

# MAJOR IN COMPUTER SCIENCE, COMPUTING FOR CREATIVES CONCENTRATION

**To prepare for first semester:** The curriculum for the Computer Science major assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester. All students must maintain a C (2.000) or better in CO 150 and in all CS, DSCI, MATH, STAT, and IDEA courses which are required for graduation.

## Major Completion Map

### Distinctive Requirements for Degree Program:

#### Freshman

| Semester 1                                                                                                                                                                                                                                                                   | Critical | Recommended | AUCC | Credits   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|------|-----------|
| CO 150 College Composition (GT-CO2)                                                                                                                                                                                                                                          | X        |             | 1A   | 3         |
| First course from Group A, B, or C (See options in Concentration Requirements Tab)                                                                                                                                                                                           | X        |             |      | 2-4       |
| Department Approved Science (See list on Concentration Requirements Tab)                                                                                                                                                                                                     | X        |             | 3A   | 3         |
| Diversity, Equity, and Inclusion ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion</a> ) | X        |             | 1C   | 3         |
| Elective                                                                                                                                                                                                                                                                     |          | X           |      | 2-4       |
| MATH 124 and MATH 126 may be necessary for some students to fulfill pre-calculus requirements.                                                                                                                                                                               | X        |             |      |           |
| <b>Total Credits</b>                                                                                                                                                                                                                                                         |          |             |      | <b>15</b> |
| Semester 2                                                                                                                                                                                                                                                                   | Critical | Recommended | AUCC | Credits   |
| CS 201/PHIL 201 Ethical Computing Systems (GT-AH3)                                                                                                                                                                                                                           | X        |             | 3B   | 3         |
| MATH 156 or 160 Mathematics for Computational Science I (GT-MA1)<br>Calculus for Physical Scientists I (GT-MA1)                                                                                                                                                              | X        |             | 1B   | 4         |
| Remaining course(s) from Group A, B, or C (See options in Concentration Requirements Tab)                                                                                                                                                                                    | X        |             |      | 0-4       |
| Department Approved Science with Lab (See list on Concentration Requirements Tab)                                                                                                                                                                                            | X        |             | 3A   | 4         |
| CO 150 must be completed by the end of Semester 2 with a grade of C or better.                                                                                                                                                                                               | X        |             |      |           |
| Elective                                                                                                                                                                                                                                                                     |          |             |      | 0-4       |
| <b>Total Credits</b>                                                                                                                                                                                                                                                         |          |             |      | <b>15</b> |

#### Sophomore

| Semester 3                                                                                                                                                                                                                                                    | Critical | Recommended | AUCC | Credits      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|------|--------------|
| CS 165 CS2--Data Structures                                                                                                                                                                                                                                   | X        |             |      | 4            |
| CS 220 Discrete Structures and their Applications                                                                                                                                                                                                             | X        |             |      | 4            |
| IDEA 210 Introduction to Design Thinking (GT-AH1)                                                                                                                                                                                                             | X        |             | 3B   | 3            |
| Select one course from the following:                                                                                                                                                                                                                         | X        |             |      | 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                                                                                                                                                                                                           |          |             |      |              |
| Historical Perspectives ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives</a> ) |          | X           | 3D   | 3            |
| <b>Total Credits</b>                                                                                                                                                                                                                                          |          |             |      | <b>15-17</b> |

