

# COMPUTER SCIENCE

## Bachelor of Science Degree

### **Program Description**

The Bachelor of Science in Computer Science program is designed to provide the knowledge and skills necessary for a career in computer science and related fields.

Students will develop competencies needed to analyze, design, implement, and assess computing solutions using various programming languages, tools, paradigms, and technologies. The program provides students with a foundation of knowledge and understanding along with communication and technical skills within an ethical framework essential for succeeding in both professional and educational endeavors in an increasingly diverse society.

### **Program Outcomes**

Upon successful completion of this program, students will be able to:

- Evaluate key theories, programming languages, tools, paradigms, and technologies within computer science.
- Analyze, design, and implement computing solutions at multiple levels of detail and abstraction.
- Assess functionality, usability, and performance of systems by applying quantitative and qualitative assessment techniques.
- Communicate complex ideas with others from diverse backgrounds.
- Create software using industry standards, considering social, legal, and ethical issues.
- Collaborate with others as a member of a team using a defined development process.

<b>General Education Requirements – see p. 98</b>		<b>Credits</b>
<b>41 credits total</b>		
CSI 101 Introduction to Computers		3 credits
ENG 101 English Composition I		3 credits
ENG 102 English Composition II <sup>1</sup>		3 credits
History/Government		3 credits
Humanities Elective		3 credits
IDS 167 First Year Seminar		3 credits
MAT 103 College Algebra <sup>1</sup>		3 credits
MAT 113 Precalculus <sup>1</sup>		3 credits
MAT 204 Calculus I B <sup>1</sup>		4 credits
Natural Science w/ Lab		4 credits
Social Science/Psychology		3 credits
General Education Electives <sup>2</sup>		6 credits

<b>Program Requirements – 67 credits total</b>		<b>Credits</b>
MAT 210 Discrete Math <sup>1</sup> (S)		4 credits
CSI 104 Introduction to Programming with Python		3 credits
CSI 107 C++ Programming <sup>1</sup>		3 credits
CSI 213 Advanced C++ <sup>1</sup>		3 credits
CSI 218 Data Structures and Algorithms <sup>1</sup>		3 credits
CSA 213 Database Management		3 credits
CSI 226 Unix With Linux		3 credits
CSA 227 Website Design		3 credits
CSI 235 Computer Architecture <sup>1</sup>		3 credits
CSI 242 Computer Systems Security <sup>1</sup> (F)		3 credits
CSI 244 Networking I		3 credits
CSA 229 Web and Mobile Development With JavaScript and React <sup>1</sup> (F)		3 credits
CSI 311 Computer Organization <sup>1</sup> (F)		3 credits
CSI 315 Advanced Database Management <sup>1</sup> (F)		3 credits
CSI 317 Operating Systems <sup>1</sup> (S)		3 credits
CSI 318 Analysis of Algorithms <sup>1</sup> (S)		3 credits
CSI 330 Graphics Programming/UI/UX <sup>1</sup> (F)		3 credits
CSI 480 Artificial Intelligence <sup>1</sup> (F)		3 credits
CSI 490 Software Engineering Capstone <sup>1</sup> (S)		3 credits
Program Electives		6 credits

### **Additional Information**

1. Indicates course requires the completion of a prerequisite.

2. Choose six credits from General Education Elective course list, not CSI or CSA, starting page 99. BUS 220 Business Ethics recommended.

3. Three credits must be 300-level or above.

NOTE: All classes are offered in the fall and the spring unless otherwise designated:

F=Class is only offered in the Fall

S=Class is only offered in the Spring

<b>Open Electives – 15 credits total<sup>3</sup></b>		<b>Credits</b>
<b>Total credits required for graduation</b>		<b>120 credits</b>

