The Application procedure is:

- Obtain a complete application packet from Graduate Admissions or our website or apply online through Graduate Admissions website.
- Have two official transcripts from each institution you have attended mailed directly to Graduate Admissions.
- Complete the software engineering applicant information form.
- Distribute the provided recommendation forms and envelopes to two individuals who will serve as recommenders.
- Request that official GRE scores be sent directly to us.
- Complete a professional autobiographical statement.

The Application Deadlines:

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<th>Quarter</th>
<th>Domestic</th>
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<td>Fall</td>
<td>July 20</td>
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<td>Winter</td>
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<td>Spring</td>
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<td>December 1</td>
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Applications

Applications for Software Engineering are considered for every quarter. All application materials should be sent to Graduate Admissions by the stated deadline for that quarter. Late applicants can only be considered as non-matriculating students and on a space available basis.

Degree Requirements

Minimum requirements for the degree are 47 graduate credits. These include 29 hours of required courses, nine hours of elective courses, and nine hours of software engineering project. Required courses in computing (SEGR 5010 and 503) may be waived for students passing a waiver exam and replaced by additional electives. A maximum of 12 credits taken in non-matriculated status may be applied to this program. All degree requirements must be completed within six years after course work has begun.

Required Core Courses

29 Credits Including:

- SEGR 5010 - Object-Oriented Concepts
- SEGR 5030 - Data Structures and Algorithms
- SEGR 5110 - Software Requirements
- SEGR 5220 - Software Architecture and Design I
- SEGR 5220 - Human-Computer Interaction
- SEGR 5120 - Software Construction
- SEGR 5250 - Data Modeling
- SEGR 5120 - Software Project Planning
- SEGR 5240 - Software Architecture and Design II
- SEGR 5800 - Ethics and Professional Issues in Computing

Elective Courses

9 credits from the following:

- SEGR 5150 - Software Economics
- SEGR 5210 - Software Testing
- SEGR 5160 - Software Project Management
- SEGR 5180 - Software Quality Assurance
- SEGR 5410 - Applied Formal Methods
- SEGR 5220 - Distributed Computing
- SEGR 5530 - Embedded Systems
- SEGR 5610 - Artificial Intelligence
- SEGR 5710 - Software Security

Required Project Courses

- SEGR 5850 Software Engineering Project 1 – 3 credits
- SEGR 5860 Software Engineering Project 2 – 3 credits
- SEGR 5870 Software Engineering Project 3 – 3 credits

Note: Satisfactory performance in the three-quarter software engineering project sequence (SEGR 5850, 586, and 587) is required of all MSE students. Students are grouped into teams that complete a significant software project. Students who are not full-time are expected to take only the project sequence in their final year. Students are encouraged not to begin the software engineering project sequence unless SEGR 5870 will be their final course in the program. All participants in the project sequence will be required to sign a Seattle University intellectual property (IP) and computer project room agreement, and may be required to sign an IP agreement with the project sponsor.

Typical Program Schedules

For Additional Information

- MSE Program: Department of Computer Science/Software Engineering, Seattle University, 901 12th Ave, P.O. Box 222000, EGRN 526, Seattle, WA 98122-1090. 206-296-5428, Fax 206-296-5518. Email: mse@seattleu.edu. Web: www.seattleu.edu/scieng/mse

- Graduate Admissions: Seattle University, 901 12th Ave, P.O. Box 222000, Seattle, WA 98122. 206-296-2000, Fax 206-296-5656. Email: grad-admissions@seattleu.edu. Web: www.seattleu.edu

"Seattle University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, marital status, sexual or political orientation, or status as a Vietnam-era or special disabled veteran in the administration of any of its educational or admission policies, scholarship and loan programs, athletics, and other school-administered policies and programs, or in its employment policies and practices. All University policies, practices and procedures are administered in a manner consistent with Seattle University's Catholic and Jesuit identity and character. Inquiries about the non-discrimination policy may be directed to the University's Title IX Officer and Title IX administrator, University Services Building 107, (206) 296-5870."
Description:

**SEGR 5110 Software Requirements**

Definition of types of requirements; elicitation procedures; analysis tech- niques; documentation methods; validation methods and security issues.

