Master of Science in Software Engineering

Catalog Year: 2025 Total Degree Credit hours: 30

For students who are interested in this program but do not have the required prerequisite knowledge, completion of the Graduate Certificate in Software Engineering Foundations is required prior to admission to the MSSWE program.

Software Engineering Foundation Courses (12 Credit Hours)

	Prerequisites		
CS 5000 Foundations of Programming	None	3	
SWE 5003 Software Engineering and Computational Thinking	None	3	
CS 5040 Data Structures & Algorithms	CS 5000	3	
SWE 5063 Foundations of Database and Web Development Technologies	CS 5000	3	

Core Software Engineering Courses (15 Credit Hours)

Students should choose between SWE 6623 and SWE 6733 based on their admission evaluation. If you are unsure which course you should take, please speak with the program director.

	Prerequisites		
SWE 6623 Software Engineering *or* **SWE 6733** Emerging Software Engineering Processes	**Pre:** SWE 5003 **Concurrent:** CS 5040 SWE 6623	3	
SWE 6613 Requirements Engineering	CS 5003	3	
SWE 6633 Software Project Planning & Management	CS 5003	3	
SWE 6653 Software Architecture	CS 5040 & SWE 5003 & SWE 5063	3	
SWE 6673 Software Testing and Verification	SWE 6623	3	

Program Options – Select One (15 Credit Hours)

Capstone Option

	Prerequisites		
SWE 7903 Software Engineering Capstone	**Pre**: SWE 6613 & SWE 6633 **Concurrent**: SWE 6673	3	

12 Credit Hours of 6000 or 7000-level Software Engineering, Computer Science, Information Technology, or System Engineering courses (at least 2 courses must be from SWE or the approved list of CS courses and at most 2 from either CS, IT, or SYE)

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Thesis Option

	Prerequisites		
SWE 7803 Master's Thesis (to be taken over 2 semesters)	3.0+ GPA, 9 MSSWE program credit hours, all transition courses, & permission of program director	6	

Choose 9 Credit Hours of 6000 or 7000-Level SWE, CS, IT, or SYE courses (at least 2 courses must be from SWE or from the approved list of CS/CSE courses)

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		3	

Elective Software Engineering Courses

	Prerequisites		
SWE 6733 Emerging Software Engineering Processes	SWE 6623	3	
SWE 6753 Game Design & Development	SWE 6623*	3	
SWE 6763 Software Evaluation and Measurement	SWE 6623	3	
SWE 6783 User Interaction Engineering	SWE 6623*	3	
SWE 6813 Web Service Engineering	SWE 6623	3	
SWE 6823 Embedded Systems	SWE 6623	3	
SWE 6853 Design Patterns	SWE 6623	3	
SWE 6863 Software Engineering Ethics and Legal Issues	CS 5003*	3	
SWE 6883 Formal Methods in Software Engineering	SWE 6623 & SWE 6613	3	
SWE 6903 Special Topics	Varies	1-3	
SWE 6803 Independent Study	Varies	1-3	

At least two electives must be in Software Engineering or the following list of CS/CSE courses:			
CS 7125 Cloud Computing	CS 5020 or Equivalent	3	
CS 7385 Human Factors	Permission	3	
CS 7455 Mobile App Development	Coursework in Computer Programming, or CS 5000	3	
CS 7535 Software and OS Security	CS 6025 or BSCS	3	
CS 7827 Real Time Systems	Coursework in Operating Systems or CS 6025	3	
CSE 7983 Graduate Internship	9 CSE grad credits & good standing	3	

Approved Systems Engineering Electives			
SYE 6005 Introduction to Systems Engineering	+	3	
SYE 6025 Engineering Economic Analysis	+	3	
SYE 6035 Modeling and Simulation	+	3	

+ Students interested in taking Systems Engineering, Information Technology or Computer Science electives should contact the graduate coordinators for those programs to register for them.

Depending on whether students take the capstone or the thesis option, they are required to complete 4 or 3 elective courses, respectively. In addition to the software electives listed here, students can take any 6000 and 7000-level courses in Computer Science (CS), Information Technology (IT), or approved courses in Systems Engineering (SYE), which are listed below. **Students who took SWE 6733 as a required course cannot use it also as an elective.**

* May be taken before or at the same time