



Department of Engineering Physics

UNIVERSITY OF WISCONSIN-MADISON

Academic Policies and Procedures

for

Master of Science in Engineering Mechanics Fundamentals of Applied Mechanics

Students pursuing graduate work in the traditional Engineering Mechanics MS and PhD programs should consult the guide for those programs.

Effective Summer 2020

This guide applies to students entering the program for the Summer 2020 Session. Students admitted prior to this time should continue to follow the guide that was in effect when they entered the program.

Administered by the

Department of Engineering Physics

151 Engineering Research Building, 1500 Engineering Drive, Madison, WI 53706-1609

Phone: (608) 263-1646, Fax: (608) 263-7451

<http://www.engr.wisc.edu/departement/engineering-physics/>

Content

Content	2
Introduction.....	3
Career Opportunities	3
Engineering Career Services	4
Admission.....	4
Admission as a Special Student.....	4
Grade Policy	5
Advising.....	5
Limits on Credits per Term	5
Fundamentals of Applied Mechanics Curriculum	5
Credits Requirement: 30	5
Summer Session 3-6 Credits	5
Fall Semester 14 Credits.....	6
Spring Semester 13 Credits.....	6
TOTAL = 30 cr; Grad = 15 cr.....	6
Satisfactory Progress	6
Application Procedures for the Master's Degree.....	6
Graduate Policy-Related Web Sites.....	8
Grievance Procedure.....	8
Hostile and Intimidating Behavior	9
What is Hostile and Intimidating Behavior?.....	9
What to do if you feel you've been the target of hostile and intimidating behavior:	10
Academic Integrity.....	10
Accommodations for Students with Disabilities.....	11
Training Requirements	11
Safety	11
Research Ethics	11
Exit Interviews	11
Engineering Physics Faculty	13
Graduate Student Services Office.....	13
Engineering Physics Administrative Staff	13

Introduction

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. The goal of this program is to provide a bridge to careers in engineering or to a PhD 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 traditional MS and PhD Engineering Mechanics programs.

This guide describes the academic policies and procedures for students working toward the FAM degree. The FAM program is administered by the Department of Engineering Physics. Students should become familiar with the material in this guide and with the academic policies of the Graduate School (<https://grad.wisc.edu/academic-policies/>). It is the student's responsibility to make sure that both Department and Graduate School requirements are met.

To our new FAM students, we welcome you to the University of Wisconsin-Madison and to the Department of Engineering Physics, and we wish you a successful graduate career!

Career Opportunities

Graduates of our Engineering Mechanics programs are sought by most industries and government agencies. Typical examples of project areas requiring engineers with a broad science and engineering background and with an emphasis in applied mechanics are outlined below:

Development of improved experimental, analytical and engineering methods as well as new materials for automobiles, air/spacecraft, submarines, high-speed rail systems, and other moving vehicles for improved safety, strength, and reliability.

Design of new types of structures projected for future needs, such as advanced energy systems, cryogenic structures, space stations, undersea structures and earthquake resistant installations.

Dynamic and vibrational design of rotating machinery, such as aircraft engines, high-speed gas and steam turbines, spinning disks for digital information storage, aircraft and automotive tire applications, and high-speed rotating drums and pumps.

Development of innovative experimental methods for studying machines, structural components and materials where new and unusual design conditions are encountered, such as very high or low temperatures, vibrational and repetitive loads, impact situations, moving loads, large magnetic or electrical fields, and biomedical environments.

Development of new theories, methods of analysis and computational techniques for treating unusual advanced design problems in engineering which may require higher levels of mathematics and computer training.

Research, development and testing of new materials such as metals, ceramics, composites, and plastics, to meet the changing requirements of the future that will be encountered in designing advanced energy systems, extremely high speed machinery, nonmetallic substitutes, micro-machines and biomedical apparatus. Advanced engineering in the research and development programs of major industries such as the automotive, aerospace, computer,

construction, farm equipment, home appliances, industrial machinery, nuclear, oceanographic, petroleum, tire and rubber, plastics and paper.

Engineering Career Services

The [Engineering Career Services](#) office with the College of Engineering provides support for students seeking engineering opportunities following graduation.

