

COMPUTER SCIENCE, B.S.

Bachelor of Science Degree in Computer Science

Credits: 122
CIP Code: 110701

Program Description

The Bachelor of Science Degree in Computer Science is designed to provide an in-depth study in theoretical and algorithmic foundations as well as cutting-edge developments in robotics, computer vision, intelligent systems, bioinformatics, and new approaches to programming. Through theoretical application students learn to determine the best performance possible, and the study of algorithms helps them to develop new approaches that provide better performance.

The program curricula offer a wide range of courses in areas of computer networking, software design and implementation, human-computer-interface, and uses of databases to create new knowledge. The majors in this program develop effective ways to solve computing problems, use new approaches to store information in databases, send data over networks, and display complex images.

Program Objectives for the Bachelor of Science in Computer Science

1. Train students on the new methods for processing and exchanging information.
2. Provide training on the underlying structure and appropriate uses of modern tools of the computing profession.
3. Provide practical theories and application of the scientific principles, which underlie the physical characteristics of modern computers.
4. Develop effective communicators to function well in multi-disciplinary teams.

Admissions Requirements

Applicants to the Bachelor of Science Degree in Computer Science must meet the General Admissions Requirements as published in this Catalog.

Student Learning Outcomes

Graduates of the Computer Science Program will be able to:

1. Identify computing problems and apply appropriate algorithmic theories to solve them.
2. Assess the hardware and software aspects of computer systems that support application software development.
3. Apply theoretical knowledge of programming to determine new approaches that provide best performance in the areas of networking, information storage in databases, and human-computer-interface.
4. Effectively communicate their work in both written and oral formats to diverse and professional audiences.
5. Develop software solutions to practical problems.

Degree Requirements

The degree requires a minimum of one hundred twenty-two (122) semester hours, including sixty (60) in Computer Science. Three (3) semesters of continuous science classes with laboratory are required

either in Biology, Chemistry, or Physics. Students must complete all required Computer Science courses with minimum final grades of "C".

Code	Title	Hours
Required Courses		
CCIS 101	Introduction to Computers	3
CCIS 105	Programming Principles I	3
CCIS 105L	Programming Principles I Lab	1
CCIS 106	Programming Principles II	3
CCIS 106L	Programming Principles II Lab	1
CCIS 121	Introduction to Computer Sys	3
CCIS 223	Data Structures	3
CCIS 223L	Data Structures Lab	1
CCIS 227	Discrete Structures	3
CCIS 229	Web Site Design & Development	3
CCIS 321	Software Engineering	3
CCIS 329	Rich Internet Applications	3
CCIS 371	Computer Algorithms	3
CCIS 372	Computer Architecture	3
CCIS 374	Database Systems	3
CCIS 375	Intro to Artificial Intel	3
CCIS 431	Cybersecurity I	3
CCIS 473	Intro to Operating Systems	3
CCIS 476	Programming Langs. & Compilers	3
CCIS 493	Senior Design Project	3
CCIS 4XXX	CIS Elective	3
Cognate Courses		
CBIO/CCHE/CPHY Science I		3
CBIO/CCHE/CPHY Science I Lab		1
CBIO/CCHE/CPHY Science II		3
CBIO/CCHE/CPHY Science II Lab		1
CBIO/CCHE/CPHY Science III		3
CBIO/CCHE/CPHY Science III Lab		1
CMAT 214	Linear Algebra	3
or CMAT 311	Mathematical Logic	
CMAT 321	Mathematical Prob & Stat I	3
Total Hours		75

General Education Courses

Code	Title	Hours
Area A: Humanities/Fine Arts		
Select one of the following:		3
CPHI 105	Critical Thinking	
CREL 101	The Biblical Heritage	
CREL 103	Afr Amer Religious Experiences	
Select one of the following:		3
CHIS 201/202	United States, Africa & World	
CHIS 211	History of the United States	
CHIS 212	History of the United States	
Area B: Social/Behavioral Sciences		
Select one of the following:		3
CPSY 211	General Psychology	
CPSC 219	American Govern & Politics	

