of Master of Science

Each student must complete one of the following options:

OPTION A (THESIS)	
24 semester hours of acceptable graduate credits in advanced mathematics courses, and 6 semester hours of thesis research (MATH 391) culminating in a master's thesis.	
OPTION B (NON-THESIS)	
30 semester hours of acceptable graduate credits in advanced mathematics courses. No thesis is required.	
BOTH OPTIONS	
Under either option, students must take, or acquire the knowledge of the content in, the courses MATH 331 and MATH 333, and must satisfactorily complete at least 4 300-level mathematics courses.	

In both options students must select a major concentration from among the following areas: Analysis, Algebra, Applied Mathematics, or Discrete Mathematics. The concentration shall consist of at least 9 approved credits in advanced mathematics courses in the respective area, 3 of which must be at the 300-level; students writing a thesis may count the 6 hours of thesis credit toward these 9 hours.	
With approval of the student's advisor up to 6 credits of courses outside mathematics may be used to fulfill the major, minor, or degree requirements.	

Comprehensive Examination

M.S. students must pass a comprehensive exam consisting of two parts: a written exam and either a second written exam or a thesis. The written exams are offered each August and January. Ph.D. students in the program take these exams as well, but with a more demanding criteria for passing. For example, M.S. students need to demonstrate proficiency in concepts of MATH 241 (<http://catalogue.uvm.edu/search/?P=MATH%20241>) & MATH 242 (<http://catalogue.uvm.edu/search/?P=MATH%20242>), but not necessarily in material covered by MATH 331 (<http://catalogue.uvm.edu/search/?P=MATH%20331>) & MATH 333 (<http://catalogue.uvm.edu/search/?P=MATH%20333>) (which Ph.D. students must do).

For example, a student taking MATH 241 (<http://catalogue.uvm.edu/search/?P=MATH%20241>) & MATH 242 (<http://catalogue.uvm.edu/search/?P=MATH%20242>) in their first year could sit for the analysis exam in August before their second year begins, with a second opportunity in January before their final semester.

All M.S. students need to take the analysis exam. For non-thesis students, the second exam may be in any of the following areas: algebra, numerical analysis, differential equations, or combinatorics. For thesis students, a successful M.S. thesis defense satisfies the requirement of the second exam.

Requirements for Advancement to Candidacy for the Degree of Master of Science

The requirements for advancement to candidacy are the completion of any prerequisites noted when the student was admitted.