PHYSICS, APPLIED PHYSICS EMPHASIS, MAJOR

Liberal Arts (Code 230-203)

University Requirements

GRADUATION REQUIREMENTS FOR BACCALAUREATE DEGREE

Credit Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum total for graduation</td>
<td>120</td>
</tr>
<tr>
<td>Upper division credits (courses numbered 300 and higher)</td>
<td>39</td>
</tr>
<tr>
<td>Liberal Education Core (<a href="http://catalog.uwec.edu/undergraduate/graduation-requirements/#header1">http://catalog.uwec.edu/undergraduate/graduation-requirements/#header1</a>)</td>
<td>36</td>
</tr>
<tr>
<td>Academic Concentrations (<a href="http://catalog.uwec.edu/undergraduate/graduation-requirements/#header16">http://catalog.uwec.edu/undergraduate/graduation-requirements/#header16</a>)</td>
<td></td>
</tr>
<tr>
<td>Grade Point Requirements (<a href="http://catalog.uwec.edu/undergraduate/graduation-requirements/#header14">http://catalog.uwec.edu/undergraduate/graduation-requirements/#header14</a>)</td>
<td></td>
</tr>
</tbody>
</table>

Total: 200 average

Resident: 200 average

Major: 200 average

Minor: 200 average

Certificate: 200 average

University Residency Requirements ([http://catalog.uwec.edu/undergraduate/graduation-requirements/#header15](http://catalog.uwec.edu/undergraduate/graduation-requirements/#header15))

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum total</td>
<td>30</td>
</tr>
<tr>
<td>Senior year</td>
<td>23</td>
</tr>
<tr>
<td>Major, Standard, upper division in residence</td>
<td>12</td>
</tr>
<tr>
<td>Major, Comprehensive, upper division in residence</td>
<td>21</td>
</tr>
<tr>
<td>Certificate</td>
<td>25 percent of credits</td>
</tr>
</tbody>
</table>

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](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

<table>
<thead>
<tr>
<th>Credit Restrictions</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satisfactory/Unsatisfactory</td>
<td>12</td>
</tr>
<tr>
<td>Major, Standard</td>
<td>1 course</td>
</tr>
<tr>
<td>Major, Comprehensive</td>
<td>2 courses</td>
</tr>
<tr>
<td>Minor</td>
<td>1 course</td>
</tr>
<tr>
<td>Credit by Examination</td>
<td>¼ of total</td>
</tr>
<tr>
<td>Major or minor</td>
<td>½ of total</td>
</tr>
<tr>
<td>Two-Year College Credits</td>
<td>72 credits</td>
</tr>
<tr>
<td>Activity credit (band, chorus, drama, KINS 100-184)</td>
<td>1 credit</td>
</tr>
<tr>
<td>Total KINS 100-184</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>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>UW-System</td>
</tr>
<tr>
<td>Other extension correspondence</td>
</tr>
</tbody>
</table>

USAFI

<table>
<thead>
<tr>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>USAFI</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 five learning goals of our liberal education core and the 12 learning outcomes they comprise.

LIBERAL EDUCATION CORE REQUIREMENTS

Knowledge Goal
Knowledge Outcome 1 (K1): Natural Sciences (http://catalog.uwec.edu/undergraduate/attribute-k1/)
Two (2) learning experiences
One experience in laboratory science must be selected from either K1 or K2.

Knowledge Outcome 2 (K2): Social Sciences (http://catalog.uwec.edu/undergraduate/attribute-k2/)
Two (2) learning experiences
One experience in laboratory science must be selected from either K1 or K2.

