



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

MATH 0240 Analytic Geometry and Calculus 3

Analysis; choose one of the following courses

MATH 0413 Introduction to Theoretical Mathematics
MATH 0450 Introduction to Analysis

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 1119 Applied Probability for Actuarial Mathematics
MATH 1121 Actuarial Mathematics 2
MATH 1122 Actuarial Mathematics 3
MATH 1123 Actuarial Mathematics 4
MATH 1124 Actuarial Mathematics 5
MATH 1126 Predictive Analytics 1

Numerical Methods; one of the following courses

MATH 1070 Numerical Mathematical Analysis
MATH 1080 Numerical Linear Algebra
MATH 1127 Predictive Analytics 2

Applied Mathematics; two of the following courses

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 Advanced Calculus 2
MATH 1550 Vector Analysis and Applications

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 0004 Introduction to Computer Programming -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
BUSBIS 1060 Introduction to Information Systems
ENGR 0012 Introduction to Engineering Computing

Statistics course

STAT 1152 Introduction to Mathematical Statistics

Analysis course; choose one of the following courses

ECON 1150 Applied Econometrics 1
STAT 1221 Applied Regression

Time Sequence course; choose one of the following courses

STAT 1321 Applied Time Series
STAT 1731 Stochastic Processes
STAT 1741 Applied Probability Theory

Finance; choose one of the following courses

BUSFIN 1311 Corporate Finance
ECON 1440 Economics of Corporation Finance

Writing course

Students must take at least one writing-intensive course in the major.

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

_____ MATH 0240

Analysis; one of the following courses

_____ MATH 0413 (4 credits)
_____ MATH 0450 (4 credits)

Linear Algebra; one of the following courses

_____ MATH 1180 (3 credits)
_____ MATH 1185 (3 credits)

Differential Equations; one of the following courses

_____ MATH 1270
_____ MATH 1275

Actuarial Mathematics; all of the following courses

_____ MATH 0470
_____ MATH 1119
_____ MATH 1121
_____ MATH 1122
_____ MATH 1123
_____ MATH 1124
_____ MATH 1126

Numerical Methods; one of the following courses

_____ MATH 1070
_____ MATH 1080
_____ MATH 1127

Applied Mathematics; choose two of the following courses

_____ MATH 1280
_____ MATH 1360
_____ MATH 1470
_____ MATH 1530
_____ MATH 1540
_____ MATH 1550

Economics; both of the following courses

_____ ECON 1100
_____ ECON 1110

Computer Programming; one of the following courses

_____ CS 0004
_____ CS 0007
_____ CS 0008
_____ CS 0401
_____ STAT 1301
_____ BUSBIS 1060
_____ ENGR 0012

Statistics

_____ STAT 1152

Analysis; one of the following courses

_____ ECON 1150
_____ STAT 1221

Time Sequence; one of the following courses

_____ STAT 1321
_____ STAT 1731
_____ STAT 1741

Finance

_____ BUSFIN 1311
_____ ECON 1440

Sample Four Year Program**Year 1**

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

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

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

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