UNIVERSITY OF PITTSBURGH

The DIETRICH School of Arts & Sciences

Undergraduate Degree Requirements

Actuarial Mathematics Major

www.mathematics.pitt.edu
Revised: 04/2016

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
_____ STAT 1321 (3 credits)
_____ STAT 1731 (3 credits)
_____ STAT 1741 (3 credits)

One of the following
_____ BUSFIN 1311 (3 credits)
_____ ECON 1440 (3 credits)

Sample Four Year Program

Year 1

Fall	**Spring**
MATH 0220 (4 cr)	MATH 0230 (4 cr)
CS 0401 (3 cr)	MATH 0470 or 1120 (3 cr)
STAT 1000 (4 cr)	General Education (9 cr)
General Education (3 cr)	

Year 2

Fall	**Spring**
MATH 0240 (4 cr)	MATH 1121 (3 cr)
MATH 0413 (4 cr)	MATH 1180 (3 cr)
STAT 1151 (3 cr)	STAT 1221 (3 cr)
General Education (3 cr)	General Education (6 cr)

Year 3 or 4

Fall	**Spring**
MATH 1122 (3cr)	MATH 1080 (3 cr)
MATH 1270 (3 cr)	MATH 1123 (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)
STAT 1321 (3 cr)	General Education (12 cr)
General Education (9 cr)	