<b>Program Electives – 6 credits total<sup>3</sup></b>		<b>Credits</b>
MAT 205 Linear Algebra <sup>1</sup> (S)		3 credits
MAT 206 Calculus II B <sup>1</sup> (F)		4 credits
ENG 350 Technical Communications <sup>1</sup> (F)		3 credits
CSI 150 Introduction to Game Development With Unity <sup>1</sup> (S)		3 credits
CSI 217 Introduction to Operating Systems (F)		3 credits
CSI 204 Web Programming with PHP and MySQL <sup>1</sup> (S)		3 credits
CSI 233 Java Programming <sup>1</sup> (F)		3 credits

# COMPUTER SCIENCE

## Bachelor of Science Degree

### Program Electives Continued

CSI 237 Advanced Java <sup>1</sup> (S)	3 credits
CSI 245 Networking II <sup>1</sup>	3 credits
CSI 246 Networking III <sup>1</sup> (S)	3 credits
CSI 255 C# Programming <sup>1</sup> (F)	3 credits
CSI 322 Fundamentals of DevOps	3 credits
CSI 340 Compiler Theory (S)	3 credits
CSI 357 Android Development <sup>1</sup> (F)	3 credits
CSI 261 Robotics Programming <sup>1</sup> (F)	3 credits
CSI 262 Advanced Robotics Programming <sup>1</sup> (S)	3 credits
CSI 265 Linux System Administration <sup>1</sup> (S)	3 credits
CSI 267 Amazon Web Services Academy Cloud Foundations <sup>1</sup> (S)	3 credits
CSI 450 Special Topics in Computer Science <sup>1</sup> (S)	3 credits
CSI 460 Programming Language Theory <sup>1</sup> (F)	3 credits
CSI 470 Big Data Analytics <sup>1</sup> (F)	3 credits
EXP 297 Internship I	3 credits
EXP 397 Internship II	3 credits

#### Prior Learning Assessment Opportunity

##### CompTIA and QC Courses

Network+ is equivalent to CSI 244 Networking I

Security+ is equivalent to CSI 242 Computer Systems Security

Students with proof of completion please contact Division Dean.

### Minors

Minors are designed to provide baccalaureate students with knowledge and skills in a field other than their majors, that may lead to a post-graduation competitive advantage. Bachelor's students who have earned a minimum of 45 credits and have an overall GPA of 2.0 or higher are eligible. The *Request for Minor Form* must be completed and submitted to the Registrar. To be able to complete your minor within 120 credits (minimum credits required for a major), students are strongly recommended to meet with an Academic Advisor for course planning prior to declaring a minor.

The minimum number of credits for a minor is 18. A maximum of two courses required for the major (including the general education) can be used toward a minor, and open electives may be used to satisfy the remaining of the minor requirements.

Successful completion of a minor requires a grade of C or higher in all courses of that minor. A minor must be completed at the time of the bachelor's degree and will be so noted on the student's transcript. A student cannot be readmitted to complete only a minor.

#### MINOR IN BUSINESS MANAGEMENT

*The minor in Business Management is available to bachelor students in other disciplines and is focused on providing a strong foundation in business, accounting, and management. Students will gain an understanding of how subjects such as ethics, communication, and human behavior can assist managers in leading effectively.*

#### MINOR IN PSYCHOLOGY

*The minor in Psychology is available to bachelor students in other disciplines and is focused on enhancing the understanding of human behavior. Students will develop versatile skills in communication, critical thinking, and ethical reasoning that employers increasingly value across all professional sectors.*

BUS 101 Fundamentals in Business	3 credits
MGT 201 Principles of Management	3 credits
MGT 330 Managerial Communication	3 credits
BUS 220 Business Ethics	3 credits
BUS 401 Organizational Behavior	3 credits
ACC 101 Accounting I	3 credits
<b>Total Credits Required for Minor</b>	<b>18 credits</b>

PSY 101 General Psychology	3 credits
PSY 215 Abnormal Psychology	3 credits
PSY 216 Growth and Development	3 credits
PSY 221 Health Psychology	3 credits
PSY 330 Social Psychology	3 credits
PSY 311 Cognition	3 credits
<b>Total Credits Required for Minor</b>	<b>18 credits</b>

