MATERIALS SCIENCE AND BIOMEDICAL ENGINEERING

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Department Website (https://www.uwec.edu/academics/college-arts-sciences/departments-programs/materials-science-biomedical-engineering/)

The Materials Science & Biomedical Engineering Department offers comprehensive majors in Materials Science, Materials Science & Engineering, and Biomedical Engineering. All three degree programs are designed to give students a strong foundation in fundamental sciences and mathematics.

The field of materials science and engineering is the study of "condensed matter" (that is, solids and liquids), and how an understanding of materials can be applied to fabricating devices and structures of utility. A relatively young discipline, materials science is an outgrowth of two traditional areas: the study of matter (and its structure-property relationship) that originated in chemistry and physics, and developments in various "materials" engineering fields (notably, microelectronics, metallurgy, ceramics, and plastics). More generally, materials scientists and materials engineers explore the interdependence of how a material is processed, its structure, and its properties, and how these impact material performance.

Biomedical engineering is also a relatively new area that explores the integration of engineering, technology and computation with the medical field. BME is a diverse discipline that covers specialties such as medical imaging, medical devices and instrumentation, cell and tissue engineering, 3D printing and biomaterials. The focus of this degree is designing and implementing new approaches that can help enhance disease diagnosis, improve disease management and lead to better treatments.

Department Honors in Materials Science & Biomedical Engineering

Eligibility – All students majoring in Materials Science, Materials Science and Engineering, or Biomedical Engineering are invited to apply. Students should have a resident GPA and an overall GPA of 3.50 or higher. Student should also have a GPA of 3.50 or higher in their Materials Science, MS&E, or BME major, and meet the Department's "High Impact" experience requirements (described below).

Application Procedure and Requirements – Submit an application form (available in the Department office) after completing four semesters at UW-EC, but no later than the student's graduation semester (e.g., during the Spring semester for a May graduate). A departmental faculty member familiar with the student's work (i.e., the student's faculty advisor, research advisor, etc.) must endorse the application. In addition to the GPA requirements listed above, the student submits evidence to the supporting faculty member that at least two High Impact experiences (of the seven) listed below have been completed; completing one of the seven experiences twice is not sufficient for Department Honors.

1. a summer research experience off campus as part of a federal program (NSF, NIST, DoD, DoE, etc.)
2. an appropriate internship related related to the student's major
3. a Study Abroad experience or Domestic Intercultural Immersion experience
4. an appropriate "professional" presentation, which can be met by either:
    a. any presentation at an off-campus conference
    b. an **oral** presentation at CERCA, the Provost's Honors Symposium, the WiSys Quick Pitch, or an accepted talk at the departmental seminar series
5. a faculty/student collaborative research project (that includes a poster presentation at CERCA)
6. a publication in a peer-reviewed journal
7. other immersive experience that is approved by the Materials Science & Biomedical Engineering faculty for departmental honors

Faculty

Matt Jewell, Chair

Liz Glogowski
Ying Ma
Marcus McEllistrem
Joseph Petefish
Michaela Pfau-Cloud
Aswin Sundarakrishnan

Douglas Dunham, Materials Science and Engineering Center (MSEC) Director

Professional Staff, MSEC:
Laurel McEllistrem
Anthony Wagner

Majors

- Comprehensive Major: Materials Science and Engineering - B.S. (http://catalog.uwec.edu/undergraduate/arts-sciences/materials-science-biomedical-engineering/materials-science-engineering-comprehensive-major-bs/)
- Comprehensive Major: Biomedical Engineering - B.S. (http://catalog.uwec.edu/undergraduate/arts-sciences/materials-science-biomedical-engineering/biomedical-engineering-major-bs/)
- Comprehensive Major: Materials Science - B.A./B.S. (http://catalog.uwec.edu/undergraduate/arts-sciences/materials-science-biomedical-engineering/materials-science-comprehensive-major-ba-bs/)

Certificate

- Certificate: Materials Science (http://catalog.uwec.edu/undergraduate/arts-sciences/materials-science-biomedical-engineering/materials-science-certificate/)