This program offers students an attractive option for those interested in pursuing advanced degrees in mathematical or quantitative finance and master’s degrees in business administration, as well as in securing employment in the banking and insurance industries. This multidisciplinary course of study concentrates on applied mathematics with a focus on financial models. In addition to a core curriculum of mathematics courses, students are required to complete specific courses in statistics, economics, and computer science. The capstone courses in the program, Math 1120 and 1121, follow the most recent syllabi approved by the Society of Actuaries and the Casualty Actuarial Society for the societies’ professional examinations in financial mathematics, financial economics, and life contingencies. The department organizes seminars, led by local actuaries, to prepare students for taking these professional society examinations as well as the examination in probability.

Students will be required to complete 63 credits, 46 of which will be in mathematics and statistics.

### Basic Calculus
- MATH 0240 Analytic Geometry and Calculus 3 or MATH 0245 Honors Analytic Geometry and Calculus 3

### Analysis
- One of the following
  - MATH 0413 Introduction to Theoretical Mathematics
  - MATH 0450 Introduction to Analysis

### Linear Algebra
- One of the following
  - MATH 1180 Linear Algebra
  - MATH 1185 Honors Linear Algebra

### Differential Equations
- MATH 1270 Ordinary Differential Equations 1 or MATH 1275 Honors Ordinary Differential Equations 1

### Actuarial Mathematics
- Both of the following
  - MATH 0470 or MATH 1120 Actuarial Mathematics 1
  - MATH 1121 Actuarial Mathematics 2

### Numerical Methods
- One of the following
  - MATH 1070 Numerical Mathematical Analysis
  - MATH 1080 Numerical Linear Algebra

### Applied Mathematics
- Two of the following
  - MATH 1100 Linear Programming
  - MATH 1110 Industrial Mathematics (writing course)
  - MATH 1122 Actuarial Mathematics 3
  - MATH 1123 Actuarial Mathematics 4
  - MATH 1280 Ordinary Differential Equations 2
  - MATH 1360 Modeling in Applied Math 1
  - MATH 1470 Partial Differential Equations 1
  - MATH 1530 Advanced Calculus 1
  - MATH 1540 Advance Calculus 2
  - MATH 1550 Vector Analysis

### Economics
- Both of the following
  - ECON 1100 Intermediate Microeconomic Theory
  - ECON 1110 Intermediate Macroeconomic Theory

### Computer Programming
- One of the following
  - CS 0004 Introduction to Computer Programming in BASIC
  - CS 0007 Introduction to Computer Programming in Java
  - CS 0008 Introduction to Computer Programming in Python
  - CS 0401 Programming in Java
  - STAT 1301 Statistical Packages
  - BUSMIS 1060 Introduction to Information Systems
  - ENGR 0012 Introduction to Engineering Computing

### Statistics
- Two of the following
  - STAT 1000 Applied Statistical Methods
  - STAT 1100 Statistics and Probability for Business Mgmt.
  - STAT 1151 Introduction to Probability or MATH 1510 Probability

- One of the following
  - ECON 1150 Econometrics
  - STAT 1221 Applied Regression

- One of the following
  - STAT 1321 Time Series
  - STAT 1731 Stochastic Processes
  - STAT 1741 Applied Probability

### Finance
- One of the following
  - BUSFIN 1311 Corporate Finance
  - ECON 1440 Economics of Corporation Finance

### Grade requirements: A minimum grade of C is necessary in all courses required for the major.
Satisfactory/No Credit option: No course that counts toward the major can be taken on an S/NC basis.

Declaring the major: Before declaring this major, students must complete MATH 0230 or MATH 0235 (Analytic Geometry and Calculus 2) or their equivalents, with a letter grade of C or better. Effective August 25, 2014, students must also complete MATH 0470 or MATH 1120 Actuarial Mathematics 1 with a letter grade of B- or better to declare this major.

Related area: The required courses include nine credits of statistics courses and nine to 12 credits of economics courses. Majors can fulfill the related area requirement by taking an additional statistics or economics course to achieve a total of 12 credits in one of these subjects.

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Checklist for the Actuarial Mathematics major

All of the following
_______ MATH 0220 (4 credits)
_______ MATH 0230 (4 credits)
_______ MATH 0240 (4 credits) or MATH 0245
_______ MATH 0470 or MATH 1120 (3 credits)
_______ MATH 1121 (3 credits)
_______ MATH 1270 (3 credits) or MATH 1275
_______ ECON 1100 (3 credits)
_______ ECON 1110 (3 credits)
_______ STAT 1000 (3 credits)
_______ STAT 1151 (3 credits)

One of the following
_______ MATH 0413 (4 credits)
_______ MATH 0450 (4 credits)

One of the following
_______ MATH 1180 (3 credits)
_______ MATH 1185 (3 credits)

One of the following
_______ MATH 1070 (3 credits)
_______ MATH 1080 (3 credits)

Two of the following
_______ MATH 1110 (3 credits, W-course)
_______ MATH 1122 (3 credits)
_______ MATH 1123 (3 credits)
_______ MATH 1280 (3 credits)
_______ MATH 1360 (3 credits)
_______ MATH 1470 (3 credits)
_______ MATH 1530 (3 credits)
_______ MATH 1540 (3 credits)
_______ MATH 1550 (3 credits)

One of the following
_______ CS 0004 (3 credits)
_______ CS 0007 (3 credits)
_______ CS 0008 (3 credits)
_______ CS 0401 (3 credits)
_______ STAT 1301 (3 credits)
_______ BUSMIS 1060 (3 credits)
_______ ENGR 0012 (3 credits)

Two of the following
_______ STAT 1000
_______ STAT 1100
_______ STAT 1151 or MATH 1510

One of the following
_______ ECON 1150 (3 credits)
_______ STAT 1221 (3 credits)

One of the following
_______ MATH 1180 (3 credits)
_______ MATH 1185 (3 credits)

One of the following
_______ MATH 1122 (3cr)
_______ MATH 1270 (3 cr)
General Education (9 cr)

General Education (9 cr)

Sample Four Year Program

Year 1
Fall
MATH 0220 (4 cr)
CS 0401 (3 cr)
STAT 1000 (4 cr)
General Education (9 cr)

Spring
MATH 0230 (4 cr)
MATH 0470 or 1120 (3 cr)
General Education (9 cr)

Year 2
Fall
MATH 0240 (4 cr)
MATH 0413 (4 cr)
STAT 1151 (3 cr)
General Education (3 cr)

Spring
MATH 1121 (3 cr)
MATH 1180 (3 cr)
STAT 1221 (3 cr)
General Education (6 cr)

Year 3 or 4
Fall
MATH 1122 (3cr)
MATH 1270 (3 cr)
General Education (9 cr)

Spring
MATH 1080 (3 cr)
MATH 1123 (3 cr)
BUSFIN 1311 (3 cr)
General Education (9 cr)

Year 4 or 3
Fall
ECON 1100 (3 cr)
STAT 1321 (3 cr)
General Education (9 cr)

Spring
ECON 1110 (3 cr)
General Education (12 cr)