

Computer Science

Requirements for the Major in Computer Science

The major requires successful completion of the following:

Code	Title	Semester Hours
Course Requirements ¹		
CSCI 157	Introduction to Modeling and Programming	4
CSCI 257	Object-Oriented Programming ²	4
CSCI 270	Computer Systems and Organization	4
CSCI 284	Database Design with Web Applications	4
CSCI 320	Data Structures and Algorithms	4
MATH 101	Calculus I (or higher)	4
MATH 215	Discrete Mathematical Structures	4
Select four additional courses in computer science (CSCI) numbered above 270. ³		16
Select one additional breadth course in an application area: ³		4
ECON 341	Game Theory	
ENST 217	Fundamentals of GIS	
MATH 332	Mathematical Modeling	
NEUR 254	Behavioral Neuroscience	
PHYS 203	Intermediate Electricity and Magnetism I	
STAT 204	Elementary Statistics	
or another course approved by the student's advisor		
Total Semester Hours		48

Code	Title	Semester Hours
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Additional Requirements

A comprehensive examination ⁴

1

A student majoring in computer science must present nineteen full course credits (seventy-six hours) from outside the major field.

2

With the permission of the department, students who are well prepared may begin their computer science sequence with CSCI 257.

3

Electives are to be selected in consultation with the departmental advisor.

4

A student with a double major in the department must take a comprehensive exam in each major, and must take twelve full course credits (forty-eight hours) outside the major field.

Honors

Departmental honors may be conferred on students considered worthy of distinction. Most of the following accomplishments are generally expected: a) an average of at least 3.50 in computer science courses numbered above 270; b) a superior performance on both the written and oral comprehensive examination; c) an original project, usually as part of an Independent Study (CSCI 444) elective course, and oral defense or presentation of the work; and d) additional course work in computer science beyond the minimum requirement.

Pre-engineering Program

A major in computer science is available to students in the pre-professional engineering program. The major is slightly abbreviated to accommodate a student's shortened time at Sewanee and is completed during the subsequent two years of study at the relevant engineering institution. Scheduling of courses during the three years at Sewanee is often complex; students should consult departmental advisors within their major of interest in their first year to avoid scheduling conflicts.

A student must complete all core curriculum requirements of the College.

Code	Title	Semester Hours
Course Requirements		
CHEM 120 or CHEM 150	General Chemistry (Lab) Advanced General Chemistry (Lab)	4
CSCI 157	Introduction to Modeling and Programming	4
CSCI 257	Object-Oriented Programming	4
CSCI 270	Computer Systems and Organization	4
CSCI 284	Database Design with Web Applications	4
CSCI 320	Data Structures and Algorithms	4
MATH 101	Calculus I	4
MATH 102	Calculus II	4
MATH 207	Multidimensional Calculus	4
MATH 212	Differential Equations	4
MATH 215	Discrete Mathematical Structures	4
PHYS 103 and PHYS 104	Modern Mechanics (Lab) and Electric and Magnetic Interactions (Lab)	8
Select one additional course in computer science (CSCI) numbered above 270.		4
Select three advanced courses in computer science or computer engineering at the designated engineering school		12
Total Semester Hours		68

Code	Title	Semester Hours
Additional Requirements		
A comprehensive exam ^I		

^I

The comprehensive exam is only required for 4-2 engineering students, and is not required for 3-2 engineering students.

Student Learning Outcomes

A student majoring in Computer Science will

1. Apply abstract reasoning and logic to analyze, model, and solve problems.
2. Demonstrate proficiency with programming languages typically used in applications development, systems programming, and web-based applications and design.
3. Demonstrate knowledge of multiple programming paradigms.
4. Demonstrate knowledge of the relationship between programming structures and logic, and the design of computing machines.
5. Demonstrate ability in technical writing and verbal communications using physical and electronic media including computer programs.
6. Appraise and explain the relationship and impact of computers to people and society.