COMPUTER SCIENCE - BACHELOR OF SCIENCE (BSCS)

The goal of the Department of Computer Science is to prepare students for an intriguing and satisfying career in computer science in industry, research, or academia. The huge number of technical jobs and the continuing shortage of people to fill them mean that opportunities are great for today's computer science graduates when seeking career options or to continue on to graduate school.

The BS degree program in computer science emphasizes knowledge and awareness of computing at all levels, from circuits and computer architecture through operating systems and programming languages to large application systems; the theoretical and mathematical aspects of computing; the interdependence of hardware and software; and the challenge of large-scale software production and the engineering principles used to meet that challenge. Students may choose to take classes that touch on a wide variety of computing topics, or may select classes that focus on a particular specialization.

For more information, visit the department's BS Degree (http://catalog.colorado.edu/undergraduate/college-schools/arts-sciences/programs-study/computer-science/computer-science-bachelor-arts-ba/) from CU Boulder. A student may not earn a bachelor’s degree in computer science and a minor in computer science from CU Boulder.

For more information, visit the department’s BS Degree (http://www.colorado.edu/cs/current-students/undergraduate-students/bs-degree/) webpage.

Accreditation

The Bachelor of Science degree in computer science is accredited by the Computing Accreditation Commission of ABET (http://www.abet.org).

Program Educational Objectives

Our program educational objectives for students 3–5 years after graduating with a Bachelor of Science degree in computer science are that they will be:

- **Broadly Educated and Versatile.** Able to draw upon foundational knowledge, learn, adapt and successfully bring to bear analytical and computational approaches on changing societal and technological challenges
- **Inspiring and Collaborative.** Is a leader and a responsible citizen whose strengths come from an ability to draw on and contribute to diverse teams, expertise and experiences.
- **Innovative.** Drives scientific and societal advancement through technological innovation and entrepreneurship.
- **Engaged.** Is and remains engaged with the University of Colorado, the state of Colorado and technical and scientific professional communities.

Requirements

Requirements for the BS degree in computer science include coursework in computer science, mathematics, natural science, and the humanities and social sciences, as well as free elective coursework.

The degree provides considerable freedom in the selection of specific courses to fulfill these requirements, allowing students to tailor the degree to their individual needs and interests.

A student may not earn both a BS degree in computer science and a BA degree in computer science (catalog.colorado.edu/undergraduate/...)

<table>
<thead>
<tr>
<th>Credit Hours</th>
<th>Title</th>
<th>Code</th>
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| 1 | Computer Science as a Field of Work and Study | CSCI 1000 |
| 4 | Computer Science 1: Starting Computing | CSCI 1300 |
| 4 | Computer Science 1: Starting Computing-Engineering Applications | CSCI 1320 |
| 3 | C Programming for ECE | CSCI 1350 |
| 4 | Computer Science 2: Data Structures | CSCI 2270 |
| 4 | Computer Systems | CSCI 2400 |
| 4 | Algorithms | CSCI 3104 |
| 4 | Principles of Programming Languages | CSCI 3155 |
| 3 | Software Development Methods and Tools | CSCI 3308 |
| 18-21 | Select six courses from approved list below; exact number of credit hours earned may vary based on courses selected. | |

**Computer Science Core**

Select six courses from approved list below; exact number of credit hours earned may vary based on courses selected.

- **CSCI 3002** Fundamentals of Human Computer Interaction
- **CSCI 3202** Introduction to Artificial Intelligence
- **CSCI 3287** Design and Analysis of Database Systems
- **CSCI 3302** Introduction to Robotics
- **CSCI 3403** Introduction to CyberSecurity for a Converged World
- **CSCI 3434** Theory of Computation
- **CSCI 3656** Numerical Computation
- **CSCI 4022** Advanced Data Science
- **CSCI 4273** Network Systems
- **CSCI 4448** Object-Oriented Analysis and Design

**Computer Science Electives**

Select additional approved coursework to bring total Computer Science credit hours to at least 58. See department website for list of approved courses.

<p>| 8 | Software Engineering Project 1 | CSCI 4308 |
| 8 | Software Engineering Project 2 | CSCI 4318 |</p>
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<tr>
<th>Course</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>APPM 1350</td>
<td>Calculus 1 for Engineers</td>
<td>4</td>
</tr>
<tr>
<td>CSCI 1000</td>
<td>Computer Science as a Field of Work and Study</td>
<td>1</td>
</tr>
<tr>
<td>CSCI 1300</td>
<td>Computer Science 1: Starting Computing</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 1110</td>
<td>General Physics 1</td>
<td>4</td>
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<tr>
<td>Humanities and social sciences elective</td>
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</tbody>
</table>

**Total Credit Hours** | 128 |

1. Complete the College's Humanities, Social Sciences and Writing (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/) requirements (18 credits total) as specified.
Learning Outcomes
Upon graduation, students are expected to be able 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.

Bachelor’s–Accelerated Master’s Degree Program(s)

The Bachelor’s–Accelerated Master’s (BAM) degree program options offer currently enrolled CU Boulder undergraduate students the opportunity to receive a bachelor’s and master’s degree in a shorter period of time. Students receive the bachelor's degree first, but begin taking graduate coursework as undergraduates (typically in their senior year). Because some courses are allowed to double count for both the bachelor’s and the master's degrees, students receive a master's degree in less time and at a lower cost than if they were to enroll in a stand-alone master's degree program after completion of their baccalaureate degree. In addition, staying at CU Boulder to pursue a bachelor’s–accelerated master's program enables students to continue working with their established faculty mentors.

The following BAM programs are available with the BS in Computer Science:

- BS and MS in Computer Science
- BS in Computer Science, MS in Technology, Cybersecurity and Policy

Admissions Requirements

BS and MS in Computer Science

In order to gain admission to the BAM program named above, a student must meet the following criteria:

- Have a cumulative GPA of 3.50 or higher
- Have a major GPA of 3.70 or higher
- Have at least junior class standing
- Have two strong letters of recommendation from Computer Science faculty
- Have completed the following five prerequisite courses with grades of B or better:
  - CSCI 1300
  - CSCI 2270
  - CSCI 2400
  - CSCI 3104 or CSCI 3434
  - CSCI 3155 or CSCI 3753

Students may submit their intent to apply during the term they are completing their final class from the list above.

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1 Students may choose courses from the list of college-approved humanities and social sciences (HSS) electives (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/).
2 Students may choose a course from the list of college-approved writing courses (https://www.colorado.edu/engineering-advising/get-your-degree/degree-requirements/humanities-social-sciences-and-writing-requirements/).
BS in Computer Science, MS in Technology, Cybersecurity and Policy

In order to gain admission to the BAM program named above, a student must meet the following criteria:

- Have a cumulative GPA of 3.250 or higher
- Have a major GPA of 3.250 or higher
- Have at least junior class standing

Program Requirements (for both programs above)

Students may take up to and including 12 hours while in the undergraduate program which can later be used toward the master's degree. However, only 6 credits may be double counted toward the bachelor's degree and the master's degree. Students must apply to graduate with the bachelor's degree, and apply to continue with the master's degree, early in the semester in which the undergraduate requirements will be completed.

Please see the Computer Science/Computer Science BAM degree program (https://www.colorado.edu/cs/current-students/undergraduate-students/bachelors-accelerated-masters-degree/) or Computer Science/Technology, Cybersecurity and Policy BAM degree program (https://www.colorado.edu/program/tcp/current-students/bachelors-accelerated-masters/) for more information.