This is a course-based named option within the Biomedical Engineering M.S. (http://guide.wisc.edu/graduate/biomedical-engineering/biomedical-engineering-ms/)

The Biomedical Innovation, Design, and Entrepreneurship named option in the Biomedical Engineering M.S. program is designed to provide additional graduate-level, project-based experiences in design, prototyping, and manufacturing, as well as an understanding of business fundamentals, entrepreneurship, and project management. Upon completion, student will be prepared for careers at the interface of engineering and business.

ADMISSIONS

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website.

Graduate admissions is a two-step process between academic programs and the Graduate School. Applicants must meet the minimum requirements (https://grad.wisc.edu/apply/requirements/) of the Graduate School as well as the program(s). Once you have researched the graduate program(s) you are interested in, apply online (https://grad.wisc.edu/apply/).

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Deadline</td>
<td>December 15</td>
</tr>
<tr>
<td>Spring Deadline</td>
<td>October 1</td>
</tr>
<tr>
<td>Summer Deadline</td>
<td>December 15</td>
</tr>
<tr>
<td>GRE (Graduate Record Examinations)</td>
<td>Not required.</td>
</tr>
<tr>
<td>English Proficiency Test</td>
<td>Every applicant whose native language is not English or whose undergraduate instruction was not in English must provide an English proficiency test score and meet the Graduate School minimum requirements (<a href="https://grad.wisc.edu/apply/requirements/#english-proficiency">https://grad.wisc.edu/apply/requirements/#english-proficiency</a>).</td>
</tr>
<tr>
<td>Other Test(s) (e.g., GMAT, MCAT)</td>
<td>n/a</td>
</tr>
<tr>
<td>Letters of Recommendation</td>
<td>3*</td>
</tr>
</tbody>
</table>

* Not required for applicants with a UW–Madison Biomedical Engineering bachelor's degree.

All applicants must satisfy requirements that are set forth by the Graduate School (https://grad.wisc.edu/). Students admitted to the program may be required to make up deficiency course requirements.

To apply to the BME program, complete applications (https://grad.wisc.edu/apply/), including supportive materials, must be submitted as described below and received by the deadline.

OFFICIAL ACADEMIC TRANSCRIPT

Electronically submit one copy of your transcript of all undergraduate and previous graduate work in your online application to the Graduate School. Unofficial copies of transcripts will be accepted for review. Official copies are required after an applicant is recommended for admission. Please do not send transcripts or any other application materials to the Graduate School or the BME department unless requested. If you have questions, please contact bmegradadmission@engr.wisc.edu.

TEST OF ENGLISH AS A FOREIGN LANGUAGE (TOEFL)

The TOEFL is required for international students unless a degree from a U.S. educational institution is held. Scores should be sent using institution code 1846.

An applicant whose TOEFL (iBT) score is below 92; TOEFL (PBT) score is below 580; or IELTS score is below 7 must take an English assessment test upon arrival. Depending on the result, an applicant may need to register for recommended English as a Second Language (ESL) courses in the first semester of enrollment.

THREE LETTERS OF RECOMMENDATION

These letters are required from people who can accurately judge the applicant’s academic or research performance. Letters of recommendation are submitted electronically to graduate programs through the online application. Applicants should not send any more than three letters (if more than three are sent, only the first three will be considered). See the Graduate School for FAQs (https://grad.wisc.edu/apply/) regarding letters of recommendation.

STATEMENT OF PURPOSE

In this document, applicants should explain why they want to pursue further education in BME. See the Graduate School for more advice on how to structure a personal statement (https://grad.wisc.edu/apply/prepare/).

RESUME

Upload your resume in your application.

APPLICATION FEE

Submission must be accompanied by the one-time application fee. It is non-refundable and can be paid by credit card (Master Card or Visa) or debit/ATM. This fee cannot be waived or deferred. Fee grants (https://
GRADUATE SCHOOL ADMISSIONS

Graduate admissions is a two-step process between academic degree programs and the Graduate School. Applicants must meet requirements of both the program(s) and the Graduate School. Once you have researched the graduate program(s) you are interested in, apply online (https://grad.wisc.edu/admissions/).

FUNDING

GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (https://grad.wisc.edu/funding/) is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

PROGRAM INFORMATION

Students enrolled in this program are not eligible to receive tuition remission from graduate assistantship appointments at this institution.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstexttext), in addition to the program requirements listed below.

