



## The Master of Software Engineering Preparatory, Core, and Elective Courses

The Master of Software Engineering degree will be awarded upon successful completion of the 36-credit curriculum below, the SARI Requirement, and added preparatory classes, if required. The courses are not listed in sequential order. All module course work is subject to change as new courses are developed or renumbered.

**Note: The Capstone Courses are only offered during Fall Semesters and are to be taken at or near the end of all coursework.**

**The courses listed below are for students who started the Software Engineering Program in SUMMER 2019 or EARLIER.**

15-Credit Core Curriculum				
Course #	Course Titles	Semester	Grade	
SWENG 497	Software Documentation			
SWENG 837	Software System Design ( <i>Previously SWENG 537</i> )			
SWENG 581	Software Testing			
SWENG 861	Software Construction			
SYSEN 505	Technical Project Management			
18-Credit Elective Curriculum				
Course #	Course Titles	Semester	Grade	
Required 3-Credit Capstone Course (to be taken near end of the program)				
*Capstone Courses are only offered in fall semesters. Choose ONE of the following:				
SWENG 894 or SWENG 594A	Advanced Software Engineering Studio ( <i>Previously SWENG 500</i> ) Masters Research Paper			
Preparatory Courses (for those notified that prep courses are required for admission)				
	Course #	Course Titles	Semester	Grade
<i>One or both may be assigned</i>	SWENG 400	Introduction to Software Engineering Studio		
	CMPS 473	Operating Systems Design & Construction		
Required SARI Program (Scholarship and Research Integrity)				
	SARI (Scholarship and Research Integrity) Program	Semester Completed		

**Course Descriptions/Prerequisites** - Do not check course descriptions from the registration web page. Please check course descriptions at: <https://greatvalley.psu.edu/academics/masters-degrees/software-engineering>

**Questions & Advising** - Students should contact their assigned faculty advisors with any questions or for advice on course selection. Students should email questions and requests for approved course substitutions to [EngHelp@psu.edu](mailto:EngHelp@psu.edu).

All course work toward the master's degree program in Software Engineering must be completed within eight years of admission to the program. Students must maintain a minimum grade point average of 3.0 (B) throughout the program. Students are required to have at least 5 courses at the 500-level.

**Master of Software Engineering ~ Elective Courses**  
*Students select six elective courses from the advising sheet*

Course #	Course Title
CSE 543	Computer Security
DAAN 825	DAAN 825 Large-Scale Database and Warehouse ( <i>Prerequisite: INSC 521</i> )
DAAN 862	Analytics Programming in Python ( <i>Prerequisite: STAT 500</i> )
DAAN 871	Data Visualization for Analytics
DAAN 881	Data-Driven Decision Making ( <i>Prerequisite: STAT 500</i> )
DAAN 570	Deep Learning ( <i>Prerequisite: STAT 500</i> ) ( <i>Formerly DAAN 897</i> )
DAAN 897	Enterprise Analytics Strategies
EA 871	Enterprise Architecture Fundamentals I
IE 575	Foundations of Predictive Analytics ( <i>Prerequisite: STAT 500</i> )
INFSY 860	Data Communications, Systems, and Networks ( <i>Previously INFSY 560</i> )
INFSY 863	Network Security ( <i>Previously INFSY 563</i> )
INSC 521	Database Design Concepts
INSC 525	Applied Data Mining
INSC 526	Business Process Management and Integration
INSC 561	Web Security and Privacy
INSC 846	Network & Predictive Analytics for Socio-Technical Systems
INSC 897	Ethical Hacking
IST 454	Computer and Cyber Forensics
IST 516	Web & Internet Information Retrieval
STAT 500	Applied Statistics
STS 589	Ethics and Values in Science and Technology
SWENG 497	Special Topics: Agile Processes
SWENG 497	Special Topics: Domain Specific Languages
SWENG 497	Special Topics: Software Integration
SWENG 497	Special Topics: Tools and Processes for Software Engineers
SWENG 510	Secure Software Engineering
SWENG 541	Advanced Database Design ( <i>Prerequisite: INSC 521 or Division Approval</i> )
SWENG 545	Data Mining
SWENG 568	Enterprise Integration
SWENG 569	Service-Oriented Architecture
SWENG 582	Real-Time Software Design and Analysis
SWENG 584	Genetic Algorithms
SWENG 585	Pattern-Oriented Design
SWENG 586	Requirements Engineering
SWENG 587	Software Systems Architecture
SWENG 588	Program Understanding
SWENG 597	Special Topics: Formal Methods
SWENG 826	Applied Human-Computer Interaction
SWENG 888	Mobile Computing and Applications
SYSEN 507	Systems Thinking
SYSEN 536	Decision and Risk Analysis in Engineering
SYSEN 550/850	Creativity and Problem Solving I ( <i>SYSEN 550 is now SYSEN 850</i> )
SYSEN 555	Invention and Creative Design ( <i>Taking SYSEN 550/850 prior to SYSEN 555 is recommended but not required currently</i> )