2018-19



GRADUATE HANDBOOK

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Material Science and Engineering Introduction

The Department of Materials Science and Engineering at the University of Utah offers three graduate degrees: Master of Science (MS) Thesis and Non-Thesis Options, and Doctor of Philosophy (PhD). The M.S. Thesis option requires a Master's Thesis, the MS Non-Thesis option requires a Special Project, and the PhD degree requires a Doctoral Dissertation.

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Master of Science (Thesis Option)

The Master of Science (MS) Thesis Option is a research and thesis degree. Students interested in a PhD. degree are encouraged to directly pursue the PhD degree without first earning an MS degree.

Degree Requirements

Overview

Complete a minimum of 30 credit hours in courses level 6000 or above

- 22 hours of MSE coursework (18 out of the 22 hours must be MSE courses*)
 - * Exceptions to this rule are at the discretion of the student's Supervisory Committee
- 2 hours of MSE Graduate Seminar (MSE <u>7800</u>/<u>7801</u>)
- Minimum of 6 hours of Thesis Research (MSE <u>6970</u>)
- All coursework must be completed at a cumulative 3.0 GPA (B grade average).

All courses must be passed with a B- or better. Students will also be required to complete the following requirements during the course of the program:

- Supervisory Committee
- Program of Study
- Thesis and Defense

Required Courses

All entering MS students are required to take the following MSE core courses within their first two semesters, regardless of where they received their undergraduate degree.* These courses will count towards the 22 hours of MSE coursework hours.

- MSE 6032 Advanced Thermodynamics (3 credits)
- MSE 6034 Kinetics (3 credits)
- MSE 6011 Advanced Materials Techniques: Experiment, Theory, and Characterization (3 credits)
- MSE <u>6001</u> Engineering Materials (3 credits)

The remaining 10 credit hours of required MSE course work will be determined by a student's faculty advisor.

*EXCEPTION: Students who received a BS from the Department of Materials Science and Engineering at the University of Utah and received a B or better in MSE core course (MSE<u>5034/6034</u>) will not be required to retake this course.

Graduate Seminar

Students are required to take 4 semesters (0.5 credit hours each semester) of MSE Graduate Seminar.

• MSE 7800 - Graduate Seminar I (0.5 credits) Fall Semesters

• MSE <u>7801</u> - Graduate Seminar II (0.5 credits) Spring Semesters

One oral presentations are required. Graduate Seminar credit hours cannot be used to satisfy the 22 credit hours of MSE coursework.

Thesis Hours

Students must complete at least 6 hours of Thesis Research (MSE <u>6970</u>, Thesis Research: Master of Science.). The candidate must also be regularly enrolled at the University and registered for at least one course during the semester in which the final oral examination (thesis defense) is taken.

Registration Restrictions

- Graduate credit may be transferred from other regionally-accredited institutions with department and
 advisor approval. Credits transferred from another institution may be used for only one degree. Up to six
 semester hours of transfer credit may be applied toward fulfillment of graduate degree requirements if
 they are of high letter grade (B or higher; 'credit only' grades are unacceptable), are recommended by the
 student's supervisory committee, and were taken within four years of semester of admission to the
 University of Utah for master's students.
- Only nine semester hours of non-matriculated credit, taken no more than three year prior to approval, can be applied toward a graduate degree.
- No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester. A schedule of nine credit hours is considered a full load for doctoral degree candidates.
- Only 3 hours of MSE <u>6980</u> Faculty Consultations can be counted towards the MS degree provided there is proper documentation. This can take the place of 3 MSE coursework hours on the Program of Study.
- Only 1 hour of MSE 6950 Independent Study can be used towards the MS Thesis degree.
- Students in the College of Engineering cannot simultaneously be candidates for an MS in one department and a ME, MS or PhD candidate in the same or in another department.

