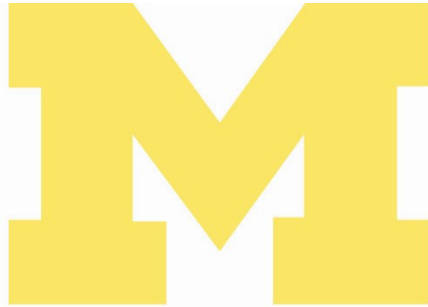




Student Handbook



DEARBORN

COLLEGE OF
ENGINEERING AND
COMPUTER SCIENCE



Mechanical Engineering
Graduate Program

University of Michigan - Dearborn

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Program Overview

The Mechanical Engineering graduate program is the oldest and one of the largest graduate programs at the University of Michigan-Dearborn. The program is approved by the Horace H. Rackham School of Graduate Studies, Ann Arbor.

The program mixes engineering practice with analysis and encompasses two broad areas of emphasis-- mechanical science and thermal and fluid science. A student may take up to one half of the graduate program requirements in his or her area of emphasis. The rest of the courses are spread over mathematics, cognates, and distribution requirements. Students must complete 30 credit hours to receive a Master of Science in Engineering (MSE) degree in mechanical engineering.

Most mechanical engineering courses are worth 3 credits and are offered in the evening from 6:10p.m. to 9:00p.m. Each course meets one night per week during the Fall and Winter terms and twice per week during the Summer I and Summer II half terms.

Degree Requirements

A candidate for the Master of Science in Engineering (Mechanical Engineering) degree must meet the requirements for the Bachelor of Science in Engineering (Mechanical Engineering) degree at this campus, or the essential equivalent to these requirements. The candidate must then complete at least 30 credit hours of graduate coursework approved by the program advisor/graduate advisory committee with a grade of at least B in each course. The 30 credit hours of graduate coursework must include:

- ME 518, Advanced Engineering Analysis (must be taken during the first or second semester after enrollment), 3 credit hours.
 - Two Mechanical Science Courses (6 credit hours) from the courses listed in Group A (*reference appendix 1*).
 - Two Thermal/Fluid Science Courses (6 credit hours) from the courses listed in Group B (*reference appendix 1*).
 - One graduate level Mathematics or Mathematics-related cognate course (3 credit hours). IMSE 510 and IMSE 511 are approved as Mathematics-related courses, as well as any 500-level course from the Mathematics & Statistics department.
 - One other cognate course (3 credit hours, 500-level or above).
 - Remaining courses (totaling 9 credit hours) must be from the ME department (Groups A and B), and may include the Thesis option (*reference appendix 2*).
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Grading System

Graduate students are graded in their coursework via a letter grading system (A, B, C, D, or E), except in the case of special courses as noted below.

Letter Grades

Letter grades may have "+" or "-" added to them whenever the instructor feels such fineness of discrimination is possible. These letter grades are then converted into numbers as follows:

A+ = 9	B+ = 6	C+ = 3	D = 0
A = 8	B = 5	C = 2	E = 0
A- = 7	B- = 4	C- = 1	

These numbers are used in the calculations of Michigan Honor Points (MHP) and Grade Point Average (GPA) which are described in the Rackham Graduate Handbook under "Academic Summary Totals."

Grades of Incomplete

You may receive a grade of Incomplete ("I") for a course only if

- The unfinished part of your work for the course is small,
- The reason(s) for the unfinished work is acceptable to your instructor, and
- Your standing in the course is that of a grade of "B" or higher.

If you find you cannot complete the work for a course by the end of the term, you must arrange to meet with your instructor and discuss a schedule for finishing up the remaining work **before** the instructor assigns grades. The instructor decides how long a student has to finish the incomplete. Your grade point average will continue to be based on hours of coursework you have completed.

Note: A grade of "I" stays on your academic record permanently. If you have made up the coursework according to the procedures noted above, your grade for the course will appear on your academic record as, for example, "I B+".

Grading for a Two-Term Course

A few graduate courses are approved by departments as "two-term" sequences. In these specially approved cases an instructor may report a "Y" grade at the end of the first term of the course to indicate that the work is still in progress. When a final grade is reported at the end of the second term, that final grade will be posted for both terms' elections and the "Y" notation removed.

Drops and Unofficial Drops

If you receive permission to drop a course officially after the first three weeks of a full term (or the first two weeks of a half term), the course will be recorded on your academic record with the notation of "W". Grades of "W" do not earn credit hours toward your degree program or Michigan Honor Points.

A grade of "ED" (Unofficial Drop) is recorded for students who register for a course and either never attend or stop attending, but do not officially drop the course. An "ED" has the same effect on your grade point average as an "E" (failure), unless you can petition successfully to have another notation recorded for the course. This is accomplished by completing an election worksheet, available from your department, and obtaining the necessary signatures.