**SEGR 5230 Software Architecture & Design I**


**SEGR 5220 Human-Computer Interaction**

Relationship of user interface design to human-computer interaction. Interface quality and methods of evaluation; dimensions of interface variability; dialogue genre, tools and techniques; user-centered design, task analysis and implementation.

**SEGR 5260 Software Construction**

High-quality life cycle practices; key programming decisions; design practices; classes; definitive programming; using variables and types; collaborative work; developer testing; re-factorizing, code-tuning and system considerations; layout, style and documentation. Prerequisites: SEGR 5420 & 5250.

**SEGR 5240 Data Modeling**

Data design and modeling; transactional and analytical systems; the use of relational and object databases; database security issues; database performance issues; and data access. Prerequisites: SEGR 5030.

**SEGR 5120 Software Project Planning**

Initiation and scope definition; software project planning processes; de- liverables; effort, schedule and cost estimation; resource allocation; risk management; quality management; and management; project planning and estimating tools.

**SEGR 5150 Software Economics**

Business decision-making process; time value of money; computing proposals for profit decisions; non-profit decisions; estimation; risk and uncertainty; project management, outsourcing costs and return. Prerequisites: SEGR 5110 and SEGR 5120.

**SEGR 5240 Software Architecture & Design II**

Fundamentals of detailed design and architectural refinement using model consistency, traceability, architectural patterns, and model driven development. Integration with software engineering techniques. Architecture and design recovery. Prerequisites: SEGR 5220.

**SEGR 5210 Software Testing**

Test levels (unit, integration, system); test objectives testing tech- niques, measures and process (planning, test case generation and defect tracking). Students may not get credit for both SEGR 5210 and CPSC 5210 and 5210. Prerequisites: SEGR 5030.

**SEGR 5160 Software Project Management**

Management of software projects (implementation of plans, supplier and subcontractor contract management, implementation of measurement process, monitoring and controlling process, and reporting); review and evaluation (determining project success or failure, reviewing and evaluating performance); project closure; software engineering measure- ment; project process improvement. Prerequisite: SEGR 5120.

**SEGR 5180 Software Quality Assurance**

Software engineering process (implementation and change, definition and measurement of software quality (fundamentals, process and practical consid- erations); Capability Maturity Model (CMM) for software. Evaluate current projects. Prerequisites: SEGR 5110 and SEGR 5120.

**SEGR 5410 Applied Formal Methods**

Formal techniques for building reliable systems. Use of abstractions for con- stantly and precisely defining system behavior. Formal logic and proof tech- niques for verifying the correctness of programs. Hierarchies of formalisms, state charts, Petri Nets, communicating processes. Operational and definitional specification languages. Prerequisites: SEGR 5300.

**SEGR 5220 Distributed Computing**

Design and analysis of distributed systems, distributed objects, middleware, quality of service in distributed systems and emerging topics in distributed computing. Students may not get credit for both SEGR 5220 and CPSC 5220. Prerequisites: SEGR 5030.

**SEGR 5350 Embedded Systems**

Methods, techniques, and tools for design, analysis, and development of embedded systems; real-time concepts, performance, distribution, dynamism, and mobility concerns. Prerequisite: SEGR 5300.

**SEGR 5610 Artificial Intelligence**

Survey of artificial intelligence as it applies to software engineering. Acquisition and representation of knowledge. Search strategies. Selected applications, such as natural language processing, image recognition, planning, neural nets, and expert systems. Students may not get credit for both SEGR 5610 and CPSC 5610. Prerequisites: CPSC 5030.

**SEGR 5800 Ethics & Professional Issues in Computing**

Examination of the role and impact of information and communication technology in society, with emphasis on ethical, professional, and public policy issues. Prerequisite: Graduating standing in the MSE program.

**SEGR 5710 Software Security**

Introduction to software dependencies, software security vs. systems security, security concerns in various phases of software development life cycle, risk management framework and threat modeling, security analysis (worms, viruses, physical leaks, root kits, Trojan, etc.), common exploits, legal and ethical implications and techniques for software security. Students may not get credit for both SEGR 5710 and CPSC 5710.

