COMPUTER SCIENCE, SOFTWARE ENGINEERING, MAJOR

Liberal Arts (Code 170-205)

University Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GRADUATION REQUIREMENTS FOR BACCALAUREATE DEGREE

Credit Requirements

- Minimum total for graduation: 120
- Upper division credits (courses numbered 300 and higher): 39
- Liberal Education Core: 36

Academic Concentrations

Grade Point Requirements 2

- Total: 2.00 average
- Resident: 2.00 average
- Major: 2.00 average
- Minor: 2.00 average
- Certificate: 2.00 average

University Residency Requirements 3

- Minimum total: 30
- Senior year: 23
- Major, Standard, upper division in residence: 12
- Major, Comprehensive, upper division in residence: 21
- Certificate: 25 percent of credits

Procedures Required for Graduation

- Obtain admission to the degree program and/or the College offering it.
- Apply for graduation on CampS.

1 Certain programs exceed this minimum.
2 See special requirements in each College.
3 See special requirements for the College of Education and Human Sciences.

Liberal Education Core

The University of Wisconsin-Eau Claire measures learning outcomes to ensure that its graduates have achieved a liberal education and prepared themselves to contribute to a complex society. Upon graduation, each undergraduate will have met the four learning goals of our liberal education core and the 11 learning outcomes they comprise.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

LIBERAL EDUCATION CORE REQUIREMENTS

Knowledge Goal

- Knowledge Outcome 1 (K1): Natural Sciences: Two (2) learning experiences
  One experience in laboratory science must be selected from either K1 or K2.
- Knowledge Outcome 2 (K2): Social Sciences: Two (2) learning experiences
- Knowledge Outcome 3 (K3): Humanities: Two (2) learning experiences
- Knowledge Outcome 4 (K4): Fine Arts: One (1) learning experience

Skills Goal

- Skills Outcome 1 (S1): Written and Oral Communication: Two (2) learning experiences
  One S1 must meet the University Writing Requirement
- Skills Outcome 2 (S2): Mathematics: One (1) learning experience
  One S2 to meet the University Mathematics Requirement
- Skills Outcome 3 (S3): Creativity: One (1) learning experience

Responsibility Goal

- Responsibility Outcome 1 (R1): Equity, Diversity, and Inclusivity: Two (2) learning experiences
  One R1 must satisfy Design for Diversity
- Responsibility Outcome 2 (R2): Global Perspectives: One (1) learning experience
- Responsibility Outcome 3 (R3): Civic and Environmental Issues: One (1) learning experience

Integration Goal

- Integration Outcome 1 (I1): Integration: Two (2) learning experiences

Service-Learning Goal

- Service-Learning: 30 hours

College Degree Requirements

Bachelor of Arts or Bachelor of Science Degree (B.A./B.S.)

University Graduation Requirements. All candidates for degrees must fulfill the requirements for credits, curriculum, GPA, and University residency as specified in the section of this catalog titled University Graduation Requirements.

College Graduation Requirements: Grade Point Averages. All candidates for degrees in the College of Arts and Sciences must earn minimum resident and total GPAs of 2.00 in the major, the minor, and the certificate. The resident and total GPAs for the major are computed using all attempted credits applicable to the major including those offered by departments other than the major department. The resident and total GPAs for the minor and the certificate are computed similarly.

Major-Minor and Major-Certificate Requirements. A standard major (a minimum of 36 credits) must be supplemented by a minor (a minimum of 24 credits) or by a certificate (12 to 18 credits) to meet graduation requirements for completing a first and second degree program. No minor or certificate is required with a Comprehensive Major (60 or more credits) or with two majors of 36 or more credits each.

Certain degree programs which include Comprehensive Majors may require more than the minimum of 120 credits for graduation.
Acceptable academic program combinations are determined at the college level. A major and a minor or a major and certificate or two majors (if available) may not be elected in the same department or program, except in the approved combinations listed here.

