Master of Science – Software Engineering
2025-2026

REQUIREMENTS	SOFTWARE ENGINEERING TRACKS

REQUIREMENTS

Admission Requirements

1. **Grade point average of 3.0** (B) from all undergraduate coursework.
2. **Resume** detailing work experiences and accomplishments.
3. **Personal statement** of career goals and background experiences, including an explanation of how this program will help achieve educational and professional objectives.
4. **Recommendations:** Two professional or academic recommendations received online, addressing the candidate's potential for graduate study completion. You will provide the emails of two references, and they will be sent a link to complete their online recommendation.
5. Candidates must possess knowledge of a **programming** language equivalent to 2 or 3 undergraduate courses.
6. Candidates must possess knowledge of **applied statistics**.

Degree Requirements

The Software Engineering (M.S.) program requires a minimum of 33 credits.

Core Courses (12 credits)

Required:
- SE 511   Introduction to Software Engineering
- SE 512   Requirements Specification

Choose 2 of the following courses:
- SE 513   Software Testing
- SE 522   Software Architecture and Design
- SE 530   Software Construction and Delivery
- SE 537   Software Quality Assurance

Electives Requirements (3-6 credits)

Any 500 or 600 level CIS course can be used as an elective. Students will require 3 additional elective credits if the project option of the capstone is chosen.

Capstone Requirements (3 or 6 credits)

Each candidate must complete either the project course or the thesis sequence. Please contact the graduate program director one semester prior to starting any of these.

Project course:
- CIS 693   Master's Project

Thesis sequence:
- CIS 690   Thesis Research Preparation
- CIS 695   Master's Thesis

Software Engineering Track Courses (12 credits)

All candidates are required to complete one of the listed tracks (see next column)

SOFTWARE ENGINEERING TRACKS

Artificial Intelligence and Software Development
Choose 2 or 3 of the following:
- AI 501   Introduction to Artificial Intelligence
- CIS 671   Information Visualization
- CIS 678   Machine Learning

Choose 1 or 2 of the following:
- AI 502   Introduction to Generative AI
- AI 511   AI Ethics and Bias
- AI 531   Natural Language Processing
- AI 541   Edge AI
- AI 545   Machine Learning Operations
- AI 551   Reinforcement Learning
- SE 536   Data Analytics in Software Engineering
- SE 537   Software Quality Assurance

Data Driven Software Development
Choose 4 of the following:
- CIS 635   Data Mining
- CIS 654   Computer Networking
- CIS 655   Cloud Applications Development
- CIS 660   Data Engineering
- CIS 671   Information Visualization
- CIS 678   Machine Learning
- SE 536   Data Analytics in Software Engineering

Full-Stack Development
Choose 4 of the following:
- CIS 641   Systems Analysis and Design
- CIS 655   Cloud Applications Development
- CIS 657   Mobile Applications Development
- CIS 658   Web Architectures
- SE 531   Software Virtualization
- SE 537   Software Quality Assurance

IoT and Cloud Computing
Required:
- CIS 654   Computer Networking
- CIS 655   Cloud Applications Development

Choose 2 of the following:
- AI 541   Edge AI
- SE 531   Software Visualization
- SE 536   Data Analytics in Software Engineering

Software Security and Assurance
Choose 2 or 3 of the following:
- CIS 615   Information Security Principles
- CIS 616   Data Privacy and Security
- CIS 619   Data Analytics for Cybersecurity

Choose 1 or 2 of the following:
- CIS 518   Secure Software Engineering
- CYB 520   Trustworthy AI
- SE 537   Software Quality Assurance