University of Pittsburgh | Dietrich School

Actuarial Mathematics Major

www.Mathematics.Pitt.edu
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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 0470, MATH 1119 and MATH 1121, follow the most recent syllabi approved by the Society of Actuaries and the Casualty Actuarial Society for the societies' professional examinations in probability, financial mathematics, investment and financial management and life contingencies. The department organizes seminars to prepare students for taking these professional society examinations.

Requirements for the Actuarial Mathematics major

Students must complete 65 credits, 46 of which will be in mathematics and statistics.

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. Students must also complete **MATH 0470 Actuarial Mathematics 1** with a letter grade of B- or better to declare this major.

Prerequisite calculus courses
MATH 0220 Analytic Geometry and Calculus 1
MATH 0230 Analytic Geometry and Calculus 2

Basic Calculus; choose one of the following courses
MATH 0240 Analytic Geometry and Calculus 3 **or**
MATH 0245 Honors Analytic Geometry and Calculus 3

Analysis; choose one of the following courses
MATH 0413 Introduction to Theoretical Mathematics
MATH 0450 Introduction to Analysis

Professional Development
MATH 0500 Professional Development

Linear Algebra; choose one of the following courses
MATH 1180 Linear Algebra
MATH 1185 Honors Linear Algebra

Differential Equations; choose one of the following courses
MATH 1270 Ordinary Differential Equations 1
MATH 1275 Honors Ordinary Differential Equations 1

Actuarial Mathematics; all of the following courses
MATH 0470 Actuarial Mathematics 1
MATH 1121 Actuarial Mathematics 2
MATH 1119 Applied Probability for Actuarial Mathematics
MATH 1126 Predictive Analytics 1

Applied Mathematics; one of the following pairs of courses
MATH 1122 Actuarial Mathematics 3
MATH 1123 Actuarial Mathematics 4

MATH 1128 Actuarial Mathematics 5
MATH 1129 Actuarial Mathematics 6

Numerical Methods; one of the following courses
MATH 1070 Numerical Mathematical Analysis
MATH 1080 Numerical Linear Algebra
MATH 1127 Predictive Analytics 2

Economics; both of the following courses
ECON 1100 Intermediate Microeconomic Theory
ECON 1110 Intermediate Macroeconomic Theory

Computer Programming; choose one of the following courses
CS 0007 Introduction to Computer Programming in Java
CS 0008 Introduction to Computer Programming in Python
CS 0010 Introduction to Computing for Systems Engineers
CS 0011 Introduction to Computing for Scientists
CS 0012 Introduction to Computing for the Humanities
CS 0401 Programming in Java
STAT 1301 Statistical Packages
BUSBIS 1060 Introduction to Information Systems
ENGR 0012 Introduction to Engineering Computing

Statistics course
STAT 1152 Introduction to Mathematical Statistics

Finance
BUSERV 1920 Financial Accounting

Choose one of the following Finance courses
BUSFIN 1311 Corporate Finance
ECON 1440 Economics of Corporation Finance

Additional requirements
Statistics, Economics, and Finance
Requirements for this major include three credits of statistics and six to nine credits of economics and finance courses. Majors must complete a total of 12 credits in one of these subjects.

Grade requirements

A minimum grade of C is necessary in all courses required for the major.

Satisfactory/No Credit option

Only MATH 0500 may be taken on an S/NC basis. All other courses must be taken on a letter grade basis.

Advising

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Checklist for the Actuarial Mathematics major

Prerequisites; both of the following courses
_____ MATH 0220
_____ MATH 0230

Basic Calculus; choose one of the following courses
_____ MATH 0240
_____ MATH 0245

Analysis; choose one of the following courses
_____ MATH 0413 (4 credits)
_____ MATH 0450 (4 credits)

Analysis; choose one of the following courses
_____ MATH 0500 (1 credit)

Linear Algebra; choose one of the following courses
_____ MATH 1180 (3 credits)
_____ MATH 1185 (3 credits)

Differential Equations; choose one of the following courses
_____ MATH 1270
_____ MATH 1275

Actuarial Mathematics; all of the following courses
_____ MATH 0470
_____ MATH 1121
_____ MATH 1119
_____ MATH 1126

Applied Mathematics; choose one of the following pairs of courses
_____ MATH 1122
_____ MATH 1123

_____ MATH 1128
_____ MATH 1129

Numerical Methods; choose one of the following courses
_____ MATH 1070
_____ MATH 1080
_____ MATH 1127

Economics; both of the following courses
_____ ECON 1100
_____ ECON 1110

Computer Programming; one of the following courses
_____ CS 0007
_____ CS 0008
_____ CS 0010
_____ CS 0011
_____ CS 0012
_____ CS 0401
_____ STAT 1301
_____ BUSBIS 1060
_____ ENGR 0012

Statistics
_____ STAT 1152

Finance
_____ BUSERV 1920

One of the following Finance courses
_____ BUSFIN 1311
_____ ECON 1440

Sample Four Year Program

Year 1

Fall	Spring
MATH 0220 (4 cr)	MATH 0230 (4 cr)
CS 0401 (3 cr)	BUSERV 1920 (3 cr)
General Education (6 cr)	General Education (9 cr)

Year 2

Fall	Spring
MATH 0240 (4 cr)	MATH 0500 (1 cr)
MATH 0413 (4 cr)	MATH 1121 (3 cr)
MATH 1119 (3 cr)	MATH 1180 (3 cr)
MATH 0470 (3 cr)	STAT 1152 (3 cr)
General Education (3 cr)	General Education (6 cr)

Year 3 or 4

Fall	Spring
MATH 1122 (3 cr) or	MATH 1180 (3 cr)
MATH 1128 (3 cr)	MATH 1123 (3 cr) or
MATH 1270 (3 cr)	MATH 1129 (3 cr)
General Education (9 cr)	BUSFIN 1311 (3 cr)
	General Education (9 cr)

Year 4 or 3

Fall	Spring
ECON 1100 (3 cr)	ECON 1110 (3 cr)
MATH 1126 (3 cr)	MATH 1127 (3 cr)
General Education (12 cr)	General Education (9 cr)