



## Master of Software Engineering (SWENG) Prescribed and Elective Courses

The Master of Software Engineering degree will be awarded upon successful completion of the 36-credit curriculum below, completion of [SARI](#). The courses are not listed in sequential order. **The Capstone Course, SWENG 894, is only offered during fall semesters. All core requirements must be completed before taking the Capstone Course.** All course work toward the Master of Software Engineering degree must be completed within eight years of admission to the program.

If you have any questions throughout your studies, please email [EngHelp@psu.edu](mailto:EngHelp@psu.edu).

18-Credit Core Curriculum			
Course #	Course Titles	Semester	Grade
SWENG 881	Software Testing ( <i>Previously SWENG 581</i> )		
SWENG 886	Requirements Engineering ( <i>Previously SWENG 586</i> )		
SWENG 887	Software Systems Architecture ( <i>Previously SWENG 587</i> )		
SWENG 837	Software System Design ( <i>Previously SWENG 537</i> )		
SWENG 861	Software Construction		
SWENG/SYSEN 805	Technical Project Management ( <i>Previously SYSEN 505</i> )		
12-Credit Elective Curriculum			
Course #	Course Titles	Semester	Grade
6-Credit Required Capstone (to be taken after all core requirements are completed.) *The Capstone Courses is only offered in Fall Semesters.			
SWENG 894	Advanced Software Engineering		
SARI Requirement Scholarship and Research Integrity			
<a href="#">SARI</a>	Scholarship and Research Integrity Program		

**NOTE:** Students must maintain a minimum grade point average of 3.0 (B) throughout the program. A 3.0 cumulative GPA is required to graduate.

**Questions & Advising:** Students should contact their assigned faculty advisors with any questions or for advice on course selection.



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Elective Course descriptions can be found at this [link](#).

Electives Courses (Choose four courses from the following)	
Course #	Course Title
A-I 500	Quantitative Methods
A-I 570	Deep Learning ( <b>Prerequisite: A-I 500</b> ) ( <i>Previously DAAN 570</i> )
A-I 574	Natural Language Processing ( <b>Prerequisites: A-I 500 and A-I/DAAN 570</b> )
A-I 572	Reinforcement Learning ( <i>Previously DAAN 572</i> )
A-I 801	Foundations of Artificial Intelligence ( <b>Prerequisite: A-I 500/equivalent</b> )
A-I 879	Machine Vision
DAAN 545	Data Mining ( <i>INSC 521 is NOT a prerequisite.</i> ) ( <i>Previously SWENG 545</i> )
DAAN 825	Large-Scale Database and Warehouse
DAAN 862	Analytics Programming in Python ( <b>Prerequisite: A-I 500</b> )
DAAN 871	Data Visualization for Analytics
DAAN 881	Data-Driven Decision Making ( <b>Prerequisite: A-I 500</b> )
IE 575	Foundations of Predictive Analytics ( <b>Prerequisite: A-I 500</b> )
INSC 521	Database Design Concepts
INSC 526	Business Process Management and Integration
INSC 561	Web Security and Privacy
INSC 846	Network & Predictive Analytics for Socio-Technical Systems
SWENG 888	Mobile Computing and Applications
SYSEN 507	Systems Thinking
SYSEN 536	Decision and Risk Analysis in Engineering
SYSEN 850	Creativity and Problem Solving I ( <i>Offered online only</i> )
SYSEN 555	Invention and Creative Design ( <b>SYSEN 850 recommended prior to SYSEN 555</b> )

Graduate Certificate Program
Program students can earn several graduate certificates while working towards their degree and add valuable credentials to their résumé. Students who successfully complete graduate certificates will also be awarded a digital badge for each.
<a href="#">Project Quality Management (MSEPQM)</a> - SWENG 886, SWENG 881, & SWENG/SYSEN 805
<a href="#">Software Architecture and Design (MSESAD)</a> -SWENG 887, SWENG 837, & SWENG 861
<a href="#">AI Engineering (MSEAIIE)</a> -DAAN 862, A-I 801, A-I 570, A-I 574
<a href="#">Data Analytics and Engineering (MSEDAE)</a> -DAAN 862, IE 575, DAAN 825, DAAN 545