NAMED OPTION REQUIREMENTS

MODE OF INSTRUCTION

Mode of Instruction Definitions

Accelerated: Accelerated programs are offered at a fast pace that condenses the time to completion. Students are able to complete a program with minimal disruptions to careers and other commitments.

Evening/Weekend: Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

Face-to-Face: Courses typically meet during weekdays on the UW-Madison Campus.

Hybrid: These programs combine face-to-face and online learning formats. Contact the program for more specific information.

Online: These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

CURRICULAR REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 semesters of B M E 701</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>9 credits of engineering courses in design, prototyping and manufacturing</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>B M E 601</td>
<td>Special Topics in Biomedical Engineering</td>
<td></td>
</tr>
<tr>
<td>B M E 601</td>
<td>Special Topics in Biomedical Engineering (Design for Rehabilitation)</td>
<td></td>
</tr>
<tr>
<td>B M E 602</td>
<td>Special Topics in Biomedical Engineering</td>
<td></td>
</tr>
<tr>
<td>B M E 602</td>
<td>Special Topics in Biomedical Engineering (Microfluidics and Rapid Prototyping)</td>
<td></td>
</tr>
<tr>
<td>B M E/M E 603</td>
<td>Topics in Bio-Medical Engineering</td>
<td></td>
</tr>
<tr>
<td>B M E/I SY E 662</td>
<td>Design and Human Disability and Aging</td>
<td></td>
</tr>
<tr>
<td>M E 449</td>
<td>Redesign and Prototype Fabrication</td>
<td></td>
</tr>
<tr>
<td>M E 514</td>
<td>Additive Manufacturing</td>
<td></td>
</tr>
<tr>
<td>M E 549</td>
<td>Product Design</td>
<td></td>
</tr>
<tr>
<td>M E 601</td>
<td>Special Topics in Mechanical Engineering</td>
<td></td>
</tr>
<tr>
<td>M E/I SY E 641</td>
<td>Design and Analysis of Manufacturing Systems</td>
<td></td>
</tr>
<tr>
<td>M E 748</td>
<td>Optimum Design of Mechanical Elements and Systems</td>
<td></td>
</tr>
<tr>
<td>I SY E 415</td>
<td>Introduction to Manufacturing Systems, Design and Analysis</td>
<td></td>
</tr>
<tr>
<td>I SY E 515</td>
<td>Engineering Management of Continuous Process Improvement</td>
<td></td>
</tr>
<tr>
<td>I SY E 517</td>
<td>Decision Making in Health Care</td>
<td></td>
</tr>
</tbody>
</table>
I SY E 552  Human Factors Engineering Design and Evaluation
I SY E 557  Human Factors Engineering for Healthcare Systems
I SY E 601  Special Topics in Industrial Engineering
I SY E 602  Special Topics in Human Factors
I SY E 603  Special Topics in Engineering Analytics and Operations Research
I SY E 604  Special Topics in Manufacturing and Supply Chain Management
I SY E 606  Special Topics in Healthcare Systems Engineering
INTEREGR 477  Tools for Prototyping and Manufacturing
INTEREGR 601  Topics in Interdisciplinary Engineering

6 credits of general business, entrepreneurship and strategic innovation courses
GEN BUS 310  Fundamentals of Accounting and Finance for Non-Business Majors
GEN BUS 311  Fundamentals of Management and Marketing for Non-Business Majors
M HR/A AE 540  Intellectual Property Rights, Innovation and Technology
M HR 715  Strategic Management of Innovation
M HR 722  Entrepreneurial Management
M HR 734  Venture Creation
M HR 738  Weissert Applied Ventures in Entrepreneurship (WAVE)
R M I 650  Sustainability, Environmental and Social Risk Management
B M E 602  Special Topics in Biomedical Engineering (Advanced Topics in Biomanufacturing Entrepreneurship)
B M E 602  Special Topics in Biomedical Engineering (Medical Device Ecosystems)
B M E 550  Introduction to Biological and Medical Microsystems
B M E 556  Systems Biology. Mammalian Signaling Networks
B M E/CBE 560  Biochemical Engineering
B M E/ MED PHYS 573  Mathematical and Conceptual Foundations
B M E/ MED PHYS 574  Imaging in Medicine: Applications
B M E/ MED PHYS 578  Non-Ionizing Diagnostic Imaging
B M E/M E 615  Tissue Mechanics
B M E/MED PHYS/ Microscopy of Life
PHMCOL-M/ PHYSICS/ RADIOL 619
B M E/ CHEM/ MED PHYS 750  Biological Optical Microscopy
B M E/E C E/ MED PHYS 778  Machine Learning in Ultrasound Imaging
CBE 540  Polymer Science and Technology
E C E/ COMP SCI/ I SY E 524  Introduction to Optimization
E C E/ COMP SCI 533  Image Processing
E C E/ COMP SCI 539  Introduction to Artificial Neural Networks
M E 563  Intermediate Fluid Dynamics
M E/E M A 570  Experimental Mechanics
M E 573  Computational Fluid Dynamics
M S & E 521  Advanced Polymeric Materials
MED PHYS/ PEDIAT 705  Women and Leadership: Science, Health and Engineering

