

**Department of Mathematics  
Louisiana State University**

*Statement of Policy Concerning Graduate Studies*

**Part I. The Director of Graduate Studies, the Committee on Graduate Studies, and their Duties**

**A.** There shall be a Director of Graduate Studies. There shall be a Committee on Graduate Studies, consisting of the Director, who shall be Chair of the Committee; the Department Chair, *ex officio*; and approximately seven other members.

**B.** The Director and the other members of the Committee shall be appointed by the Department Chair for staggered three-year terms. In order to be appointed to the Committee, a person must have been off the Committee during the previous year; except that this restriction will not apply in cases that involve the Directorship.

**C.** The Committee shall have general responsibility for the graduate program, subject to direction and reversal by the Graduate Faculty of the Department.

**D.** The charge of the Committee shall include the following particulars. In each matter, the Committee may delegate authority to the Director.

1. The Committee shall govern the conduct of the comprehensive, general, master's, final, and language examinations in a manner consistent with the regulations found elsewhere in the policy statement.
2. The Committee shall be responsible for the recruitment of graduate students, and for admissions decisions.
3. Well in advance of the beginning of each term—fall, spring, and summer—the Committee shall make an estimate of the number of graduate students who will be enrolled during that term, and of their needs. The Committee shall then, in consultation with the appropriate Department officials and agencies, determine what courses will be offered and who will teach them. This decision shall be announced before the preregistration period for that term (and, in the case of the summer term, by April). Furthermore, the Committee shall govern the adjustments in these plans that are made necessary by later developments.
4. In all questions that arise concerning degree requirements, the committee shall see to it that interpretations and particulars are provided in a timely fashion.
5. The Committee shall determine the acceptability of courses offered outside the department, and of student programs that include outside courses.
6. The Committee shall determine on an individual basis which faculty members from outside the Department may serve on thesis, dissertation, and examining committees, and as thesis or dissertation advisers.
7. The Committee's approval shall be required for a Mathematics graduate student to do a master's thesis or doctoral dissertation work under the full or partial direction of faculty outside the department.
8. In cases involving outside faculty, the committee shall see to it that the purposes and procedures of the examinations are clearly defined and explained.
9. The Committee shall review from time to time the need for changes in graduate course offerings, including changes to serve better the interests of students with

outside minors, and when appropriate shall make timely recommendations to the Graduate Faculty of the Department.

10. This Policy Statement allows a minor in computer-related mathematics for students desiring it, and provides that this minor may lead to thesis or dissertation work under the supervision of members of the Computer Science Department. Cooperation to such an extent with departments other than Computer Science shall require prior approval of the Graduate Faculty of the Department.

## Part II. Requirements for Degrees

*Part II should be understood to be supplementary to the provisions of the LSU Graduate Catalog with regard to degree requirements.*

### A. General Requirement

*The Program of Study.* In all degree programs, a student's curriculum must be approved each semester by the Director of Graduate Studies. The Director may allow the inclusion of courses outside the Department, but not normally more than a total of four during the first two years.

### B. Requirements for the degree of Master of Science

*The M.S. degree in Mathematics (without a Concentration)* is available as both a non-thesis and a thesis degree. In either case, M.S. students must complete the first semester core courses, which are Algebra (7210), Analysis (7311), and Topology (7510). The graduate course work requirement is 36 semester hours, of which at least 24 hours must be in mathematics, and at least 18 must be in mathematics courses numbered 7000 or higher.

1. Non-Thesis M.S.: Every non-thesis M.S. student must pass the Department's Comprehensive Examination at least at the M.S.-Qualifying Level. This examination is described in paragraph III.A. Students must appear for the MS final exam.
2. Thesis M.S.: This program is based on breadth of exposure in mathematics and requires an M.S. thesis. The graduate course work must include 6 hours of thesis credit (Math 8000). The student must earn at least a B-average in the three first semester core courses. The courses must include also at least three (3) 7000-level semester courses in mathematics in addition to the first-semester core courses, which may be selected from diverse areas of applied or pure mathematics. During the second semester of study, the student will need to form an Advisory Committee of at least three members of the graduate faculty in mathematics, one of whom will be the student's Thesis advisor and the Chair of the Committee. These faculty members must represent at least two of the following specialties: algebra, analysis, combinatorics, and topology. With the Advisor's suggestion, and the Committee's approval, the student will select a thesis topic. The thesis must be an original and interesting contribution to the field, or a worthwhile and useful expository work, or a substantial application of mathematics. An oral thesis defense is required as the Final Examination for this program.
3. M.S. Degree with a Concentration: An M.S. degree in Mathematics with a Concentration (subject to approval by the Graduate Council) is not equivalent in breadth of study in Mathematics to the M.S. degrees without Concentration. It is intended as a more narrowly focused degree, presenting Master's level study of certain parts of mathematics together with other specialized topics, usually intended for students in a particular field in which upper level mathematics is applied. The Department will approve separate policy statements concerning the requirements for each proposed Concentration.

