**Bachelor of Science in Computer Science**

**This is a GATED PROGRAM** *Updated 5/7/2019*

**Catalog Year: 2018-2019** Total Degree Credit Hours: 120

**General Education Requirements** (See Degreeworks for Prerequisites)

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| **A-1** | **ENGL 1101** Composition I | 3 |  |
| **ENGL 1102** Composition II | 3 |  |
| **A-2** | **MATH 1112** College Trigonometry *or*  **MATH 1113** Precalculus | 3 |  |

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| **Area A: Essential Skills (9 credit hours)**  All Area A courses must be completed within the first 30 credit hours with a grade of C or higher. |

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| **B-1** | **ECON 1000** Contemporary Economic Issues | 2 |  |
| **B-2** | **COM 1100** Human Communication | 3 |  |

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| **Area B: Institutional Options (5 credit hours)**  COM 1100 is essential for Computer Science majors. |

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| **C-1** | **ENGL 2110, 2111, 2112, 2120, 2121, 2122, 2130, 2131, 2132,** *or* **2300** | 3 |  |
| **C-2** | **ART 1107, MUSI 1107, DANC 1107,** *or* **TPS 1107** | 3 |  |

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| **Area C: Humanities, Fine Arts, and Ethics (6 cr hrs)**  Choose one course from each area. |

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| **D-1** | **MATH 1190** Calculus I | 4 |  |
| **D-2** | **Group 1: BIOL 1107/L, CHEM 1211/L,** *or*  **PHYS 2211/L**  **Group 2: BIOL 1108/L, CHEM 1212/L,** *or*  **PHYS 2212/L** | 8 |  |

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| **Area D: Science, Math, and Technology (12 cr hrs)**  Computer Science majors must complete a Science sequence. “L” denotes the corresponding Lab course. |

**Area F Lower Division Major Requirements**

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| **E-1** | **POLS 1101** American Government | 3 |  |
| **E-2** | **HIST 2111** *or* **2112** US History | 3 |  |
| **E-3** | **HIST 1100, 1111,** *or***1112** World History | 3 |  |
| **E-4** | **CRJU 1101, GEOG 1101, PSYC 1101, SOCI 1101, STS 1101, ANTH 1102,** *or* **ECON 2100** | 3 |  |

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| **Area E: Social Sciences (12 credit hours)**  Choose one course from each area for E-2, E-3, & E-4. |

Prerequisites

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| **CSE 1321/L** Programming & Problem Solving I | Co-req w/ MATH 1112, 1113, 1190 or CSE 1300 | 4 |  |
| **CSE 1322/L** Programming & Problem Solving II | Minimum grade of ‘B’ in CSE 1321/L | 4 |  |
| **MATH 2202** Calculus II | MATH 1190 | 4 |  |
| **Science Major Course\*\*\***  \*\*\*STUDENTS MUST COMPLETE AN ADDITIONAL LECTURE/LAB SCIENCE COURSE FROM THE OPTIONS LISTED IN AREA D, BUT IT MUST BE DIFFERENT FROM THE SCIENCES COURSES USED TO MEET THE AREA D SCIENCE SEQUENCE REQUIREMENTS.\*\*\* | Varies | 4 |  |
| **Carryover credit hour from Area D Math** | See Area D Math requirement | *1* |  |
| **Carryover credit hour from Area D Group 2 Science Lab** | See Area D Science requirement | *1* |  |

CSE 1321/L and CSE 1322/L must have a minimum grade of ‘B.’

Upon completing CSE 1322/L with a minimum grade of ‘B,’ students should request to have their major changed to the fully admitted Computer Science major.

**Free Electives (5 credit hours)**

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**CSE 1300** is highly recommended for students who are new to programming and have available free elective credits to complete.

