

# Mathematics

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## Department Information

- **Department Chair:**  
Friedrich Littmann, Ph.D.
- **Graduate Coordinator:**  
Indranil Sengupta, Ph.D.
- **Department Location:**  
412 Minard Hall
- **Department Phone:**  
(701) 231-8171
- **Department Web Site:**  
[www.ndsu.edu/math/](http://www.ndsu.edu/math/) (<http://www.ndsu.edu/math/>)
- **Application Deadline:**  
March 1 to be considered for assistantships for fall. Openings may be very limited for spring.
- **Credential Offered:**  
Ph.D., M.S.
- **English Proficiency Requirements:**  
TOEFL iBT 71; IELTS 6; Duolingo 100

At least one year of academic work must be spent in residence at NDSU in fulfilling graduate requirements for each graduate degree earned. The M.S. customarily takes two years to complete; the Ph.D. usually last three years beyond the master's. Students must maintain a cumulative GPA of at least 3.0 throughout their graduate career.

## Master of Science

The Master of Science degree is offered in two options: the Thesis Option or the Comprehensive Study Option. The Thesis Option emphasizes research and preparation of a scholarly thesis, whereas the Comprehensive Study Option emphasizes a broader understanding of a major area of mathematics.

## Departmental Requirements

1. At least 30 credit hours in approved graduate-level mathematics course work, depending on the degree option.
  - a. Thesis Option: At least 6 credit hours of MATH 798 Master's Thesis, in addition to at least 18 credit hours in courses numbered 700-789. These 18 credit hours must include six foundational courses.
  - b. Comprehensive Study Option: At least 2 credit hours of MATH 797 Master's Paper, in addition to at least 24 credit hours in courses numbered 700-789. These 24 credit hours must include six foundational courses. Subject to the approval of the Supervisory Committee, at most 6 of the required 30 credits may be earned in 600-level mathematics courses (excluding 620, 621, 650, and 651) or in courses outside the Mathematics Department.
2. A grade of Master's Pass in four of the written preliminary examinations offered by the department. These examinations are offered in the areas: Algebra, Analysis, Combinatorics, Applied Mathematics, and Geometry/Topology.
3. A thesis or expository paper written under the supervision of a faculty member and defended at an oral examination administered by the student's supervisory committee.

## Timelines

A candidate has three calendar years from the time of enrollment in the Graduate School to complete the Master's degree. Extensions may be granted after review and approval by the Graduate Committee, subject to Graduate School Policy.

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## Doctor of Philosophy

The Doctor of Philosophy degree is awarded in recognition of high scholarly attainment as evidenced by a period of successful advanced study, the satisfactory completion of prescribed examinations, and the development of an acceptable dissertation covering a significant, original aspect of mathematics.

## Departmental Requirements

1. A total of at least 90 credit hours in approved graduate-level mathematics course work, including:
  - a. At least 42 credit hours in courses numbered 700-789 or as approved by the Graduate Program Director. These 42 credit hours must include six foundational courses. The advisor should in consultation with the graduate chair ensure that the 42 credit hours contain a broad spectrum of courses (at least 12 credit hours) outside the student's area of emphasis as well as depth in a specific area of mathematics.

- b. At least 3 credit hours of MATH 790 Graduate Seminar.
  - c. At least 6 credit hours of MATH 799 Doctoral Dissertation. Subject to the approval of the supervisory committee, at most 12 of the required 42 credit hours may be earned in 600-level mathematics courses (excluding 620, 621, 650, and 651) or in courses outside the Mathematics Department. Credits used to satisfy the requirements of a Master's degree at NDSU may be included in the 90 credit hours required for the Ph.D. A student entering the Doctoral program with a Master's degree from another institution need only complete 60 credit hours to complete the Ph.D. degree. Half of these 60 credits must be in courses numbered 700-789 excluding those courses numbered 720, 721, 750, and 751.
2. A grade of Ph.D. Pass in four written preliminary examinations offered by the department. These examinations are offered in the areas: Algebra, Analysis, Combinatorics, Applied Mathematics, and Geometry/Topology.
  3. A passing grade in a preliminary oral examination administered by the student's supervisory committee after completion of the Preliminary Examinations.
  4. A dissertation consisting of a written presentation of original and significant research completed by the student under the supervision of a faculty member and defended at an oral examination administered by the candidate's supervisory committee.
  5. A dissertation video describing the candidate's research, evaluated by the candidate's supervisory committee.

## Timelines

Ph.D. students have through the January Preliminary Exams during their third year in the program to demonstrate proficiency in basic areas of mathematics by passing the written Preliminary Examinations.

A student advances to candidacy after completion of the preliminary oral examination. All students must advance to candidacy by August 31st after their fourth academic year of study. Extensions may be granted after review and approval by the Graduate Committee, subject to Graduate School Policy.