

Catalog Year: 2019

Total Degree Credit hours: 36

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 (15 Credit Hours)

### Prerequisites

<b>CS 5000</b> Foundations of Programming	None	3	
<b>SWE 5123</b> Advanced Programming and Data Structures	CS 5000 or CSE 1322 & CSE 1322L	3	
<b>CS 5020</b> Computer Architectures and Operating Systems	None	3	
<b>CS 5060</b> Databases: Design and Applications	None	3	
<b>CS 5070</b> Mathematical Structures for Computer Science	Undergraduate Calculus course	3	

## Core Software Engineering Courses (18 Credit Hours)

Students who enter the program from the foundation certificate and students who did not take an introductory course in software engineering in their undergraduate degree program should take SWE 6623. SWE 6673 is highly recommended for all other students.

### Prerequisites

<b>SWE 6623</b> Software Engineering OR <b>SWE 6733</b> Emerging Software Engineering Processes	CS 5000 SWE 6623	3	
<b>SWE 6613</b> Requirements Engineering	SWE 6623*	3	
<b>SWE 6633</b> Software Project Planning & Management	SWE 6623*	3	
<b>SWE 6653</b> Software Architecture	SWE 6623*	3	
<b>SWE 6673</b> Software Testing and Verification	SWE 6623 and SWE 6613	3	
<b>SWE 6743</b> Object-Oriented Analysis & Design	SWE 6623	3	

\* This prerequisite may be taken concurrently with the requirement

## Program Options – Select One (18 Credit Hours)

### Capstone Option

### Prerequisites

<b>SWE 7903</b> Software Engineering Capstone	SWE 6613, SWE 6623, SWE 6673 and SWE 6633	3	
---	---	---	--

15 Credit hours of 6000-level Software Engineering, Computer Science, Information Technology, or Systems Engineering courses. At least 3 must be from Software Engineering and at most 2 from either CS, IT or SE.

_____	Varies	3	
_____	Varies	3	
_____	Varies	3	
_____	Varies	3	
_____	Varies	3	

### Thesis Option

### Prerequisites

<b>SWE 7803</b> Master's Thesis	*	6	
---------------------------------	---	---	--

12 Credit hours of 6000-level Software Engineering, Computer Science, Information Technology, or Systems Engineering courses. At least 2 must be from SWE or from the approved list of CS courses.

_____	Varies	3	
_____	Varies	3	
_____	Varies	3	
_____	Varies	3	

\*Prerequisite: GPA 3.0 or above; completed all foundation courses and 12 graduate course credits in your major program by the end of the semester in which you are seeking thesis topic approval. Thesis topic Approval Form, to which the one page thesis topic description is attached, must be all signed by the thesis Advisor, thesis Committee Members, the Department Chair and the Dean.

## Elective Software Engineering Courses

	Prerequisites		
<b>SWE 6733</b> Emerging Software Engineering Processes	SWE 6623	3	
<b>SWE 6753</b> Game Design & Development	SWE 6623	3	
<b>SWE 6763</b> Software Evaluation and Measurement	SWE 6623	3	
<b>SWE 6783</b> User Interaction Engineering	SWE 6623	3	
<b>SWE 6813</b> Web Service Engineering	SWE 6623	3	
<b>SWE 6823</b> Embedded Systems	SWE 6623	3	
<b>SWE 6853</b> Design Patterns	SWE 6623	3	
<b>SWE 6863</b> Software Engineering Ethics and Legal Issues	None	3	
<b>SWE 6883</b> Formal Methods in Software Engineering	SWE 6623 & SWE 6613	3	
<b>SWE 6903</b> Special Topics	Varies	3	
<b>SWE 6803</b> Independent Study	Department permission	1-3	
<b>CS 7125</b> Cloud Computing	CS 5020	3	
<b>CS 7455</b> Mobile App Development	CS 5000	3	
<b>CS 7535</b> Computing Security: Implementation & Application	CS 5040 & CS 5070	3	
<b>CS 7827</b> Real Time Systems	CS 5020	3	

Approved Systems Engineering Electives			
<b>SYE 6005</b> Introduction to Systems Engineering	*	3	
<b>SYE 6025</b> Economic Decision Analysis	*	3	
<b>SYE 6035</b> 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 5 or 4 elective courses, respectively. In addition to the software electives listed here, **students can take any 6000-level courses in Computer Science and Information Technology**, or any 7000 level courses in Computer Science or approved courses in Systems Engineering (which are listed here). **At least two electives must be in Software Engineering or the CS courses listed here.**

Students who took SWE 6733 as core cannot use it also as an elective (you may only use the credit once towards the 36 required hours).