Note: Once a grade or notation (other than "ED") has been assigned, you may not drop the course.

Academic Standing

Good Standing

In order to be admitted as an applicant for the master's degree, students must satisfy the graduate committee of the department that they have completed preparation equivalent to the undergraduate degree requirements in this department and that they are prepared to undertake the advanced courses. In general, the applicants must have maintained B (5.0) averages as undergraduates. Students will not be given graduate credit for courses equivalent to any which they have been required to take for the bachelor's degree or for courses required in the undergraduate curriculum of this department.

Graduate students are held to a higher academic standard than undergraduates with respect to grading. To maintain

satisfactory academic standing, graduate students must make satisfactory progress toward their degrees and have a minimum Rackham cumulative grade point average (GPA) of "B" (5.0 on a 9 point scale) as well as a minimum GPA of "B" for all graduate courses taken for credit and applied towards the degree program. Students who fall below this average are placed on academic probation. (See "Academic Probation" later in this handbook.)

The accumulated grade average in the master's program must be at least a B (5.0) to receive the degree. Further, a grade below B in any course will not be accepted for graduate credit unless, after review of the credit circumstances, the acceptance of the credit is recommended by the graduate committee.

Academic Probation

A student whose cumulative Grade Point Average (GPA) falls below a "B" (5.00) in a given term or half term will be placed on academic probation for the following term or half term. Upon the recommendation of the graduate committee, and with the consent of the Graduate School, a student may be granted an opportunity to correct the scholastic and/or academic deficiency. A student whose cumulative grade point average falls below a "B" average may be denied permission to register or may be required to withdraw from the University.

Any student whose cumulative GPA is below a "B" (5.00) will not be awarded a graduate degree or certificate and cannot transfer credit to a Rackham program or be advanced to candidacy (See "Transfer of Credit").

A student who is not making satisfactory progress in his or her program, or who has failed to demonstrate an ability to

succeed in his or her plan of studies, may be required to withdraw from the University.

For this reason, students are encouraged to check with their advisors periodically about their academic standing (i.e., whether the department finds the student to be making sufficient progress toward the degree).

Transfer Credit

To recognize graduate credits earned in other accredited institutions of higher education, and in other schools and colleges of the University of Michigan (including the Flint and Ann Arbor campuses), the Rackham Graduate School has formulated a policy that provides for the transfer of graduate credit to its master's and professional degree programs. All requests for transfer of credit are reviewed and must be approved by the Graduate Committee.

Conditions for Transfer of Credit

- Be enrolled in good standing in a master's or professional degree program in the Rackham Graduate School at the University of Michigan, and
- Have completed 8 or more credit hours of graduate-level, letter-graded (A-E) courses in residence in the Rackham Graduate School and earned a cumulative grade point average of "B" (i.e., 5.0 on the 1-9 Rackham scale) or better, and
- Have submitted to the ME department office an official transcript that posts your undergraduate degree, if your admission to the Graduate School was contingent upon doing so.

Courses Eligible for Credit

- Graduate credits completed at other accredited institutions.
- Graduate credits completed at another U-M School or College other than Rackham (including Flint and Ann Arbor).
- Graduate Extension courses from the University of Michigan, Wayne State University, Michigan State University, Western Michigan University, Central Michigan University, Eastern Michigan University, Northern Michigan University, and Oakland University.
- Courses taken at your undergraduate institution, ***only if***
 - *You took them during your junior or senior year;
 - *They are acceptable for graduate credit as described in "Courses approved for Graduate Credit" (Chapter 2 of Rackham Student Handbook);
 - *They were approved for graduate credit by the graduate school of the institution where and when you took them, and the courses were not used in whole or in part, in any way, to meet requirements for another degree.

Courses NOT Eligible for Credit

- Courses taken at an exclusively undergraduate institution are not acceptable for graduate credit.
- Courses that have already been applied in whole or in part in any way toward any other degree or certificate.
- Courses taken more than five years before your admission to your current Rackham program.
- Courses in which you received a letter grade of less than "B."

Limits on the Number Transfer Credits

Note the following limits to transfer of credit:

Non-U-M graduate credits. You may transfer a maximum of 6 credit hours to your master's degree program from another accredited institution.

U-M/non-Rackham graduate credits. You may transfer up to one-half (1/2) the minimum number of credit hours required for your master's degree from U-M/non-Rackham departments and programs (including Flint and Ann Arbor).

A combination of non-U-M and U-M/non-Rackham credits. You may transfer up to one-half (1/2) the minimum number of credit hours required for your master's or professional degree from a combination of non-U-M and U-M/non-Rackham departments and programs.