**College Credits.** Earn at least 90 credits in courses offered by the College of Arts and Sciences.

### Bachelor of Arts Degree in the College of Arts and Sciences (B.A.)

Fulfillment of all University Graduation Requirements (which includes the Liberal Education Core); all College-level degree requirements (major and minor/certificate emphases, GPAs, earning at least 90 credits in Arts and Sciences course work); foreign language competency at the 102 level. Foreign language competency may be met in one of two ways: (1) Achieve a score on the foreign language placement test that qualifies the student to enter the 201-level course in a foreign language. (2) Earn a grade of at least C (not C-) or a mark of S in a 102-level foreign language course (or AIS 112 or AIS 122 / LANG 122 or CSD 103).

### Bachelor of Science Degree in the College of Arts and Sciences (B.S.)

Fulfillment of all University Graduation Requirements (which includes the Liberal Education Core); all College-level degree requirements (major and minor/certificate emphases, GPAs, earning at least 90 credits in Arts and Sciences course work); mathematics competency at the MATH 111, MATH 112 or MATH 113 level. Mathematics competency can be met in one of three ways: (1) Achieve a score on the mathematics placement test that qualifies the student to enter MATH 114. (2) Earn a grade of at least C (not C-) or a mark of S in MATH 111, MATH 112, or MATH 113. (3) Achieve a satisfactory score on the MATH 112 competency test. This test may be attempted no more than two times.

### Major Requirements

This major is recommended for students who desire a strong foundation in software design and development.

A minimum of 42 semester credits, including:

#### Software Engineering Core (39 crs)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 145</td>
<td>Programming for New Programmers</td>
<td>4</td>
</tr>
<tr>
<td>or CS 148</td>
<td>Programming for Experienced Programmers</td>
<td></td>
</tr>
<tr>
<td>CS 146</td>
<td>The Big Picture in Computer Science</td>
<td>1</td>
</tr>
<tr>
<td>CS 245</td>
<td>Advanced Programming and Data Structures</td>
<td>4</td>
</tr>
<tr>
<td>CS 252</td>
<td>Computer Systems</td>
<td>4</td>
</tr>
<tr>
<td>CS 260</td>
<td>Database Systems</td>
<td>4</td>
</tr>
<tr>
<td>CS 268</td>
<td>Web Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 330</td>
<td>Programming Languages</td>
<td>3</td>
</tr>
<tr>
<td>CS 335</td>
<td>Algorithms</td>
<td>3</td>
</tr>
<tr>
<td>CS 352</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
<tr>
<td>CS 355</td>
<td>Software Engineering I</td>
<td>3</td>
</tr>
<tr>
<td>CS 396</td>
<td>Junior Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CS 452</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 485</td>
<td>Software Engineering II (capstone course)</td>
<td>3</td>
</tr>
</tbody>
</table>

A Computer Science elective, selected from one of the following options:

- **Option 1**
  - Select a minimum of three credits of electives chosen from the following Computer Science courses not already included in the Software Engineering core:
    - CS 278 Digital System Design
    - CS 291 Special Topics
    - CS 321 Web Design and Development
    - CS 322 Animation Programming
    - CS 370 Computer Security
    - CS 376 Cryptography and Network Security
    - CS 388 UNIX Systems Programming
    - CS 399 Independent Study - Juniors
    - CS 420 Artificial Intelligence
    - CS 436 Mobile Software Development
    - CS 450 Theory of Computation
    - CS 455 Computer Graphics
    - CS 462 Computer Networks
    - CS 491 Special Topics
    - CS 498 Computer Science Internship
    - Or other courses designated by the department (three-four credits; recommended for students considering industry employment)

- **Option 2**
  - Six credits from:
    - CS 482 Research in Computer Science I
    - CS 492 Research in Computer Science II

   1 additional capstone and research experience; recommended for students considering graduate school

**NOTE 1:** MATH 114 or equivalent is required.

**NOTE 2:** MATH 314 or equivalent is required.

**NOTE 3:** CJ 202, ENGL 312, or ENGL 313 must be completed for a degree in Computer Science, Software Engineering.