COMPUTER SCIENCE, COMPREHENSIVE MAJOR

Liberal Arts (Code 170-030)

University Requirements

GRADUATION REQUIREMENTS FOR BACCALAUREATE DEGREE

Credit Requirements

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

Academic Concentrations

Grade Point Requirements

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

University Residency Requirements

- Minimum total: 30 credits
- Senior year: 23 credits
- Major, Standard, upper division in residence: 12 credits
- Major, Comprehensive, upper division in residence: 21 credits
- 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.

Applicability of Credits Toward Graduation

Junior College or Two-Year College Credits. A maximum of 72 semester credits earned in a junior college or two-year college will be accepted as degree credits at UW-Eau Claire.

Extension Credits. Credits earned in credit outreach courses offered by UW-Eau Claire are treated as resident credits. Credits earned in extension courses offered by other units of the University of Wisconsin System are treated as transfer credits. All other (non-UW) extension and correspondence credits are normally limited to one-fourth of the total required for graduation from any curriculum.

WTCS Credits. A maximum of 72 semester credits earned in college parallel programs at Madison Area Technical College, Milwaukee Area Technical College, Nicolet Area Technical College, or Chippewa Valley Technical College may be accepted as degree credits at UW-Eau Claire. A set number of general education courses will be accepted from other technical schools. Occupational and technical courses may also be considered for transfer if the quality and content of the course work from the technical college is judged to be comparable to course work at UW-Eau Claire. Refer to the Transfer Credit Wizard (https://my.uwec.edu/psp/PUBLIC/EMPLOYEE/HRMS/c/EAU_SS_CUSTOM.EAU_TRNCRDWZ.GBL) or contact the UW-Eau Claire Admissions Office for information about the current transfer policy.

USAFI Credit. UW-Eau Claire will accept up to 32 semester credits for work done through the United States Armed Forces Institute, under the provision for non-UW correspondence credit (see Extension Credits above).

Activity Credit (band, chorus, drama, KINS 100-184 courses) Students may count toward graduation no more than one credit of KINS 110-184 courses. Students may count toward graduation no more than four credits earned in any single activity course and no more than 12 credits resulting from any combination of activity courses (excluding KINS 110-184 courses).

Other Restricted Credits. For other University restrictions, see the following: Cooperative Education; Credit by Examination; Satisfactory/Unsatisfactory Registration; Transfer of Credits. College or departmental restrictions may also be placed on Independent Study (399-499 courses), Directed Study (395-495), and other types of credits.

APPLICABILITY OF CREDITS TOWARD GRADUATION

Satisfactory/Unsatisfactory

<table>
<thead>
<tr>
<th>Credit Restrictions</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total degree credit</td>
<td>12</td>
</tr>
<tr>
<td>Major, Standard</td>
<td>1</td>
</tr>
<tr>
<td>Major, Comprehensive</td>
<td>2 courses</td>
</tr>
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</table>

Credit by Examination

<table>
<thead>
<tr>
<th>Credit Restrictions</th>
<th>Maximum</th>
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</thead>
<tbody>
<tr>
<td>Total degree credit</td>
<td>¼ of total</td>
</tr>
<tr>
<td>Major or minor</td>
<td>½ of total</td>
</tr>
</tbody>
</table>

Two-Year College Credits

<table>
<thead>
<tr>
<th>Credit Restrictions</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total degree credit</td>
<td>72 credits</td>
</tr>
<tr>
<td>Activity credit (KINS 100-184)</td>
<td>1 credit</td>
</tr>
<tr>
<td>Total Band, chorus, drama</td>
<td>12 credits</td>
</tr>
<tr>
<td>Single course band, chorus, drama</td>
<td>4 credits</td>
</tr>
</tbody>
</table>

Extension credits

<table>
<thead>
<tr>
<th>Credit Restrictions</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>UW-System</td>
<td>No maximum</td>
</tr>
<tr>
<td>Other extension/ correspondence</td>
<td>¼ of total</td>
</tr>
<tr>
<td>USAFI</td>
<td>32 credits</td>
</tr>
</tbody>
</table>

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.

LIBERAL EDUCATION CORE REQUIREMENTS

<table>
<thead>
<tr>
<th>Credit Restrictions</th>
<th>Minimum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total degree credit</td>
<td>36 credits</td>
</tr>
</tbody>
</table>
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
- One experience in laboratory science must be selected from either K1 or K2.

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

Liberal Arts (Code 170-030)

This major is recommended for students who desire a strong foundation in software design and development, computer systems and networking, and mathematics.

A minimum of sixty semester credits, including:

Computer Science 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>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td>---------</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 462</td>
<td>Computer Networks (capstone course)</td>
<td>3</td>
</tr>
</tbody>
</table>

**Mathematics Core (15 crs)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 114</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 215</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 314</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 246</td>
<td>Elementary Statistics</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 345</td>
<td>Introduction to Probability and Mathematical Statistics</td>
<td>3</td>
</tr>
</tbody>
</table>

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

**Option 1**

Select a minimum of six credits of electives chosen from the following and not already included in the Computer Science 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 485: Software Engineering II
- CS 491: Special Topics
- CS 498: Computer Science Internship

Or other courses designated by the department (six-seven credits; recommended for students considering industry employment)

**Option 2**

Select six credits from the following:

- 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

For a degree in Computer Science, a student must:

**Required courses not counted toward credits in major:**

Complete one of the following:

- ENGL 312: Science Writing
- ENGL 313: Technical Writing

Required:

- PHIL 308: Ethics in Computing and Engineering (3 crs)

Complete one lab science sequence chosen from:

- PHYS 211: General Physics
- & PHYS 212: General Physics

**OR**

- PHYS 231: University Physics I
- & PHYS 232: University Physics II

Note: The Satisfactory/Unsatisfactory option may not be elected to satisfy a course requirement at the 200 level or higher for the major or minor programs, except for CS 490.