Supervisory Committee

Overview

Each supervisory committee consists of **three faculty members**. The committee chair and the majority of the committee must be tenure-line faculty in the MSE department. In compliance with The Graduate School's policy, the supervisory committee chair must be a regular faculty at the University of Utah with at least an adjunct appointment in the Materials Science and Engineering Department and the committee members must meet the approval of the Director of Graduate Studies. If the advisor is an adjunct faculty member in Materials Science and Engineering the other two members of the committee must be tenure track Materials Science and Engineering faculty members. If agreed by the advisor, one member of the committee can be chosen from outside the Department providing the advisor is a tenure track faculty member in Materials Science and Engineering.

Program of Study

Overview

During the second year of graduate study, MS students are required to complete a Program of Study. This form is not a selection of courses that satisfies the minimum requirements, but will be a list of all course work and research hours proposed for the MS degree that will be approved by the Supervisory Committee. It is important that students understand that the Supervisory Committee makes the final decision for the courses that will appear on the Program of Study for the MS.

Procedure to Complete

The procedure to complete the Program of Study form is as follows:

- Students must arrange a meeting with their Supervisory Committee Chair to present the proposed course for the Program of Study form. At the meeting, the Supervisory Committee Chair will review and approve the student's courses for their degree.
- In some cases, the Supervisory Committee Chair may require extra course work that exceeds the minimum requirements for a MS degree based on the thesis topic.
- As stated in the Graduate School's policy requirements: coursework used to complete requirements for one graduate program may not be used to meet the requirement of another.

Thesis and Defense

Thesis

Students should become familiar with the information on the Thesis Office website.

The style and format for the MS Thesis are determined by Departmental policy and registered with the Thesis Editor, who approved individual theses in accordance with Departmental and The Graduate School policy. The approved style guides can be found on The Graduate School: http://gradschool.utah.edu/thesis/department-approved-style-guides-2/

Please be sure to check the Thesis Office manuscript tracking system to see if your thesis has been uploaded to ProQuest.

Defense

The draft or final thesis document will serve as the written basis for the presentation and should be submitted to the Supervisory Committee four weeks prior to the oral defense.

The oral defense date is set by the supervisory committee and is open to the public. After the oral presentation, a question and answer period must be allowed. At the conclusion of the public participation, the committee may excuse the public and conduct further questioning on the thesis and related topics. The outcome of the thesis defense is reported on the Report of the Final Oral Exam and Thesis for the Master's Degree form. These forms are the responsibility of the student and can be found on The Graduate School's website">The Graduate School's website.

The earlier you defend in a given semester, the more likely you are to be able to graduate that same semester. Check the Thesis Calendar (http://gradschool.utah.edu/thesis/calendar/) to see when the submission deadline is. You need to defend far enough ahead of that deadline that you can make any changes to the text required by your committee and ensure that the manuscript adheres to your chosen style guide and Thesis Office requirements by the deadline. Be aware that if you submit your manuscript on the deadline and there are any formatting errors you will not graduate that semester. The sooner you turn your manuscript in the more likely you are to graduate in that semester. As a general rule of thumb, plan to defend in the first 2 months of the semester if you want to graduate that semester.

Registration

Students must be registered for at least 3 credit hours of MSE <u>6970</u> during the semester of their defense. Once the student defends and the thesis has been accepted by their supervisory committee the student is not required to register for another semester. International Students should check with the International Center once they have defended to make sure that they do not go out of status while completing requested rewrites.

Master of Science (Non-Thesis Option)

The degree of Master of Science Non-Thesis recognizes achievement in which design is emphasized, in contrast to the typical MS degree that has emphasis on research. For students entering and accepted for an MS non-thesis degree and with adequate undergraduate preparation, an MS Non-Thesis degree should be completed within two years of full-time study.

Degree Requirements

Overview

Complete a minimum of 30 credit hours in courses level 6000 or above

- 22 hours of MSE coursework (18 out of the 22 hours must be MSE courses*)
 - * Exceptions to this rule are at the discretion of the student's Supervisory Committee
- 2 hours of MSE Graduate Seminar (MSE <u>7800</u>/<u>7801</u>)
- Minimum of 6 hours of Special Project (MSE <u>6590</u>)
- All coursework must be completed at a cumulative 3.0 GPA (B grade average).

