Computer Science BS

The B.S. in Computer Science combines the depth and breadth of traditional computer science studies with practical exposure to a wide variety of tools and technologies. This program is designed for those interested in software and computer systems. It provides students a solid foundation in computing and mathematics, and facilitates specializations offered through electives and certificates such as Artificial Intelligence, Cybersecurity, Data Science, Mobile Apps and Computing, and Internet and Web. In addition, students develop practical skills for working in groups and technical reading and writing. Students completing this degree have also gained professional and ethical perspectives and are well prepared for a challenging career or further graduate studies in Computer Science. The entire program can be completed in the evening, and most courses can also be completed online.

General Education Requirements

All department majors must satisfy the university and appropriate school or college general education requirements.

Satisfactory/Unsatisfactory Restrictions

Courses required for a major program or a certificate cannot be taken on a satisfactory/unsatisfactory basis.

Computer Science Courses

Courses required for a major program or a certificate must be completed with a grade of C- or better. At least four courses numbered 3000 or above must be taken in residence for a major program. Students must have a minimum of 2.0 grade point average in the CMP SCI courses.

All prerequisite courses must be passed with a grade of C- or better unless explicitly stated otherwise.

Students who are ready to begin their program with CMP SCI 2250, Programming and Data Structures, but lack proper credit or transfer for the prerequisite CMP SCI 1250, Introduction to Computing, will be granted credit for CMP SCI 1250 once they complete CMP SCI 2250 with a grade of C- or better. Interested students must reach out to their faculty advisor.

Courses that are prerequisites for higher-level courses may not be taken for credit if the higher-level course has been satisfactorily completed.

Degree Requirements in Computer Science

Candidates for the B. S. Computer Science degree must complete the following work:

1) Computer Science Core		
CMP SCI 1000	Computer Science Experiences	1
CMP SCI 1250	Introduction to Computing	3
CMP SCI 2250	Programming and Data Structures	3
CMP SCI 2261	Object-Oriented Programming	3
CMP SCI 2700	Computer Organization and Architecture	3
CMP SCI 2751	File Systems, Operations, and Tools	3
CMP SCI 3010	Web Full Stack Development	3
CMP SCI 3130	Design and Analysis of Algorithms	3
CMP SCI 3260	C/C++ for Advanced Programming	3
CMP SCI 4250	Programming Languages	3
CMP SCI 4280	Program Translation Project	3
CMP SCI 4500	Introduction to the Software Profession	3
CMP SCI 4760	Operating Systems	3
2) Computer Science Electives		
Select four more elective computer science courses, numbered above 3000.		12
3) Mathematics and Statistics		
MATH 1320	Introduction to Probability and Statistics	3
MATH 1800	Analytic Geometry and Calculus I	5
MATH 1900	Analytic Geometry and Calculus II	5
MATH 2450	Elementary Linear Algebra	3
MATH 3000	Discrete Structures	3
4) Additional Skills		
ENGL 3130	Technical Writing	3
Total Hours		**71**

There are no related area requirements for majors in Computer Science

Learning Outcomes

Upon completion of the program, graduates will be able to:

- Apply logical reasoning, algorithmic and mathematical principles, and computer science theory to understand and solve a wide variety of computational problems
- Analyze computing problems, their size and scope, and input-output requirements
- Analyze, evaluate, and compare alternative solutions to computing problems, with particular reference to computational complexity, scalability, and usability
- Compare multiple general-purpose programming languages and select and use the appropriate languages for specific applications
- Design, implement (code) and document solutions to computational problems
- Create software systems following specific design and performance requirements within practical constraints
- Implement Internet applications on client and server sides
- Work effectively in teams to design, implement and evaluate solutions to computational problems
- Effectively communicate computer science concepts and solutions, verbally and in writing
- Recognize and promote the professional, social, ethical and legal issues and responsibilities in the computing / software profession

Sample Four Year Plan

First Year			
Fall	**Hours**	**Spring**	**Hours**
INTDSC 1003[1]	1	CMP SCI 1250	3
ENGL 1100	3	MATH 1800	5
MATH 1030	3	CORE – US History & Government	3
MATH 1035	2	EXPLORE – Social Sciences	3

EXPLORE – Humanities & Fine Arts	3	EXPLORE - Humanities and Fine Arts	3
EXPLORE – Social Sciences	3		
	15		**17**

Second Year

Fall	Hours	Spring	Hours
CMP SCI 2250	3	CMP SCI 2261	3
CMP SCI 2700	3	CMP SCI 2750	3
MATH 1320	3	CMP SCI 3010	3
MATH 1900	5	MATH 3000	3
EXPLORE – Humanities and Fine Arts	3	CORE – Communication Proficiency	3
	17		**15**

Third Year

Fall	Hours	Spring	Hours
CMP SCI 3130	3	CMP SCI 4760	3
CMP SCI 4250	3	CMP SCI 3000+ level elective	3
CMP SCI 3000+ Elective Course	3	CMP SCI 3000+ level elective	3
MATH 2450	3	EXPLORE – Social Sciences	3
ENGL 3130	3	Elective or minor	3
	15		**15**

Fourth Year

Fall	Hours	Spring	Hours
CMP SCI 4500	3	CMP SCI 4280	3
CMP SCI 3000+ level elective	3	CMP SCI 3000+ level elective	3
Cultural Diversity Requirement	3	Elective or minor	3
Elective or minor	3	Elective or minor	3
Elective or minor	3	Elective or minor	1
	15		**13**

Total Hours: 122

[1] INTDSC 1003 is required only for first-time freshmen and transfer students with less than 24 college credits.

Please Note: This plan is an example of what a four year plan could look like for a typical student. Placement exam scores in math as well as the completion of coursework may change the plan. It should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor each semester . All requirements are subject to change.