Software Engineering (M.S.)

Master of Science

http://cs.gmu.edu/prospective-students/ms-programs/ms-in-software-engineering/
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Program Overview
Mason Engineering offers a Master of Science in Software Engineering through its Department of Computer Science. The MS in Software Engineering Program provides specialized knowledge and experience in developing and modifying large, complex software systems. It emphasizes the technical and management aspects of the software engineering process. Software engineering is an established discipline based on requirements analysis, design, construction, testing, maintenance and project management issues of software engineering. Software engineers are concerned with the theoretical and practical aspects of technology, cost, and social impact of software systems that are effective and efficient. Having a pragmatic approach to problem solving is the hallmark of a software engineer. The content of the MS in Software Engineering Program is revised on a regular basis to stay abreast of the latest developments in information technology. Recent additions to the program include software construction with the object-oriented Java programming language, requirements analysis with use cases and the Unified Modeling Language (UML), object-oriented software design with the UML, user interface design, web-based and component-based software development, software project management using agile approaches and the Capability Maturity Model, software architecture, reusable software architectures and product lines, design patterns, real-time software design, system testing and testing of object-oriented components, and secure software design and programming.

Program Requirements
Completion of the MS program requires a minimum of 30 approved graduate credits. The course work is divided into three categories: a breadth requirement of four core courses, a depth requirement of three emphasis courses, and three elective courses.

Core courses include:
- Object-Oriented Software Specification and Construction
- Software Testing
- Software Modeling and Architectural Design
- Distributed Software Engineering

Currently defined emphasis areas are:
- Software Design
- Secure Software Engineering
- Software Management
- Web Applications Design and Development

Electives provide students the opportunity to gain in-depth knowledge in a selected area, gain breadth of knowledge, or, by careful selection, complete some of the core course requirements for the PhD program. A list of approved qualified electives, including most graduate courses in the Volgenau school, is available from the department office.
Refer to our website for more information on program course offerings and details on program requirements.

Related Programs:
• Computer Science, MS
• Information Technology, PhD

Graduate Certificate degree programs may also be offered. Please visit our website for details.

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Admission Requirements
In addition to meeting the general admission requirements of the university, applicants to the MS in Software Engineering Program must hold a four-year baccalaureate degree in an appropriate discipline from an accredited institution and have earned a grade point average of 3.00 or better in the last 60 credits of undergraduate study.

Foundation Courses: All applicants must have four pre-identified courses in their background to proceed with the program core courses.
• Discrete and Logical Structures for Information Systems
• Computer Organization Course and Operating Systems
• Program Design and Data Structures
• Object Oriented Programming in Java

Applicants who do not have equivalent courses in their undergraduate course work may take the foundation courses prior to beginning graduate course work or take an examination to receive a waiver. Acceptance into the program is based on overall assessment of the applicant's potential ability to complete the program of study in a satisfactory manner. Well-qualified students with minor deficiencies may be admitted to the program in provisional status, with specified course work to be completed within a specified time.

Required application materials include:
• Online application and non-refundable fee
• Transcripts showing all post-secondary study
• Professional and Educational Goals Statement
• Two letters of recommendation from professors or senior officials at place of employment
• Self-Evaluation
• GRE scores (for applicants who have not earned at least a Bachelor's degree from a U.S. institution)
• Resume

Additional application materials, including English proficiency examination scores (e.g., TOEFL, IELTS), are required if the applicant holds a degree from an international institution and/or requires an F-1 or J-1 visa. Visit http://admissions.gmu.edu/grad/ for details.

Special admission programs are available for Volgenau School students and alumni.

Visit our website for details: http://cs.gmu.edu/prospective-students/ms-programs/ms-in-software-engineering/
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