All courses must be passed with a B- or better. Students will also be required to complete the following requirements during the course of the program:

- Supervisory Committee
- Program of Study
- Thesis and Defense

Required Courses

All entering MS students are required to take the following MSE core courses within their first two semesters, regardless of where they received their undergraduate degree.* These courses will count towards the 22 hours of MSE coursework hours.

- MSE 6032 Advanced Thermodynamics (3 credits)
- MSE 6034 Kinetics (3 credits)
- MSE 6011 Advanced Materials Techniques: Experiment, Theory, and Characterization (3 credits)
- MSE 6001 Engineering Materials (3 credits)

The remaining 10 credit hours of required MSE course work will be determined by a student's faculty advisor.

*EXCEPTION: Students who received a BS from the Department of Materials Science and Engineering at the University of Utah and received a B or better in MSE core course (MSE<u>5034</u>/<u>6034</u>) will not be required to retake this course.

Graduate Seminar

Students are required to take 4 semesters (0.5 credit hours each semester) of MSE Graduate Seminar.

- MSE 7800 Graduate Seminar I (0.5 credits) Fall Semesters
- MSE 7801 Graduate Seminar II (0.5 credits) Spring Semesters

One oral presentations are required. Graduate Seminar credit hours cannot be used to satisfy the 22 credit hours of MSE coursework.

Special Project Hours

Students must complete at least 6 credit hours of Special Project (MSE <u>6590</u>). The candidate must also be regularly enrolled at the University and registered for at least one course during the semester in which the final oral examination (thesis defense) is taken.

Registration Restrictions

- Graduate credit may be transferred from other regionally-accredited institutions with department and advisor approval. Credits transferred from another institution may be used for only one degree. Up to six semester hours of transfer credit may be applied toward fulfillment of graduate degree requirements if they are of high letter grade (B or higher; 'credit only' grades are unacceptable), are recommended by the student's supervisory committee, and were taken within four years of semester of admission to the University of Utah for master's students.
- Only nine semester hours of non-matriculated credit, taken no more than three year prior to approval, can be applied toward a graduate degree.
- No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester. A schedule of nine credit hours is considered a full load for doctoral degree candidates.
- Only 3 hours of MSE 6980 Faculty Consultations does not count towards fulfillment of degree requirements.
- Only 1 hour of MSE 6950 Independent Study can be used towards the MS Non-Thesis degree.
- Students in the College of Engineering cannot simultaneously be candidates for an MS in one department and a ME, MS or PhD candidate in the same or in another department.

Supervisory Committee

Overview

Each supervisory committee consists of three faculty members. The committee chair and the majority of the committee must be tenure-line faculty in the MSE department. In compliance with The Graduate School's policy, the supervisory committee chair must be a regular faculty at the University of Utah with at least an adjunct appointment in the Materials Science and Engineering Department and the committee members must meet the approval of the Director of Graduate Studies. If the advisor is an adjunct faculty member in Materials Science and Engineering the other two members of the committee must be tenure track Materials Science and Engineering

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faculty members. If agreed by the advisor, one member of the committee can be chosen from outside the Department providing the advisor is a tenure track faculty member in Materials Science and Engineering.

Program of Study

Overview

During the second year of graduate study, MS students are required to complete a Program of Study. This form is not a selection of courses that satisfies the minimum requirements, but will be a list of all course work and research hours proposed for the MS degree that will be approved by the Supervisory Committee. It is important that students understand that the Supervisory Committee makes the final decision for the courses that will appear on the Program of Study for the MS.

Procedure to Complete

The procedure to complete the Program of Study form is as follows:

- Students must arrange a meeting with their Supervisory Committee Chair to present the proposed course for the Program of Study form. At the meeting, the Supervisory Committee Chair will review and approve the student's courses for their degree.
- In some cases, the Supervisory Committee Chair may require extra course work that exceeds the minimum requirements for a MS degree based on the thesis topic.
- As stated in the Graduate School's requirements: coursework used to complete requirements for one graduate program may not be used to meet the requirement of another.

Special Project

Overview

The Special Project must be written in the form of a report that is submitted to the student's Supervisory Committee. Students are then required to present the results of their project in an oral presentation to the Supervisory Committee and other designated audience.

