GRADUATE STUDENT GUIDE

MECHANICAL ENGINEERING (ME) PROGRAM

MS Degree

MECHANICAL ENGINEERING
Graduate Studies Committee
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IV. MASTER’S DEGREE PROGRAM

A. Program of Study

The general policy of the Department is to permit flexibility in the Program of Study according to the individual objectives and career planning of the student. However, final authority for a student’s program of study is vested in the student’s Academic Advisor. The Academic Advisor must be a member of the ME Program Faculty (exceptions to allow other engineering faculty to serve in this capacity will be considered by petition to the Department’s Graduate Studies Committee).

It is the responsibility of the student to consult his/her Academic Advisor and to formulate a Program of Study as soon as he/she enters the MS Degree program. A Program of Study form should be completed in triplicate in order to record the study plan. The Advisor will keep one copy, and the student should retain a signed copy as his/her assurance of an approved Program of Study. The third copy should be given or sent to the Graduate Studies Coordinator (701 ERC). The Program of Study forms are available on-line at the following URL: www.eng.uc.edu/dept_min/grad/forms/. The Program of Study should be completed by the end of the second week of the first quarter of study. Revisions of a student’s program of study are to be expected; however, revisions should be recorded by preparing revised Program of Study forms.

In the case of Provisional Admission, for example if a student does not have an undergraduate degree in the field of Mechanical Engineering, the ME Graduate Studies Committee will require prerequisite or collateral undergraduate coursework in addition to the minimum graduate credits required for the MS Degree. (Such requirements are normally stipulated at the time provisional admission is granted.) The student should consult with his/her academic advisor to ensure that such requirements are completed. The required courses should be included in the students Provisional Admission Program of Study form (see Section l.C.2 for further details).

A student may select courses outside of the Program, the Department and/or the College of Engineering with the approval of his/her Academic Advisor. Individual study or projects can be accommodated by registration for Topics in Mechanical Engineering (20-MECH-871). However, it is the student’s responsibility to arrange for faculty supervision and to obtain the consent of the Academic Advisor prior to registering for Topics.

A Program of Study can be interdepartmental and interdisciplinary. However, in such cases the Academic Advisor may wish to select and consult with the
student's Advisory and Examining Committee during the development of the student's Program of Study. The Department does not provide financial aid for students not enrolled in the Department.

B. Credit Hour Requirements

The Mechanical Engineering Graduate Program offers both a thesis and non-thesis program of study for the MS Degree. The MS Degree program includes the following specific requirements:

(Thesis Option)

- A minimum of 45 graduate credit hours are required. This may include up to 18 credit hours for research courses (which must include a minimum of nine (9) credit hours 20-MECH-800 Thesis and may include a maximum of nine (9) credit hours of 20-MECH-870 Research). Prior to electing 20-MECH-800 Thesis, the student must register for a prerequisite of nine (9) credit hours of 20-MECH-870 Research and complete three quarters of full-time graduate study, or equivalent.

- A minimum of 27 graduate quarter credit hours must be classroom work, i.e., academic work other than Thesis (20-MECH-800), Research (20-MECH-870), Topics in Mechanical Engineering (20-MECH-871), or Seminar (20-MECH-697). The 27 hour classroom total must include:
  - A minimum of 18 credit hours of mechanical engineering graduate courses (20-MECH-xxx or 20-EGFD-xxx).
  - A minimum of six (6) graduate quarter credit hours of study in advanced mathematics beyond an introductory course in ordinary differential equations. Courses not taken from the Mathematics Department must be approved by the Academic Advisor to apply to this category. This can be done as part of the Program of Study approval.

- An oral thesis defense during the final quarter of the study is required.

(Non-Thesis Option)

- A minimum 45 graduate credit hours that may include up to 3 credit hours for Research (20-MECH-870) or Topics in Mechanical Engineering (20-MECH-871) are required; therefore a minimum of 42 graduate quarter credit hours must be classroom work, i.e., academic work other than Thesis (20-MECH-800), Research (20-MECH-870), Topics in Mechanical
Engineering (20-MECH-871), or Seminar (20-MECH-697). Students selecting the non-thesis option should not register for Thesis (20-MECH-800) at any time.

- Of the minimum 42 hours of classroom work, a minimum of 30 credit hours of ME graduate courses (20-MECH-xxx or 20-EGFD-xxx) are required.

- Of the minimum 42 hours of classroom work, in addition to the above requirement, a minimum of 9 graduate quarter credit hours of study in advanced mathematics are required. Courses not taken from the Mathematics Department must be approved by the Academic Advisor to apply to this category. This can be done as part of the Program of Study approval.

- A Final Oral Examination during the final quarter of study is required.