Admission

For admission to the FAM degree program, an applicant must have a bachelor's degree in physical science or mathematics (some engineering disciplines will also be considered) and an undergraduate record that indicates an ability to succeed in graduate study. The Graduate School requires a minimum undergraduate grade point average of 3.0 on a 4.0 basis on the equivalent of the last 60 semester hours from the most recent bachelor's degree. In special cases, students with grade point averages lower than 3.0 who meet all the general requirements of the Graduate School may be considered for admission on probation. Scores for the general GRE are required for all applicants who are not UW-Madison graduates. International applicants are required to submit TOEFL scores, and a minimum score of 100 is needed for admission.¹ Exceptions to the TOEFL requirement are made if any of the following apply:

- English is the exclusive language of instruction at the undergraduate institution; **or**
- The student earned a degree from a regionally accredited U.S. college or university not more than 5 years prior to the anticipated semester of enrollment; **or**
- The student completed at least two full-time semesters of graded course work, exclusive of ESL courses, in a U.S. college or university, or at an institution outside the U.S. where English is the exclusive language of instruction. Completion of graded course work cannot be more than five years prior to the anticipated semester of enrollment.

Students must be solely enrolled in the FAM program to be candidates for this degree. They are not permitted to earn more than one M.S. degree in Engineering Mechanics at UW-Madison.

Admission as a Special Student

The Graduate School will permit admission as a Special Student for students whose academic record is difficult to evaluate, but otherwise shows promise for graduate study. While graduate level work performed as a Special Student does not earn Graduate School credit, it can be used to meet admission requirements and to correct weaknesses in the student's preparation for graduate study. After demonstrating satisfactory performance as a Special Student, a student can apply for admission as a regular graduate student. Upon admission to the FAM program, it is possible to apply as many as 15 credits of FAM-required courses (see FAM Curriculum below) taken as a Special Student toward the degree requirements. Students are advised to consult the Graduate School for current policies and regulations. Applicants should note that a tuition charge may be assessed.

¹ Given the accelerated pace of the FAM degree program, international students need to be fluent in English at the start of the program, hence the high TOEFL score requirement.

Grade Policy

The Graduate School requires an average record of B or better in all 300-level or above courses taken as a graduate student, regardless of whether a course counts for credit in the program. The Graduate School reviews each student's progress every semester and will usually refuse continued enrollment after two semesters of below B-average grades unless unusual or extenuating circumstances have prevailed.

The FAM program requires that courses in which grades of BC, C, or below are received cannot be counted toward a graduate 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.

Advising

Upon entering the program, each student will be appointed a faculty advisor by the chair of the Graduate Studies Committee. The College of Engineering also provides support for students in named M.S. options, such as FAM; the program director for the College's named option programs is [Lee DeBaillie](#).

Wait Listed Courses: In any given semester, courses may fill up quickly depending on demand. Some courses may have a wait list established through the enrollment system. Students will be notified by email if they have been given permission to enroll from the wait list. The Department will assist students in enrolling for the courses they need. However, there is no guarantee that students will be allowed into a wait-listed section.

Financial Support: The Department of Engineering Physics does not offer assistantship positions to its FAM students. The two semesters of the program are academically accelerated, and students are not expected to have time for assistantship work.

Limits on Credits per Term

Full-time student status requires a student to enroll for a minimum of 8 credits of course work numbered 300 and above. The normal maximum number of credits is 15. A full-time student is limited to 12 credits during the summer.

Fundamentals of Applied Mechanics Curriculum

Credits Requirement: 30

Of the 30 credits counted towards the degree, at least 15 must be at the graduate level.

Summer Session 3-6 Credits

Required:

EMA 303 3cr Mechanics of Materials [on line]

Recommended prerequisite (strongly recommended):
EMA 202 3cr Dynamics [on line]

Fall Semester 14 Credits

Required:

EMA 307	1cr	Mechanics of Materials Lab
EMA 506	3cr	Adv Mechanics of Materials
EMA 542	3cr	Adv Dynamics
EP 547	3cr Grad	Eng Analysis I
EMA 601	1cr	Mechanics Seminar

Choose 1 of the following:

EMA 405	3cr	Prac Finite Elements
EMA 570	3cr Grad	Experimental Mechanics
EMA 605	3cr	Intro to Finite Elements

Spring Semester 13 Credits

Required:

