ENGINEERING MECHANICS: FUNDAMENTALS OF APPLIED MECHANICS, M.S.

This is a named option within the Engineering Mechanics M.S (http://guide.wisc.edu/graduate/mechanical-engineering/engineering-mechanics-ms/).

Admissions to the Fundamentals of Applied Mechanics named option will be suspended as of fall 2022, and the program will be discontinued as of fall 2024. If you have any questions, please contact the department.

The Fundamentals of Applied Mechanics (FAM) option of the Master of Science degree in Engineering Mechanics is primarily designed for students with a science background who would like to transition to engineering. It may also be suitable for non-mechanics engineering students (electrical, chemical, etc.) who are interested in transitioning to mechanics. The goal of this program is to provide a bridge to careers in engineering or to a Ph.D program in mechanics. FAM is fast-paced; students are expected to complete the curriculum over a twelve-month period, starting in a summer session. Prospective graduate students with a background in mechanics are encouraged to consider our M.S. Research option (http://guide.wisc.edu/graduate/mechanical-engineering/engineering-mechanics-ms/engineering-mechanics-research-ms/) and Ph.D. in Engineering Mechanics programs (http://guide.wisc.edu/graduate/mechanical-engineering/engineering-mechanics-phd/).

For more information on this specific degree plan, please visit the EP website (https://www.engr.wisc.edu/department/engineering-physics/).

ADMISSIONS

Admissions to the Fundamentals of Applied Mechanics named option will be suspended as of Fall 2022, and the program will be discontinued as of Fall 2024. If you have any questions, please contact the department.

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>Requirement</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Deadline</td>
<td>This program does not admit in the fall.</td>
</tr>
<tr>
<td>Spring Deadline</td>
<td>The program does not admit in the spring.</td>
</tr>
<tr>
<td>Summer Deadline</td>
<td>December 15</td>
</tr>
</tbody>
</table>

The Fundamentals of Applied Mechanics option of the Master of Science degree in Engineering Mechanics (FAM) is primarily designed for students with a science background who would like to transition to engineering. It may also be suitable for non-mechanics engineering students (electrical, chemical, etc.) who are interested in transitioning to mechanics. Prospective graduate students with a background in mechanics are encouraged to consider our primary M.S. (https://guide.wisc.edu/graduate/engineering-physics/engineering-mechanics-ms/) and Ph.D. in Engineering Mechanics (https://guide.wisc.edu/graduate/engineering-physics/engineering-mechanics-phd/) programs.

The Graduate School sets minimum requirements for admissions (https://grad.wisc.edu/admissions/requirements/). Academic program admission requirements are often more rigorous than those set by the Graduate School. Please check the program website (https://www.engr.wisc.edu/department/engineering-physics/academics/master-science-engineering-mechanics-fundamentals-applied-mechanics-option/) for details and admissions deadlines.

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.

Students in violation of this policy may be placed on departmental probation.

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

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

## NAMED OPTION REQUIREMENTS

### MODE OF INSTRUCTION

**Face to Face**  
Evening/Weekend  
Online  
Hybrid  
Accelerated  

No  
No  
No  
Yes  
Yes

**Mode of Instruction Definitions**

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**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

**Requirement Detail**

**Minimum Credit Requirement**  
30 credits

**Minimum Residence Credit Requirement**  
16 credits

**Minimum Graduate Coursework Requirement**  
15 of the required 30 credits must be in graduate-level coursework from E M A and Engineering Physics; courses with the Graduate Level Coursework attribute are identified and searchable in the university’s Course Guide (https://registrar.wisc.edu/course-guide/).

**Overall Graduate GPA Requirement**  
3.00 GPA required.

**Other Grade Requirements**

Courses in which grades of BC, C, or below are received cannot be counted toward the degree except as follows: 1) Credits of C will be allowed provided they are balanced by twice as many credits of A or by four times as many credits of AB, 2) Credits of BC will be allowed provided they are balanced by twice as many credits of AB or by an equal number of credits of A.

**Assessments and Examinations**

None.

**Language Requirements**

No language requirements.

