

# Bachelor of Science in Computer Science

## Program Curriculum

120 credits

### DSU General Education Requirements

All DSU General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to DSU's minimum General Education standards in American Institutions, English, and Mathematics.

| Code   | Title                        | Hours |
|--|------------------------------|-------|
| <b>General Education Core Requirements</b> (catalog.dixie.edu/programs/generaleducation/#gerequirementstext) |                              |       |
|  | English                      | 3-7   |
|  | Mathematics                  | 3-5   |
|  | American Institutions        | 3-6   |
|  | Life Sciences                | 3-10  |
|  | Physical Sciences            | 3-5   |
|  | Laboratory Science           | 0-1   |
|  | Fine Arts                    | 3     |
|  | Literature/Humanities        | 3     |
|  | Social & Behavioral Sciences | 3     |
|  | Exploration                  | 3-5   |

| Code                                      | Title  | Hours |
|---|--|-------|
| <b>Computer Science Core Requirements</b> |  |       |
| CS 1400                                   | Fundamentals of Programming                    | 3     |
| CS 1410                                   | Object Oriented Programming                    | 3     |
| CS 2420                                   | Introduction to Algorithms and Data Structures | 3     |
| CS 2450                                   | Software Engineering                           | 3     |
| CS 2810                                   | Computer Organization and Architecture         | 3     |
| CS 3005                                   | Programming in C++                             | 3     |
| CS 3200                                   | Web Application Development I                  | 3     |
| CS 3400                                   | Operating Systems <sup>1</sup>                 | 3     |
| or CS 3410                                | Distributed Systems                            |       |
| CS 3510                                   | Advanced Algorithms/Data Structures            | 3     |
| CS 3520                                   | Programming Languages                          | 3     |
| CS 3530                                   | Computational Theory                           | 3     |
| CS 3600                                   | Graphics Programming                           | 3     |
| CS 4300                                   | Artificial Intelligence                        | 3     |
| CS 4307                                   | Database Design & Management                   | 3     |
| CS 4550                                   | Compilers                                      | 3     |
| CS 4600                                   | Senior Project                                 | 3     |

### Math & Science Core Requirements

|                          |  |   |
|--------------------------|--|---|
| CS 3310                  | Discrete Mathematics   | 3 |
| MATH 1210                | Calculus I   | 4 |
| MATH 1220                | Calculus II  | 4 |
| BIOL 1610<br>& BIOL 1615 | Principles of Biology I (LS)<br>and Principles of Biology I Lab (LAB)  | 5 |
| PHYS 2210<br>& PHYS 2215 | Physics/Scientists Engineers I<br>and Physics/Scientists Engineers Lab | 5 |

### Math & Science Elective Requirements

Complete eight (8) credits from the following, one of which must have a MATH prefix:

|           |                        |   |
|-----------|------------------------|---|
| MATH 2210 | Multivariable Calculus | 4 |
| MATH 2270 | Linear Algebra         | 3 |

|                          |   |   |
|--------------------------|---|---|
| MATH 2280                | Ordinary Differential Equation  | 3 |
| MATH 3400                | Probability & Statistics  | 3 |
| BIOL 1620<br>& BIOL 1625 | Principles of Biology II<br>and Principles of Biology II Lab              | 5 |
| BIOL 2060<br>& BIOL 2065 | Principles of Microbiology<br>and Principles of Microbiology Lab          | 4 |
| CHEM 1210<br>& CHEM 1215 | Principles of Chemistry I (PS)<br>and Principles of Chemistry I Lab (LAB) | 5 |
| CHEM 1220<br>& CHEM 1225 | Principles of Chemistry II<br>and Principles of Chemistry II Lab          | 5 |
| PHYS 2220<br>& PHYS 2225 | Physics/Scientists EngineersII<br>and Physics/Scientists Engineers II Lab | 5 |

**Computer Science Elective Requirements**

Complete at least nine (9) credits from the following (courses used to complete Core Discipline Requirements may not be repeated here):

|            |  |     |
|------------|--|-----|
| CS 3010    | Mobile Application Development for Android | 3   |
| CS 3020    | Mobile Application Development: iOS        | 3   |
| CS 3400    | Operating Systems <sup>1</sup>             | 3   |
| or CS 3410 | Distributed Systems                        |     |
| CS 3440    | Software Practices                         | 3   |
| CS 3500    | Application Development                    | 3   |
| CS 4200    | Web Application Development II             | 3   |
| CS 4920R   | Internship                                 | 1-3 |
| CS 4990    | Sem in Computer Science                    | 3   |
| CS 4991R   | Competitive Programming                    | 0.5 |
| IT 3100    | Systems Design and Administration I        | 3   |
| IT 3110    | Systems Design and Administration II       | 3   |
| IT 4200    | DevOps Lifecycle Management                | 3   |
| IT 4500    | Information Security                       | 3   |
| WEB 1400   | Web Design I: Fundamentals                 | 3   |
| WEB 3400   | Web Design II: Essentials                  | 3   |

<sup>1</sup> If not used to fulfill core requirement.

**NOTE:** A course may only be used to fulfill one program requirement. Dual-listed courses may only be used once to fill requirements. Consult course descriptions in the current catalog to verify dual-listed courses.

