

Computer Science

The Computer Science curriculum leads to an Associate in Science (A.S.) degree in Computer Science. The primary goal of the program is to prepare students for transfer to a baccalaureate program in Computer Science. The curricular focus is a set of courses concentrating on the skills necessary for the analysis of mathematically-oriented problems and the development of algorithms and data structures to solve those problems using computers.

STUDENT LEARNING OUTCOMES:

Upon completion of this program graduates will be able to:

- Use technology effectively to communicate and analyze information related to computer programming, algorithm development and software engineering.
- Work as a part of a professional team to design, code, test and debug mathematically-based, object-oriented computer software.
- Demonstrate a fundamental knowledge of information transfer and control in modern computer systems, including knowledge of assembly languages, computer architecture and computer organization.
- Demonstrate a basic understanding of mathematical concepts important in computer science and software engineering, including differential and integral calculus, linear algebra and discrete mathematics.
- Develop object-oriented algorithms and data structures using the structured sequential logic of computer programming languages in an object-oriented environment and implement those solutions as Java applications and Java applets.
- Analyze the temporal and spatial efficiency of algorithms and data structures and redesign them for increased efficiency where possible.

PROGRAM ENTRY REQUIREMENTS:

This program is open to interested students. However, new students are normally required to take the College's placement test at their time of entry. Students' test results must show readiness for English 101 and at least a grade of "C" in Math 161 or its equivalent for admission to the program. Those students whose test results identify them as needing developmental course work must complete satisfactorily the appropriate English and mathematics courses as a part of their degree program.

PROGRAM OF STUDY AND GRADUATION REQUIREMENTS:

Two sets of physics courses are permitted within the program. This is because some transfer institutions require calculus-based physics, while others have a more lenient requirement. Students who do well in their first-year math courses should be able to handle the 10 credits of

calculus-based physics, while those less mathematically inclined may opt for eight credits of algebra-based physics.

To qualify for the A.S. degree in Computer Science, students must complete a minimum of 61 credit hours as prescribed and attain a grade point average of 2.0 ("C" average).

COMPUTER SCIENCE

Course Number and Name	Prerequisites and Corequisites	Credits	Gen Ed Req.
FIRST SEMESTER			
CSCI 111 – Programming and Algorithm Development I	MATH 161 or equivalent	4	
MATH 163 – Discrete Mathematics	MATH 161	4	Mathematics
MATH 171 – Calculus I	MATH 162 or dept. approval	4	
ENGL 101 – English Composition I		3	ENGL 101
SECOND SEMESTER			
CSCI 112 – Programming and Algorithm Development II	CSCI 111 or dept. approval	4	
MATH 270 – Linear Algebra	MATH 171,172	4	
MATH 172 – Calculus II	MATH 171 or dept. approval	4	
ENGL 102 – English Composition II	ENGL 101	3	ENGL 102, Info Lit
THIRD SEMESTER			
CSCI 211 – Data Structures and Algorithms	CSCI 112 and MATH 163 or dept. approval	4	
CSCI 212 – Introduction to Computer Systems	CSCI 112 and MATH 163 or dept. approval	4	
PHYS 111* – General Physics I or PHYS 140 – Mechanics, Heat and Sound	MATH 162 or 119 or dept. approval	4/5	Natural Science
Humanities Elective		3	Humanities

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COMPUTER SCIENCE, *continued*

Course Number and Name	Prerequisites and Corequisites	Credits	Gen Ed Req.
FOURTH SEMESTER			
CSCI 213 – Introduction to Computer Organization	CSCI 212 or dept. approval	4	
PHYS 112* – General Physics II or	PHYS 111 or dept. approval	4/5	
PHYS 241 – Electricity, Magnetism and Light	PHYS 140 and ENGR 172 or dept. approval		
Social Science Elective		3	Social Sciences
CIS 103 – PC Applications		3	Tech Comp
MINIMUM CREDITS NEEDED TO GRADUATE		61	

General Education Requirements

All General Education requirements are met through required courses (as indicated above) except for the Writing Intensive requirement, the Interpretive Studies requirement and the American/Global Diversity requirement. Therefore, in order to graduate, students in this program must choose one course that is designated Writing Intensive, one course that is designated Interpretive Studies and one course that is designated American/Global Diversity. The same course may be used to fulfill more than one of these requirements. A list of courses that fulfill these requirements and a more detailed explanation of the College's general education requirements appear elsewhere in this Catalog and on www.ccp.edu.

* If students choose PHYS 111 and PHYS 112, they will need two additional credits from elective courses to complete the 61 credits required for the degree.

For More Information Contact:

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