# MAJOR IN COMPUTER SCIENCE, HUMAN-CENTERED COMPUTING CONCENTRATION

## Major Completion Map

**Distinctive Requirements for Degree Program:**

**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. Those pre-calculus requirements are listed as benchmark courses in Freshman Semester 1 below. All students must maintain a C (2.000) or better in CO 150 and in all CS, DSCI, MATH, and STAT and Technical Elective courses which are required for graduation.4

***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 | | | 3 |
| Department Approved Science (See list on Concentration Requirements Tab) | | X | | 3A | 3 |
| Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion) | | X | | 1C | 3 |
| Electives | | | X | | 1-5 |
| MATH 117, MATH 118, and MATH 124 must be completed by the end of Semester 1, if necessary. | | X | | | |
| | **Total Credits** | | | | **13-17** |

| 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 | | | 2-6 |
| Department Approved Science w/lab (See list on Concentration Requirements Tab) | | X | | 3A | 4 |
| MATH 125 and MATH 126 must be completed by the end of Semester 2, if necessary. | | X | | | |
| | **Total Credits** | | | | **13-17** |

***Sophomore***

| Semester 3 | | Critical | Recommended | AUCC | Credits |
|---|---|---|---|---|---|
| CS 165 | CS2--Data Structures | X | | | 4 |
| CS 220 | Discrete Structures and their Applications | X | | | 4 |
| 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 | | | | |
| Social and Behavioral Sciences (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences) | | | X | 3C | 3 |
| Elective | | | X | | 0-2 |
| MATH 156 or MATH 160 must be completed by the end of Semester 3. | | X | | | |
| | **Total Credits** | | | | **12-16** |

| 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 | | | 4 |
| CS 250 | Computer Systems Foundations | | | | |
| CS 270 | Computer Organization | | | | |
| Select one course from the following: | | X | | | 3-4 |
| DSCI 369 | Linear Algebra for Data Science | | | | |
| MATH 369 | Linear Algebra I | | | | |
| Historical Perspectives (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives) | | | X | 3D | 3 |
| Elective | | | X | | 0-2 |
| CS 220, CS 270, and DSCI 369 or MATH 369 must be completed by the end of Semester 4. | | X | | | |
| | **Total Credits** | | | | **14-18** |

***Junior***

| **Semester 5** | | **Critical** | **Recommended** | **AUCC** | **Credits** |
|---|---|---|---|---|---|
| CS 320 | Algorithms--Theory and Practice | X | | | 3 |
| CS 370 | Operating Systems | X | | | 3 |
| Select one course from the following: | | X | | | 3 |
| CS 310H/ IDEA 310H | Design Thinking Toolbox: Mixed Reality Design | | | | |
| CS 312 | Modern Web Applications | | | | |
| Any CS course numbered 400- or above excluding CS 480-499 | | | | | |
| Technical Elective (See List on Concentration Requirements tab.) | | X | | | 3 |
| Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing) | | | X | 2 | 3 |
| CS 253 must be completed by the end of Semester 5. | | X | | | |
| | **Total Credits** | | | | **15** |

| **Semester 6** | | **Critical** | **Recommended** | **AUCC** | **Credits** |
|---|---|---|---|---|---|
| CS 314 | Software Engineering | X | | 4A,4B | 3 |
| CS 345 | Machine Learning Foundations and Practice | X | | | 3 |
| Technical Elective Course (See List on Concentration Requirements tab.) | | X | | | 3 |
| Electives | | | X | | 6 |
| CS 320 and CS 370 must be completed by the end of Semester 6. | | X | | | |
| | **Total Credits** | | | | **15** |

***Senior***

| **Semester 7** | | **Critical** | **Recommended** | **AUCC** | **Credits** |
|---|---|---|---|---|---|
| Pick Two CS Depth Courses (See List on Concentration Requirements tab.) | | X | | | 8 |
| Technical Electives (See List on Concentration Requirements tab.) | | X | | | 3 |
| Elective | | | X | | 3 |
| | **Total Credits** | | | | **14** |

| **Semester 8** | | **Critical** | **Recommended** | **AUCC** | **Credits** |
|---|---|---|---|---|---|
| CS 464 | Principles of Human-Computer Interaction | X | | 4C | 4 |
| CS*** Course numbered 300- or above | | X | | | 3 |
| Electives | | | X | | 9 |
| The benchmark courses for the 8th semester are the remaining courses in the entire program of study. | | X | | | |
| | **Total Credits** | | | | **16** |
| | **Program Total Credits:** | | | | **120** |