

# ACTUARIAL MATHEMATICS AND STATISTICS, CERTIFICATE

Requirements for an undergraduate certificate may be completed at any campus location offering the specified courses for the certificate.

## Program Description

Designed to prepare students for a career as an actuary. Students completing the certificate are prepared to pass the P/1 (Probability), FM/2 (Financial Mathematics) examination and would obtain via credit for economic, corporate finance and applied statistical methods topics once a second actuarial examination is passed. It is divided with mathematical and statistical prerequisites, upper-level statistics, and finance/economics courses. Requires 31 credit hours and can be completed concurrently with a Penn State degree or via continuing education.

## What is Actuarial Mathematics and Statistics?

Actuarial science is an interdisciplinary study that combines mathematics, probability theory, statistics, finance, economics, and computer science. Actuaries study and evaluate risk, often in the insurance and finance sectors.

### You Might Like This Program If...

- You enjoy working with numbers and data, both scientific and financial.
- You like not only mathematics but also business and computing.
- You have strong communication skills.
- You are comfortable working on a cross-discipline team.

## Program Requirements

To earn an undergraduate certificate in Actuarial Mathematics and Statistics, a minimum of 31 credits is required.

Code	Title	Credits
<b>Prescribed Courses</b>		
ECON 102	Introductory Microeconomic Analysis and Policy	3
ECON 104	Introductory Macroeconomic Analysis and Policy	3
ECON 481	Business Forecasting Techniques	3
or ECON 485	Econometric Techniques	
FIN 301	Corporation Finance	3
FIN 427	Derivative Securities	3
MATH 230	Calculus and Vector Analysis	4
STAT 301		3
STAT 414	Introduction to Probability Theory	3
STAT 462	Applied Regression Analysis	3
Select one of the following:		3-4
SCM 200	Introduction to Statistics for Business	
STAT 200	Elementary Statistics	
STAT 401	Experimental Methods	

Prerequisites Required.

## Certificate Learning Objectives

- Demonstrate a strong understanding of core mathematical concepts, including calculus, probability, and statistics.
- Apply financial and economic principles to analyze risk and uncertainty.
- Identify and evaluate potential solutions to the actuarial problems
- Obtain credit for all Validation by Educational Experience (VEE) requirements of the Society of Actuaries and the Casualty Actuarial Society.

## Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

### Erie

**Michael Rutter, Ph.D.**

Associate Professor of Statistics

3-B Prischak

Erie, PA 16563

814-898-6272

mar36@psu.edu

## Career Paths

Actuaries are in high demand and the job outlook is expected to grow much faster than average in the next decade. Qualifications for an actuary are a bachelor's degree in mathematics, finance, or a related field and passing one or more actuary exams. Internships are plentiful and a key component to finding employment as an actuary. Penn State Behrend has a comprehensive support system to help you identify and achieve your goals for college and beyond. Meet with your academic adviser often and take advantage of the services offered by the Academic and Career Planning Center beginning in your first semester.

### Careers

Students completing the certificate are prepared to pass the P/1 (Probability) and FM/2 (Financial Mathematics) actuary examinations and would obtain Validation by Educational Experience (VEE) credit for economics, corporate finance, and applied statistical methods once a second actuarial examination is passed.

MORE INFORMATION ABOUT POTENTIAL CAREER OPTIONS FOR GRADUATES WITH A CERTIFICATE IN ACTUARIAL MATHEMATICS AND STATISTICS (<https://behrend.psu.edu/school-of-science/academic->

programs/certificate-programs/actuarial-mathematics-and-statistics-certificate)

## Opportunities for Graduate Studies

A certificate in the sciences, particularly when added to a major program outside of the sciences, demonstrates to graduate school admissions committees your commitment to interdisciplinary thinking.

MORE INFORMATION ABOUT OPPORTUNITIES FOR GRADUATE STUDIES (<https://behrend.psu.edu/school-of-science/academic-programs/certificate-programs/actuarial-mathematics-and-statistics-certificate>)

## Professional Resources

- Society of Actuaries (<https://www.soa.org>)
- Be An Actuary (<https://www.beanactuary.org/>)

## Contact

### Erie

SCHOOL OF SCIENCE

1 Prischak

4205 College Drive

Erie, PA 16563

814-898-6105

[behrend-science@psu.edu](mailto:behrend-science@psu.edu)

<https://behrend.psu.edu/school-of-science>