For both options, the following specific requirements have to be satisfied:

- Exclusive of seminar, topics, Research, and Thesis grades, the quality point average (QPA) for grades received in all other courses must not be less than 3.0 (B average). In addition, a student’s QPA for all credits in his/her Program of Study must not be less than 3.0. If a student’s QPA falls below 3.0, dismissal from the program may result.

- Seminar (20-MECH-697) does not count toward the 45 graduate credit hours required.

- Any unsatisfactory, "I" (incomplete), or "F" (failure) grade must be replaced by repeating the course. However, grade replacement is not offered at the graduate level; the unsatisfactory grade will be included in computation of the student’s QPA.

- The required courses will be selected by the student in consultation with the Academic Advisor. Final approval of the Program of Study is the decision of the student’s Academic Advisor.

C. Registration for Research Courses

Research courses for MS students are 20-MECH-800 Thesis and 20-MECH-870 Research. New MS students electing a research course should register for Research until a decision on the thesis option is made. Permission from the faculty member is required prior to registration in a research course. The student must understand and meet the requirements set forth by the
professor in order to receive a grade for the course. All such courses will
normally be graded SP (in progress) until graduation. Upon satisfactory
completion of the final oral exam for the degree, the faculty member will
submit changes to applicable SP grades.

D. Transfer of Credits

As a means of assuring that the character and standards embodied in
graduate degrees awarded by the University of Cincinnati are preserved,
limits are set on the amount of work completed at other institutions which
can be used to fulfill graduate degree requirements. The limits complement
residency requirements, and are stated as follows:

- A maximum of 12 graduate quarter credit hours can be transferred (one
time only) from another university and/or academic program, upon
approval of the Academic Advisor, with subsequent approval from
appropriate department and university authorities. Specific policies
regarding such transfer of credits are:

  - Transfer of graduate credit hours is not allowed for coursework taken
to satisfy the requirements of a previous or concurrent undergraduate
or graduate degree program.

  - Credit hours allowed for a course will not exceed the quarter credit
hours of any University of Cincinnati course(s) which covers
equivalent material.

  - The student's Academic Advisor must send a written request for
transfer of credits to the Director of Graduate Studies (ME). Upon
approval, the Director of Graduate Studies (ME) will submit the
request to the University Graduate Faculty for approval.

  - Thesis work cannot be transferred.

  - Credits taken at the University of Cincinnati, prior to formal admission
to the ME Graduate Program, are likewise limited to 12 graduate
credit hours. This includes both non-degree coursework as well as
coursework taken while enrolled in another degree program at UC
which did not count toward another degree.

E. Minimum Academic Performance

In order to obtain a Master's Degree in ME, a student must (1) maintain a B
average (3.0/4.0 or better), (2) obtain grades of A, A-, B+, B or B- in at
least 2/3 of the minimum graduate credits necessary for the degree and (3) satisfy all final project/thesis requirements.

F. Candidacy

Students are not required to submit formal application for Master’s candidacy. However, to maintain status as a graduate student and thus be eligible for a graduate degree, students must maintain minimum academic performance and must register for at least one (1) credit each academic year during the Autumn quarter. A student becomes a candidate for the Master’s Degree upon matriculation into the ME Master’s program.

G. Time Limitations

The minimum requirement for the Master’s Degree is the equivalent of one academic year of full-time graduate study, consisting of at least 45 graduate credits completed to the satisfaction of the candidate’s Advisory and Examining Committee. The average length of time involved in completing the MS Degree is two years. The student whose undergraduate training has been insufficient should expect to spend more than two years fulfilling the requirements for the degree. A student pursuing a program leading to a Master’s Degree must complete all requirements no later than seven (7) years from the date of first registration in that degree program. Under extenuating circumstances students may petition the Graduate School for extension of the time limit.

In general, full-time students who continue their academic programs without interruption (not including Summer Quarter) are held responsible for the graduate program requirements that are in force and published at the time of first matriculation into that program. Generally, changes in graduate program requirements will affect only the students who enroll after adoption and publication of the modifications.

Students who interrupt their graduate studies by withdrawing from the University, either officially or by failing to register for at least one graduate quarter credit for an entire academic year, will be held responsible for the graduate program requirements in force and published at the time they reenter that program. A written request for reinstatement must be made to the Graduate Studies Director (701 ERC). For current forms an instructions, please refer to the following URL: www.grad.uc.edu.

H. Theses, Research Projects and Examinations
Students are encouraged to select a thesis/project topic in their area of specialization/interest within the field of Mechanical Engineering. Thesis work is a valuable learning experience in which students have an opportunity to develop their abilities to search the literature, plan, analyze, experiment, evaluate, present and defend their work in addition to achieving a degree of specialization.

