

## **GRADUATE DEGREE PROGRAMS IN MATHEMATICS**

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The Department of Mathematics offers graduate programs leading to the Master of Science (M.S.) and the Master of Science in teaching (M.S.T.) degrees in mathematics.

### **Program Objectives**

1. To provide quality mathematics training at the master's degree level
2. To help increase the number of mathematicians qualified to undertake further studies leading to the doctoral degree in the mathematical sciences.
3. To increase the pool of mathematicians seeking to obtain employment in industry, government and academic institutions.

### **Degree Programs**

The M.S. degree is research oriented and a Thesis is required for graduation. The M.S.T. degree, in general, can be completed with only course work, a Thesis or Project is optional. However, all of the programs are designed to meet academic requirements for students who are interested in seeking degrees beyond the master's or specialist's level.

The M.S.T. degree would lead to a Class "AA" Teaching Certificate for students who hold the Class "A" Teaching Certificate. Students who do not hold the Class "A" Teaching Certificate but wish to receive the M.S.T. degree with a Class "AA" Teaching Certificate must first complete the requirements for a Class "A" Teaching Certificate. A student can also receive the M.S.T. degree without seeking the Class "AA" Teaching Certificate. The coursework requirement for this option is the same with those holding the Class "A" Teaching Certificate.

### **Admissions Requirements**

Admission to a graduate program in mathematics requires at least 15 semester hours of undergraduate mathematics above the regular calculus sequence and the fulfillment of the admission requirement into graduate studies at Jackson State University, which is an earned Bachelor's degree with a cumulative GPA of at least 3.0 on the 4.0 scale in all undergraduate courses taken at a regional accredited degree granting institution. GRE is not required for admission into any of the Master's degree programs. However, students who are seeking to pursue the doctoral degree are encouraged to take the GRE exams, general and subject area, to increase their chances for competitive admission and financial assistance. These exams can be taken while students are taking courses or after they have completed all coursework.

### **Transfer of Credits**

A course for which transfer credit is sought must have been completed with a grade of "B" or better. Departmental approval is required.

### Time Limit

Students with adequate mathematics preparation at the undergraduate level will normally take two years to complete any of the Master's degree programs. However, all students must complete their programs within eight years of starting coursework at Jackson State University or elsewhere.

### Master of Science in Mathematics

The department offers programs leading to the M.S. degree in Pure or Applied Mathematics for students who plan on pursuing the doctoral degree or wish to seek careers in college or university teaching, government, industry and the business sector. The programs are designed for persons with adequate background in undergraduate mathematics beyond the calculus sequence.

To receive the M.S. degree a student must be in residence at Jackson State University for at least one semester, complete all degree requirements and must take and pass the Graduate English Competency Exam. If a student's GPA upon completion of all coursework is below 3.33, then such a student is required to take and score at least 70% on a comprehensive exit exam given by the Department.

### The requirements for the M.S. degree are:

1. Thirty six (36) hours are required with a thesis, i.e. ten (10) courses plus six (6) hours for a thesis.
2. A "B" average with no more than one "C" grade is required for graduation.

### Required Courses

Course	Title	Hours
Math 513	Linear Algebra I	3
Math 511	Abstract Algebra I	3
Math 531	Real Analysis I	3
Math 541	Complex Analysis I	3
Math 551	General Topology I	3
Math 571	Computational Methods	3
Math 599	Thesis	6
	<i>Total Hours</i>	<i>24</i>

The student will fulfill the remaining 12 hours from mathematics electives drawn from a list of pure or applied mathematics courses to match his/her area of concentration. Courses are offered each semester to match each enrolled student's interest. In consultation with an advisor and the department chairperson, a student must develop a study plan and select sufficient electives from departmental courses to complete degree requirements with a concentration in either pure or applied mathematics. See the list of departmental courses below. A typical study plan for a student with a concentration in applied mathematics who is seeking to pursue a doctoral degree would look like this:

### Coursework for Year One

Fall Semester

Math 511 – Abstract Algebra I

Math 513 – Linear Algebra I

Math 531 – Real Analysis I

Spring Semester

Math 577- Ordinary Differential Equations with Applications

Math 579- Partial Differential Equations with Applications

Math 541 – Complex Analysis I

Summer Sessions

Math 599-Thesis

### **Coursework for Year Two**

Fall Semester

Math 551 – General Topology I

Math 542 – Complex Analysis II

Math 535 – Real Analysis II

Math 580 – Partial Differential Equations II or Math 599 -Thesis

### **Extra Coursework and Thesis Defense**

Spring Semester

Math 537 – Introduction to Functional Analysis

Math 547- Integral Equations

Take the GRE both General and Subject area tests

Math 599-Thesis

May – Receive the M.S. degree from JSU

### **Master of Science in the Teaching of Mathematics**

The Department of Mathematics in cooperation with the College of Education, offers a program leading to the Master of Science in Teaching (M.S.T.) degree in mathematics. Based on the certification requirements of the State of Mississippi as stated in Bulletin 130, and upon the stated principles and guidelines of The National Council of Teachers of Mathematics, The Mathematics Association of America and The Mississippi Council of Teachers-Mathematics, the M.S.T. degree program is designed for persons with an adequate background in mathematics and who wish additional preparation for mathematics teaching or mathematics supervision.

