

# ACTUARIAL SCIENCES GRADUATE CERTIFICATE

Banner Code: SC-CERG-ACTS

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The Actuarial Sciences Graduate Certificate is designed to serve students and professionals in the Washington, D.C. area who are interested in pursuing careers as actuaries. The course content provides students with specific training related to the following exams:

- Society of Actuaries (SOA) Exam FM (formerly Course 2)
- SOA Exam MLC (formerly Course 3)
- SOA Exam C (formerly Course 4)
- VEE for applied statistics (formerly part of Course 4)
- Exam EA-1 and EA-2A (for those pursuing EA designation from the U.S. Treasury)

The courses also provide a solid foundation for the corresponding Casualty Actuary Society (CAS) exams. Preparation for the first exam is equivalent to meeting the prerequisites for the certificate courses in the area of probability and statistics.

The Actuarial Sciences Graduate Certificate may only be pursued on a part-time basis.

## Admissions & Policies

### Admissions

University-wide admissions policies can be found in the Graduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (<https://www2.gmu.edu/admissions-aid/apply-now>).

Interested applicants must submit three letters of recommendation. GRE scores are not required.

Students intending to pursue the Actuarial Sciences Graduate Certificate must have three semesters of calculus, a course in linear algebra (equivalent to MATH 203 Linear Algebra), a calculus-based course in probability (equivalent to MATH 351 Probability), and statistics (equivalent to MATH 352 Statistics). Completion of the SOA Exam P is also sufficient preparation for the certificate program.

### Policies

For policies governing all graduate programs, see AP.6 Graduate Policies.

## Requirements

### Certificate Requirements

Total credits: 18

Students should refer to the Admissions & Policies tab for specific policies related to this certificate.

#### Core Courses

MATH 551	Regression and Time Series	3
MATH 554	Financial Mathematics	3
MATH 555	Actuarial Modeling I	3
MATH 556	Actuarial Modeling II	3
Total Credits		12

#### Electives

Select 6 credits from the following:		6
MATH 557	Financial Derivatives	
MATH 653	Construction and Evaluation of Actuarial Models I	
MATH 654	Construction and Evaluation of Actuarial Models II	
MATH 655	Pension Valuation (recommended only for students who wish to pursue a career as a pension actuary)	
Any other elective approved by the graduate committee and chosen in consultation with advisor.		
Total Credits		6

### Preparation for the SOA, CAS, and EA Exams

The graduate certificate coursework provides preparation for SOA, CAS, and EA exams as follows:

- MATH 551 Regression and Time Series is the SOA VEE for Applied Statistics and is preparation for part of the CAS Exam 3
- MATH 554 Financial Mathematics covers most of the SOA Exam FM material as well as CAS Exam 2 and much of the EA-1 exam
- MATH 555 Actuarial Modeling I and MATH 556 Actuarial Modeling II cover all of the Exam MLC material and most of the CAS Exam 3L as well as the remainder of the EA-1 exam
- MATH 557 Financial Derivatives covers all of the SOA EXAM MFE material
- MATH 653 Construction and Evaluation of Actuarial Models I and MATH 654 Construction and Evaluation of Actuarial Models II covers all of the SOA Exam C material as well as CAS Exam 4
- MATH 655 Pension Valuation covers all of the EA-2A Exam material

### Counting Actuarial Courses for Other Mathematics Degrees

A student enrolled in the Actuarial Sciences Graduate Certificate and another graduate degree program in mathematics can count actuarial mathematics courses toward the master's or doctoral degree according to the following rules:

- None of the following actuarial mathematics courses can count toward the Mathematics, PhD:

MATH 551	Regression and Time Series	3
MATH 554	Financial Mathematics	3
MATH 555	Actuarial Modeling I	3
MATH 556	Actuarial Modeling II	3
MATH 557	Financial Derivatives	3
MATH 653	Construction and Evaluation of Actuarial Models I	3
MATH 654	Construction and Evaluation of Actuarial Models II	3
MATH 655	Pension Valuation	3

- None of the actuarial mathematics courses MATH 551 Regression and Time Series, MATH 554 Financial Mathematics, and MATH 655 Pension Valuation can count toward the Mathematics, MS.
- Up to two of the actuarial mathematics courses MATH 555 Actuarial Modeling I, MATH 556 Actuarial Modeling II, MATH 653 Construction and Evaluation of Actuarial Models I, and MATH 654 Construction and Evaluation of Actuarial Models II can count toward the Mathematics, MS provided that all other courses counted toward that degree are MATH courses. An exception can be made if the student wishes to count only one actuarial mathematics course from the list toward the Mathematics, MS. In this case, at most one other non-MATH course can be counted toward the degree with approval of the graduate coordinator. An additional exception is made if the student has completed the actuarial sciences certificate before being admitted to the MS degree program: in this case, up to four of these courses can count toward the MS degree.

### Counting Actuarial Courses toward the Statistical Science, MS Degree

A student enrolled in this certificate and in the Statistical Science, MS can count MATH 555 Actuarial Modeling I and MATH 556 Actuarial Modeling II as approved non-STAT elective courses and can count MATH 653 Construction and Evaluation of Actuarial Models I and MATH 654 Construction and Evaluation of Actuarial Models II as STAT electives when designing a curriculum for this degree. The full curriculum should be designed in consultation with the student's Statistics Department advisor.