The primary requirements of a thesis are that it demonstrate ability of expression and critical power to evaluate. The acceptability of a thesis depends upon its quality and merit rather than the time and effort required for its completion or the tuition fees and credits hours spent on the investigation.

The thesis/project investigation can be either research or design oriented depending upon the mutual interests of the student and the Thesis/Project Director. Although rare, it is possible, under proper circumstances, to pursue and complete the thesis in absentia and/or with a Thesis Director from outside the university.

The thesis/project and Thesis/Project Director should be selected as soon as feasible in the student’s overall program. It is the policy of the Department that the selection of a thesis topic and Thesis Director be a voluntary process which is initiated by the student.

**Thesis/Project Director.** Since the student is normally assigned an Academic Advisor in his/her field of interest and since the Academic Advisor has guided the student in preparation for the thesis, the Academic Advisor and the Thesis/Project Director will normally be the same person. If a student wishes to change Advisors (Academic, Thesis/Project or to a Thesis/Project Director different from the Academic Advisor), he/she must submit a written petition to the Director of Graduate Studies including the written approval of both the new and old Advisors (Academic Advisor and Thesis/Project Director if the petition is that they be different people) and the reasons for the change. Generally speaking, this change should be initiated towards the end of the first quarter after a student has entered the MS program. The Thesis Director must be approved by the Academic Advisor. Since the assignment of Academic Advisor is based on the area of interest of the student and the area of expertise of the advisor, changes in advisors generally reflects a change in student’s area of interest. Since the MS ME program is designed to take approximately eighteen months, students should choose their areas of interest very carefully.

It is the student's responsibility to initiate thesis/project topic discussion with his/her Academic Advisor.
The Thesis/Project Director will become a member of the student's Advisory and Examining Committee, if not already a member, and assumes the primary responsibility for guiding the student to completion of the thesis/project as long as the student continues to make reasonable progress.

**Advisory and Examining Committee.** Members of the Advisory and Examining Committee are selected and appointed by the student's Academic Advisor (in consultation with the student) at the appropriate stage of the program. The Advisory and Examining Committee consists of a minimum of three faculty members including the Academic Advisor, who acts as its Chairperson, and the Thesis Director (if applicable). At least 50% of the Committee must be ME Program faculty. One member of the Committee must be from the Graduate Faculty. The remaining member(s) may be selected from the faculty of the Department, the faculties of other departments in the University, and appropriate persons outside the University (who must have a PhD). The student’s Thesis Director must be a member of the committee, if not already a member.

**Thesis/Project Proposal.** Communication between the student and the Advisory and Examining Committee is an important factor in the successful completion of a thesis. Since the student is the central figure in a thesis/project investigation, he/she should strive to maintain communication. Preparation of a written thesis/project proposal (at the early stages of the research) with an oral presentation to the Advisory and Examining Committee is an excellent way of establishing communication and is recommended of each student. The thesis/project proposal should include a plan for subsequent meetings or other forms of communication. To be effective, however, the thesis/project proposal should be prepared early in the investigation.

**Thesis/Project Submittal.** When the thesis/project work is essentially complete, a final draft is prepared. In general, the thesis will have gone through several preliminary drafts, and the Advisory and Examining Committee will have set forth specific requirements concerning the final draft.

The final draft is submitted to the Advisory and Examining Committee for critical review before scheduling of the Final Oral Examination. The student should allow the Advisory and Examining Committee ample time to review the work. Action on a draft submitted less than one month before the date on which the completed thesis/project is due may be deferred until the next quarter.
After the Advisory and Examining Committee is satisfied, the student will, together with the Chairperson of this Committee (usually the Academic Advisor), schedule the Final Oral Examination. The Thesis/Project Director will instruct the student regarding specific material which must be prepared for the examination.

Information concerning the required thesis format, reproduction, and fees, is available from the Graduate School (110 Van Wormer). Additional stipulations regarding thesis reproduction may exist if the student is working under a grant or research contract. Any thesis submitted to the Department to satisfy requirements for the MS Degree becomes the property of the University.

**Final Oral Examination.** The MS Degree is not granted solely on the basis of the accumulation of the required number of graduate credits. A Final Oral Examination is required of candidates for the MS Degree. The purpose is to examine the student’s understanding of engineering principles, his/her abilities of expression and power of critical evaluation. A thesis student will present and defend the thesis as part of the Final Oral Examination. A non-thesis student will be subjected to an oral examination on Mechanical Engineering principles, covered in his/her Program of Study, or present and defend an independent project completed in connection with Research (20-MECH-870) or Topics in Mechanical Engineering (20-MECH-871).

The Final Oral Examination is administered by each student’s Advisory and Examining Committee. The student’s Academic Advisor selects and is chairperson of the Committee. A student should contact his/her Advisor at the beginning of his/her last quarter in order to discuss and make preliminary arrangements for the Final Oral Examination.

