



MS Software Engineering Program

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SFWE

Undergraduate Projected Enrollments

Projected Enrollments	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
On Campus / Distance	37	75	120	200	300	350
Online	3	30	60	110	175	175
Total Enrollment	40	105	180	310	475	525

	Nov '22	Feb '23
Majors	66	98
Minors	19	22
On Campus	66	91
Online	14	21
Yuma	5	8

Nov '22
Total: 85

Feb '23
Total: 120

SFWE Graduate Programs

➤ **GOAL: LAUNCH MS / PHD IN SOFTWARE ENGINEERING FALL 2023**

- Proposal completed
- Going thru numerous internal university committee reviews
- Targeting to get to Arizona Board of Regents (ABOR) in mid 2023
- Campuses to include Main, AZ Online,
 - In the future distance campuses (Yuma and Chandler)
- Over the next 5 years, will add:
 - 5 additional Tenure Track Faculty (including PhD Faculty)
 - 2 additional Professor of Practice
 - 1 Graduate Advisor
 - Other support staff

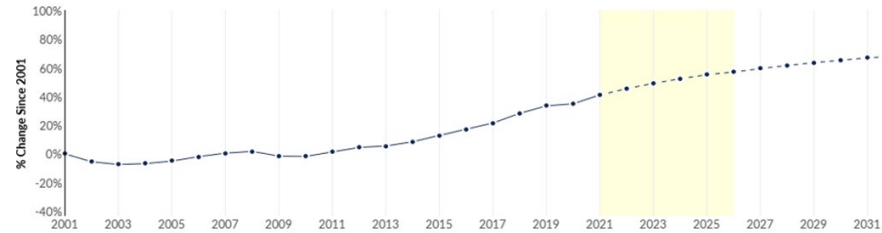
Total SFWE Faculty (including BS) in 5 Years
13 TT
4 POPs On Campus
4 POPs Online
3 Adjuncts

Projected Graduate Level Enrollments - SFWE

Degree	Year 1 (2023 / 2024)	Year 2 (2024 / 2025)	Year 3 (2025 / 2026)	Year 4 (2026 / 2027)	Year 5 (2027 / 2028)
MS	20	50	100	150	200

Regional Market Analysis for Advanced SW Engr Degreed Professionals

Regional Trends



Region	2021 Jobs	2026 Jobs	Change	% Change
• Region	3,074,978	3,421,626	346,648	11.3%

Additional Faculty Resources Required

Projected Additional Resource Acquisition Plan (by Year) (On Campus + Online)							
Resource Type	2023 - 2024	2024 - 2025	2025 - 2026	2026 - 2027	2027 - 2028	Total New Instructors Acquired Over 5 Years	<i>For Reference Only - Total SFWE faculty (including the BS program faculty)</i>
Tenured Track Faculty	1	1	1	0	0	3	13
PoP (On Campus)	1	1	0	0	0	2	4
Professor of Practice (Online)	0	0	0	0	0	0	4
Adjunct (On Campus)	0	0	0	0	0	0	1
Adjunct (Online)	0	0	0	0	0	0	2

MS SFWE

Required *Core* Courses (12):

- SFWE 507 (3) - Foundations of Software Engineering (NEW)

Complete 3 courses of additional Core coursework (*select 3 from the following list of courses*):

- SFWE 502 (3) - Software DevSecOps (co-convened with SFWE 402)
- SFWE 503 (3) - Software Project Management (co-convened with SFWE 403)
- SFWE 504 (3) - Software Requirements Analysis and Test (NEW)
- SFWE 505 (3) - Software Architecture and Design (NEW)
- SFWE 506 (3) – Distributed Computing (NEW)

Students that have a BS in Software Engineering and have demonstrated a given Core course's competencies *must* substitute the course with any of the SFWE 5xx level courses listed in the **Technical Computing Electives** below.

Complete one of the following options:

Thesis Option:

- Complete 12 units from the **Technical Computing Electives** listed below or in a closely related computing field (must be approved by graduate studies committee).
- Complete 6 units of thesis (SFWE 910)

Non-Thesis Option:

Complete 18 units from the **Technical Computing Electives** list or in a closely related computing field (must be approved by graduate studies committee).

MS Curriculum Summary

Technical Computing Electives

- SFWE 501 (3) - SW Assurance
- SFWE 508 (3) –Data Mining (NEW)
- SFWE 509 (3) – Cloud Computing Principles and Practices (NEW)
- SFWE 510 (3) – Cloud Native Software Engineering (NEW)
- SFWE 511 (3) – Software for Industrial Control Systems (NEW)
- SFWE 512 (3) –Robotics (NEW)
- SFWE 513 (3) – Software Engineering Research Methods (NEW)
- CSE 501 (3) – Operating System Design
- ECE 503 (3) - Probability and Random Processes for Engineering Applications
- ECE 509 (3) –Cybersecurity Concept, Theory, Practice
- ECE 513 (3) –Web Development and the IoT
- ECE 523 (3) –Engineering Applications of Machine Learning and Data Analytics
- ECE 562 (3) –Computer Architecture and Design
- ECE 576A (3) - Engineering of Computer Based Systems
- ECE 576B (3) - Embedded System Design and Optimization
- ECE 579 (3) –Principles of Artificial Intelligence
- SIE 533 (3) –Fundamentals of Data Science for Engineers
- SIE 558 (3) –Model Based Systems Engineering
- SIE 577 (3) – Introduction to Biomedical Informatics

*Other courses may be added at the discretion of the faculty advisor and GSC, or as additional new SFWE courses not listed in section III. **New Courses Needed** are developed.*

Planned New Course Development

- SFWE 504 – Software Requirements Analysis and Test
- SFWE 505 – Software Architecture and Design
- SFWE 506 – Distributed Computing**
- SFWE 507 – Foundations of Software Engineering**
- SFWE 508 – Data Mining**
- SFWE 509 – Cloud Computing Principles and Practices**
- SFWE 510 – Cloud Native Software Engineering**
- SFWE 511 – Software for Industrial Control Systems**
- SFWE 512 – Robotics**
- SFWE 513 – Software Engineering Research Methods**

* GRADUATE LEVEL EXTENSIONS OF THE CURRENT 300-LEVEL COURSE

** CAN BE CO-CONVENED WITH 400 LEVEL COURSES

New Course Development Timeline

Course Number / Name	Planned Development Timeframe	First Semester Offered
SFWE 507 - Foundations of Software Engineering	Fall 2023	Spring 2024
SFWE 504 - Software Requirements Analysis and Test	Fall 2023	Spring 2024
SFWE 505 - Software Architecture and Design	Spring 2024	Fall 2024
SFWE 506 - Distributed Computing	Fall 2024	Spring 2025
SFWE 508 - Data Mining	Fall 2024	Spring 2025
SFWE 509 - Cloud Computing Principles and Practices	Fall 2023	Spring 2024
SFWE 510 - Cloud Native Software Engineering	Spring 2024	Fall 2024
SFWE 511 - Software for Industrial Control Systems	Spring 2024	Fall 2024
SFWE 512 - Robotics	Spring 2025	Fall 2025
SFWE 513 – Research Methods	Spring 2024	Fall 2024
SFWE 910 - Thesis	Spring 2024	Fall 2024