#### **The requirements for the M.S.T. degree are:**

1. Thirty six (36) hours are required with a thesis, i.e. ten (10) courses plus six (6) hours for a thesis.
2. Thirty six (36) hours are required with a project, i.e. eleven (11) courses plus three (3) hours for a project.
3. Thirty six (36) hours are required if neither a thesis nor a project is done.
4. A “B” average with no more than one “C” grade is required for graduation, if a student has two “C” grades, then the student must earn an “A” grade in an additional course.

## Core Educational

<b>Courses</b>	<b>Title</b>	<b>Hours</b>
EDFL 511	History and Philosophy of Education (R)	3
EDFL 515	Methods of Educational Research (R)	3
EDFL 514	Elementary Statistics (R*)	3
EDFL 568	Curriculum Methods (R*)	3
	<i>Total Hours</i>	<i>15</i>

(R) – Required

(R\*) – Required for students without an undergraduate Statistics course and it is a prerequisite for EDFL 515.

## Required Mathematics Courses

<b>Course</b>	<b>Title</b>	<b>Hours</b>
Math 501	Topics in Geometry	3
Math 510	Topics and Issues	3
Math 513	Linear Algebra I	3
Math 511	Abstract Algebra I	3
Math 531	Real Analysis I	3
	<i>Total Hours</i>	<i>15</i>

Students who do not hold the Class “A” Teaching Certificate must also complete the following requirements for certification: Take the PRAXIS I Pre-professional Skills Test (PPST) and make the required cut scores on each of the subtests—reading, writing, and mathematics **and** successfully complete the PRAXIS II, mathematics Area Examination. Then complete the following pre-teaching required coursework:

<b>Course</b>	<b>Title</b>	<b>Hours</b>
EDFL 581	Principles of Measurement	3
EDFL 556	Special Topics: Classroom Management	3
EDFL 500	Secondary Internship(R*)	6
	<i>Total Hours</i>	<i>12</i>

(R\*) – Required and a student must be employed and have a GPA of at least 2.5 for all undergraduate coursework.

After successful completion of the pre-teaching required coursework, the PRAXIS I and PRAXIS II, the Mississippi Department of Education Office of Teacher Licensure will issue the applicant upon receipt of PRAXIS test scores, a transcript, a completed application, and institutional recommendation a license that is valid for 5 years.

## Requirements for Option Choices

- Option 1: Math 590 Thesis 6 (hrs)  
 Option 2: Math 584 Independent Study (Project) 3(hrs), plus 3hr course selected from List I, or  
 Option 3: Six hours selected from List I and three hours selected from List II or List III.  
 Total number of hours for students with Class "A" Teaching Certificate: 36  
 Total number of hours for students without the Class "A" Teaching Certificate: 48

A student may concentrate in Applied Mathematics by taking the four (4) elective courses from: Math 514, 537, 541, 542, 561, 562, 565, 566, 577, 579, 580, CSC 511, 512, 515, 518, 531 and 561 or Foundation of Mathematics by taking from: Math 503, 512, 535, 541, 542, CSC 511, 512, 515, 518, 531 and 561.

<p><b>List I</b>          Math 503 Foundations of Mathematics I          Math 504 Foundations of Mathematics II          Math 512 Abstract Algebra II          Math 513 Linear Algebra I          Math 514 Linear Algebra II          Math 532 Real Analysis II          Math 541 Complex Analysis I          Math 542 Complex Analysis II          Math 561 Probability and Statistics I          Math 562 Probability and Statistics II          Math 551 General Topology I          Math 552 General Topology II          Math 581 Number Theory I          Math 582 Number Theory I</p>	<p><b>List II</b>          Math 505 Mathematics for Secondary Teachers          Math 506 Concepts for Teachers I          Math 507 Concepts for Teachers II          Math 509 Mathematical Structures          Math 519 Topic in Mathematics Education I          Math 520 Topics in Mathematics Education II</p> <p><b>List III</b>          CSC 511 Computers and Programming          CSC 512 Introduction to Computer Systems and Organ.          CSC 515 Data Structures and File Management          CSC 518 Principles of Operating Systems          CSC 531 Computer Simulation Methods and Models</p>
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