## REQUIRED COURSES

### Summer Session

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E M A 303</td>
<td>Mechanics of Materials</td>
<td>3</td>
</tr>
<tr>
<td>E M A 202</td>
<td>Dynamics (strongly recommended prerequisite)</td>
<td>3</td>
</tr>
</tbody>
</table>

### Fall Semester

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>M E/E M A 307</td>
<td>Mechanics of Materials Lab</td>
<td>1</td>
</tr>
<tr>
<td>E M A 506</td>
<td>Advanced Mechanics of Materials I</td>
<td>3</td>
</tr>
<tr>
<td>E M A 542</td>
<td>Advanced Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>E M A/E P 547</td>
<td>Engineering Analysis I</td>
<td>3</td>
</tr>
<tr>
<td>E M A 601</td>
<td>Special Topics in Engineering Mechanics (Topic: Mechanics Seminar)</td>
<td>1</td>
</tr>
</tbody>
</table>

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<tr>
<th>Code</th>
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</thead>
<tbody>
<tr>
<td>E M A 405</td>
<td>Practicum in Finite Elements</td>
<td>3</td>
</tr>
<tr>
<td>or E M A 605</td>
<td>Introduction to Finite Elements</td>
<td></td>
</tr>
</tbody>
</table>

### Spring Semester

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E M A/E P 548</td>
<td>Engineering Analysis II</td>
<td>3</td>
</tr>
<tr>
<td>E M A 601</td>
<td>Special Topics in Engineering Mechanics (Topic: Mechanics Seminar)</td>
<td>1</td>
</tr>
</tbody>
</table>

### Summer Session

Choose three of the following:

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<tr>
<td>E M A/CIV ENGR/ M E 508</td>
<td>Composite Materials</td>
</tr>
<tr>
<td>E M A 519</td>
<td>Fracture Mechanics</td>
</tr>
<tr>
<td>E M A/A/M E 570</td>
<td>Experimental Mechanics</td>
</tr>
<tr>
<td>E M A 611</td>
<td>Advanced Mechanical Testing of Materials</td>
</tr>
<tr>
<td>E M A 622</td>
<td>Mechanics of Continua</td>
</tr>
<tr>
<td>E M A 642</td>
<td>Satellite Dynamics</td>
</tr>
<tr>
<td>E M A 705</td>
<td>Advanced Topics in Finite Elements</td>
</tr>
</tbody>
</table>

1 While strongly recommended, E M A 202 Dynamics will not satisfy any degree requirement for this program and will not count toward the 30 credits required to earn the degree.

2 At least one of the three must be either E M A 705 Advanced Topics in Finite Elements, E M A 622 Mechanics of Continua, or E M A 642 Satellite Dynamics.

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 degree program faculty. Policies set by the academic degree program can be found below.
NAMED OPTION-SPECIFIC POLICIES

PRIOR COURSEWORK

Graduate Work from Other Institutions

No transfer credits are allowed.

UW–Madison Undergraduate

With program approval, students are allowed to count up to 7 credits of coursework from the following list of courses:

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<td>Engineering Analysis II</td>
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<td>E M A 303</td>
<td>Mechanics of Materials</td>
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<td>Mechanics of Materials Lab</td>
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<td>Advanced Mechanics of Materials I</td>
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<td>Composite Materials</td>
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<td>E M A 542</td>
<td>Advanced Dynamics</td>
<td>3</td>
</tr>
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<td>E M A/M E 570</td>
<td>Experimental Mechanics</td>
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<td>Introduction to Finite Elements</td>
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<td>E M A 642</td>
<td>Satellite Dynamics</td>
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</tr>
<tr>
<td>E M A 705</td>
<td>Advanced Topics in Finite Elements</td>
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</tr>
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These may be counted toward the Minimum Graduate Degree Credit Requirement as applicable. No credits may be counted toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission to a master’s degree is not allowed to satisfy requirements.

UW–Madison University Special

With program approval, students are allowed to count up to 15 credits of coursework numbered 400 or above taken as a UW–Madison Special student toward the minimum graduate residence credit requirement, and the minimum graduate degree credit requirement. UW–Madison coursework taken as a University Special student would not be allowed to count toward the 50% graduate coursework minimum unless taken at the 700 level or above. Coursework earned five or more years prior to admission to a master’s is not allowed to satisfy requirements.

PROBATION

A semester GPA below 3.0 will result in the student being placed on academic probation. If a semester GPA of 3.0 is not attained during the subsequent semester of full time enrollment (or 12 credits of enrollment if enrolled part-time) the student may be dismissed from the program or allowed to continue for one additional semester based on advisor appeal to the Graduate School.