Example: For a 30 credit-hour program, you may transfer a maximum of 15 credit hours from U-M and non-U-M sources. No more than 6 of those credit hours may come from the non-U-M source.

Applying for Transfer Credit

To apply for transfer of credit, you must complete a transfer of credit request form, available from the ME Graduate Secretary (me-grad@engin.umd.umich.edu).

Please Note: The grades for these transferred courses do not carry over to your University transcript and are therefore not calculated into your grade point average.

Being a Guest Student

To be a guest student at the Ann Arbor campus, you must complete a Guest Student application, available from the Graduate Secretary in the ME department office. Once completed, the request will be reviewed by the Graduate Committee. If approved, your application will be forwarded to the Rackham ME department in Ann Arbor, who will make the final admission decision and register you for the course.

To be a guest student at a non-UM institution, you must petition the Graduate Committee and provide as much information as possible regarding the course you would like to take, including why you want to take it on another campus. Petition forms are available from the ME department office or by contacting the Graduate Secretary.

Faculty

The program is taught almost exclusively by full-time Ph.D. faculty dedicated to teaching and research. Some courses are taught by experts from local industry. The active research interests of the mechanical engineering faculty include plastics and composite materials, fatigue and fracture, internal combustion engines, computational fluid mechanics, heat transfer, vehicle climate control, structural dynamics, and vibration and acoustics. Projects are funded both internally and externally. A large portion of the externally funded projects are supported by local industry. This close partnership has created a program that is up-to-date with the current technological needs of industry.

Advising

The ME Department Chair is the assigned Faculty Advisor for all ME graduate students. For advising questions or to set up an appointment with the Chair, contact the Graduate Secretary in the ME department office.

Assistantship/Financial Assistance

Fellowships and teaching/research assistantships may be available to full-time graduate students depending on interests and funding availability. Enclose a letter with your application if you are interested in teaching/research assistantships; the department will contact you if they become available.

There is a Non-Resident Graduate Scholarship available through the Associate Dean's Office. For an application and further information, contact Graduate Student Services at gradprog@engin.umd.umich.edu.

Further information can be obtained from Rackham Student Handbook of Policies & Procedures at <http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/contents.html>

International Students—CPT/OPT

Curricular Practical Training (CPT) Requirements

All students interested in applying for CPT must:

- Obtain necessary forms from the International Office.
- Obtain a job offer letter from the employer; only an original document is considered valid.
- Arrange for an ME faculty member to be the CPT advisor (this person will sign all paperwork related to CPT). Thesis students must have CPT approved by the thesis advisor, who will sign all related forms.
- Register for ME 600-Study or Research in Selected ME Topics for 1 credit (authorization form is available in the ME dept. office).
- Bring all CPT-related forms to the ME dept. Graduate Secretary so that copies can be made for the student's file. This includes the forms in the CPT packet, the ME 600 registration form, and the offer letter from the employer.
- Submit an essay describing how the knowledge gained from their coursework has been implemented during their work experience. This will be used to assign a letter grade for the course.

According to USCIS policy, CPT is available for one term only and may be extended on a term-to-term basis. The total number of CPT extensions may not exceed 3 terms unless the student is willing to forfeit eligibility for OPT (see below for details). CPT extensions will follow the same guidelines as first-time CPT. The CPT essay should be submitted to the advisor at the advisor's discretion. Any questions related to CPT should be directed to the Graduate Secretary or to the International Office.

Optional Practical Training (OPT) Requirements

- Non-Thesis Students:
Students who have not chosen the thesis option may apply for OPT once they are in their final term of study. The ME dept. will issue a letter from the ME dept. stating the number of courses completed toward the program and expected date of graduation.
- Thesis Students:
Students who have chosen the thesis option are eligible to apply for OPT while still working on their thesis; however, a letter of support for OPT will not be issued until the student has submitted the first draft of the thesis. The thesis advisor will be directly involved in the decision to allow OPT, and will also sign any pertinent documents. Neither the ME dept. Chair, nor the ME Graduate Committee, will override the wishes of the thesis advisor concerning OPT.

Applying to Graduate

All students must apply to graduate during their final term of study. It is advisable for students to contact the Graduate Secretary as soon as they have registered for their final course(s) to request a pre-audit. Applying to graduate can be done through the Registrar's Office website at www.umd.umich.edu/registration. Choose 'Applying to Graduate' from the list on the left, then click on one of the icons to the right. If you are applying in the first month of the term, use the online application. If you are applying after the first month, use the paper application. Rackham students have until the last day of classes to apply to graduate. Any questions related to graduation should be directed to the Graduate Secretary.

