PHYSICS, DUAL DEGREE ENGINEERING EMPHASIS, MAJOR

University Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal Arts (Code 230-206)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Graduation Requirements for Baccalaureate Degree**

<table>
<thead>
<tr>
<th>Credit Requirements</th>
<th></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</td>
<td>36</td>
</tr>
</tbody>
</table>

**Academic Concentrations**

<table>
<thead>
<tr>
<th>Grade Point Requirements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>2.00 average</td>
</tr>
<tr>
<td>Resident</td>
<td>2.00 average</td>
</tr>
<tr>
<td>Major</td>
<td>2.00 average</td>
</tr>
<tr>
<td>Minor</td>
<td>2.00 average</td>
</tr>
<tr>
<td>Certificate</td>
<td>2.00 average</td>
</tr>
</tbody>
</table>

**University Residency Requirements**

<table>
<thead>
<tr>
<th>University Residency Requirements</th>
<th></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.
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>Liberal Education Core Requirements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Knowledge Goal**

- Knowledge Outcome 1 (K1): Natural Sciences
  - Two (2) learning experiences
- 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
- Skills Outcome 2 (S2): Mathematics
  - One (1) learning experience
- Skills Outcome 3 (S3): Creativity
  - One (1) learning experience

**Responsibility Goal**

- Responsibility Outcome 1 (R1): Equity, Diversity, and Inclusivity
  - Two (2) learning experiences
- 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 emphasis combines the benefits of a traditional physics degree with those of a formal engineering education. In this program students receive a UW-Eau Claire physics degree in conjunction with a bachelor’s degree in engineering from UW-Madison, UW-Milwaukee, UW-Stout, or the University of Minnesota-Twin Cities.

The Dual Degree Engineering Emphasis requires 36 credits of physics coursework including:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 120</td>
<td>Introduction to Engineering</td>
<td>2</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>
</tbody>
</table>

**Select one of the following:**

- **PHYS 365** Theoretical Mechanics
- **PHYS 255** Statics
- **& PHYS 356** and Dynamics (option depends on engineering program)

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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 312</td>
<td>Differential Equations and Linear Algebra</td>
</tr>
</tbody>
</table>

Select one computer science course from the following:

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 163</td>
<td>Introduction to Programming in C++</td>
</tr>
<tr>
<td>CS 170</td>
<td>Computing for the Sciences and Mathematics</td>
</tr>
</tbody>
</table>

Complete an engineering degree

1 To receive the UW-Eau Claire Dual Degree Engineering Emphasis physics degree, the student must complete an engineering degree from one of the above schools. Students will typically complete most of the UW-Eau Claire Liberal Education Core and Dual Degree physics requirements while at UW-Eau Claire before transferring to the engineering school. Students must complete 84 semester credits before transferring to the engineering school, 56 of which must be taken in residency at UW-Eau Claire, with a minimum of 12 upper-division credits of physics and a minimum of six credits of mathematics taken at UW-Eau Claire.

**NOTE 1:** The UW-Eau Claire physics degree will not be awarded until an official copy of the student’s engineering degree has been sent to UW-Eau Claire’s Registrar’s Office. If the engineering degree is not completed, then students must satisfy all of the requirements for another degree program at UW-Eau Claire.

**NOTE 2:** A maximum of six credits of any combination of PHYS 392, PHYS 399, PHYS 491, and PHYS 499 can be counted toward the major.