3-6 credits of advanced design or research project
B M E 799  Advanced Independent Study

Additional credits taken from the list above, in consultation with advisor

Total Credits 30

1
At least 6 credits in "Engineering courses in design, prototyping, manufacturing" and/or "Technical elective engineering courses" need to be from B M E courses.

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval. Students in this program cannot enroll concurrently in other undergraduate, graduate or certificate programs.

POLICIES

GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy/) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the
These resources may be helpful in addressing your concerns:

**NAMED OPTION-SPECIFIC POLICIES**

**PRIOR COURSEWORK**

**Graduate Work from Other Institutions**

This program follows the Graduate School's policy for Satisfying Requirements with Prior Graduate Coursework from Other Institutions. ([https://policy.wisc.edu/library/UW-1216/](https://policy.wisc.edu/library/UW-1216/)) Reach out to the BME Graduate Coordinator for more information.

**UW–Madison Undergraduate**

A student who has completed their bachelor's degree at UW-Madison may transfer 6 credits of coursework with program approval. These courses must be coursework numbered 400 level or above. Coursework earned five or more years prior to admission to a M.S. degree is not allowed to satisfy requirements. These courses may not be used toward the Graduate School's Minimum Graduate Residence Credit.

**UW–Madison University Special**

This program follows the Graduate School's policy for Transfer from UW–Madison University Special Student Career at UW–Madison. ([https://policy.wisc.edu/library/UW-1216/](https://policy.wisc.edu/library/UW-1216/)) Reach out to the BME Graduate Coordinator for more information.

**PROBATION**

This program follows the Graduate School's Probation policy ([https://policy.wisc.edu/library/UW-1217/](https://policy.wisc.edu/library/UW-1217/)).

**ADVISOR / COMMITTEE**

Every BME graduate student must have a faculty advisor. A faculty advisor provides the graduate student with academic guidance in their course program and research oversight in their thesis, project, or engineering report. Graduate students should always seek advice from their advisor and other faculty in their interest area prior to enrolling for courses.

**CREDITS PER TERM ALLOWED**

15 credits maximum

**TIME LIMITS**

The MS BIDE program is typically completed in less than 18 months.

This program follows the Graduate School's Time Limits policy ([https://policy.wisc.edu/library/UW-1221/](https://policy.wisc.edu/library/UW-1221/)).

**GRIEVANCES AND APPEALS**

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting ([https://doso.students.wisc.edu/bias-or-hate-reporting/](https://doso.students.wisc.edu/bias-or-hate-reporting/))
- Graduate Assistantship Policies and Procedures ([https://hr.wisc.edu/policies/gapp/#grievance-procedure](https://hr.wisc.edu/policies/gapp/#grievance-procedure))
- Hostile and Intimidating Behavior Policies and Procedures ([https://hr.wisc.edu/hib/](https://hr.wisc.edu/hib/))
  - Office of the Provost for Faculty and Staff Affairs ([https://facstaff.provost.wisc.edu/](https://facstaff.provost.wisc.edu/))
- Dean of Students Office ([https://doso.students.wisc.edu/](https://doso.students.wisc.edu/)) (for all students to seek grievance assistance and support)
- Employee Assistance ([http://www.eao.wisc.edu/](http://www.eao.wisc.edu/)) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office ([https://employeedisabilities.wisc.edu/](https://employeedisabilities.wisc.edu/)) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School ([https://grad.wisc.edu/](https://grad.wisc.edu/)) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance ([https://compliance.wisc.edu/](https://compliance.wisc.edu/)) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office of Student Conduct and Community Standards ([https://conduct.students.wisc.edu/](https://conduct.students.wisc.edu/)) (for conflicts involving students)
- Ombuds Office for Faculty and Staff ([http://www.ombuds.wisc.edu/](http://www.ombuds.wisc.edu/)) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX ([https://compliance.wisc.edu/titleix/](https://compliance.wisc.edu/titleix/)) (for concerns about discrimination)

**BME Grievance Procedures**

If a student feels unfairly treated or aggrieved by faculty, staff, or another student, the University offers several avenues to resolve the grievance.