Both the report and presentation are required for completion of the MS Non-Thesis. A copy of the final written Special Project is provided to the Academic Advisor to be retained in the student's file, once it has been approved by the Supervisory Committee and been presented in the oral presentation.

To graduate, the "Report the Final Examination for the Master's Degree" form needs to be completed and signed. This form is processed by the Materials Science and Engineering Academic Advisor after the completion of the oral presentation of the special project.

Registration

Students must be registered for at least 3 credit hours of MSE <u>6590</u> during the semester of their presentation. International Students should check with the International Center once they have defended to make sure that they do not go out of status while completing requested rewrites.

Master of Science – Other Information

Admissions

Overview

For information on admission to the MS program visit: https://mse.utah.edu/graduate/admissions/

Graduate School Policies

Degree Residency Requirements

At least 24 credit hours must be in resident study at the University of Utah. The Graduate Council may approve departmental or programmatic exceptions to the minimum residency requirements and proposals for new programs or academic offerings using distance learning technologies and/or off-campus sites, as provided by Graduate School policy.

Degree Time Limit

All work for the master's degree must be completed within four consecutive calendar years. On recommendation of the student's supervisory committee, the dean of The Graduate School can modify or waive this requirement. If the student exceeds the time limit and is not granted a modification or waiver, the department has the option to discontinue the student. Students whose studies have been interrupted for long periods of time and who have been granted extended time to complete their degrees may be required to complete additional courses, to pass examinations, or otherwise to demonstrate that they are current in their field.

Continuous Registration

All graduate students must be registered for at least one course from the time of formal admission through completion of all requirements for the degree they are seeking, unless granted an official leave of absence (see Leaves of Absence section, below). Students not on campus and not using University facilities are not expected to register for summer term. Students must, however, be registered during summer term if they are taking examinations or defending theses/dissertations. If students do not comply with this continuous registration policy and do not obtain an official leave of absence, they will be automatically discontinued from graduate study. In this case, students will be required to reapply for admission to the University through Graduate Admissions upon approval of the home department. Students should be registered for graduate level courses (5000-6000 level for masters); until they have completed all requirements for the degree including, the defense of the thesis or project.

Advancing to PhD

 MS students that have successfully completed an MS degree and would like to pursue a PhD degree in the same program should petition the Materials Science and Engineering faculty for approval of advancement to the PhD program. A letter from the PhD advisor must accompany the petition from the student, committing the research project for this student. A copy of the thesis release for the MS must accompany the petition.

• Students who have completed their MS degrees, but do not have a PhD advisor, may not petition the faculty until such time as they have secured a project and advisor. Approved petitions will become part of the students PhD file. A change of graduate status will not be filed with The Graduate School until the petition has been approved by the faculty.

Full Time Status

Full time status for graduate students at the University of Utah must meet the following conditions:

Registering for 9 credit hours and up to 11 credit hours of approved graduate study courses. For MS students, some of these credit hours may be for thesis research (MSE 6970 for MS Thesis students) or special project (MSE 6590 for MS Non-thesis students.)

Domestic graduate students are allowed to attend graduate school on a part-time basis; however, it is necessary that a part time student be registered for a minimum of 3 credit hours each semester. A letter must be submitted to the Materials Science and Engineering Administrative Office and must be received at the beginning of the student's first semester advising the Academic Advisor that the student will be part time. This student will remain a part time student until the Materials Science and Engineering Administrative Office is notified otherwise. Part time students still need to satisfy the residency requirement for their perspective degrees

Leave of Absences

Domestic students who wish to take a leave of absence for a semester must complete a Request for Leave of Absence form and have it approved by their supervisory committee. The form must then be submitted to the Academic Advisor for further processing. The form must be filled out prior to the semester that will be missed. Leave of absences can be granted for up to one year. International students are not allowed to take a leave of absence.

Credit/No Credit

The only courses in the MS students can take for Credit/No-Credit (CR/NC) are MSE $\frac{7800}{1}$ and MSE $\frac{7801}{1}$ (Graduate Seminar) and MSE $\frac{6970}{1}$ (Thesis Hours) or MSE $\frac{6590}{1}$ (Special Projects). All other courses on the student's program of study must be taken for a letter grade.

