

# COMPUTER SCIENCE B.S. - SOFTWARE ENGINEERING

## Bachelor of Science - Computer Science; Concentration in Software Engineering

### General Education Requirements

Information regarding these requirements can be found in the General Education Section (<http://catalog.umd.edu/academics/general-education-requirements/>) of the catalog.

### Summary

| Code                               | Title | Hours        |
|------------------------------------|-------|--------------|
| Computer Science Core Courses      |       | 33           |
| Science Core                       |       | 9-10         |
| Science Electives                  |       | 6-10         |
| Communication Requirement          |       | 3            |
| Software Engineering Concentration |       | 36           |
| <b>Total Hours</b>                 |       | <b>87-92</b> |

Degree Specific Credits: 87-92

Required Cumulative GPA: 2.0

### Computer Science Core Courses

#### Notes:

- CSCI 315E will fulfill the upper-division writing requirement.
- Only students choosing the Software Engineering concentration may take M 162 (Applied Calculus) instead of M 171 (Calculus I).

| Code  | Title                                       | Hours     |
|---|---|-----------|
| <b>Complete all of the following courses:</b> |   |           |
| CSCI 106                                      | Careers in Computer Science                 | 1         |
| CSCI 150                                      | Introduction to Computer Science            | 3         |
| CSCI 151                                      | Interdisciplinary Computer Science I        | 3         |
| CSCI 152                                      | Interdisciplinary Computer Science II       | 3         |
| CSCI 232                                      | Intermediate Data Structures and Algorithms | 4         |
| CSCI 258                                      | Web Application Development                 | 3         |
| CSCI 315E                                     | Computers, Ethics, and Society              | 3         |
| CSCI 332                                      | Advanced Data Structures and Algorithms     | 3         |
| CSCI 340                                      | Database Design                             | 3         |
| M 171   | Calculus I                                  | 4         |
| or M 162                                      | Applied Calculus                            |           |
| M 225   | Introduction to Discrete Mathematics        | 3         |
| <b>Total Hours</b>                            |   | <b>33</b> |

Minimum Required Grade: C-

### Science Core

**Rule:** Complete 1 of the following subcategories of science sequences. 9-10 total credits required.

#### Biology Sequence Option

| Code  | Title                                  | Hours    |
|---|--|----------|
| <b>Complete all of the following courses:</b> |  |          |
| BIOB 160N                                     | Principles of Living Systems           | 3        |
| BIOB 161N                                     | Principles of Living Systems Lab       | 1        |
| BIOB 170N                                     | Principles of Biological Diversity     | 3        |
| BIOB 171N                                     | Principles of Biological Diversity Lab | 2        |
| <b>Total Hours</b>                            |  | <b>9</b> |

Minimum Required Grade: C-

#### Chemistry Sequence Option

| Code  | Title   | Hours     |
|---|---|-----------|
| <b>Complete all of the following courses:</b> |   |           |
| CHMY 141N & CHMY 142N                         | College Chemistry I and College Chemistry I Lab   | 5         |
| CHMY 143N & CHMY 144N                         | College Chemistry II and College Chemistry II Lab | 5         |
| <b>Total Hours</b>                            |   | <b>10</b> |

Minimum Required Grade: C-

#### Physics Sequence Option

| Code  | Title                                    | Hours     |
|---|--|-----------|
| <b>Complete all of the following courses:</b> |  |           |
| PHSX 215N                                     | Fundamentals of Physics with Calculus I  | 4         |
| PHSX 216N                                     | Physics Laboratory I with Calculus       | 1         |
| PHSX 217N                                     | Fundamentals of Physics with Calculus II | 4         |
| PHSX 218N                                     | Physics Laboratory II with Calculus      | 1         |
| <b>Total Hours</b>                            |  | <b>10</b> |

Minimum Required Grade: C-

### Science Electives

**Rule:** Complete 2 of the following courses. Laboratory courses must be taken in conjunction with their associated lecture course.

**Note:** The Biology, Chemistry, or Physics sequence chosen to fulfill the science core may not count toward the science electives requirement.

| Code  | Title   | Hours |
|---|---|-------|
| <b>Complete two of the following courses:</b> |   |       |
| ASTR 131N & ASTR 134N                         | Planetary Astronomy and Planetary Astronomy Lab                               | 6-10  |
| ASTR 132N & ASTR 135N                         | Stars, Galaxies, and the Universe and Stars, Galaxies, and the Universe Lab   |       |
| BIOB 160N & BIOB 161N                         | Principles of Living Systems and Principles of Living Systems Lab             |       |
| BIOB 170N & BIOB 171N                         | Principles of Biological Diversity and Principles of Biological Diversity Lab |       |
| BIOM 250N & BIOM 251                          | Microbiology for Health Sciences and Microbiology Health Sciences Lab         |       |

|                          |   |
|--------------------------|---|
| CHMY 141N<br>& CHMY 142N | College Chemistry I<br>and College Chemistry I Lab                                  |
| CHMY 143N<br>& CHMY 144N | College Chemistry II<br>and College Chemistry II Lab                                |
| FORS 201                 | Forest Biometrics   |
| GEO 101N<br>& GEO 102N   | Introduction to Physical Geology<br>and Introduction to Physical Geology Lab        |
| PHSX 215N<br>& PHSX 216N | Fundamentals of Physics with Calculus I<br>and Physics Laboratory I with Calculus   |
| PHSX 217N<br>& PHSX 218N | Fundamentals of Physics with Calculus II<br>and Physics Laboratory II with Calculus |
| PHSX 343                 | Modern Physics  |
| PHSX 444                 | Advanced Physics Lab  |
| <b>Total Hours</b>       | <b>6-10</b>   |

## Communication Requirement

| Code  | Title                           | Hours    |
|---|---------------------------------|----------|
| <b>Complete one of the following courses:</b> |                                 | <b>3</b> |
| COMX 111A                                     | Introduction to Public Speaking |          |
| COMX 242                                      | Argumentation                   |          |
| <b>Total Hours</b>                            |                                 | <b>3</b> |

Minimum Required Grade: C-

## Software Engineering Concentration

### Notes:

- Only students choosing the Software Engineering concentration may take M 162 (Applied Calculus) instead of M 171 (Calculus I).
- A maximum of 3 credits of Computer Science electives may be in research credits (CSCI 390 or CSCI 490).
- A maximum of 3 credits of Computer Science electives may be in internship credits (CSCI 398 or CSCI 498).

| Code  | Title                                | Hours     |
|---|--------------------------------------|-----------|
| <b>Complete all of the following courses:</b>                               |                                      |           |
| CSCI 181  | Web Design and Programming           | 3         |
| CSCI 322  | Advanced Web Application Development | 3         |
| CSCI 426  | Software Design & Development I      | 3         |
| CSCI 427  | Software Design and Development II   | 3         |
| CSCI 443  | User Interface Design                | 3         |
| or CSCI 400   | Digital Entrepreneurship             |           |
| <b>Advanced Software Electives - Complete two of the following courses:</b> |                                      | <b>6</b>  |
| CSCI 443  | User Interface Design                |           |
| CSCI 444  | Data Visualization                   |           |
| CSCI 498  | Internship                           |           |
| <b>Upper-Division Computer Science Electives</b>                            |                                      | <b>15</b> |
| Complete 15 credits of CSCI courses numbered 300 and above.                 |                                      |           |
| <b>Total Hours</b>  |                                      | <b>36</b> |

Minimum Required Grade: C-