Software Engineering, M.S.S.E.

Degrees Offered

- Masters of Science, Software Engineering (M.S.S.E.)

Nature of the Program

The Lane Department of Computer Science and Electrical Engineering offers the professionally oriented and applied Masters of Science in Software Engineering (M.S.S.E.) degree program. The M.S.S.E. provides graduate educational opportunities to working professionals with any accredited degree as well as recent graduates of an accredited BS CS, BS SE, or closely related bachelor's degree. The M.S.S.E. degree is a unique fully-online program offered through Coursera that provides graduate level software engineering expertise to individuals who are currently working in software engineering or the information technology industry. The program aspires to serve full-time software engineering professionals seeking an applied master's program and wanting the flexibility an online graduate degree program offers. Under the coursework-only option, students will complete their degree requirements with five core courses and five advanced courses that deepen their understanding of aspects of software engineering relevant to their careers.

Program Educational Objectives

The objective of the program is to produce graduates who have the knowledge, skills, and attitudes that will ensure success in professional positions in business, industry, research, or governmental service. After completing five core courses, students will achieve proficiency in:

- Software Project Management.
- Software Analysis and Design.
- Object-Oriented Design of Software.
- Software Verification and Validation.
- Software Evolution.

Master Admissions

Students seeking admission to the Masters of Science in Software Engineering (MSSE) program must satisfy the following requirements to be considered. All students must fulfill all items in General Admission Requirements as well as meet either Category A or Category B Admission Requirements for entry into the program.

GENERAL ADMISSION REQUIREMENTS

- Submit a completed application using Major Code 3081 for Software Engineering through the WVU Online Graduate Admissions (https://online.wvu.edu/admissions/graduate-application/) page.
- Submit a personal statement. Your personal statement should be 750 to 1,000 words and double-spaced. This is an opportunity to tell the admissions committee more about your reasons to earn an MSSE Degree and should not repeat your resume.
- Letters of reference can be received after an application is submitted. Letters must come directly from the recommender. Letters submitted by the applicant are not accepted. Both Academic and Professional References mentioned below should discuss your education and professional experience with the Software Development Life Cycle (SDLC), as applicable. Once you enter their information into the online application, your recommenders will be notified to submit a letter of reference or complete a brief online information form.
- International applicants must meet the WVU requirement of English language proficiency (https://graduateadmissions.wvu.edu/how-to-apply/apply-for-2023-2024/international-graduate-applicant/).

CATEGORY A ADMISSION REQUIREMENTS

- Submit official transcripts showing degree completion of a bachelor's degree in Computer Science, Computer Engineering, Software Engineering, or a closely related field from an accredited University, with a minimum cumulative grade point average of 3.0 (on a 4-point scale) or better.
- Submit the GRE General Test results. No GRE is required, if graduated from an ABET accredited universities with GPA above 3.5/4.0.
- Submit a resume that reflects your education and experience.
- Submit 2 required letters of academic or professional reference.

CATEGORY B ADMISSION REQUIREMENTS

- Submit official transcripts showing degree completion of a bachelor's degree in any field of study from an accredited University with a minimum cumulative grade point average of 3.0 (on a 4-point scale) or better.
- No GRE is required.
- Submit a resume that reflects education and 1 year or more of full-time work experience with focus on the Software Development Life Cycle (SDLC) within any industry.
- Submit 2 required letters, both being professional reference.
It is strongly recommended that students without a bachelor’s degree in Computer Science, or a closely related field complete SENG 505: Programming Applications with JAVA.

Note: the credit earned for the SENG 505 course does not apply toward the required hours for the MSSE Degree.

**Admission Requirements 2024-2025**

The Admission Requirements above will be the same for the 2024-2025 Academic Year.

Major Code: 3081

**Curriculum in Master of Science in Software Engineering**

A candidate for the M.S. degree in software engineering must comply with the rules and regulations as outlined in the WVU Graduate Catalog and the specific requirements of the Statler College and the Lane Department of Computer Science and Electrical Engineering.

**Program Requirements**

All M.S. degree candidates are required to follow a planned program of study. The student’s faculty advisor, in conjunction with the student’s Advising and Examining Committee (AEC) will be responsible for determining the plan of study appropriate to the student’s needs. The underlying principle of the planned program is to provide the student with the necessary support to complete their degree and prepare them for their career.

**Curriculum Requirements**

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<thead>
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<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<td>A minimum cumulative GPA of 3.0 is required</td>
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**Course Requirements**

**Plan of Study**

**Core Courses**

- SENG 510 Software Project Management
- SENG 520 Software Analysis and Design
- SENG 530 Software Verification and Validation
- SENG 540 Software Evolution
- SENG 550 Object Oriented Design

**Advanced Courses**

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Select from the following:

- CPE 538 Intro Computer Security Management
- SENG 564 Software Engineering of Mobile Applications
- SENG 565 Database Design and Implementation
- SENG 581 Quality Software Process Management
- SENG 582 Enterprise Architecture Framework
- SENG 585 Software Engineering Economics
- SENG 660 Engineering Secure Software
- SENG 695 Independent Study (Experiential Learning)

**Total Hours** 30

SENG 505 is offered as a Preparatory Course and is recommended for those with little to no formal education in computer science or software Engineering.

**Suggested Plan of Study**

The plan below illustrates the Coursework Option. It is important for students to take courses in the order specified as much as possible; all prerequisites and concurrent requirements must be observed. A typical M.S.S.E degree program that completes degree requirements in two years is as follows.

**First Year**

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<tr>
<th>Fall</th>
<th>Hours</th>
<th>Spring</th>
<th>Hours</th>
<th>Summer</th>
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<tr>
<td>SENG 520</td>
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<td>SENG 510</td>
<td>3</td>
<td>SENG 540</td>
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<tr>
<td>SENG 550</td>
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<td>SENG 530</td>
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Second Year

<table>
<thead>
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<tr>
<td>Advanced Course</td>
<td>3</td>
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Total credit hours: 30

**Major Learning Outcomes**

**SOFTWARE ENGINEERING**

It is our goal that in the first five years after graduation our students will:

1. Apply software engineering practices to solve complex problems by analyzing and assessing needs and implementing improvements.
2. Achieve success and proficiency in the Software Engineering profession by making significant contributions to technology advancements.
4. Advance as a team member or lead engaged in the Software Engineering discipline.