

Materials Science and Engineering Program

Graduate Student Handbook

College of Engineering and Applied Science
Department of Mechanical, Materials and Industrial
Engineering
University of Cincinnati

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1 Introduction

1.1 University Structure

The University of Cincinnati (UC) is a large public research university in the State of Ohio. As a public university it is ultimately overseen by the governor and elected state legislature of Ohio, who have appointed a Board of Trustees to govern the university. The Board of Trustees is responsible for selecting and appointing the university president, setting the operating budget, approving personnel appointments, granting all degrees awarded by the university, establishing tuition and fee rates, approving contracts, and approving all rules, regulations, curriculum changes, new programs and degrees of the university. Many of these decisions are routinely delegated by the Board to other leadership roles within UC.

The President of UC serves as the chief executive officer of the entire university, which includes multiple campuses spread throughout the local region and the UC medical system. The university is then subsequently divided into many separate colleges, each of which is led by a separate Dean, and each college is often divided further into departments which are led by Department Heads. Programs and Centers are smaller administrative units which can exist within a single department, across multiple departments, or even across multiple colleges. Each layer of leadership can additionally have multiple appointed subsidiary officers. For example, the Executive Vice President for Academic Affairs (Provost) is an important officer which reports to the university president and oversees all academics affairs at the university. Within the College of Engineering and Applied Science there is a Dean for Graduate Studies, who helps to resolve issues with graduate programs.

Each student is ultimately responsible for being familiar and complying with all program, college, and university graduate regulations. Your program faculty and advisor will assist you in navigating this large system and your role within it. Most graduate students will interact primarily with faculty members only within their program and those closely related to it, as well as the many helpful staff members within the department and college offices.

1.2 Materials Science and Engineering Program

The Materials Science and Engineering (MSE) Program is situated within the Department of Mechanical, Materials and Industrial Engineering (MMIE), which is in UC's College of Engineering and Applied Science (CEAS). All graduate students in the MSE Program are enrolled under this organizational structure regardless of their advisor's affiliation, which may differ from their own.

The MSE Program is led by the **MSE Program Chair**, who often also serves as the MSE Program's **Graduate Studies Director**. Faculty in the MSE Program are either:

Primary Faculty – Faculty members directly responsible for the well-being of program as a whole and who vote on any major changes.

Secondary Faculty – Faculty members affiliated with the MSE Program but are more directly associated with another program with the university.

Primary and secondary MSE faculty members hold appointments across different departments, and in some cases different colleges. From the student perspective distinctions between primary and secondary faculty are relevant only when choosing MS thesis or PhD dissertation committee members and limiting certain advisor roles.

The MSE Program offers both MS level and PhD level degrees in Materials Science and Engineering, which require a thesis and dissertation respectively, as well as a non-thesis Masters (MEng) degree option.

1.3 Graduate College

All MSE graduate students are part of the UC Graduate College, which coordinates all graduate programs across the university. This is in addition to their enrollment within the College of Engineering and Applied Science. The policies and procedures described in this handbook apply equally to full-time and part-time students pursuing a graduate degree in the MSE Program and supplement those published separately in the **Graduate Handbook of the UC Graduate College**. In situations where the handbooks or any other regulations set forth by the University, CEAS, International Student Services Office, or any other relevant bodies are altered to create conflict, those other rules will supersede those found in this handbook. Please alert the MSE Program Chair to any conflicting rules as soon as possible.

UC Graduate Handbook Link: (<https://grad.uc.edu/fac-staff/handbook.html>)

2 Degree Programs and Requirements

2.1 Master of Science (MS)

To enter the MSE MS degree program students must formally apply and be admitted following the Graduate College's admission policy.

Full-time MS students are expected to complete the degree requirements within 2 years of their initial enrollment into the graduate program and financial aid offers may be withheld after this time. The Board of Trustees stipulates that all degree requirements must be completed within 5 years for a master's degree, regardless of full-time or part-time status. There is no formal candidacy status for the MS degree.

2.1.1 Course Requirements

To satisfy the requirements for an MS degree in the MSE Program, the following minimum course requirements must be satisfied:

- 12 Credit hours of Core Courses (listed below)
- 9 Credit hours in Additional MSE Graduate Courses
- 9 Credit hours of Graduate Research
- 2 Credit hours of Graduate Seminar (or written waivers)
- 32 *Total credit hours*

Core Courses: Four of the core courses listed below must be taken by MS students for a total of 12 credit hours

One of the following three courses:

- MTEN6001 – Principles of Materials
- MTEN6033 - Introduction to Polymers and Soft Materials
- MTEN7094 – Fundamentals of Polymer Science

One of the following two courses:

- MTEN6005 – Materials Thermodynamics
- MTEN7035 – Advanced Thermodynamics

One of the following three courses:

- MTEN6009 – Materials Characterization
- MTEN7010C – Materials Characterization
- MTEN7032C – Polymer Analysis and Characterization

One of the following two courses:

- MTEN6020 – Materials Kinetics
- MTEN6034 – Physics of Polymer Properties

Additional MSE Graduate Courses: MS students must complete an additional 9 credit hours of MSE graduate courses (6000/7000/8000 level, MTEN designation). Students wishing to use graduate courses offered by other departments or programs to fulfill these credits must obtain prior approval from their Academic Advisor, Research Advisor (if different), and the Graduate Studies Director. All course registrations should also have prior approval by the student's Academic Advisor regardless of whether they are being used to fulfill this requirement.

