COMPUTER SCIENCE MAJOR: SYSTEMS OPTION (B.A.)

https://ceps.unh.edu/computer-science/program/ba/computer-science-systems-option

Description

The B.A. in Computer Science will allow students to combine the study of computer science with the study of another field. Given the emergence of computational approaches to virtually all areas of scholarship and creative expression, it is important to offer this flexibility. The three tracks in the B.A. program contain the same computer science core as the B.S. program, but give more control to the student to choose the complementary and advanced courses.

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

Computer science majors must maintain an overall grade-point average of 2.0 or better in all required computer science, mathematics, and computer engineering courses in order to graduate. If at the end of any semester, including the first, a student's cumulative grade-point average in these courses falls below 2.0, the student may not be allowed to continue as a CS major.

The following courses or their equivalents must be completed with a grade of C- or better in order to meet the CS major requirements: CS 415, CS 416, CS 420, CS 515, CS 520, and IT 403.

Students are expected to demonstrate consistent progress towards the satisfaction of the core degree requirements and are allowed two repeats of the aforementioned courses before being subject to removal from the program. This can be a single class repeated twice or two classes repeated once. Students may petition to be reinstated after a one-year absence from the program.

If a student wishing to transfer into the computer science major has any coursework that is applicable to the major, the grades in those courses must satisfy the minimum grade requirements for the B.S. degree in computer science. The student must have an overall grade-point average of 2.0 or better in all courses taken at the university.

Code	Title	Credits
Computer Science Courses		
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
or CS 410C	Introduction to Scientific Programming/C	
or CS 410P	Introduction to Scientific Programming/Python	
CS 416	Introduction to Computer Science II	4
CS 420	Foundations of Programming for Digital Systems	4
IT 403	Introduction to Internet Technologies	4
CS 501	Professional Ethics and Communication in Technology-related Fields	4
CS 515	Data Structures and Introduction to Algorithms	4
CS 518	Introduction to Software Engineering	4
CS 520	Computer Organization and System-Level Programming	4
CS 527	Fundamentals of Cybersecurity	4
CS 619	Introduction to Object-Oriented Design and Development	4
CS 620	Operating System Fundamentals	4
Capstone		
CS 791	Senior Project I	4
& CS 792	and Senior Project II	
or CS 799	Thesis	
Computer Science Electives		
Select two additional CS courses numbered 690-799		8
Mathematics Courses		
MATH 425	Calculus I	4
MATH 539	Introduction to Statistical Analysis	4
or MATH 644	Statistics for Engineers and Scientists	
Select two courses from the following:		8
CS 659	Introduction to the Theory of Computation	
MATH 420	Finite Mathematics	
MATH 426	Calculus II	
MATH 445	Mathematics and Applications with MATLAB	
Any MATH 500-level course or higher		
Science Courses [1]		
One Discovery Biological Science (BS) with Discovery Lab		4
One Discovery Physical Science (PS) with Discovery Lab		4
Discovery requirements not already covered by required courses		20
Total Credits		**102**

[1] Courses must carry the Discovery attributes of Biological Science or Physical Science and include Discovery lab (DLAB).

Degree Plan

Sample Degree Plan

This sample degree plan serves as a general guide; students collaborate with their academic advisor to develop a personalized degree plan to meet their academic goals and program requirements.

First Year

Fall		Credits
CS 400	Introduction to Computing	2
CS 415	Introduction to Computer Science I	4
IT 403	Introduction to Internet Technologies	4
MATH 425	Calculus I	4
Discovery I (or Foreign Language)		4
	Credits	**18**

Spring		
CS 416	Introduction to Computer Science II	4
CS 420	Foundations of Programming for Digital Systems	4
MATH 539	Introduction to Statistical Analysis	4
ENGL 401	First-Year Writing	4
	Credits	**16**

Second Year

Fall

CS 515	Data Structures and Introduction to Algorithms	4
CS 518 or CS 527	Introduction to Software Engineering or Fundamentals of Cybersecurity	4
CS 501	Professional Ethics and Communication in Technology-related Fields (or Discovery II)	4
Discovery II (or Foreign Language)		4
	Credits	**16**

Spring

CS 520	Computer Organization and System-Level Programming	4
CS 527 or CS 518	Fundamentals of Cybersecurity or Introduction to Software Engineering	4
MATH Elective I		4
Discovery III (or CS 501)		4
	Credits	**16**

Third Year

Fall

CS 619	Introduction to Object-Oriented Design and Development	4
CS 620	Operating System Fundamentals	4
MATH Elective II		4
Discovery IV		4
	Credits	**16**

Spring

CS 700-level Elective I		4
CS 700-level Elective II		4
Discovery V		4
General Elective I		4
	Credits	**16**

Fourth Year

Fall

CS 791	Senior Project I	2
Discovery VI		4
General Elective II		4
General Elective III		4
General Elective IV		4
	Credits	**18**

Spring

CS 792	Senior Project II	2
Discovery VII		4
General Elective V		4
General Elective VI		4
	Credits	**14**
	Total Credits	**130**

Discovery (7): Historical Perspectives, Humanities, Fine and Performing Arts, Social Science, World Cultures, Physical Science Discovery Lab, Biological Science Discovery Lab.

Two Discovery or General Elective courses must have the Writing Intensive (WI) attribute.

Student Learning Outcomes

Program Learning Outcomes
Graduates of the UNH B.A. CS programs will have an ability to:

- Analyze a complex computing problem and to 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.
- Learn independently about new technologies, and have the skills needed to understand them.