Students will receive Credit (CR) in MSE <u>6970</u> (Thesis Hours) or MSE <u>6590</u> (Special Projects) for satisfactory research progress. If the student is not showing satisfactory progress for their research a grade of No Credit (NC) will be given.

Adding, Dropping, and Withdrawal Procedures

Adding Classes - All classes must be added within two weeks of the beginning of the semester. Adding classes after the deadline is not permitted in the College of Engineering and requires a petition letter.

Dropping Classes – A drop implies that the student will not be held financially responsible and a "W" will not be listed on the transcript. Student may drop any class without penalty or permission during the first ten calendar days of the term.

Withdrawing from Classes – means that a "W" will appear on the student's transcript and tuition will be charged. Withdrawal from Full Term Length –Beginning the eleventh calendar day and continuing through the midpoint of the term, students may withdraw from a class or the University without instructor/department permission. After midpoint of the term, students may petition the deadline for withdrawal if they have a nonacademic emergency. For more information about the petition process, please contact your Academic Advisor.

Check the <u>academic calendar</u> for specific add, drop, and withdrawal dates.

Appeals Procedures

If a student believes that an academic action is arbitrary or capricious he/she should discuss the action with the involved faculty member and attempt to resolve. If unable to resolve, the student may appeal the action in accordance with the following procedure.

- 1. Appeal to the Department Chair (in writing) within 40 working days; chairs must notify student of a decision with 15 days. If the faculty member or student disagrees with decision then,
- 2. Appeal to Academic Committee, see II Section D, <u>Code of Student Rights and Responsibilities</u> for details on Academic Appeal Committee hearing.

Americans with Disabilities Act

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in classes, reasonable prior notice needs to be given to the instructor and to the Center for Disability and Access.

Health Insurance and Family Leave

Graduate students have an option to obtain affordable health insurance coverage through the Graduate School as part of the Tuition Benefit Program. TAs and RAs are generally eligible. If a student prefers a different insurance policy, reimbursement can be obtained up to the cost of the plan available through the Graduate School. See link here.

The MSE Department supports graduate students seeking family medical leave and/or reasonable accommodation as outlined generally under Policy 5-200 Leaves of Absence (health related) of the University of Utah Regulations that cover family medical leave and/or reasonable accommodation for conditions such as illness, pregnancy leave, military leave, foster care, adoption, hardship leave, care for elderly parents, or care for children.

Graduate students in the MSE graduate programs and employed by the MSE Department as either an RA or TA are entitled to up to 12 weeks for a family medical leave of absence beginning within the time of employment. A leave will not extend beyond the time of the thesis defense or other final date marking the completion of examinations needed for the program.

Orderly Dismissal Policy for Graduate Students

In some cases, a student may not satisfy the requirements and expectations of the MSE PhD program triggering an assessment of the student's status in the program. These include reasonable rate of progress towards completing the requirements of the degree program. While expectations for scholarly output and rate thereof is left to the judgement of the advisor and supervisory committee, a general guideline is that PhD students in

the MSE department are encouraged to present at conferences and workshops and should have at least three first-authored papers accepted to reputable peer-reviewed journals before graduation and multiple conference presentations and papers. The student's supervisory committee (or a majority thereof) will be the deciding body. The maximum sanction for unacceptable academic performance is dismissal from the Program (see Student Code, University Policy 6-400; http://www.regulations.utah.edu/academics/6-400.html). In cases requiring dismissal from the Program, a "Recommendation for Change of Graduate Classification" form will be filed with the Graduate Records Office. The student may appeal the decision, following the procedure outline in the Student Code (University Policy 6-400).

If any of the criteria listed below are not met, the advisory committee will have discretion to either:

- 1. Dismiss the student from the program immediately.
- Place the student on academic probation for 1 semester. In this case, the student's committee will provide
 a list of specific milestones which the student must accomplish in order to be reinstated to good standing.
 If these milestone are not accomplished within 1 semester, the student will be dismissed from the
 program.