Graduate Research Credits: These credits are graded pass/fail and should be registered under the student's Research Advisor (MTEN9071, with the appropriate section number corresponding to the advisor). If a Research Advisor is not yet available, they should be registered under the program's Graduate Studies Director. A passing grade is required for credits to satisfy the requirement.

Graduate Seminar: MS students are required to register for the 1 credit hour graduate seminar (MTEN8071) their first Fall and Spring semesters on campus. The graduate seminar is graded pass/fail and a passing grade is required for credits to satisfy the requirement. Full-time students may receive written waivers from the Graduate Studies Director to register for another program's graduate seminar to fulfill this requirement or to delay fulfilling the requirement into their second year. In exceptional circumstances part-time students or those conducting research from a location outside of Cincinnati as part of their degree may have the requirement waived entirely by the Graduate Studies Director.

2.1.2 MS Thesis Requirements

To receive an MS in Materials Science and Engineering all students are required to prepare, defend, and submit an approved thesis as a public record. Preparation of this thesis demonstrates the student's ability to conduct work, communicate, and to evaluate critically within their field of study.

Thesis Topic: The selection of the MS thesis topic is made in consultation with the student's Research Advisor.

Examination Committee: Each MS student will work to establish a thesis examination committee in consultation with their Research Advisor. At a minimum the committee will consist of three UC faculty members, including the Research Advisor, though additional thesis committee members may be included. A majority

of the committee must be MSE Program primary faculty or receive special approval of the committee by the Graduate Studies Director, and the committee composition must conform to regulations stipulated in the handbook of the Graduate College in all cases. The student's Research Advisor typically assumes the role of the Thesis Committee Chair when possible, though an alternate committee member eligible for the role may be appointed by the student if it is necessary. The thesis committee selection must be submitted to the Graduate Studies Director for approval using the MS Thesis Committee Approval form, prior to scheduling of the thesis examination.

Thesis Document: The thesis document must be prepared in accordance with the formatting guidelines of the Graduate College, which can be found via their handbook. While there are no firm requirements for an MS thesis in the MSE Program, it is generally advised that the content could be published as a peer-reviewed journal article and that a corresponding manuscript has been submitted, accepted, or is in final preparation at the time of the examination. The student is strongly encouraged to discuss with their thesis committee members the expectations for an acceptable MS thesis document prior to the examination.

Thesis Defense: A successful oral defense of the thesis before the student's committee is a degree requirement. This examination may only be scheduled after or during the semester in which all course requirements will be fulfilled.

Copies of the complete thesis must be submitted to the thesis committee members at least one week prior to the oral defense, unless an alternative deadline is explicitly arranged with the committee. Failure to meet this deadline may be used by any of the committee members as grounds to reschedule the date of the examination.

The examination should be scheduled no less than two weeks before the Electronic Thesis/Dissertation (ETD) submission deadline of the semester the student intends to graduate, otherwise revisions and approvals will likely result in graduation being delayed to the following semester. ETD deadlines occur roughly halfway through each semester, so having a complete thesis to distribute three weeks (one pre-defense, two weeks post-defense) prior to the deadline means students should have a complete initial draft of their thesis submitted to their advisor by the start of the semester they intend to graduate to avoid potential graduation delays.

Students are required to make a public announcement of their thesis defense, including time, date, location, and title of the public presentation. To make this

announcement students should contact the appropriate person within the CEAS Graduate Studies Office assigned to the MSE Program.

The oral examination will start with a formal presentation (30 minutes) by the MS student summarizing their thesis, followed by questions from the members of the thesis committee and members of the audience. At an appropriate point the thesis committee chair will excuse members from the audience from the room and questioning from the committee members may continue. Upon completion of questioning the defending student will be dismissed from the room and the committee will deliberate on the result. The results of this deliberation will be communicated directly to the student by the committee. Required revisions to the thesis document will be conveyed to the student in writing on MS Thesis Examination form, which will be circulated for signatures and submitted to the Graduate Studies Director. The entire examination should not exceed 2 hours.

Following any required revisions, the student will recirculate a corrected thesis document along with the Committee Approval form (generated as part of the application process for graduation) for committee signatures.

2.2 Doctorate of Philosophy (PhD)

To enter the MSE PhD degree program students must formally apply and be admitted following the Graduate College's admission policy. UC MSE MS students desiring to continue to the doctoral program must still apply and be accepted through the graduate admissions application system. In the special circumstance a UC MS MSE student has been offered a funded PhD position by an advisor, pending their admission to the PhD program, the graduate application fee may be waived by submitting a fully signed "Continuing to PhD Form" to the Graduate Studies Office. The Continuing to PhD form can be accessed in the [CEAS student portal](#) in the Graduate Study forms section.

