COMPUTER SCIENCE MAJOR (B.A.)

https://manchester.unh.edu/program/ba/computer-science

Description

The computer science program combines a solid foundation in computing necessary to succeed in today's start-up and high-tech environments. The program is designed in response to market demand for students proficient in computer science.

Students in the computer science program gain real-world experience through extensive project work and opportunities to interact with industry experts through internships and sponsored research.

Career prospects for students with an undergraduate computer science degree are varied, and may include such areas as applications developer, computer and information research scientist, data security specialist, database administrator, database developer, multimedia developer, network architect, product development manager, quality assurance analyst, software systems developer, user experience designer, or web developer.

Program Educational Objectives

Within five years of graduation, a CS student should be able to:

- Demonstrate mastery of the core areas of computer science
- Invent, develop, manage, and evaluate computing systems and services
- Exercise professional responsibility and have appreciation of the social, legal, ethical, and cultural issues inherent in the computing field.

For additional information about the computer science program, contact Michael Jonas (michael.jonas@unh.edu) or the UNH Manchester Office of Admissions (unhm.admissions@unh.edu), (603) 641-4150.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: Yes

All Major, Option and Elective Requirements as indicated.
Major GPA requirements as indicated.

Major Requirements

Students majoring in computer science must complete 128 credits to graduate, satisfy the University's Discovery Program, and complete 69 credits in the major with a minimum of C- in each course. Students must maintain an overall cumulative GPA of 2.0 or better.

Transfer students who elect to major in computer science must earn 69 approved credits for completion of the major, of which at least 24 credits must be completed at UNH Manchester.

Code	Title	Credits
Mathematics and Science [1]		
COMP 500	Discrete Structures	4
COMP 570	Statistics in Computing and Engineering	4
MATH 425	Calculus I	4
MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
Computing Core		
COMP 415	Mobile Computing First and For Most	4
COMP 424	Applied Computing 1: Foundations of Programming	4
COMP 430	Systems Fundamentals	4
COMP 525	Data Structures Fundamentals	4
COMP 530	Machine and Network Architecture	4
COMP 560	Ethics and the Law in the Digital Age	4
COMP 625	Data Structures and Algorithms	4
COMP 630	Systems Software	4
Project and Professional Practice [2]		
COMP 690	Internship Experience	4
COMP 790	Capstone Project	4
or COMP 791	Senior Thesis	
UMST 582	Internship and Career Planning Seminar	1
Computing Topics [3]		8
Select two from the following:		
COMP 705	Full Stack Development	
COMP 715	Information Security	
COMP 720	Database Systems and Technologies	
COMP 725	Programming Languages	
COMP 740	Machine Learning Applications and Tools	
Total Credits		**69**

[1] The program requires four mathematics courses and one physics course.

[2] The program prepares students for the workforce and further education in a holistic way by emphasizing communication, collaboration, team work, initiative, appreciation for diversity, and self-direction and responsibility.

[3] Advisor permission required.

Degree Plan

Sample Course Sequence

First Year

Fall		Credits
COMP 424	Applied Computing 1: Foundations of Programming	4
ENGL 401	First-Year Writing	4
MATH 425	Calculus I	4
UMST 401	First Year Seminar	2
Discovery Course		4
	Credits	**18**
Spring		
COMP 415	Mobile Computing First and For Most	4
COMP 430	Systems Fundamentals	4
COMP 570	Statistics in Computing and Engineering	4

PHYS 407	General Physics I	4
	Credits	**16**
Second Year		
Fall		
COMP 500	Discrete Structures	4
COMP 525	Data Structures Fundamentals	4
Discovery Course		4
Foreign Language		4
	Credits	**16**
Spring		
COMP 530	Machine and Network Architecture	4
COMP 560	Ethics and the Law in the Digital Age	4
MATH 645	Linear Algebra for Applications	4
Discovery Course		4
	Credits	**16**
Third Year		
Fall		
COMP 625	Data Structures and Algorithms	4
UMST 582	Internship and Career Planning Seminar	1
Discovery Course		4
Elective Course		4
Elective Course		4
	Credits	**17**
Spring		
COMP 630	Systems Software	4
COMP 690	Internship Experience	4
Discovery Course		4
Elective Course		4
	Credits	**16**
Fourth Year		
Fall		
COMP Topic Course		4
COMP Topic Course		4
Elective Course		4
Elective Course		4
	Credits	**16**
Spring		
COMP 790	Capstone Project	4
Elective Course		4
Elective Course		4
Elective Course		4
	Credits	**16**
	Total Credits	**131**

Student Learning Outcomes

- Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

The student learning outcomes are aligned with criteria for accrediting computer science programs as recommended by the ABET Computing Accreditation Commission and the ACM Computing Curricula – CS 2013 Computer Science guidelines.