Appendix 1—Courses in Groups A & B

Group A: Mechanical Science

ME 510-Finite Element Methods
ME 512-Structural Analysis
ME 514-Advanced Stress Analysis
ME 515-Advanced Mechanics of Solids
ME 516-Special Topics in ME
ME 519-Basic Computational Methods in Engineering
ME 540-Mechanical Vibrations
ME 542-Advanced Dynamics
ME 543-Vehicle Dynamics
ME 545-Acoustics and Noise Control
ME 547-Automotive Powertrains I
ME 548-Automotive Powertrains II
ME 554-Theory of Gearing & Applications
ME 556-Stress & Strength Considerations in Design
ME 558-Fracture & Fatigue Considerations in Design
ME 560-Experimental Methods in Design
ME 563-Advanced Instrumentation & Control
ME 565-Mechatronics
ME 567-Reliability Considerations in Design
ME 580-Advanced Engineering Materials
ME 581-Materials for Manufacturing
ME 582-Injection Molding
ME 583-Mechanical Behavior of Materials
ME 584-Mechanical Behavior of Polymers & Ceramics
ME 585-Cast Metals in Engineering Design
ME 586-Materials Consideration in Manufacturing
ME 587-Automotive Composites
ME 588-Production of Mechanical Products
ME 589-Composite Materials
ME 591-Degradation of Materials

Group B: Thermal/Fluid Science

ME 516-Special Topics in ME
ME 521-Dyn. & Thermodynamics of Compressible Flow
ME 522-Advanced Fluid Mechanics
ME 525-Computational Fluid Mechanics & Heat Transfer
ME 528-Fundamentals of Boiling and Condensation
ME 531-Statistical Thermodynamics
ME 532-Combustion Processes
ME 535-Advanced Thermodynamics
ME 537-Automotive Air Conditioning
ME 571-Conduction Heat Transfer
ME 572-Convection Heat Transfer
ME 573-Radiative Transport of Heat
ME 592-Fundamentals of Fuel Cells
ME 596-Internal Combustion Engines I
ME 597-Internal Combustion Engines II
ME 598-Engine Emissions
ME 622-Advanced Topics in Fluid Mechanics (a Ph.D. course available only to students who have taken ME 522)

All courses are worth 3 credit hours.

Appendix 2—Thesis Option

**The University of Michigan-Dearborn
Department of Mechanical Engineering
Regulations Regarding the Master's Thesis Option**

A student wishing to exercise the thesis option may initiate the process through the following steps:

1. Find a faculty member willing to serve as a Thesis Advisor.

The Thesis Advisor is responsible for supervising the work of the Master's thesis project.

2. Submit a proposal with endorsement by the Thesis Advisor to the Graduate Committee at least six weeks before the start of a new term in which the thesis project is to commence. The graduate Committee must approve the proposal before the student may register for the Master's thesis course. Also, before enrolling in the master's course, the student must receive written clearance from his/her employer declaring the non-proprietary nature of the thesis work.
3. Enroll in the Master's thesis course (ME 699) for one to six credit hours. The master's thesis course must be taken or a total of six (6) credit hours to satisfy degree requirements, but these credit hours may be spread over more than one term. The course may be taken for one to six credit hours per term. At the discretion of the thesis advisor, the student may also register for ME 602-Guided Study in ME, to be used as a thesis preparation course worth 3 credits. ME 602 should be taken before registering for ME 699, and will require several components for completion, which will be discussed between the student and the advisor.
4. Arrange for a Master's Thesis Committee to be appointed by the Thesis Advisor and reviewed by the Chair of the Graduate Committee. The Master's thesis Committee shall consist of the Thesis Advisor, as Chair, and at least two additional faculty members, one of whom may be from a different department than the Mechanical Engineering Department. The Master's Thesis Committee will be available for consultation and will evaluate the thesis. The Master's thesis course will be graded "Y" until the thesis is completed. The final grade in the Master's thesis course must be a "B" or better to meet degree requirements.

DEADLINES:

1. The thesis proposal must be approved prior to registration in ME 699.
2. The student must complete the thesis within twenty-four (24) months of the initial election of the thesis course.
3. The student must submit two bound copies of the thesis to the Provost Office no later than three weeks prior to the end of classes for the term of intended graduation, and must also provide a copy for the ME department.

ME 602—Thesis Preparation Course


Students taking ME 602 as a thesis preparation course must complete the following task items during the semester in which they register:

1. Define thesis topic
2. Organize thesis committee (with help of advisor)
3. Review literature related to topic
4. Draft preliminary results
5. Submit thesis proposal
6. Complete final report documenting the above items

These do not have to be completed in the order given; however, all items must be completed before a grade will be awarded. Any questions about these requirements should be directed to the ME Department Chair or the Graduate Secretary.



COLLEGE OF ENGINEERING & COMPUTER SCIENCE

A yellow line graphic that starts with a yellow dot on the left, extends diagonally down and to the right, then turns sharply down and to the left, ending with another yellow dot on the right.

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