Full-time PhD students are expected to complete the degree requirements within 5 years of their initial enrollment into the graduate program and financial aid offers may be withheld after this time. The Board of Trustees stipulates that all degree requirements must be completed within 9 years for a doctoral degree, regardless of full-time or part-time status. Students admitted into the PhD program must subsequently earn their PhD candidacy status, which is not conferred automatically.

2.2.1 Course Requirements

Course requirements vary depending on whether the PhD student holds a BS degree or a prior MS degree in Materials Science. The Graduate College dictates doctoral degrees require a minimum of three years of full-time graduate study and a minimum of 90 graduate semester credits beyond the bachelor's degree, excluding credits earned to remove deficiencies.

In general, to satisfy the requirements for a PhD degree in the MSE Program, the following minimum course requirements must be satisfied:

- 12 Credit hours of Core Courses (listed below)
- 9 Credit hours in Additional MSE Graduate Courses
- 9 Credit hours in Additional Graduate Courses
- 60 Credit hours of Graduate Research
- 6 Credit hours of Graduate Seminar (or written waivers)
- 96 *Total credit hours*

For students already possessing an MS degree in MSE or a constituent field (e.g. Metallurgical, Polymer or Ceramics Engineering) awarded outside UC, determined at the discretion of the program's Graduate Studies Director, 30 graduate research credit hours are automatically waived, lowering the requirements to:

- 12 Credit hours of Core Courses (listed below)
- 9 Credit hours in Additional MSE Graduate Courses
- 9 Credit hours in Additional Graduate Courses
- 30 Credit hours of Graduate Research
- 6 Credit hours of Graduate Seminar (or written waivers)
- 66 *Total credit hours*

As 30 graduate research credits are already waived for students holding a prior MS degree, additional transfer credits will be considered only in exceptional cases (outlined in section 3.2.4 *Transfer of Credits*) and the expectation is that all PhD students will be required to complete at least 60 credit hours at UC prior to graduation. Approval of transfer credits for MS holding students may be approved in rare cases by the Graduate Studies Director.

Students who have completed their MS degree with the UC MSE program and are continuing toward their PhD will be required to take a selection of courses, counting those already used to earn their MS, that collectively satisfy the full 96 credit hour minimum PhD requirements (as if entering without an MS). This equates to 64 credit hours in addition to those they will have used to satisfy the minimum MS requirements. These course requirements also apply to all PhD students opting to earn their MS degree during their studies while simultaneously enrolled in both degree programs.

Core Courses: Four of the core courses listed below must be taken by PhD students for a total of 12 credit hours

One of the following three courses:

MTEN6001 – Principles of Materials

MTEN6033 - Introduction to Polymers and Soft Materials

MTEN7094 – Fundamentals of Polymer Science

One of the following two courses:

MTEN6005 – Materials Thermodynamics

MTEN7035 – Advanced Thermodynamics

One of the following three courses:

MTEN6009 – Materials Characterization

MTEN7010C – Materials Characterization

MTEN7032C – Polymer Analysis and Characterization

One of the following two courses:

MTEN6020 – Materials Kinetics

MTEN6034 – Physics of Polymer Properties

Additional MSE Graduate Courses: PhD students must complete an additional 9 credit hours of MSE graduate courses (6000/7000/8000 level, MTEN designation) beyond the core courses. All course registrations should have prior approval by the student's Academic Advisor.

Additional Graduate Courses: PhD students must complete an additional 9 credit hours of graduate level courses (6000/7000/8000) past the core courses and MSE additional graduate course requirements. These may include but are not limited to courses in the MSE Program. All course registrations should have prior approval by the student's Academic Advisor.

Graduate Research Credits: These credits are graded pass/fail and should be registered under the student's Research Advisor (MTEN9071, with the appropriate section number corresponding to the advisor). If a Research Advisor is not yet available, they should be registered under the program's Graduate Studies Director. A passing grade is required for credits to satisfy the requirement.

Graduate Seminar: PhD students are required to register for the 1 credit hour graduate seminar (MTEN8071) their first six Fall and Spring semesters on campus. The graduate seminar is graded pass/fail and a passing grade is required for credits to satisfy the requirement. Full-time students may receive written waivers from the Graduate Studies Director to register for another program's graduate seminar to fulfill this requirement. In exceptional circumstances part-time students or those conducting research from a location outside of Cincinnati as part of their degree may have semesters of the requirement waived entirely by the Graduate Studies Director.

2.2.2 PhD Qualifying Examination

The objective of the PhD Qualifying Examination is to determine whether the student's level of preparation is adequate for the successful completion of the doctoral dissertation research program. The PhD Qualifying Examination is a two-part process consisting of a Written Examination testing their knowledge from coursework, and a PhD Proposal and proposal defense which tests their ability to apply this knowledge in their own research.

Written Examination: The written qualifying examination consists of questions in topic areas coinciding with the four required core classes. Students taking the exam will convey which of the two classes in each Core Course category they intend to include in their exam to the Qualifying Exam Committee Chair (the Graduate Studies Director, unless otherwise appointed). Students may choose to take an exam on a course they did not formally take for credit, though they are discouraged to do so.