EP 548	3cr Grad	Eng Analysis II
EMA 601	1cr	Mechanics Seminar

Choose 3 of the following (at least 1 of 3 must be either EMA 622, 642, 705):

EMA 405	3cr	Prac Finite Elements
EMA 508	3cr Grad	Composites
EMA 519	3cr Grad	Fracture Mechanics
EMA 611	3cr Grad	Adv Mech Testing of Materials
EMA 622	3cr Grad	Mech of Continua
EMA 642	3cr Grad	Satellite Dynamics
EMA 705	3cr Grad	Adv Topics in Finite Elements

TOTAL = 30 cr; Grad = 15 cr

Note: EMA 202 is a recommended prerequisite, but it does not count toward the Graduate School's 30-credit minimum.

Satisfactory Progress

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.

Application Procedures for the Master's Degree

The following is a summary of some of the Graduate School requirements. This is not a complete list. Please review the Graduate School Catalog and the Graduate School Academic Policies and Procedures for a complete list, or contact the Graduate School.

To receive the master's degree, contact the Graduate Student Services Office, 3182 Mechanical Engineering, at the beginning of the semester in which you intend to graduate. Have your

advisor check that you have met Department requirements, then Student Services will check that you have met the Graduate School's requirements and will request a warrant on your behalf from the Graduate School. You need to be enrolled for a minimum of two graduate-level credits (300 or above) for a grade (audits and pass/fail do not satisfy this requirement) during the semester in which you intend to graduate. For more information and for deadlines see *Completing Your Master's Degree*, found at the website <https://grad.wisc.edu/current-students/masters-guide/>.

If you have a prior master's degree from this University, you must submit, along with your degree application, a letter from each department that includes an official (signed by advisor or Department Chair) list of courses used for each degree. Your warrant application is not complete until the two lists are received.

You must have a graduate GPA of at least 3.0/4.0 and no incomplete or progress grades on your record.

A signed warrant is a document needed to graduate. The warrant is issued by the Graduate School for one semester only. The warrant is signed by your academic advisor and the Department Chair, indicating that all degree requirements have been met. Warrants can be issued after all other incomplete and progress grades are cleared.

If the Department has signed and returned your warrant to the Graduate School, and you subsequently receive an incomplete or progress grade, you will graduate during the semester in which your grade is cleared.

Graduate Policy-Related Web Sites

The Graduate School web site (<https://grad.wisc.edu>) has extensive information concerning policies and procedures for graduate students. Students are responsible for consulting these policies and procedures and for abiding by them.

Other useful web sites are:

Engineering Physics Department <http://www.engr.wisc.edu/department/engineering-physics>

College of Engineering <http://www.engr.wisc.edu>

Graduate student wellness, see <https://grad.wisc.edu/current-students/>

Grievance Procedure

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.

Procedures for proper accounting of student grievances:

- 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.

A student may be reluctant to approach the person against whom the grievance is directed, or to that person's supervisor, or to anyone else in the administrative hierarchy. In that case, the student should seek a person who can guarantee confidentiality to the extent allowed by the law

and University policy and can act as an Ombuds to provide non-judgmental advice as to appropriate next steps. Note that if criminal activity is involved, confidentiality cannot be guaranteed. The College Assistant Dean of Graduate Affairs or any faculty member of the College of Engineering trusted by the student can either serve the Ombuds role or direct the student to someone who can assure confidentiality.

The Assistant Dean for Graduate Affairs (enr-dean-graduateaffairs@enr.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 established policies governing student conduct, academic dishonesty, and sexual and racial harassment. The Graduate School also 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/>.

Hostile and Intimidating Behavior

Hostile and intimidating behavior, sometimes known by the shorthand term “bullying,” is defined in university policy as “unwelcome behavior pervasive or severe enough that a reasonable person would find it hostile and/or intimidating and that does not further the University’s academic or operational interests.”

Hostile and intimidating behavior (HIB) can occur in the university setting. Even individual instances of such behavior can have a significant effect on the person it’s aimed at, and can take a physical and emotional toll, reduce the effectiveness of a person’s work or learning. It is a significant reason for unhealthy workplace climate and culture, and it should be addressed immediately. Hostile and intimidating behavior is prohibited by university policy.

What is Hostile and Intimidating Behavior?