**Step 1**

The student is encouraged to speak first with the person toward whom the grievance is directed to see if a situation can be resolved at this level. Students are also encouraged to talk with their faculty advisors regarding concerns or difficulties, or reach out to the Graduate Student Services Coordinator or Associate Chair of BME Graduate Advising for additional assistance. These activities do not rise to the level of a formal grievance; however, the student is encouraged to keep documentation of these interactions as they may be useful if a formal grievance is pursued.

**Step 2**

Should a satisfactory resolution not be achieved, a formal grievance can be filed with the BME Grievance Committee. To do so, the student contacts the Department Administrator, who will provide the student with the name of the current chair of the Grievance Committee. The student will then contact the Chair of the Grievance Committee, who will reply within seven calendar days. If the grievance is with the current Chair of the Grievance Committee, please let the Department Administrator know and they will identify an alternate committee member to contact. It is advised that grievances are filed within 60 calendar days of the alleged unfair treatment to enable a thorough investigation.

**Step 3**

If the student does not feel comfortable working through the departmental process, they are encouraged to seek out other campus resources including:

- The Assistant Dean for Graduate Affairs in the College of Engineering
- The Graduate School
- UW Division of Diversity, Equity & Educational Achievement (DDEEA)
- McBurney Disability Resource Center
- Employee Assistance Office
- Ombuds Office
- University Health Services
Step 4

At this point, if either party (the student or the person toward whom the grievance is directed) is unsatisfied with the decision of the faculty committee, the party may file a written appeal. Either party has ten working days to file a written appeal to the School/College. For more information, students should consult the College of Engineering Academic Advising Policies and Procedures.

Step 5

Documentation of the grievance will be stored for at least seven years. Significant grievances that set a precedent will be stored indefinitely. The Graduate School has procedures for students wishing to appeal a grievance decision made at the school/college level. These policies are described in the Graduate School’s Academic Policies and Procedures.

OTHER

Students are strongly discouraged to pursue positions as Project Assistants, Teaching Assistants or Research Assistants during their time in this program, as the rigor and accelerated nature of this program may not accommodate those work time commitments. Students in this program will not receive the tuition remission that is typically part of the compensation package for a graduate assistantship.

PROFESSIONAL DEVELOPMENT

GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School’s professional development resources (https://grad.wisc.edu/pd/) to build skills, thrive academically, and launch your career.

PROGRAM RESOURCES

THE INDIVIDUAL DEVELOPMENT PLAN (IDP)

An Individual Development Plan (IDP) (https://grad.wisc.edu/pd/idp/) helps graduate students and postdoctoral researchers:

• assess current skills, interests, and strengths;
• make a plan for developing skills to meet academic and professional goals; and
• communicate with supervisors, advisors, and mentors about evolving goals and related skills.

The IDP is a document to be revisited again and again, to update and refine as goals change and/or come into focus, and to record progress and accomplishments.

The university recommends IDPs for all postdoctoral researchers and graduate students, and requires IDPs for all postdoctoral researchers and graduate students supported by National Institutes of Health (NIH) funding. See the Graduate School for more information and IDP resources (https://grad.wisc.edu/pd/idp/).

ENGINEERING CAREER SERVICES

The Engineering Career Services (https://ecs.wisc.edu/) staff offers assistance to students searching or preparing for internships, co-ops, and jobs with well-recognized organizations.

THE WRITING CENTER

The Writing Center (https://writing.wisc.edu/) is a campus-wide organization that provides free of charge, face-to-face and online consultations for students writing papers, reports, resumes, and applications.

PEOPLE

FACULTY

Paul Campagnola (Chair)
Randolph Ashton
David Beebe
Walter Block
Christopher Brace
Kevin Eliceiri
Shaoqin ‘Sarah’ Gong
Aviad Hai
Melissa Kinney
Pamela Kreeger
Wan-ju Li
Kip Ludwig
Kristyn Masters
Megan McClean
Beth Meyerand
William Murphy
Krishanu Saha
Melissa Skala
Darryl Thelen
Justin Williams
Colleen Witzenburg
Filiz Yesilkoy

INSTRUCTIONAL STAFF AND TEACHING FACULTY

Amit Nimunkar
John Puccinelli
Tracy Jane Puccinelli
Darilis Suarez-Gonzalez
Aaron Suminski

See also Biomedical Engineering Faculty Directory (http://directory.engr.wisc.edu/bme/).