The Written Examination is offered every spring semester and full-time students are expected to take it for the first time in the spring following their second fall semester enrolled in the program. A one-year extension may be requested using the PhD Qualifying Exam Selection form but will be granted only in special circumstances (e.g., medical/parental leave or part-time students), and requires approval from

the student's research advisor. Failure of an eligible student to take the exam will be counted as a failed attempt for that year.

By the first day of class in this spring semester all students planning to take the Written Examination during that year must declare which subjects they intend to be examined on using the PhD Qualifying Exam Selection form. For students unable to take the qualifier in accordance with this timeline, special permission is required by their Research Advisor (if applicable) and Graduate Studies Director to delay taking the exam.

The Written Examination is based upon 400 total points (100 points from each topical area) and is open book but not open resource (no internet connection is allowed and the exam must be taken without human consultation). Each topical area will be written as a one-hour exam but the students will have six hours to finish, with the time to be divided as they chose. A minimum average percentage of 60% overall is required for a passing grade. The written examination will be given in a predesignated location and proctored by the Qualifying Exam Committee Chair. Anonymity of the students will be kept from the topic area graders and all other faculty members throughout the entire qualifying exam process.

Students who fail the Written Examination are required to retake it the next time it is offered. A maximum of two attempts of the Written Examination are allowed and a second failure will result in removal from the PhD program.

PhD Proposal: The PhD Proposal should occur within the year following successful completion of the Written Examination. Failure to do so may jeopardize the student's standing within the program and their ability to receive funding and scholarships. The student will prepare a 15 page research proposal on their intended dissertation topic, following general NSF proposal format (single spaced, minimum size 11 font, 1" margins, references excluded from page limit). This document may borrow from but should not replicate any existing grant proposal not written by the student themselves, and should concentrate more heavily than a standard grant proposal on demonstrating clear understanding of the existing literature and specific detail of how the objectives will be addressed.

The written proposal must be submitted to all committee members one week prior to the PhD Proposal defense. The PhD proposal examination committee will consist

of the student's Research Advisor, in addition to two other faculty members, with at least two of the three members being primary MSE faculty. It is expected that PhD Proposal examination committee, with the addition of at least one more member, will become the student's dissertation committee upon passing the qualifier.

The PhD Proposal defense will consist of a 30 minute technical presentation by student covering the content of their PhD proposal, followed by questions from the examination committee related to the literature review and critique of the student's proposed plan of research. The PhD Proposal defense may be public or private according to the student's choice but only committee members and the student will be permitted to speak.

Upon completion of questioning the defending student and any audience members will be dismissed from the room and the committee will deliberate on the result. The results of this deliberation will be communicated directly to the student by the committee, and the PhD Proposal Defense form will be completed by the student's Research Advisor, signed by the committee, and submitted to the Graduate Studies Director for record.

Students who fail the PhD Proposal are required to retake it with the same committee by the following semester. A maximum of two attempts of the PhD Proposal are allowed and a second failure will result in removal from the PhD program.

PhD Candidacy: Students may initiate the process for admission to doctoral candidacy upon completion of all coursework requirements (excluding research and seminar credits) and passing both the Written Examination and the PhD Proposal. This requires approval using the Application for Admission to PhD Candidacy form.

2.2.3 PhD Dissertation

Dissertation Committee: In consultation with their Research Advisor, each student will select a list of members to be appointed to the student's Dissertation Committee. The committee should include the student's Research Advisor and at least three additional UC faculty members. The student's Research Advisor typically assumes the role of the Dissertation Committee Chair when possible, though an alternate committee member eligible for the role may be appointed by the student if it is necessary. At least half of the committee members must be primary MSE faculty, and

a majority of the members must be either primary or secondary MSE faculty. If a non-UC faculty member or appropriate professional practitioner has special expertise in a dissertation topic, they may be added to the Dissertation Committee if they are nominated by the candidate and approved by the Dissertation Committee Chair, the Graduate Studies Director, and the Graduate College.

The student will submit the Dissertation Committee to the Graduate Studies Director for approval using the PhD Dissertation Committee Approval form, who will either approve the committee or suggest alternative compositions. The Dissertation Committee must be approved prior to any Progress Reviews or Dissertation Defenses being scheduled and should be submitted for consideration directly following acceptance into PhD candidacy.

Progress Reviews: The primary objective of these reviews is to ensure that the student is making adequate progress towards the PhD degree, specifically in the quality and quantity of research work and the Dissertation Committee's expectations. Progress Reviews also serve to protect the student from unexpected graduation delays and document agreements with the committee regarding the evolving scope of their dissertation as research plans change.

The students are expected to complete a Progress Review every year following their admission into PhD candidacy and must have completed at least one before the start of their intended graduation semester. Students who have not completed a Progress Review in over a year may be required to submit one by the Graduate Studies Director if they have not already applied for graduation. Failure to do so may jeopardize the student's standing within the program and their ability to receive funding and scholarships.

The review process will consist of two components. The first is a short (not to exceed 20 pages double-spaced) written document distributed to the Dissertation Committee summarizing the student's research progress, any proposed revisions to the dissertation structure since their PhD Proposal or last Progress Review, remaining objectives, and an expected timeline to graduation. The review document is to be a high-level summary of the student's progress and expected dissertation content, not a technical manuscript or a section of their dissertation.

