

Clemson University Mathematical Sciences M.S. Degree Program

The assumptions and premises on which the Department of Mathematical Sciences bases its master's of science degree program are: 1) A major source of employment for mathematical scientists in the future will be non-academic agencies; 2) Most such employers will require more than a B.S. degree but less than a Ph.D. degree in the mathematical sciences; 3) Employers will prefer personnel who possess not only a concentration in a particular area of the mathematical sciences, but also diversified training in most of the other areas; 4) Graduates should have more than superficial training in applying mathematical techniques to solve problems in areas other than the mathematical sciences. Inherent in such training is the ability to communicate, both verbally and in writing, with persons from these application areas; 5) It is desirable to obtain such broad based training in the mathematical sciences prior to specializing for the Ph.D degree.

Course Requirements

The required courses are divided into the following groups: prerequisites, foundation, breadth, interest area, and project. The courses in each group are listed below with the appropriate Math Sciences course number where possible.

Prerequisites: (4 courses)

Linear Algebra
Differential Equations
Statistics
Computer Language

Foundation: (4 courses)

Advanced Calculus (453)
Probability (400)
Modern Algebra (412)
Discrete Computing (past language intro.)

Breadth: (6 courses)*

Scientific Computing (860)
Mathematical Programming (810)
Matrix Analysis (853)
Linear Analysis (821)
Data Analysis (805)
+ 1 additional course in OR or Statistics

Interest area: (6 courses)

to include a models course

Project:

Master's Project Course (892)

**listed courses are highly recommended but not required*

Narrative

An especially well-prepared student can complete the program in the minimum of 37 hours, although 40 hours will be more typical. Students in the non-thesis option are required to complete a one credit hour project course.

The prerequisite courses can be satisfied by courses taken at the undergraduate level. The foundation courses are satisfied by upper level undergraduate courses or graduate courses. Generally, an entering student is expected to have completed three of the four

foundation courses prior to entry into the program in order to complete the master's program in two years plus one summer session. Deficiencies will ordinarily be removed by taking the corresponding Math Sciences graduate course (653, 800, 612, and 863 respectively).

A breadth course is required from each of the major areas of study represented in the department — algebra, analysis, computation, operations research, and statistics. The specific breadth courses listed above are highly recommended but not required. *At least one foundation or breadth course from each area is to be completed during the first calendar year of the program.*

Interest-area courses are determined by each student and advisor. It is not necessary that all courses in the interest area be chosen from the same departmental area. This group of courses must include a *models course*. Each interest area of the department will specify at least one course in each academic year which has a significant modeling/applications orientation. Other courses, possibly from outside the department, can be approved by the director of graduate studies. The project course culminates with both a written and oral presentation in conjunction with the master's examination.

Typical Schedule

1st semester: 1 foundation course, 853, 810

2nd semester and summer: 805, 860, 821, 1 course in interest area

3rd and 4th semesters: 5 interest-area courses (including models), additional OR or statistics course, project course.