

SOFTWARE ENGINEERING GRADUATE CERTIFICATE

Banner Code: VS-CERG-SWE

Academic Advising

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 Website: cs.gmu.edu/prospective-students/ms-programs/graduate-certificates/

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 of Engineering (<http://catalog.gmu.edu/archives/2020-2021/colleges-schools/engineering/>).

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

Admissions & Policies

Admissions

General Concentration

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:

Code	Title	Credits
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.

Web-Based Software Engineering Concentration

Applicants must hold a baccalaureate degree from an accredited institution and have earned a GPA of 3.00 or better in the last 60 credits. Applicants must complete a self-assessment form, which can be obtained from the department or the department web site. The form provides information concerning background and preparation for the program.

Applicants must possess knowledge equivalent to that provided by the following courses:

Code	Title	Credits
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

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 to the certificate program does not guarantee admission to any MS program.

Policies

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

Requirements

Certificate Requirements

Total credits: 12

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

Requirements

Students must complete all requirements within a concentration.

Concentration in General (GEN)

Code	Title	Credits
Select three courses from the following:		9
SWE 619	Object-Oriented Software Specification and Construction	
SWE 621	Software Design and Architecture	
SWE 632	User Interface Design and Development	
SWE 637	Software Testing	
Select one course from the following: ¹		3
CS 675	Distributed Systems	
CS 706	Concurrent Software Systems	
SWE 620	Software Requirements Analysis and Specification	
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
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 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
SYST 621	Systems Architecture Design
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Total Credits	12

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; 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.

Concentration in Web-Based Software Engineering (WBSE)

Code	Title	Credits
Required Courses:		
SWE 632	User Interface Design and Development	3
SWE 642	Software Engineering for the World Wide Web	3
Select two from the following:		6
CS 550	Database Systems	
ISA 656	Network Security	
SWE 619	Object-Oriented Software Specification and Construction	
SWE 621	Software Design and Architecture	
SWE 637	Software Testing	
SWE 645	Component-Based Software Development	
SWE 681	Secure Software Design and Programming	
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Total Credits		12