CSCJ 215	Intro. to Sociology	
CSCJ 216	Intro. to Anthropology	
CSCJ 218	Contemporary Social Problems	
CSCJ 201	Intro. to Criminal Justice	
Area C: Natural Sciences/Mathematics/Statistics		
CMAT 111	Calculus I	4
CMAT 112	Calculus II	4
Area D: Communications		
CENG 105	College Composition I	3
CENG 106	College Composition II	3
CSTA 101	Fundamentals of Speech	3
Area E: Financial/Technological		
CECO 107	Introduction to Economics	3
CCIS 253 & 253L	Intro. to Comp. Sim/Analysis and Intro. to Comp. Sim/Analy(Lab)	4
Total Hours		33

Other University Requirements

Code	Title	Hours
CGED 100	First Year Seminar	1
CGED 101	1st-Year Seminar	1
Total Hours		2

Free Electives: 12 Credits

Note: Free Electives should be chosen in consultation with the advisor depending on the choice of minor or stackable credentials.

Plan of Study for Bachelor of Science Degree in Computer Science

(Students who are not prepared to complete calculus in their first year of study should arrange a revised plan of study in consultation with an advisor.)

Course	Title	Hours
First Year		
First Semester		
CCIS 101	Introduction to Computers	3
CENG 105	College Composition I	3
CGED 100	First Year Seminar	1
CMAT 111	Calculus I	4
CCIS 105	Programming Principles I	3
CCIS 105L	Programming Principles I Lab	1
Hours		15
Second Semester		
CENG 106	College Composition II	3
CGED 101	1st-Year Seminar	1
CMAT 112	Calculus II	4
CCIS 106	Programming Principles II	3
CCIS 106L	Programming Principles II Lab	1
CCIS 121	Introduction to Computer Sys	3
Hours		15
Second Year		
First Semester		
CBIO/CCHE/CPHY Science I ¹		3

CBIO/CCHE/CPHY Science I Lab ¹		1
CXXX	Area A, B, C, D	3
CXXX	Area A, B, C, D	3
CCIS 223	Data Structures	3
CCIS 223L	Data Structures Lab	1
CMAT 214	Linear Algebra	3
or CMAT 311	or Mathematical Logic	
Hours		17

Second Semester

CBIO/CCHE/CPHY Science II ¹		3
CBIO/CCHE/CPHY Science II Lab ¹		1
CXXX	Area A, B, C, D	3
CCIS 253 & 253L	Intro. to Comp. Sim/Analysis and Intro. to Comp. Sim/Analy(Lab)	4
CCIS 227	Discrete Structures	3
CXXX	Area A, B, C, D	3
Hours		17

Third Year

First Semester

CCIS 229	Web Site Design & Development	3
CBIO/CCHE/CPHY Science III ¹		3
CBIO/CCHE/CPHY Science III Lab ¹		1
CCIS 374	Database Systems	3
CCIS 375	Intro to Artificial Intel	3
CCIS 321	Software Engineering	3
Hours		16

Second Semester

CMAT 321	Mathematical Prob & Stat I	3
CXXX	Area A, B, C, D	3
CCIS 329	Rich Internet Applications	3
CCIS 371	Computer Algorithms	3
CCIS 372	Computer Architecture	3
Hours		15

Fourth Year

First Semester

CCIS 476	Programming Langs. & Compilers	3
CCIS 431	Cybersecurity I	3
CCIS XXX	CIS Elective ²	3
CXXX	Free Elective	3
CXXX	Free Elective	3
Hours		15

Second Semester

CCIS 473	Intro to Operating Systems	3
CCIS 493	Senior Design Project	3
CXXX	Free Elective	3
CXXX	Free Elective	3
Hours		12
Total Hours		122

¹ Three (3) semesters of continuous science classes with labs are required either in Biology, Chemistry, or Physics.

² Computer Science Electives must be at the 400 level or higher.