The student will then schedule a meeting occurring no sooner than a week after distribution the progress review document. The meeting will begin with a short (15-20 minute) summary by the student of their progress to the assembled Dissertation Committee, followed by questions and discussion. In total the meeting is intended to take no more than an hour and a half. The Dissertation Committee is expected to critically review of the student's progress and make recommendations that will guide the student's progress towards completion of the degree, while assuring that the research meets the expected high standards of the doctoral program. The Dissertation Committee may provide directions to conduct additional research work and/or analysis, modeling, etc., that is deemed essential to completing the work. If warranted, the committee can also make recommendations as to the scope, direction and feasibility of the research project. The committee can also express concern over the rate of progress and set specific goals to rectify the situation, including mandating a follow-up Progress Review within a set timeframe. If necessary, the student may be asked to step out of the room while the committee deliberates on its recommendations.

Following the review, the student with the aid of their dissertation advisor will compile the committee's feedback and recommendations in writing on the PhD Progress Review form, which will be distributed for signatures (or edits) and submitted to the Graduate Studies Director upon completion.

Dissertation Document: Each PhD student must produce and defend a Dissertation Document showing high scholarly achievement based on their original research. The student is required to submit an electronic document as public evidence of this research following its approval by the Dissertation Committee in accordance with the Graduate College policies.

While there are no set requirements for a PhD Dissertation in the MSE Program, given the many unique forms research at this level can take, it is generally advised that the content has already or could be published as at least three peer-reviewed journal articles on related topics. Through the PhD Proposal and Progress Reviews the candidate will be provided with direct feedback from their committee regarding expectations and scope for their dissertation. The dissertation should be structured as a stand-alone document clearly establishing the student's original and independent scientific contribution to the field. Students are strongly encouraged to

talk to their Dissertation Committee and look up prior dissertations successfully submitted within the MSE Program for formatting guidance. While research work used to satisfy a student's MS thesis can be included as background, it cannot be presented again as a contribution to their PhD dissertation.

Dissertation Defense: By regulation at least six months must elapse between the time of admission to doctoral candidacy and the Dissertation Defense examination. Additionally, the student must have completed at least one Progress Review before the start of their intended graduation semester.

The student should initiate the defense process by submitting the PhD Dissertation Defense Scheduling form to the Graduate Studies Director.

Copies of the complete Dissertation Document must be submitted to the Dissertation Committee members at least two weeks prior to the Dissertation Defense, unless an alternative deadline is explicitly arranged with the committee. Failure to meet this deadline may be used by any of the Dissertation Committee members as grounds to reschedule the date of the examination.

The examination should be scheduled no less than two weeks before the Electronic Thesis/Dissertation (ETD) submission deadline of the semester the student intends to graduate, otherwise revisions and approvals will likely result in graduation being delayed to the following semester. The ETD deadlines occur roughly halfway through each semester, so having a final copy of the dissertation to distribute to the Dissertation Committee four weeks (two weeks pre-defense, two weeks post-defense) prior to the deadline means students should intend to have a complete initial draft of their dissertation submitted to their Research Advisor by the start of the semester they intend to graduate to avoid potential graduation delays.

Students are required to make a public announcement of their dissertation defense, including time, date, location, and title of the public presentation. To make this announcement students should contact the appropriate person within the CEAS Graduate Studies Office assigned to the MSE Program.

The Dissertation Defense will start with a formal presentation (40 minutes) by the student summarizing their dissertation work, followed by questions from the members of the Dissertation Committee and members of the audience. At an

appropriate point the Dissertation Committee Chair will excuse members from the audience from the room and questioning from the committee members may continue. Upon completion of questioning the defending student will be dismissed from the room and the Dissertation Committee will deliberate on the result. The results of this deliberation will be communicated directly to the student by the committee. Required revisions to the Dissertation Document will be conveyed to the student in writing on the PhD Dissertation Examination form, which will be circulated for signatures and submitted to the Graduate Studies Director. The entire Dissertation Defense examination should not exceed 2 hours.

Following any required revisions, the student will recirculate a corrected Dissertation Document along with the Committee Approval Form (generated as part of the application process for graduation) for committee signatures.

2.3 Master of Engineering (MEng)

The MSE Program offers a non-thesis MEng program option. MEng students in the MSE program are required to complete 12 credits of graduate level MSE courses (6000/7000/8000 level, MTEN designation), in addition to 9 credits of graduate electives, and 6 credits of comprised of two MEng specific core courses, and a capstone project. For a current list of applicable core courses please consult the Graduate Studies Office where a MEng Graduate Student Handbook is also available with a detailed description of specific MEng program requirements.

The Graduate Studies Director serves as the default Academic Advisor to all MSE MEng students. If MEng students choose, they may request to complete an independent capstone project with another MSE faculty member as an advisor to fulfill their capstone requirement.

3 Program Policies

The policies found in this section are intended to be supplemental to those found in the UC Graduate Handbook (<https://grad.uc.edu/fac-staff/handbook.html>) provided by the Graduate College. Some important policies from the Graduate Handbook have been summarized here for convenience, if there are any discrepancies due to updates the information in the Graduate Handbook supersedes this document.