ADVISOR / COMMITTEE

Each student is required to meet with his or her advisor prior to registration every semester.

CREDITS PER TERM ALLOWED

15 credits

TIME CONSTRAINTS

Students are expected to complete the FAM degree program in one calendar year, i.e., 12 months (summer session plus two semesters). One additional semester is permitted to complete the requirements, if needed.

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/)
- Graduate Assistantship Policies and Procedures (https://hr.wisc.edu/policies/gapp/#grievance-procedure)
- Hostile and Intimidating Behavior Policies and Procedures (https://hr.wisc.edu/hib/)
  - Office of the Provost for Faculty and Staff Affairs (https://facstaff.provost.wisc.edu/)
- Dean of Students Office (https://doso.students.wisc.edu/) (for all students to seek grievance assistance and support)
- Employee Assistance (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/) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (https://grad.wisc.edu/) (for concerns about graduate student conduct)
- Office of Compliance (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/) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (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/) (for concerns about discrimination)

Engineering Mechanics Grievance Procedures

Students who feel that they have been treated unfairly have the right to a prompt hearing of their grievance. Such complaints may involve course grades, classroom treatment, advising, various forms of harassment, or other issues. Any student or potential student may use these procedures.

- The student should speak first with the person toward whom the grievance is directed. In most cases, grievances can be resolved at this level.
- Should a satisfactory resolution not be achieved, the student should contact the program’s Grievance Advisor to discuss the grievance. The Graduate Student Coordinator can provide students with the name of this faculty member, who facilitates problem resolution through informal channels. The Grievance Advisor is responsible for facilitating any complaints or issues of students. The Grievance Advisor first attempts to help students informally address the grievance prior to any formal complaint. Students are also encouraged to talk with
their faculty advisors regarding concerns or difficulties if necessary. University resources for sexual harassment concerns can be found on the UW Office of Equity and Diversity website.

• If the issue is not resolved to the student’s satisfaction, the student can submit the grievance to the Grievance Advisor in writing, within 60 calendar days of the alleged unfair treatment.

• On receipt of a written complaint, a faculty committee will be convened by the Grievance Advisor to manage the grievance. The program faculty committee will obtain a written response from the person toward whom the complaint is directed. The response will be shared with the person filing the grievance.

• The faculty committee will determine a decision regarding the grievance. The Grievance Advisor will report on the action taken by the committee in writing to both the student and the party toward whom the complaint was directed within 15 working days from the date the complaint was received.

• 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 10 working days to file a written appeal to the College of Engineering.

The Assistant Dean for Graduate Affairs (engr-dean-graduateaffairs@engr.wisc.edu) provides overall leadership for graduate education in the College of Engineering (CoE) and is a point of contact for graduate students who have concerns about education, mentoring, research, or other difficulties.

The Graduate School has procedures for students wishing to appeal a grievance decision made at the college level. These policies are described in the Academic Policies and Procedures at https://grad.wisc.edu/academic-policies/.

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.

PEOPLE

PROFESSORS

Darryl Thelen (Chair)  
Peter Adamczyk  
Mark Anderson  
Riccardo Bonazza  
Wendy Crone  
Christian Franck  
Jaal Ghandhi  
Sage Kokjohn

ASSOCIATE PROFESSORS

Lianyi Chen  
Melih Eriten  
Katherine Fu  
Tom N. Krupenkin  
Ying Li  
Franklin Miller  
Sangkee Min  
Wenxiao Pan  
James Pikul  
Pavana Prabhakar  
Alejandro Roldan-Alzate  
Michael Zinn

ASSISTANT PROFESSORS

Joseph Andrews  
Jennifer Franck  
Corinne Henak  
Eric Kazyak  
Allison Mahvi  
Lucas Mastropasqua  
Jacob Netbohm  
Josh Roth  
Shiva Rudraju  
Stephan Rudykh  
Eric Tervo  
Ramathasan Teyawan  
Dakotah Thompson  
Mike Wagner  
Michael Wehner  
Jinlong Wu  
Xiaobin Xiong  
Xiangru Xu

See also Mechanical Engineering Faculty Directory (https://directory.engr.wisc.edu/me/faculty/).