MATERIALS SCIENCE, COMPREHENSIVE MAJOR

University Code (Code 250-010)

University Requirements

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

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.

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

Credit Restrictions

| Total degree credit | maximum 12 |
| Major, Standard | maximum 1 course |
| Major, Comprehensive | maximum 2 courses |

Credit by Examination

Total degree credit  maximum ¼ of total
Major or minor  maximum ½ of total

Two-Year College Credits

Total degree credit  maximum 72 credits

Activity credit (band, chorus, drama, KINS 100-184)

Total KINS 100-184  maximum 1 credit
Total Band, chorus, drama  maximum 12 credits
Single course band, chorus, drama  maximum 4 credits

Extension credits

UW-System  no maximum
Other extension/correspondence  maximum ¼ of total

USAFI

USAFI  maximum 32 credits

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

a minimum of 36 credits
### Knowledge Goal

<table>
<thead>
<tr>
<th>Knowledge Outcome</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (K1): Natural Sciences</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td>2 (K2): Social Sciences</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td>3 (K3): Humanities</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td>4 (K4): Fine Arts</td>
<td>One (1) learning experience</td>
</tr>
</tbody>
</table>

### Skills Goal

<table>
<thead>
<tr>
<th>Skills Outcome</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (S1): Written and Oral Communication</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td>2 (S2): Mathematics</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td>3 (S3): Creativity</td>
<td>One (1) learning experience</td>
</tr>
</tbody>
</table>

### Responsibility Goal

<table>
<thead>
<tr>
<th>Responsibility Outcome</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (R1): Equity, Diversity, and Inclusivity</td>
<td>Two (2) learning experiences</td>
</tr>
<tr>
<td>2 (R2): Global Perspectives</td>
<td>One (1) learning experience</td>
</tr>
<tr>
<td>3 (R3): Civic and Environmental Issues</td>
<td>One (1) learning experience</td>
</tr>
</tbody>
</table>

### Integration Goal

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

### Service-Learning Goal

Service-Learning 30 hours

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### 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 satisfactory 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 satisfactory 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 250-010)**

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 six credits from courses in the Materials Science electives,
and at least six credits in a chosen emphasis. Credits applied toward the electives and emphasis must be unique credits.

## CORE COURSES

**Materials Science**

- **MSE 221** Living in a Materials World 3
- **MSE 315** Materials Characterization 4
- **MSE 334** Soft Materials 4
- **MSE 350** Thermodynamics of Materials 4
- **MSE 357** Phase Transformation & Kinetics 3
- **MSCI 384** Materials Science Junior Seminar I 0.5
- **MSCI 385** Materials Science Junior Seminar II 0.5
- **MSCI 484** Materials Science Capstone I 1
- **MSCI 485** Materials Science Capstone II 2

**Chemistry**

- **CHEM 115** Chemical Principles 6
  - or
  - **CHEM 103 & CHEM 104** General Chemistry I and General Chemistry II 8
  - or
  - **CHEM 105 & CHEM 106 & CHEM 109** General Chemistry I Lecture and General Chemistry I Laboratory and General Chemistry II with Lab 9
- **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 256** Introduction to Computer Aided Design 1
- **MSE 362** Microelectronic Materials Processing 2
- **MSE 363** Microelectronic Materials Processing Lab 2
- **MSE 367** Macroprocessing of Materials 3
- **MSE 368** Macroprocessing Materials Lab 2
- **MSE 372** Transport Phenomena 3
- **MSE 374** Physics of Solids 4
- **MSE 451** Computational Materials Science 4
- **MSE 475** Nanomaterials 3
- **MSE 493** Collaborative Internship 1-3
- **MSE 494** Off-campus Materials Science Internship 1-3
- **MSCI 395** Directed Studies 1-3
- **MSCI 399** Independent Study - Juniors 1-3
- **MSCI 499** Independent Study - Seniors 1-3

1 Only six credits apply to major.

### NOTES:

1. A maximum of three credits total from **MSCI 395**, **MSCI 399**, and **MSCI 499** and **MSE 493** and **MSE 494** may be applied toward the Electives category.

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

## EMPHASIS REQUIREMENTS

Core courses plus six credits from the Elective courses plus six credits in an Emphasis. All six emphasis credits must meet the requirements described in either A or B below.

### A. Defined emphasis

- Be from the same prefix
- Be from the following prefixes: BIOL, CHEM, CS, GEOL, MATH, MGMT, PHYS
- Be from UWEC courses numbered 300 or above, or from courses appropriate for a major, such as: BIOL 221, BIOL 222, BIOL 223, CHEM 213, CHEM 218, CS 145, CS 148, CS 163, CS 170, CS 245, CS 252, GEOL 106, GEOL 110, GEOL 115, GEOL 118, and MATH 216

### B. Distributed emphasis

The student may pursue an emphasis that reflects a thematic area of concentration and intentional connections. Such an emphasis, with approval of the faculty advisor, must draw from courses appropriate for a major in another area distinct from Materials Science or Materials Science and Engineering.