3.1 Advisor Roles

Due to the interdisciplinary nature of the MSE Program three different types of advisory roles exist within the program:

Academic Advisors: MSE primary faculty members who help to determine appropriate coursework plans, progress towards the degree objective, and that program specific requirements are being met.

Research Advisors: Oversee the student's thesis or dissertation research and fund the student's research work as applicable.

Position Advisors: Applicable to students receiving Teaching Assistantships (TAs), Research Assistantships (RAs), and oversee the work performed.

In many situations several or all these roles may be fulfilled by the same faculty member, but they may also be spread amongst three separate faculty members.

An Academic Advisor is assigned to all students upon entry into the program and students should meet with them on the first available opportunity to discuss coursework and selection of a Research Advisor. In the case of PhD students the Academic Advisor may already be their Research Advisor (due to funding guarantees), but the student should make efforts to verify if this is the case.

Any semester a student has been assigned either a TA or RA they should meet with their Positional Advisor at the first available opportunity to discuss the work commitments expected for that semester. In many cases RA offers will be directly under the student's Research Advisor, but this is not always the case.

Students admitted to the MS and PhD tracks of the MSE Program should make every effort to choose a thesis or dissertation Research Advisor during the first semester of their enrollment in the program. This decision should not be postponed beyond the end of the second semester. The selection of the Research Advisor is the most important decision the student will make in the early stages of their career study. It is strongly recommended that the student spend time with multiple faculty members discussing the faculty members' research interests, research groups, expectations, and advisory styles. The decision must be mutually agreeable between student and

faculty member and should be communicated to the Graduate Studies Director by using the Official Advisor Selection Form.

Research Advisors do not need to be members of the primary MSE faculty, and this is often not the case due to the interdisciplinary nature of materials research. In cases where the Research Advisor has an appointment in a different department, or occasionally a different college, students may routinely interact with the staff members of that unit to coordinate financial aid and laboratory purchases. The MSE student themselves will always remain situated in the Department of Mechanical, Materials and Industrial Engineering (MMIE), which is in UC's College of Engineering and Applied Science (CEAS).

When necessary, students may choose to formally designate two Research Co-advisors, notably on interdisciplinary projects or when they are working on collaboratively funded projects.

If the Research Advisor is not a primary MSE faculty member, the student will retain their Academic Advisor to assist them in navigating the MSE Program and approving coursework plans.

It is recognized that occasionally, a student may have to change their Research Advisor over the course of their studies. An approval form must be processed through the Graduate Studies Director and Graduate Program Office before the student can officially make this change. Approval and agreement by all parties to this change is required and should indicate that all research obligations to the current Research Advisor have been met. Students are recommended to start the process by consulting with the Graduate Studies Director.

3.2 Coursework Policies

3.2.1 Course Registration

Students admitted to graduate study in the MSE Program should consult with their Academic Advisor regarding their plan of study. All MSE graduate students are expected to take mainly those courses, classes, and other credits hours that are offered within the MSE Program, starting with the core requirements, unless a reason for deviation is provided.

All full-time MSE graduate students are required to submit a copy of their complete Program of Study (from UC Registrar's Office) to their Academic Advisor before the end of the fourth week of the semester when starting a MS or PhD degree. A signed and approved Program of Study form should be submitted the Graduate Studies Director. Students wishing to take classes outside of the College of Engineering must fill out a form available in the Graduate Studies Office and obtain approval also from the MSE Program Graduate Studies Director.

3.2.2 Full-time Load and Reduced-Time Load of Graduate Credits

The normal load for a student devoting full-time to graduate study is 15 graduate credits of work in the fall and spring semesters. Students will not be permitted to register for more than 18 credits in any one semester without approval of their Research Advisor and the Graduate Studies Director. Students who have completed their total credit hour requirements for the degree being pursued, but have not yet completed and defended their thesis/dissertation, may register for a reduced course load of 1 credit hour per semester (maintaining thereby their full-time status) by filling out a form available online and/or in the College's Graduate Studies Office and having their Research Advisor sign it. Since these policies may be subject to revision students should contact the Graduate Program Office periodically for guidance.

3.2.3 Academic Performance

Minimum Requirements: The student must maintain at least a 3.0 cumulative Grade Point Average (GPA) in graduate courses at the University of Cincinnati and within the MSE Program. Failure to maintain at least a 3.0 GPA may result in probation in the following semester. No student with a GPA below 3.0 will be recommended for graduation.

Unsatisfactory Course Performance: A student having a grade of "F", "I", or "NG" or "UP" in any course for which he/she has registered is not considered to have completed the degree requirements. An "F" grade is permanent on the student's transcript and is included in the GPA. The student cannot graduate without retaking the course with the "F" grade and obtaining a passing (i.e. C or above) grade. Note that all graduate courses are graded on a strict passing (C or above) or failing (F) basis and do not issue intermediary grades (e.g. C-, D+, D, D-).

In unusual cases, an alternative procedure may be permitted to replace a failing course grade, provided that such procedure has the approval of the course instructor and Graduate Studies Director.