| Semester 4                           | Critical | Recommended | AUCC | Credits |
|--------------------------------------|----------|-------------|------|---------|
| Select one group from the following: | X        |             |      | 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:                                                                                                                                                                                                                                      |                                                                        | X               |                    |             | 2-4            |
| DSCI 369                                                                                                                                                                                                                                                                   | Linear Algebra for Data Science                                        | X               |                    |             |                |
| MATH 269                                                                                                                                                                                                                                                                   | Geometric Introduction to Linear Algebra                               |                 |                    |             |                |
| MATH 369                                                                                                                                                                                                                                                                   | Linear Algebra I                                                       | X               |                    |             |                |
| Social and Behavioral Sciences ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences</a> ) |                                                                        |                 | X                  | 3C          | 3              |
| Electives                                                                                                                                                                                                                                                                  |                                                                        |                 | X                  |             | 0-5            |
| CS 165 and CS 220 and CS 270 must be completed by the end of Semester 4.                                                                                                                                                                                                   |                                                                        | X               |                    |             |                |
| MATH 156 or MATH 160 and MATH 269 or MATH 369 or DSCI 369 must be completed by the end of Semester 4.                                                                                                                                                                      |                                                                        | X               |                    |             |                |
| <b>Total Credits</b>                                                                                                                                                                                                                                                       |                                                                        |                 |                    |             | <b>12-14</b>   |
| <b>Junior</b>                                                                                                                                                                                                                                                              |                                                                        |                 |                    |             |                |
| <b>Semester 5</b>                                                                                                                                                                                                                                                          |                                                                        | <b>Critical</b> | <b>Recommended</b> | <b>AUCC</b> | <b>Credits</b> |
| CS 314                                                                                                                                                                                                                                                                     | Software Engineering                                                   | X               |                    | 4A,4B       | 3              |
| CS 320                                                                                                                                                                                                                                                                     | Algorithms–Theory and Practice                                         | X               |                    |             | 3              |
| Advanced Writing ( <a href="http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing">http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing</a> )                                   |                                                                        |                 | X                  | 2           | 3              |
| Electives                                                                                                                                                                                                                                                                  |                                                                        |                 | X                  |             | 5              |
| <b>Total Credits</b>                                                                                                                                                                                                                                                       |                                                                        |                 |                    |             | <b>14</b>      |
| <b>Semester 6</b>                                                                                                                                                                                                                                                          |                                                                        | <b>Critical</b> | <b>Recommended</b> | <b>AUCC</b> | <b>Credits</b> |
| CS 250                                                                                                                                                                                                                                                                     | Computer Systems Foundations                                           |                 | X                  |             | 4              |
| CS 345                                                                                                                                                                                                                                                                     | Machine Learning Foundations and Practice                              | X               |                    |             | 3              |
| CS courses numbered 300- or above, excluding 380-399 and 480-499                                                                                                                                                                                                           |                                                                        | X               |                    |             | 3-4            |
| Electives                                                                                                                                                                                                                                                                  |                                                                        |                 | X                  |             | 5-6            |
| CS 314 and CS 320 and CS 345 must be completed by the end of Semester 6.                                                                                                                                                                                                   |                                                                        | X               |                    |             |                |
| <b>Total Credits</b>                                                                                                                                                                                                                                                       |                                                                        |                 |                    |             | <b>16</b>      |
| <b>Senior</b>                                                                                                                                                                                                                                                              |                                                                        |                 |                    |             |                |
| <b>Semester 7</b>                                                                                                                                                                                                                                                          |                                                                        | <b>Critical</b> | <b>Recommended</b> | <b>AUCC</b> | <b>Credits</b> |
| CS 462 or 464                                                                                                                                                                                                                                                              | Engaging in Virtual Worlds<br>Principles of Human-Computer Interaction | X               |                    | 4C          | 4              |
| CS course numbered 400- or above, excluding 480-499                                                                                                                                                                                                                        |                                                                        | X               |                    |             | 4              |
| Design thinking Courses (see list on Program Requirements tab)                                                                                                                                                                                                             |                                                                        | X               |                    |             | 9              |
| At least 2 Upper-Division CS classes must be completed by the end of Semester 7.                                                                                                                                                                                           |                                                                        | X               |                    |             |                |
| <b>Total Credits</b>                                                                                                                                                                                                                                                       |                                                                        |                 |                    |             | <b>17</b>      |
| <b>Semester 8</b>                                                                                                                                                                                                                                                          |                                                                        | <b>Critical</b> | <b>Recommended</b> | <b>AUCC</b> | <b>Credits</b> |
| CS*** Course numbered 400- or above                                                                                                                                                                                                                                        |                                                                        | X               |                    |             | 4              |
| Electives                                                                                                                                                                                                                                                                  |                                                                        | X               |                    |             | 10             |
| The benchmark courses for the 8th semester are the remaining courses in the entire program of study.                                                                                                                                                                       |                                                                        | X               |                    |             |                |
| <b>Total Credits</b>                                                                                                                                                                                                                                                       |                                                                        |                 |                    |             | <b>14</b>      |
| <b>Program Total Credits:</b>                                                                                                                                                                                                                                              |                                                                        |                 |                    |             | <b>120</b>     |