**SEGR 5910 Special Topics**

May include topics as artificial intelligence, data privacy, embedded systems, ethics of computing, programming languages, real-time systems, software metrics, software engineering project. A maximum of three credits of 5910 courses may be taken toward the MSE degree without department approval. Prerequisite: instructor permission.

**SEGR 5950 Internship**

By permission only. Supervised practical training combined with academic studies in which students apply and develop their software engineering know- ledge and skills working for a business or non-profit institution. Students are required to complete academic studies under the direction of a faculty advisor. A maximum of three credits of 5950 courses may be taken toward the MSE degree without department approval.

**SEGR 5960 Independent Study**

Independent research and in-depth study of topics under the supervision of a faculty advisor. A maximum of three credits of 5960 courses may be taken toward the MSE degree without department approval. Prerequisite: instructor permission.

**Required Project Courses**

SEGR 8580, 8560, 8570 Software Engineering Project 1.2 & 3

A three-quarter sequence where each student is grouped into teams, and each team completes a year-long software project. The sequence begins in the fall and ends spring quarter. Prerequisites: completion of core courses and departmental approval. All participants in the Project sequence will be required to sign an agreement with the University (UIP) and computer project room agreement, and may be required to sign an IP agreement with the Project Sponsor.

**Why Graduate Study in Software Engineering?**

The software industry requires highly skilled people to develop and maintain the computer programs that support our society; programs that do everything from managing financial systems to controlling high-performance aircraft.

Graduate study in software engineering offers the software profession- nal the mix of managerial and technical education necessary to understand and apply advanced software engineering principles vital to industry.

Students enter the master of software engineering (MSE) program with a variety of interests and experiences, but they share a common goal: to improve their mastery of software development and maintenance. By studying a comprehensive range of top- ics, MSE students acquire the practical and technical skills to confidently address difficult software issues. Our graduates enjoy the increased financial rewards, heightened responsibilities, and enhanced job challenges that accompany an MSE degree.

**Our Students**

The typical MSE student is a software professional with at least two years of software development or maintenance experience. Many MSE students have additional undergraduate computer science education; other students come to the program from diverse back- grounds, including various engineering disciplines, mathematics, the physical and biological sciences, and business. This combina- tion of experience and diversity promotes a cross-pollination of issues and ideas throughout the program.

**Our Tradition**

Seattle University has long been a leader in software engineering education. It established its pioneering MSE program in 1979, and awarded the world’s first MSE degree in 1982. Our graduate faculty have extensive industrial experience as well as strong academic credentials. Our curriculum has been shaped by close contacts with local industry, ensuring that courses are relevant to the workplace and that projects are tailored to the professional needs of our students.

**Admission Requirements**

• A four-year Bachelor's degree in computer science or a related discipline, earned at a regionally accredited school. Completed Application for Graduate Admission and non- refundable application fee (waived for Seattle University Alumni)
• Minimum GPA of 3.00 and 90 credits or coursework from any post-baccalaureate educational institutions attended in the last 90 quarter/60 semester credits of your bachelor's degree.
• Current resume reflecting at least two years of professional ex- perience in software development or maintenance.
• Completed Software Engineering Applicant Information form with the Seattle University software engineering project.
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• Personal statement that clearly articulates your interest in the computing experience of its students by providing course work on a variety of software engineering and computer science topics, with an emphasis on team work and disciplined approach to prob- lem solving. We offer a balanced core curriculum of technical and managerial courses, and a choice of electives to address areas of personal interest. Principles and techniques learned throughout the program are integrated into a year-long software project as the capstone experience.

**Our Program**

The MSE program at Seattle University is designed for working professionals. All classes are typically offered in the evenings. The courses are aligned with the Guide to the Software Engineering Body of Knowledge (SWEBOK), a project of the IEEE Computer Society Professionals Committee. The program builds on the computing experience of its students by providing course work on a variety of software engineering and computer science topics, with an emphasis on team work and disciplined approach to problem solving. We offer a balanced core curriculum of technical and managerial courses, and a choice of electives to address areas of personal interest. Principles and techniques learned throughout the program are integrated into a year-long software project as the capstone experience.