Hostile and intimidating behavior is defined as unwelcome behavior pervasive or severe to the extent that it makes the conditions for work inhospitable and impairs another person’s ability to carry out his/her responsibilities to the university, and that does not further the University’s academic or operational interests. A person or a group can perpetrate this behavior. The person need not be more senior than or a supervisor to the target. Unacceptable behavior may include, but is not limited to:

1. Abusive expression (including spoken, written, recorded, visual, digital, or nonverbal, etc.) directed at another person in the workplace, such as derogatory remarks or epithets that are outside the range of commonly accepted expressions of disagreement, disapproval, or critique in an academic culture and professional setting that respects free expression;
2. Unwarranted physical contact or intimidating gestures; Conspicuous exclusion or isolation having the effect of harming another person’s reputation in the workplace and hindering another person’s work;
3. Sabotage of another person’s work or impeding another person’s capacity for academic expression, be it oral, written, or other;

4. Abuse of authority, such as using threats or retaliation in the exercise of authority, supervision, or guidance, or impeding another person from exercising shared governance rights, etc.

Repeated acts or a pattern of hostile and/or intimidating behaviors are of particular concern. A single act typically will not be sufficient to warrant discipline or dismissal, but an especially severe or egregious act may warrant either.

What to do if you feel you've been the target of hostile and intimidating behavior:

Undesired consequences of hostile and intimidating behavior can be avoided or minimized when the problem is addressed early on, but victims are often hesitant to pursue a formal process before the impact is severe. Educational opportunities and campus resources have been implemented with the intent of aiding all employees and students in defusing situations before they become severe. These resources, including trained personnel who can advise and mediate, comprise the "informal process." It is possible that situations will continue to arise in which informal interventions are not effective, and the "formal process" has been designed to address those situations.

You are encouraged to seek out advice and consultation after the first instance of hostile and intimidating behavior: consultation is not escalation. Discussing what's happened in a timely way can often prevent continued bullying. Here are some ways to do this:

1. Seek advice from a trusted colleague;
2. You may choose to seek informal resolution by approaching the individual yourself or with an intermediary (also see <https://hr.wisc.edu/hib/addressing-hib/>);
3. Consult your advisor, human resources representative, department chair, director, dean, or any campus resource to discuss options for resolution;
4. Keep notes of what happened, when, where, and who was present. Retain copies of any correspondence.

Graduate Students sometimes experience hostile and intimidating behavior from faculty members. If you are a student who is experiencing such behavior, you are entitled to support as a university employee through the Ombuds office, the Dean of Students office, and (if a grad student) the Graduate School. Graduate student workers should also consult with Graduate Coordinators, TAA Stewards, and/or the Graduate School.

EP graduate students with concerns may contact the Chair of the Graduate Studies Committee, the EP Grievance Advisor, or the College of Engineering Assistant Dean for Graduate Affairs (enr-dean-graduateaffairs@enr.wisc.edu). Additional campus information on hostile and intimidating behavior is available at <https://hr.wisc.edu/hib/>.

Academic Integrity

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action.

This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to <https://conduct.students.wisc.edu/academic-integrity/>.

Also see the Graduate School's policies on academic misconduct, <https://grad.wisc.edu/documents/misconduct-academic/>.

Accommodations for Students with Disabilities

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty will work either directly with the student or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA." For more information, visit <https://mcburney.wisc.edu/>.

Training Requirements

Safety

Whether working in a laboratory or other settings, safety is of paramount importance. To inform students of proper procedures and reporting requirements, the department has a one-time safety training requirement for all graduate students, regardless of whether a student works in a laboratory. The safety training materials are available online at <https://canvas.wisc.edu/courses/172200>.

Research Ethics

The research enterprise and the development of new technology depend on scientists and engineers working with the highest levels of integrity. In addition, there are areas of research that must consider whether certain technological developments are in the public's interest. To raise awareness of these and related issues, the College of Engineering has established an annual ethics training requirement for graduate students. Seminars and other sessions that satisfy this requirement are announced to students. Taking part in at least one session per academic year is required of all Engineering Mechanics graduate students, regardless of whether a student conducts research.