**Thesis Option.** The student’s Academic Advisor will moderate the Final Oral Examination and will assist the student in arranging for the time, place and date. The Academic Advisor and the Thesis Director will specify what is required of the student prior to the Final Oral Examination and thesis defense. The student and the Academic Advisor will prepare a resume of the student’s Program of Study including grades received, credits earned and QPA. The resume will be submitted along with the final draft of the thesis to members of the Advisory and Examining Committee at least one month before the examination date.

The specific format of each student’s examination is left to the Academic Advisor; however, a typical procedure is as follows: The examination includes an uninterrupted summary (approximately 30 minutes) of the thesis by the student, an oral defense of the thesis, and a question period generally
covering the student’s comprehension of engineering principles. The thesis presentation is important and should be well prepared. Visual aids are recommended for this presentation. The examination lasts approximately one hour. Visitors may be invited to attend the thesis presentation, but they will not be permitted to remain during the committee questioning session.

The decision of the Advisory and Examining Committee is rendered immediately after the examination. If the student does not pass the examination, then the Committee will decide upon a future course of action. If the student passes, then the Committee will complete the Thesis Approval Page and the Record of Final Oral Examination form. The Committee will also recommend a grade for the thesis, and make a recommendation to the Graduate Studies Director (ME) and the Graduate Studies Committee concerning acceptability of the student for the doctoral program.

The Academic Advisor will forward the Record of Final Oral Examination form and a completed Program of Study for the student showing grades received, credits earned, and QPA to the Director of Graduate Studies (ME).

There may be changes or additions required to the thesis. These must be made by the student and approved by the Thesis Director. The final corrected copies must be submitted to the Graduate School (110 Van Wormer) before the date on which the completed thesis is due. Electronic submission of the thesis is now required. For additional information, refer to www.etd.uc.edu.

**Non-Thesis Option.** The student’s Academic Advisor will moderate the Final Oral Examination and assist the student in arranging for the time, place and date. The Advisor will specify what is required of the student prior to the examination. The student and the Academic Advisor will prepare a completed Program of Study for the student including grades received, credits earned and QPA. The resume will be submitted to members of the Advisory and Examining Committee at least one week before the examination date.

The specific format of each student’s examination is left to the Advisory and Examining Committee. The Examination is given in a meeting of the student and his/her Advisory and Examining Committee. The entire Committee should be present at this Examination. The student’s coursework in his/her Program of Study, comprehension of engineering principles, and project work are generally covered in an examination lasting approximately one hour.

If the student does not pass the Final Oral Examination, then the Committee will decide upon a future course of action. If the student passes, the
Committee will complete the record of Final Oral Examination form and make a recommendation concerning acceptability of the student for the doctoral program, regardless of whether the student is planning further graduate study.

The Academic Advisor will forward the Record of Final Oral Examination form and a completed (updated) Program of Study for the student showing grades received, credits earned, and QPA to the COE Graduate Studies Office (701 ERC).

I. Graduation

The graduate student has the responsibility to notify the Director of Graduate Studies one quarter prior to expected graduation. Based upon this notification, the Graduate School (110 Van Wormer) will issue a packet of information and forms required for graduation. Application for graduation is now submitted electronically; refer to the URL www.grad.uc.edu for further information.

Any student intending to receive a graduate degree is responsible for insuring that the aforementioned procedures, as well as those listed below, are carried out and the indicated forms submitted to the appropriate graduate office.

Graduation Requirements for Master's Degrees are:

1. Formal Application for Degree--online at www.grad.uc.edu
2. Alumni Office Record.
3. Cap and Gown - Cap and gown may be purchased or rented at the University Bookstore (for June Graduation).
4. Final Date for Defense of Thesis (as applicable to the degree awarded by the unit). Students should check with the Graduate Studies Office for specific dates. The Graduate School must have ten days' notice in order to make notification of the defense.
5. Degree in Absentia - A degree is conferred in absentia upon written request from the student, submitted on the appropriate form to the Graduate Studies office. The request must be made at least ten days prior to Commencement.
6. SP, NG, I, and F Grades - Notification of removal of all SP, NG, I, and F grades must be submitted prior to a student's graduation.
7. Credit Hours - Completion of the required quarter hours for the degree.

8. Certification of Program Requirements - Completion of all program requirements for the degree. Certification will be based upon a valid Program of Study form in the student's academic file.

Job Placement Form. It is very helpful to the Department to know the kinds of employment obtained by graduates. The Job Placement Form should be completed by the student and returned to the Academic Advisor for submission with the Final Oral Examination form. If the student has not confirmed employment at the time of the Oral Examination he/she should submit this form to the Graduate Studies Coordinator (701 ERC) as soon as possible. Part-time students should list their present jobs on this form.