**Graduation Requirements**

1. Complete a minimum of 120 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at DSU for institutional residency.
4. Cumulative GPA 2.0 or higher.
5. Grade C- or higher in each Core Discipline and Elective Requirement course.

**Graduation Plan**

| Course                          | Title  | Hours |
|---------------------------------|--|-------|
| <b>1st Year</b>                 |  |       |
| <b>Fall Semester</b>            |  |       |
| First Year Recommended Elective |  | 2     |
| CS 1400                         | Fundamentals of Programming  | 3     |
| ENGL 1010<br>or ENGL 1010D      | Introduction to Writing (EN)<br>or Introduction to Writing (EN)  | 3     |
| MATH 1210                       | Calculus I (meets General Education (Mathematics) (catalog.dixie.edu/programs/generaleducation/#gerequisitestext)) | 4     |
| CS Elective (WEB 1400)          |  | 3     |

Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.

|   |  |    |
|---|--|----|
|   | Hours  | 15 |
| <b>Spring Semester</b>  |  |    |
| BIOL 1610<br>& BIOL 1615  | Principles of Biology I (LS)<br>and Principles of Biology I Lab (LAB) ( meets General Education (Life Sciences & Lab Science) (catalog.dixie.edu/<br>programs/generaleducation/#gerequirementstext)) | 5  |
| CS 1410   | Object Oriented Programming  | 3  |
| MATH 1220   | Calculus II  | 4  |
| ENGL 2010   | Intermediate Writing Selected Topics: (EN)   | 3  |
| Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements. |  |    |

|   |  |    |
|---|--|----|
|   | Hours  | 15 |
| <b>2nd Year</b>   |  |    |
| <b>Fall Semester</b>  |  |    |
| PHYS 2210<br>& PHYS 2215  | Physics/Scientists Engineers I<br>and Physics/Scientists Engineers Lab (meets General Education (Physical Sciences) (catalog.dixie.edu/programs/<br>generaleducation/#gerequirementstext)) | 5  |
| CS 3005   | Programming in C++   | 3  |
| CS 2420   | Introduction to Algorithms and Data Structures   | 3  |
| Math/Science Elective   |  | 3  |
| General Elective  |  | 1  |
| Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements. |  |    |

|   |  |    |
|---|--|----|
|   | Hours                                  | 15 |
| <b>Spring Semester</b>  |  |    |
| CS 2810   | Computer Organization and Architecture | 3  |
| CS 3600   | Graphics Programming                   | 3  |
| CS 4307   | Database Design & Management           | 3  |
| Math/Science Elective   |  | 3  |
| General Elective  |  | 3  |
| Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements. |  |    |

|   |                               |    |
|---|-------------------------------|----|
|   | Hours                         | 15 |
| <b>3rd Year</b>   |                               |    |
| <b>Fall Semester</b>  |                               |    |
| CS 3200   | Web Application Development I | 3  |
| CS 3310   | Discrete Mathematics          | 3  |
| CS 3530   | Computational Theory          | 3  |
| General Education (American Institutions) (catalog.dixie.edu/programs/generaleducation/#gerequirementstext)       |                               | 3  |
| General Education (Literature/Humanities) (catalog.dixie.edu/programs/generaleducation/#gerequirementstext)       |                               | 3  |
| Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements. |                               |    |

|  |   |    |
|--|---|----|
|  | Hours                                       | 15 |
| <b>Spring Semester</b>   |   |    |
| CS 3400<br>or CS 3410  | Operating Systems<br>or Distributed Systems | 3  |
| CS 3510  | Advanced Algorithms/Data Structures         | 3  |
| CS Elective  |   | 3  |
| General Education (Social & Behavioral Sciences) (catalog.dixie.edu/programs/generaleducation/#gerequirementstext) |   | 3  |
| General Education (Fine Arts) (catalog.dixie.edu/programs/generaleducation/#gerequirementstext)                    |   | 3  |
| Milestones & Notes: Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.  |   |    |

|                      |                         |    |
|----------------------|-------------------------|----|
|                      | Hours                   | 15 |
| <b>4th Year</b>      |                         |    |
| <b>Fall Semester</b> |                         |    |
| CS 3520              | Programming Languages   | 3  |
| CS 4300              | Artificial Intelligence | 3  |
| CS Elective          |                         | 3  |

|  |     |
|--|-----|
| General Education (Exploration) ( <a href="http://catalog.dixie.edu/programs/generaleducation/#gerequirementstext">catalog.dixie.edu/programs/generaleducation/#gerequirementstext</a> ) | 3   |
| General Elective   | 3   |
| Milestones & Notes: Apply for graduation (SPRING DEADLINE NOV. 1, FALL DEADLINE APR. 1). Meet with your program advisor. Maintain minimum prerequisite and program grade requirements.   |     |
| Hours  | 15  |
| <b>Spring Semester</b>   |     |
| CS 2450                      Software Engineering  | 3   |
| CS 4550                      Compilers   | 3   |
| CS 4600                      Senior Project  | 3   |
| General Elective   | 3   |
| General Elective   | 3   |
| Milestones & Notes: Double check with advisor for final classes. Maintain minimum program grade requirements. Congratulations!   |     |
| Hours  | 15  |
| Total Hours  | 120 |