### C. Requirements for the degree of Doctor of Philosophy

Specific requirements for the PhD in mathematics are the following:

1. Completion of at least 54 semester hours of graduate credit.
2. Completion of the Common Core courses:
  - a. Math 7210 (Algebra I)
  - b. Math 7311 (Analysis I)
  - c. Math 7510 (Topology I)
3. One hour of Communicating Mathematics is required each semester of the first year
4. In order to Ph.D. qualify, each student must take at least four Breadth courses, of which at least two must come from List A. Each of the four breadth courses must be passed with at least a grade of B, and at least one must be passed with a grade of A. (Exceptions are subject to the approval of the Graduate Committee.)
  - a. **List A:** Algebra II (7211), Complex Variables (7350), Functional Analysis (7330), Topology II (7512), and Differential Geometry (7550).
  - b. **List B:** Numerical Linear Algebra (7710), Ordinary Differential Equations (7320), Graph Theory (7410), and Probability (7360).
5. Passing the written Comprehensive Examination at the Ph.D. Qualifying Level. The student must pass this exam by January of the spring semester of the second year, unless a postponement is allowed by the Graduate Committee.
6. Passing the oral General Examination. The student must pass this exam prior to the start of the fourth year of study, unless a postponement is allowed by the Graduate Committee.
7. Writing a dissertation and passing the Final Examination which is primarily a doctoral dissertation defense.

### **Part III. Examinations**

The Committee on Graduate Studies shall be in charge of administering the examinations, shall decide the details of their content and conduct, and shall provide information in a timely fashion

#### **A. Comprehensive Examination**

The three subtests of the Comprehensive Examination are syllabus-based tests taken by all non-thesis M.S. and Ph.D. graduate students in mathematics covering the material commonly found in first semester graduate courses Math 7210, 7311, and 7510. The exam serves as the major portion of the Final Examination for the non-thesis M.S., and (with a higher passing score) as the Ph.D. Qualifying Examination. The Committee on Graduate Studies shall determine how the exam shall be composed, administered, marked and evaluated. In making these decisions, the Committee shall consult those who have taught graduate mathematics courses during the previous three semesters or so. The Committee shall promulgate the appropriate information about the exam, including a syllabus to guide preparation.

#### **B. MS Final Examination**

This exam is offered once a semester. The student appears before the exam committee, which reviews the student's written exam results. The student is questioned and advised. Alternate opportunities for students to receive an MS final exam are at the discretion of the graduate committee.

#### **C. General Examination**

The General Examination, an oral exam for Ph.D. students, tests if a student is prepared to begin dissertation research. The General Exam must be passed prior to the start of the fourth year of study, unless a postponement is allowed by the Graduate Committee. The exam is conducted by the student's Advisory Committee, which will consist of at least three Graduate Faculty Members plus a Dean's Representative appointed by the Dean of the Graduate School. The committee is to be chosen in consultation with the intended dissertation advisor, who will serve as Chair of the Advisory Committee, and must be approved by the Graduate Director.

The specific content of the general examination is established by the individual student's Advisory Committee in consultation with the student. It should consist of material that is appropriate for advanced graduate courses, and it should not seriously overlap the Comprehensive exam material. The Exam Syllabus will be the material chosen for the exam. A copy of the syllabus should be provided to the student, to each member of the Advisory Committee, and to the Graduate Director for inclusion in the student's file. The Exam Syllabus should be completed at least four weeks before the date of the exam, and before the Exam is scheduled with the Graduate School.

The format of the exam will consist of an optional, at the discretion of the advisor, short presentation by the student (of at most 20 – 30 minutes), and an oral exam on the content of the exam syllabus. The exam should last at most two hours.

The Advisory committee shall determine whether the student passes the General Exam. If the student fails, the Advisory Committee will determine whether the exam can be retaken. The exam can be taken at most one additional time.

## **D. Final Examination**

This oral examination for PhD candidates is primarily a doctoral dissertation defense.

## **Part IV. Graduate Minor in Mathematics**

The requirements for a student in another graduate field to obtain a graduate minor in mathematics are as follows:

- A. **Master's Degree:** To obtain a minor in mathematics, a master's degree student in another field must take nine hours of graduate credit in mathematics, with at least three hours credit in mathematics courses numbered above 7000.
- B. **PhD Degree:** To obtain a minor in mathematics, a PhD student in another field must take twelve hours of graduate credit in mathematics, with at least six hours credit in mathematics courses numbered above 7000.

Note: Math 4005 does not count towards graduate credit for the mathematics minor.