Exit Interviews

The EP Department will conduct interviews of all graduate students who complete their degrees and of those who leave without completing a degree. Two formats will be available: students will

be encouraged to meet with a member of the Graduate Studies Committee, but they will be allowed to complete an online survey when an in-person meeting is not practicable. Specific survey questions may be adjusted over time, but they will need to cover at least the following topics:

1. The student's degree of satisfaction with mentor/mentee relationships,
2. The quality of the research experience,
3. Whether the climate of the research group was constructive,
4. Coursework requirements and options that contributed greatest and least to the student's professional knowledge,
5. Whether the climate of the EP Department was supportive of the student's professional development, and
6. The extent to which the EP graduate experience prepared the individual for forthcoming career steps.

Engineering Physics Faculty

Name	Title	Office	Phone	E-mail Address
Paul Wilson	Professor and Chair	153 ERB	263-0807	paul.wilson@wisc.edu
Matthew S. Allen	Associate Professor	525 ERB	890-1619	matt.allen@wisc.edu
Laura Bartol	Faculty Associate	433 ERB	263-3703	ljplesha@wisc.edu
Vicki Bier	Professor (also IE/GNI)	3270A ME	262-2064	vicki.bier@wisc.edu
Riccardo Bonazza	Professor	537 ERB	265-2337	riccardo.bonazza@wisc.edu
Curt Bronkhorst	Professor	507 ERB	890-2586	cbronkhorst@wisc.edu
Jennifer Choy	Assistant Professor	535 ERB	263-6974	jennifer.choy@wisc.edu
Adrien Couet	Assistant Professor	425 ERB	265-7955	couet@wisc.edu
Wendy Crone	Professor	543 ERB	262-8384	wendy.crone@wisc.edu
Stephanie Diem	Assistant Professor	329 ERB	263-1414	sjdiem@wisc.edu
Jennifer Franck	Assistant Professor	527 ERB	263-2562	jafranck@wisc.edu
Benedikt Geiger	Assistant Professor	325 ERB	262-3386	benedikt.geiger@wisc.edu
Chris C. Hegna	Professor	521 ERB	263-0810	heгна@engr.wisc.edu
Douglass Henderson	Professor	439 ERB	263-0808	dlhender@wisc.edu
Antonio Hernandez	Faculty Associate	503 ERB		ahernandez2@wisc.edu
Roderick S. Lakes	Professor	541 ERB	265-8697	rlakes@wisc.edu
John Murphy	Faculty Associate	429 ERB	265-4186	jmurphy@engr.wisc.edu
Sonny Nimityongskul	Faculty Associate	503 ERB		apnimityongs@wisc.edu
Jacob Notbohm	Assistant Professor	533 ERB	890-0030	jacob.notbohm@wisc.edu
Oliver Schmitz	Professor	341 ERB	263-1547	oschmitz@wisc.edu
Leslie Smith	Professor (also Math)	825 VV	263-3057	lsmith@math.wisc.edu
Carl R. Sovinec	Professor	519 ERB	263-5525	csovinec@wisc.edu
R. Thevamaran	Assistant Professor	539 ERB	262-5724	thevamaran@wisc.edu
Fabian Waleffe	Professor (also Math)	819 VV	262-3269	waleffe@math.wisc.edu
Yongfeng Zhang	Assistant Professor	917 ERB	890-3779	yzhang2446@wisc.edu

Graduate Student Services Office

The College Graduate Student Services Office is located in 3182 Mechanical Engineering. Questions about the application process can be directed to emgradadmission@engr.wisc.edu. For assistance with Graduate School requirements and warrant requests, contact Sara Hladilek, shladilek@wisc.edu, 262-8617.

Engineering Physics Administrative Staff

Name	Title	Office	Phone	E-mail address
Dina Christenson	Assistant Dept. Admin	145 ERB	263-5966	Dina.christenson@wisc.edu
Lauren Gee	Research Admin	143 ERB	263-2196	llgee@wisc.edu
Nancy Griego	Research Admin	107 ERB	263-2352	Nancy.griego@wisc.edu
Talvick Hook	Financial Specialist	153 ERB	263-1646	thook@wisc.edu
Tim Jensen	Comm. Spec.	147 ERB	265-5092	timjensen@wisc.edu
Dennis Manthey	Dept. Administrator	146 ERB	263-1647	Dennis.manthey@wisc.edu
Jesse Prochaska	Accountant	109 ERB	890-3580	jjprocha@wisc.edu
Kathy Wegner	Financial Specialist	111 ERB	263-8142	wegner@engr.wisc.edu