Prerequisites

**Upper Division Major Courses**

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| **CS 3305/L** Data Structures | | MATH 2345 & CSE 1322/L | 4 |  |
| **CS 3503/L** Computer Organization & Architecture | | CSE 1322/L | 4 |  |
| **CS 3502** Operating Systems | | CS 3503/L & CS 3305/L | 3 |  |
| **SWE 3313** Intro to Software Engineering | | CSE 1322/L | 3 |  |
| **CS 3410** Introductionto Database Systems | | CSE 1322/L | 3 |  |
| **CS 4306** Algorithm Analysis | | CS 3305/L | 3 |  |
| **CS 4504** Distributed Computing\* *or*  **CS 4720** Internet Programming\* | | CS 3502 | 3 |  |
| CS 3305/L & (CS 3410/CSE 3153) |
| **CS 4308** Programming Languages | | CS 3503/L & CS 3305/L | 3 |  |
| **CSE 3801** Professional Practices and Ethics | | CSE 1322/L | 2 |  |
| **CS 4850** Senior Project | | CS 3502 &SWE 3313 | 3 |  |
| **TCOM 2010** Technical Writing | | ENGL 1102 | 3 |  |
| **MATH 2345** Discrete Mathematics | | MATH 1112, 1113, or 1190 | 3 |  |
| **MATH 3332** Probability and Inference | | MATH 2202 | 3 |  |
| **Upper Division Math Elective** | | | | |
| Choose 1 | **MATH 3260** Linear Algebra I | MATH 1190 | 3 |  |
| **MATH 3261** Numerical Methods I | MATH 3260 & CSE 1321/L | 3 |  |
| **MATH 3272** Intro to Linear Programming | MATH 3260 | 3 |  |
| **MATH 3324** Enumerative Combinatorics | MATH 2345 | 3 |  |

All major courses must have a minimum grade of ‘C,’ except for CSE 1321/L and CSE 1322/L, which must have a minimum grade of ‘B.’

\*Alternative can be used as a Major Elective

Potential other

Upper-Level Math courses with coordinator approval.

**Major Electives** (Choose any 4 classes)

Prerequisites

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| **CS 4242** Artificial Intelligence | CS 3305/L | 3 |  |
| **CS 4265** Big Data Analytics | CS 3305/L & CS 3410 | 3 |  |
| **CS 4267** Machine Learning | CS 3305/L & CS 3410 | 3 |  |
| **CS 4270** Intelligent Systems in Bioinformatics | CS 3305/L & CS 3410 | 3 |  |
| **CS 4322** Mobile Software Development | CS 3305/L & SWE 3313 & CS 3410/CSE 3153 | 3 |  |
| **CS 4400** Directed Studies | Varies | 1-3 |  |
| **CS 4412** Data Mining | CS 3305/L & CS 3410 | 3 |  |
| **CS 4491** Special Topics | Varies | 3 |  |
| **CS 4512** Systems Programming | CS 3502 | 3 |  |
| **CS 4514** Real-Time Systems | CS 3502 | 3 |  |
| **CS 4522** HPC & Parallel Programming | CS 3502 | 3 |  |
| **CS 4523** Programming Massively Parallel Processors | CS 3502 | 3 |  |
| **CS 4524** Cloud Computing | CS 3502 | 3 |  |
| **CS 4612** Secure Software Development | CS 3503/L | 3 |  |
| **CS 4622** Computer Networks | CS 3503/L | 3 |  |
| **CS 4632** Modeling & Simulation | CS 3305/L | 3 |  |
| **CS 4712** User Interface Engineering | CSE 1322/L | 3 |  |
| **CS 4720** Internet Programming (only counts once) | CS 3305/L & CS 3410/CSE 3153 | 3 |  |
| **CS 4722** Computer Graphics and Multimedia | CS 3305/L | 3 |  |
| **CS 4732** Machine Vision | CS 3305/L | 3 |  |
| **CGDD 4203** Mobile & Casual Game Development | CGDD 4003 | 3 |  |
| **SWE 3633** Software Architecture and Design | SWE 3313 | 3 |  |
| **SWE 3643** Software Testing & Quality Assurance | SWE 3313 | 3 |  |
| **SWE 3683** Embedded Systems Analysis & Design | CS 3305/L | 3 |  |
| **SWE 4633** Component-Based Software Development | CS 3305/L | 3 |  |

All major courses must have a minimum grade of ‘C,’ except for CSE 1321/L and CSE 1322/L, which must have a minimum grade of ‘B.’