MATERIALS SCIENCE, NANOSCIENCE EMPHASIS, COMPREHENSIVE MAJOR

Liberal Arts (Code 250-005)

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 ^1^ 120
Upper division credits (courses numbered 300 and higher) 39
Liberal Education Core 36
Academic Concentrations

Grade Point Requirements ^2^

<table>
<thead>
<tr>
<th>Total</th>
<th>2.00 average</th>
</tr>
</thead>
<tbody>
<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 ^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>

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**

**Materials Science Core**

The structure of the major is unique: it integrates an engineering-oriented field into a liberal arts and sciences degree, and is thus deliberately interdisciplinary and broadly defined, consistent with a liberal education approach. Students specialize through a chosen emphasis. The major serves students who plan to enter the workforce after graduation as well as students interested in graduate education in areas such as Materials Science, Engineering, Chemistry, and Physics.

The degree is comprised of a minimum of 62 credits, including completion of core courses, at least four credits from courses in the Materials Science elective, and at least eight credits in a chosen emphasis. Credits applied toward the elective and emphasis must be unique credits.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 221</td>
<td>Living in a Materials World</td>
<td>3</td>
</tr>
<tr>
<td>MSE 315</td>
<td>Materials Characterization</td>
<td>4</td>
</tr>
<tr>
<td>MSE 334</td>
<td>Soft Materials</td>
<td>4</td>
</tr>
<tr>
<td>MSE 350</td>
<td>Thermodynamics of Materials</td>
<td>4</td>
</tr>
<tr>
<td>MSE 357</td>
<td>Phase Transformation &amp; Kinetics</td>
<td>3</td>
</tr>
<tr>
<td>MSCI 384</td>
<td>Materials Science Junior Seminar I</td>
<td>0.5</td>
</tr>
<tr>
<td>MSCI 385</td>
<td>Materials Science Junior Seminar II</td>
<td>0.5</td>
</tr>
<tr>
<td>MSCI 484</td>
<td>Materials Science Capstone I</td>
<td>1</td>
</tr>
</tbody>
</table>

**Chemistry**

CHEM 115  Chemical Principles  6

or

CHEM 103  General Chemistry I

& CHEM 104  General Chemistry II  1

CHEM 325  Organic Chemistry I with Laboratory  4

**Mathematics**

MATH 114  Calculus I  4

MATH 215  Calculus II  4

**Physics**

PHYS 231  University Physics I  5

PHYS 232  University Physics II  5

**Elective Courses**

- MSE 362  Microelectronic Materials Processing
- MSE 363  Microelectronic Materials Processing Lab
- MSE 367  Macroprocessing of Materials
- MSE 368  Macroprocessing Materials Lab
- MSE 372  Transport Phenomena
- MSE 451  Computational Materials Science
- MSE 475  Nanomaterials
- MSCI 395  Directed Studies
- MSCI 399  Independent Study - Juniors
- MSCI 499  Independent Study - Seniors

1 Only six credits apply to major.

**NOTES:**

1. Up to two credits total from MSCI 395, MSCI 399, and MSCI 499 may be applied toward any emphasis upon approval of a faculty advisor.

2. MATH 312 is recommended for students planning to attend graduate school.

**Nanoscience Emphasis**

**Core and elective courses plus the following:**

- MSE 475  Nanomaterials  3

**Five credits selected from:**

- MSE 362  Microelectronic Materials Processing

- MSE/PHYS 374  Physics of Solids

- MSCI 395  Directed Studies

- MSCI 399  Independent Study - Juniors

- MSCI 499  Independent Study - Seniors

1 Only six credits apply to major.

**NOTES:**

1. Up to two credits total from MSCI 395, MSCI 399, and MSCI 499 may be applied toward any emphasis upon approval of a faculty advisor.

2. MATH 312 is recommended for students planning to attend graduate school.