# COMPUTER SCIENCE

## Bachelor of Science Degree

Semester 1	Credits	Pre-Requisites
ENG 101 English Comp I	3 credits	
CSI 101 Introduction to Computers	3 credits	
IDS 167 First Year Seminar	3 credits	
CSI 104 Introduction to Programming with Python	3 credits	
CSI 244 Networking I	3 credits	
<b>Total</b>	<b>15 credits</b>	

Semester 2	Credits	Pre-Requisites
MAT 103 College Algebra	3 credits	Appropriate Placement Score or Completion of MAT 097
CSA 227 Website Design	3 credits	
ENG 102 English Composition II	3 credits	ENG 101
CSI 107 C++ Programming	3 credits	CSI 104 or CSI 116
CSI 226 Unix With Linux	3 credits	
<b>Total</b>	<b>15 credits</b>	

Semester 3	Credits	Pre-Requisites
CSA 213 Database Management	3 credits	
CSI 242 Computer Systems Security	3 credits	CSI 244
Natural Science w/ Lab	4 credits	
MAT 113 Pre-Calculus	3 credits	MAT 103 or Permission of Instructor
CSI 213 Advanced C++ <sup>1</sup>	3 credits	CSI 107
<b>Total</b>	<b>16 credits</b>	

Semester 4	Credits	Pre-Requisites
MAT 204 Calculus I B	4 credits	MAT 113
CSI 218 Data Structures and Algorithms	3 credits	CSI 213
CSI 235 Computer Architecture	3 credits	CSI 104 or CSI 116
History/Government	3 credits	
Social Science/Psychology	3 credits	
<b>Total</b>	<b>16 credits</b>	

### Semester Path:

Recommended course of study for a full-time student. It is recommended that students speak to an Academic Advisor before registering for courses each semester.

### Student Resources:

#### Academic Advising

617-984-1720

#### Dean's Office of Arts and Sciences & Professional Programs

617-405-5920

#### Dean's Office of Allied Health

617-405-5960

#### Dean's Office of Nursing

617-405-5990

#### Financial Aid Office

617-984-1620

#### Registrar's Office

617-984-1650

#### Student Accessibility and Academic Support Services

617-405-5915

# COMPUTER SCIENCE

## Bachelor of Science Degree

Semester 5	Credits	Pre-Requisites
CSI 315 Advanced Database Management	3 credits	CSA 213
Open Elective*	3 credits	
CSA 229 Web and Mobile Development With JavaScript and React	3 credits	CSI 104 or CSI 116; CSA 227
CSI 311 Computer Organization	3 credits	CSI 104 or CSI 116
Humanities Elective	3 credits	
<b>Total</b>	<b>15 credits</b>	

\*At least 3 open elective credits must be 300-level or above

\*\*At least 3 program elective credits must be 300-level or above

\*\*\*Choose six credits from General Education Elective course list, not CSI or CSA, starting page 99. BUS 220 Business Ethics recommended. Three credits must be 300-level or above.

Semester 6	Credits	Pre-Requisites
Open Elective*	3 credits	
CSI 318 Analysis of Algorithms	3 credits	CSI 218
Open Elective*	3 credits	CSI 218
CSI 317 Operating Systems	3 credits	CSI 218 & 226
MAT 210 Discrete Mathematics	4 credits	MAT 204
<b>Total</b>	<b>16 credits</b>	

Semester 7	Credits	Pre-Requisites
CSI 330 Graphics Programming/UI/UX	3 credits	CSI 213 & 218; CSA 227
CSI 480 Artificial Intelligence	3 credits	CSI 218; MAT 210 (pre or coreq)
Open Elective*	3 credits	
Program Elective**	3 credits	
General Education Elective***	3 credits	
<b>Total</b>	<b>15 credits</b>	

Semester 8	Credits	Pre-Requisites
General Education Elective***	3 credits	
CSI 490 Software Engineering (Capstone)	3 credits	CSI 218, 226, 330 & 315
Program Elective**	3 credits	
Open Elective*	3 credits	
<b>Total</b>	<b>12 credits</b>	