Academic Probation: If a student is on probation for two consecutive semesters or three non-consecutive semesters, they may be denied further financial aid and dismissed from the program. The graduate college GPA threshold for academic probation (3.0) is higher than that for undergraduate students (2.0).

3.2.4 Transfer of Credits

To transfer graduate credits earned at other U.S. institutions of higher learning, the student must file a petition for Advanced Standing with the Graduate Studies Director no later than two semesters after admission. The petition should be endorsed by the student's Academic Advisor, and should list the courses to be transferred, the university, the year, and the grade earned. The student should provide proof that the course to be transferred was not part of a program for which a degree was granted. Only courses with grades "A" or "B", taken within the last 5 years, can be transferred. Credit for a course will be transferred only if an equivalent course is given at the University of Cincinnati and the student has not taken the UC course. A maximum of 6 semester credits may be transferred to satisfy either the MS or PhD course requirements. Special cases exceeding this policy may be approved by the Graduate Studies Director, generally limited to cases where students are switching universities/programs or have multiple prior graduate degrees.

3.2.5 Undergraduate Courses for Graduate Credits

Under special circumstances, undergraduate courses offered by other Departments within the University may be counted toward the requirements for the MS or PhD degree. A petition must be filed by the student, with the endorsement of their advisor, to the Graduate Studies Director. The undergraduate course in question must be: (1) outside the student's main area of study, (2) essential in broadening the student's capability in an area related to their main area of study, and (3) unavailable at the graduate level within the University. No more than six credit hours taken under this provision may be counted toward the degree requirement. Undergraduate credits do not count toward full-time status and cannot be supported by certain types of financial aid.

3.2.6 Auditing Courses

Graduate students, with the permission of the course instructor and their Research Advisor, may be allowed to audit a course. The pass/fail conditions for the audited course will be clearly set by the instructor. Audit credits cannot be included as part of the degree course requirements and audited courses cannot be retaken later for credit. Note that audit credits cannot be supported by various types of financial aid and do not count toward full-time status, so students are advised to consult with all appropriate offices before registering.

3.2.7 Special Projects

Special Projects are a special category of research credit that receives a letter grade as opposed to being graded pass/fail. No more than 4 credit hours may be taken as special project credits by MS students, and no more than 6 credit hours may be taken by PhD students. Special projects may be counted toward the research credit requirements for each degree but not the course requirements.

3.2.8 Course Deficiencies

In exceptional cases a new graduate student who is found to be deficient in undergraduate studies may be required by their Academic Advisor to take certain undergraduate courses to make up such deficiencies, to be assigned in consultation with the Graduate Studies Director. Graduate credit will not be granted for these courses. Undergraduate credits do not count toward full-time status and cannot be supported by certain types of financial aid.

3.2.9 Maximum Number of Credit Hours

The University has set an upper limit for the number of credit hours that a graduate student can earn and still be eligible for financial aid. For students who start in the graduate program at the University of Cincinnati after a BS degree this upper limit is 174 graduate credit hours. For students starting after an MS degree from another institution this upper limit is 134 graduate credit hours. For students transferring from another department within the University of Cincinnati, graduate credits earned in different departments are counted cumulatively in determining whether the upper limit has been reached. This policy is not set by the MSE Program and the current version can be found in the Graduate College handbook.

3.3 Special Provisions

3.3.1 Part-time Students

Most provisions stated in this handbook are applicable to part-time students as well as to full-time students, with the exception of time limitations set for the PhD Qualifying Examination which may be altered in consultation with the Graduate Studies Director. All other time limits and regulations set by the University Graduate College remain unchanged. A change in the status of a student from full-time to part-time or vice versa will require approval by the student's Academic Advisor and the Graduate Studies Director.

3.3.2 Conflict and Grievance Resolution

Students who have a conflict with any of their advisors, course instructors, staff member, or other students should bring the issue to the attention of the MSE Program Chair, who will initiate the necessary ameliorative steps. If this route is not available, the student may make an appeal directly to the Mechanical and Materials Department Head.

3.3.3 Certification for Graduation

The Graduate Studies Director has the responsibility for certifying students for award of MS and PhD degrees. At the time of certification, the entire academic file is reviewed to assure compliance with all the academic requirements for graduation. It is the student's responsibility to make sure that they are in compliance with all academic requirements. Students is expected to graduate within 12 months of the date of their thesis/dissertation defense. Any extension of this limit must be approved by the entire Thesis/Dissertation Committee. Failure to comply with this time limit may result also in non-certification for graduation.

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

OFFICIAL ADVISOR SELECTION

To: Graduate Studies Office and MSE Graduate Studies Director

From: Faculty Advisor

Please be advised that I have agreed to be the academic advisor for the graduate student below, who will be working towards their MS/ PhD degree objective in the MSE Program.

Student Name (Last, First): _____

M#: _____ **UC Email:** _____

Pursuant to this agreement, I will provide the needed guidance, laboratory facilities, and financial support, as detailed below, and as discussed with and agreed to by the student.

