SOFTWARE ENGINEERING MAJOR (B.SC.) (63 CREDITS)

Offered by: Computer Science (Faculty of Science)
Degree: Bachelor of Science
Program credit weight: 63

Program Description

This program provides a broad introduction to the principles of computer science and covers in depth the design and development of software systems.

Students may complete this program with a maximum of 63 credits or a minimum of 60 credits if they are exempt from taking COMP 202 Foundations of Programming..

Degree Requirements — B.Sc.

This program is offered as part of a Bachelor of Science (B.Sc.) degree.

To graduate, students must satisfy both their program requirements and their degree requirements.

- The program requirements (i.e., the specific courses that make up this program) are listed under the Course Tab (above).
- The degree requirements—including the mandatory Foundation program, appropriate degree structure, and any additional components—are outlined on the Degree Requirements page.

Students are responsible for ensuring that this program fits within the overall structure of their degree and that all degree requirements are met. Consult the Degree Planning Guide on the SOUSA website for additional guidance.

Note: For information about Fall 2025 and Winter 2026 course offerings, please check back on May 8, 2025. Until then, the "Terms offered" field will appear blank for most courses while the class schedule is being finalized.

Required Courses (36-39 credits)

Expand allContract all

Course	Title	Credits
COMP 202	Foundations of Programming.[1]	3
COMP 206	Introduction to Software Systems.	3
COMP 250	Introduction to Computer Science.	3
COMP 251	Algorithms and Data Structures.	3
COMP 273	Introduction to Computer Systems.	3
COMP 302	Programming Languages and Paradigms.	3
COMP 303	Software Design.	3
COMP 310	Operating Systems.	3
COMP 361D1	Software Engineering Project.	3
COMP 361D2	Software Engineering Project.	3
ECSE 429	Software Validation.	3
MATH 223	Linear Algebra.	3
MATH 240	Discrete Structures.	3

[1] Students who have sufficient knowledge in a programming language do not need to take COMP 202 Foundations of Programming..

Complementary Courses (24 credits)

9 credits selected from Groups A and B, with at least 3 credits selected from each:

15 credits selected from Groups C and D, with at least 9 credits selected from Group C, and at least 3 credits selected from Group D.

Group A

Expand allContract all

Course	Title	Credits
MATH 222	Calculus 3.	3
MATH 323	Probability.	3
MATH 324	Statistics.	3

Group B

Expand allContract all

Course	Title	Credits
COMP 330	Theory of Computation.	3
COMP 360	Algorithm Design.	3

Group C: Software Engineering Specialization

Expand allContract all

Course	Title	Credits
COMP 409	Concurrent Programming.[1]	3
COMP 523	Language-based Security.	3
COMP 525	Formal Verification.	3
COMP 529	Software Architecture.	4
COMP 533	Model-Driven Software Development.	3
COMP 555	Information Privacy.	4
ECSE 326	Software Requirements Engineering.	3
ECSE 420	Parallel Computing.[1]	3
ECSE 424	Human-Computer Interaction.	3
ECSE 437	Software Delivery.	3
ECSE 539	Advanced Software Language Engineering.	4

[1] Students may select either COMP 409 Concurrent Programming. or ECSE 420 Parallel Computing., but not both.

Group D: Applications

Expand allContract all

Course	Title	Credits
COMP 350	Numerical Computing.	3
COMP 417	Introduction Robotics and Intelligent Systems.	3

COMP 421	Database Systems.	3
COMP 424	Artificial Intelligence.	3
COMP 512	Distributed Systems.	4
COMP 520	Compiler Design.	4
COMP 521	Modern Computer Games.	4
COMP 535	Computer Networks 1.	4
COMP 551	Applied Machine Learning.	4
COMP 557	Fundamentals of Computer Graphics.	4
COMP 558	Fundamentals of Computer Vision.	4
COMP 585	Intelligent Software Systems .	4