Knowledge Outcome 3 (K3): Humanities (http://catalog.uwec.edu/undergraduate/attribute-k3/)
Two (2) learning experiences

Knowledge Outcome 4 (K4): Fine Arts (http://catalog.uwec.edu/undergraduate/attribute-k4/)
One (1) learning experience

Skills Goal
Skills Outcome 1 (S1): Written and Oral Communication (http://catalog.uwec.edu/undergraduate/attribute-s1/)
Two (2) learning experiences
One S1 must meet the University Writing Requirement (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header10)

Skills Outcome 2 (S2): Mathematics (http://catalog.uwec.edu/undergraduate/attribute-s2/)
One (1) learning experience
One S2 to meet the University Mathematics Requirement (http://catalog.uwec.edu/undergraduate/graduation-requirements/#header11)

Skills Outcome 3 (S3): Creativity (http://catalog.uwec.edu/undergraduate/attribute-s3/)
One (1) learning experience

Responsibility Goal
Responsibility Outcome 1 (R1): Equity, Diversity, and Inclusivity (http://catalog.uwec.edu/undergraduate/attribute-r1/)
Two (2) learning experiences
One R1 must satisfy Design for Diversity (http://catalog.uwec.edu/undergraduate/attribute-DDIV/#header13)

Responsibility Outcome 2 (R2): Global Perspectives (http://catalog.uwec.edu/undergraduate/attribute-r2/)
One (1) learning experience

Responsibility Outcome 3 (R3): Civic and Environmental Issues (http://catalog.uwec.edu/undergraduate/attribute-r3/)
One (1) learning experience

Integration Goal
Integration Outcome 1 (I1): Integration (http://catalog.uwec.edu/undergraduate/attribute-i1/)
Two (2) learning experiences

Service-Learning Goal
Service-Learning (http://catalog.uwec.edu/undergraduate/attribute-sl/#header13) 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 (http://catalog.uwec.edu/undergraduate/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 (http://catalog.uwec.edu/undergraduate/arts-sciences/#academicprogramstext).

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 5 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 230-203)

This emphasis focuses on physics applications of relevance to industrial and engineering employment environments following completion of the baccalaureate degree.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 120</td>
<td>Introduction to Engineering</td>
<td>0.5-2</td>
</tr>
<tr>
<td>or PHYS 186</td>
<td>Introductory Seminar</td>
<td></td>
</tr>
<tr>
<td>PHYS 231</td>
<td>University Physics I</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 232</td>
<td>University Physics II</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 332</td>
<td>University Physics III</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 340</td>
<td>Optics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 350</td>
<td>Electric and Electronic Circuits</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 360</td>
<td>Electronics</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following:

- PHYS 255 & PHYS 356 Statics and Dynamics
- PHYS 365 Theoretical Mechanics
- PHYS 375 Electromagnetic Fields
- PHYS 430 Advanced Laboratory Techniques 2
- PHYS 486 Senior Seminar 0.5

The remaining Physics credits are to be selected from any physics course above 325 (including PHYS 374/MSE 374) and MSE 315, MSE 357, MSE 372, and MSE 451.

Required courses not counted toward credits in major:

- MATH 312 Differential Equations and Linear Algebra
- MATH 345 Introduction to Probability and Mathematical Statistics
- PHYS 240 Computational Physics
- or CS 145 Programming for New Programmers
- or CS 163 Introduction to Programming in C++
- or CS 170 Computing for the Sciences and Mathematics

Select one of the following:

- CHEM 115 Chemical Principles
- CHEM 103 General Chemistry I
- & CHEM 104 and General Chemistry II
- CHEM 105 General Chemistry I Lecture
- & CHEM 106 and General Chemistry I Laboratory
- & CHEM 109 and General Chemistry II with Lab

1 Many upper division physics courses require proficiency in Python so PHYS 240 is preferred. If CS 145, CS 163 or CS 170 is taken, Python proficiency will be required prior to enrollment in relevant upper division physics courses. Contact the department to complete the required programming exercise.

NOTE 1: An approved research project must be completed prior to PHYS 486 (see PHYS 486 course description for details)

NOTE 2: A maximum of six credits of any combination of PHYS 399, PHYS 491, and PHYS 499 can be counted toward the major.

NOTE 3: Limit of 3 credits of PHYS 495 counted toward major.