# MAJOR IN COMPUTER SCIENCE, COMPUTER SCIENCE EDUCATION CONCENTRATION

## Requirements
### Effective Fall 2023

A minimum grade of C (2.000) is required in CO 150 and in all CS, DSCI, MATH, and STAT courses which are required for graduation.

### Freshman

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>AUCC</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO 150</td>
<td>College Composition (GT-CO2)</td>
<td>1A</td>
<td>3</td>
</tr>
<tr>
<td>MATH 156 or 160</td>
<td>Mathematics for Computational Science I (GT-MA1)</td>
<td>1B</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Calculus for Physical Scientists I (GT-MA1)</td>
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</tbody>
</table>

Select one group from the following:

- **Group A:**
  - CS 150A or 150B
  - Culture and Coding: Java (GT-AH3)
  - Culture and Coding: Python (GT-AH3)

- **Group B:**
  - CS 152
  - Python for STEM

Select at least two courses totaling a minimum of 7 credits from the following (one course must be or include the sequenced laboratory):

- **Group C:**
  - CS 163
  - CS1—No Prior Programming Experience

- **Arts and Humanities (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-and-humanities)**

- **CS 201/PHIL 201**
  - Ethical Computing Systems (GT-AH3)

Select at least two courses totaling a minimum of 7 credits from the following (one course must be or include the sequenced laboratory):

- **AA 100 & AA 101**
  - Introduction to Astronomy (GT-SC2)

- **ANTH 120 & ANTH 121**
  - Human Origins and Variation (GT-SC2)

- **BZ 110 & BZ 111**
  - Principles of Animal Biology (GT-SC2)

- **BZ 120**
  - Principles of Plant Biology (GT-SC1)

- **CHEM 107 & CHEM 108**
  - Fundamentals of Chemistry (GT-SC2)

- **CHEM 111 & CHEM 112**
  - General Chemistry I (GT-SC2)

- **GEOL 120 & GEOL 121**
  - Exploring Earth - Physical Geology (GT-SC2)

- **GEOL 122 & GEOL 121**
  - The Blue Planet - Geology of Our Environment (GT-SC2)
Major in Computer Science, Computer Science Education Concentration

GEOL 124 & GEOL 121
Geology of Natural Resources (GT-SC2)  3A

GEOL 150
Physical Geology for Scientists and Engineers  3A

HONR 292A
Honors Seminar: Knowing in the Sciences  3A

LIFE 102
Attributes of Living Systems (GT-SC1)  3A

LIFE 103
Biology of Organisms-Animals and Plants (GT-SC1)  3A

LIFE 201A
Introductory Genetics: Applied/Population/Conservation/Ecological (GT-SC2)  3A

LIFE 201B
Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)  3A

LIFE 220/LAND 220
Fundamentals of Ecology (GT-SC2)  3A

NR 150
Oceanography (GT-SC2)  3A

PH 121
General Physics I (GT-SC1)  3A

PH 122
General Physics II (GT-SC1)  3A

PH 141
Physics for Scientists and Engineers I (GT-SC1)  3A

PH 142
Physics for Scientists and Engineers II (GT-SC1)  3A

Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)  1C

Electives  3

Total Credits  26-34

Sophomore

CS 165
CS2--Data Structures  4

CS 220
Discrete Structures and their Applications  4

EDUC 275
Schooling in the United States (GT-SS3)  3C

EDUC 340
Literacy and the Learner  3

Select one group from the following:  4-5

Group A
CS 214
Software Development

CT 301
C++ Fundamentals

Group B
CS 253
Software Development with C++

Select one course from the following:  4

CS 250
Computer Systems Foundations

CS 270
Computer Organization

Select one course from the following:  3-4

DSCI 369
Linear Algebra for Data Science

MATH 369
Linear Algebra I

Select one course from the following:  1-3

STAT 301
Introduction to Applied Statistical Methods

STAT 302A
Statistics Supplement: General Applications

STAT 307
Introduction to Biostatistics

STAT 315
Intro to Theory and Practice of Statistics

Electives  0-4

Total Credits  26-34

Junior

CS 314
Software Engineering  4A,4B

CS 320
Algorithms--Theory and Practice  3

CS 370
Operating Systems  3

EDUC 331
Educational Technology and Assessment  2

EDUC 350
Instruction I-Individualization/Management  3

EDUC 386
Practicum-Instruction I  1

Two CS courses numbered 300- or above, excluding 380-399 and 480-499  6-8
Major in Computer Science, Computer Science Education Concentration

- One CS course numbered 400- or above, excluding 480-499: 3-4
- Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing): 2, 3
- Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives): 3D, 3

| Total Credits | 30-33 |

Senior

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDCT 465</td>
<td>Methods and Materials in Technology Education</td>
<td>3</td>
</tr>
<tr>
<td>EDCT 485</td>
<td>Student Teaching</td>
<td>4A, 4B, 4C, 11</td>
</tr>
<tr>
<td>EDUC 450</td>
<td>Instruction II-Standards and Assessment</td>
<td></td>
</tr>
<tr>
<td>EDUC 486E</td>
<td>Practicum: Instruction II</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 493A</td>
<td>Seminar: Professional Relations</td>
<td>1</td>
</tr>
</tbody>
</table>

CS Education Standards: Select 2 courses from the following: 7-8

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>CS 312</td>
<td>Modern Web Applications</td>
</tr>
<tr>
<td>CS 414</td>
<td>Object-Oriented Design</td>
</tr>
<tr>
<td>CS 430</td>
<td>Database Systems</td>
</tr>
<tr>
<td>CS 457</td>
<td>Computer Networks and the Internet</td>
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</table>

Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

1 MATH 156 recommended for computer science majors who do not already have MATH 160 credit.
2 Recommended sequence for most incoming students is Group A: CS 150B to CS 164.
3 CS 192 or other seminar course is a recommended elective for incoming, first semester, students.
4 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).