SOFTWARE ENGINEERING GRADUATE CERTIFICATE

Banner Code: VS-CERG-SWE

Academic Advising
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This graduate certificate program provides knowledge, tools, and techniques to those who are working in or planning to work in software engineering but do not want to complete requirements for a master’s degree in the field. The certificate may be pursued concurrently with any of the graduate degree programs in the Volgenau School.

The graduate certificate may be pursued on a part-time or full-time basis.

Admissions & Policies

Admissions
Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or higher in the last 60 credits. In addition, applicants must complete a self-assessment form, which can be obtained from the Computer Science Department. This form provides summary information concerning background and preparation for the program.

Applicants must possess knowledge equivalent to the following undergraduate courses: structured programming in a modern programming language, data structures, discrete mathematics, and machine organization. The level of knowledge may also be achieved by taking the following foundation courses at Mason:

- **INFS 501** Discrete and Logical Structures for Information Systems 3
- **SWE 510** Object-Oriented Programming in Java 3
- **INFS 515** Computer Organization Course and Operating Systems 3
- **INFS 519** Program Design and Data Structures 3

In addition, it is desirable, but not necessary, for applicants to have at least one year of appropriate work experience in building or modifying software systems.

Applicants must submit a one- to two-page statement of educational and work experience in the computing field that includes a statement of career goals in software engineering. Students not enrolled in a graduate degree program at Mason should apply for the certificate program through the Office of Graduate Admission. Students already enrolled in a Mason graduate degree program should apply to the department for admission into the certificate program. Admission into the certificate program does not guarantee acceptance into any MS program.

Policies
Students must complete four courses with an average grade of B or better for a total of 12 credits of graduate study.

Requirements

Certificate Requirements
Total credits: 12

**Three Courses**
Select three courses from the following: 9

- **SWE 619** Object-Oriented Software Specification and Construction
- **SWE 621** Software Modeling and Architectural Design
- **SWE 622** Distributed Software Engineering
- **SWE 637** Software Testing

**Total Credits** 9

**Additional Course**
Select one course from the following: 1

- **CS 675** Distributed Systems 3
- **CS 706** Concurrent Software Systems
- **SWE 620** Software Requirements Analysis and Specification
- **SWE 622** Distributed Software Engineering
- **SWE 625** Software Project Management
- **SWE 626** Software Project Laboratory
- **SWE 631** Software Design Patterns
- **SWE 632** User Interface Design and Development
- **SWE 637** Software Testing
- **SYST 621** Systems Architecture Design
- **SWE 642** Software Engineering for the World Wide Web
- **SWE 645** Component-Based Software Development
- **SWE 681** Secure Software Design and Programming
- **SWE 699** Special Topics in Software Engineering
- **SWE 721** Reusable Software Architectures
- **SWE 727** Quality of Service for Software Architectures
- **SWE 760** Software Analysis and Design of Real-Time Systems
- **SWE 763** Software Engineering Experimentation
- **SWE 795** Advanced Topics in Software Engineering
- **SWE 798** Research Project

**Total Credits** 3

1 subject to satisfying the prerequisites

Notes
Students enrolled in the MS in Information Systems Program must substitute SWE 620 Software Requirements Analysis and Specification for INFS 622 Information Systems Analysis and Design to obtain this certificate. Credit is not given for taking both INFS 622 Information Systems Analysis and Design and SWE 620 Software Requirements Analysis and Specification.
Systems Analysis and Design and SWE 620 Software Requirements Analysis and Specification; only 3 credits will be awarded.

Students enrolled in the MS in Computer Science Program may obtain a certificate in software engineering by taking any four SWE courses. If CS 706 Concurrent Software Systems is included, it is possible to complete the MS in Computer Science and the certificate in software engineering in 30 hours.