Advisor Name: _____

The above named advisor intends to offer the student the following financial aid:

___ Graduate Research Assistantship (Grant # _____)

___ Other (explain) _____

___ Advisor does not intend to offer the student financial aid

Student Signature: _____ **Date:** _____

Advisor Signature: _____ **Date:** _____

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

MS THESIS COMMITTEE APPROVAL

Student: _____ **M#:** _____

Proposed Thesis Title:

Proposed MS Thesis Committee Members (Printed):

_____ Research Advisor & Chair
_____ Alternate Chair: Yes / No

Additional Committee Members or Requirement Deviations Requested:

Student Signature: _____ **Date:** _____

Advisor Signature: _____ **Date:** _____

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

MS THESIS EXAMINATION

Student: _____ **M#:** _____

Thesis Title:

MS Thesis Defense Examination

Oral Examination: Passed / Did not Pass

Thesis Document: Approved / Pending Revisions / Insufficient

Committee Requested Thesis Revisions: (may attach additional sheet)

MS Thesis Committee Member Signatures:

	Research Advisor & Chair
	Alternate Chair: Yes / No
	<i>(additional, only if needed)</i>

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

PHD QUALIFYING EXAM SELECTION

Student: _____ **M#:** _____

Advisor Name: _____

Date of Enrollment in the MSE Program (Month/Year): _____

Topic Area Selections (select one from each pairing)

_____ MTEN6001 – Principles of Materials

_____ MTEN7094 – Fundamentals of Polymer Science

_____ MTEN6005 – Materials Thermodynamics

_____ MTEN7035 – Advanced Thermodynamics

_____ MTEN7010C – Materials Characterization

_____ MTEN7032C – Polymer Analysis and Characterization

_____ MTEN6020 – Materials Kinetics

_____ MTEN6034 – Physics of Polymer Properties

Only If Applicable:

I wish to request a one-year delay in attempting the Written Exam for the following reason:

Student Signature: _____ Date: _____

Advisor Signature: _____ Date: _____

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to the MSE Program Graduate Studies Director

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

PHD PROPOSAL DEFENSE

Student: _____ **M#:** _____

Advisor Name: _____

Year Written Exam Passed: _____ **Date of Proposal Defense:** _____

Proposal Title:

(below to be completed by the examining committee)

PhD Proposal Document: Excellent / Acceptable / Needs Improvement

Oral Proposal Presentation: Excellent / Acceptable / Needs Improvement

Ability to Answer Questions: Excellent / Acceptable / Needs Improvement

Committee Comments:

Overall Assessment: Passed / Did not Pass

Exam Committee Members (Printed)

Signatures

Completed form to be returned to the MSE Program Graduate Studies Director

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

APPLICATION FOR ADMISSION TO PHD CANDIDACY

Student: _____ **M#:** _____

Advisor Name: _____

Tentative Dissertation Committee Members (Printed)

(leave blank if Dissertation Committee not yet selected)

of Graduate Credits Taken: _____

Are all Coursework Requirements Satisfied? Yes / No

Date of Qualifying Examination Pass: _____

Student Signature: _____ **Date:** _____

Advisor Signature: _____ **Date:** _____

Checked against Departmental Record: Yes / No (Grad Director to Circle)

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

PHD DISSERTATION COMMITTEE APPROVAL

Student: _____ **M#:** _____

PhD Candidacy Approved: Yes / No

Proposed Dissertation Title:

Proposed PhD Dissertation Committee Members (Printed):

_____ Research Advisor & Chair

_____ Alternate Chair: Yes / No

Additional Committee Members Requested:

Student Signature: _____ **Date:** _____

Advisor Signature: _____ **Date:** _____

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

PHD PROGRESS REVIEW

Student: _____ **M#:** _____

Dissertation Advisor: _____

Date of first enrollment in MSE Program (month/year): _____

Date completed Qualifying Examination (month/year): _____

Total graduate credits taken: _____ **GPA:** _____

Dates of Previous Progress Reviews (month/year): _____

Committee Suggestions and Feedback:

Dissertation Committee Member Signatures:

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

PHD DISSERTATION DEFENSE SCHEDULING

Student: _____ **M#:** _____

Date of defense: _____ **Time:** _____ **Room:** _____

Dissertation Title:

PhD Dissertation Committee Members (Printed):

_____ Research Advisor & Chair

_____ Alternate Chair: Yes / No

Advisor Signature: _____ **Date:** _____

Dates of Progress Reviews (month/year): _____

Certification of fulfillment of all requirements: Yes / No (Grad Director to Circle)

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall

**MATERIALS SCIENCE AND ENGINEERING GRADUATE PROGRAM
UNIVERSITY OF CINCINNATI**

PHD DISSERTATION EXAMINATION

Student: _____ **M#:** _____

Dissertation Title:

PhD Dissertation Defense Examination

Oral Examination: Passed / Did not Pass

Dissertation Document: Approved / Pending Revisions / Insufficient

Committee Requested Dissertation Revisions: (may attach additional sheet)

PhD Dissertation Committee Member Signatures:

_____	Research Advisor & Chair
_____	Alternate Chair: Yes / No

_____	<i>(additional, only if needed)</i>

Approval of Graduate Studies Director: _____

Date: _____

Completed form to be returned to Graduate Studies Office, 665 Baldwin Hall