Criteria Graduate students must:

- 1. Maintain a minimum cumulative GPA of 3.0
- 2. Passing all required examinations within specified times limits (e.g. for PhD students the candidacy exam, dissertation proposal, and thesis defense).
- 3. Continuously maintain an official advisor and supervisory committee from the 3rd semester through completion of the program.
- 4. Continually make acceptable progress toward the degree as determined by the supervisory committee + thesis advisor.

Graduation

Overview

The following process is recommended to help students prepare for graduation:

- During the semester before your graduation date, students should check their Electronic Graduate Record File in CIS. For more information on how to access the Electronic Graduate Record File click here.
- If students have questions or issues surrounding graduation, they should make an appointment with the MSE Academic Advisor. It is important that you communicate with the Academic Advisor about your intended graduation date and progress.

In order to graduate, students must meet all of the University of Utah requirements as well as the department requirements for graduation.

For graduation deadlines and how to apply <u>click here.</u> Students can also find information on the Commencement Ceremony <u>here</u>.

Recourses

Overview

Our students' success and well-being are paramount in providing a world-class education. Take advantage of the numerous resources and services created to help students of all kinds prosper during their time at the U. For more information, please visit https://mse.utah.edu/masters-program-of-study/

- Office of Undergraduate Research
- International Center
- <u>Learning Abroad</u>
- <u>Counseling Center</u>
- <u>Dean of Students</u>
- <u>Disability Services</u>
- Equal Opportunity & Affirmative Action
- <u>LGBT Resource Center</u>
- <u>Student Wellness</u>
- Veterans Support Center
- Women's Resource Center
- <u>Leave of Absence</u>

Doctoral Degree

The Doctoral (PhD) degree offered through the Materials Science and Engineering Department is an intensive research and doctoral dissertation degree. Students may directly pursue a PhD degree without first earning a MS degree.

Degree Requirements

Overview

Complete a minimum of 30 credit hours in courses level 6000 or above

- 36 hours of course work (25 out of the 36 hours must be MSE courses)
 - * Exceptions to this rule are at the discretion of the student's Supervisory Committee
- 2 hours of MSE Graduate Seminar (MSE 7800/7801)
- Minimum of 14 hours of Thesis Research (MSE 7970)

All coursework must be completed at a cumulative 3.0 GPA (B grade average). All courses must be passed with a B- or better.

Students will also be required to complete the following requirements during the course of the program:

- Qualifying Examination
- Supervisory Committee
- Program of Study
- Dissertation Proposal
- Dissertation

Required Courses

All entering PhD students are required to take the following MSE core courses within their first two semesters, regardless of where they received their Mater's degree.* These courses will count towards the 25 hours of MSE coursework hours.

- MSE 6032 Advanced Thermodynamics (3 credits)
- MSE 6034 Kinetics (3 credits)
- MSE 6011 Advanced Materials Techniques: Experiment, Theory, and Characterization (3 credits)
- MSE 6001 Engineering Materials (3 credits)

The remaining 13 credit hours of required MSE course work will be determined by a student's faculty advisor. (ADD update from curriculum committee)

*EXCEPTION: Students who received a B.S. or M.S. degree from the Department of Materials Science and Engineering at the University of Utah and received a B or better in MSE core courses (MSE 6032, MSE 5034/6034, 6011) will not be required to retake there courses.

Graduate Seminar

Students are required to take 4 semesters (0.5 credit hours each semester) of MSE Graduate Seminar.

- MSE 7800 Graduate Seminar I (0.5 credits) Fall Semesters
- MSE 7801 Graduate Seminar II (0.5 credits) Spring Semesters

Two oral presentations are required. Graduate Seminar credit hours cannot be used to satisfy the 25 credit hours of MSE coursework.

Thesis Hours

Students must complete at least **14 hours of Thesis Research** (MSE 7970, Thesis Research: Ph.D.). The candidate must also be regularly enrolled at the University and registered for at least one course during the semester in which the final oral examination (dissertation defense) is taken.

Grading Assistant

All PhD students are required to be a Grading Assistant (GA) for one semester without compensation during their graduate studies in order to receive their degree. A Grading Assistant must have a thorough understanding of the material being covered and cannot simultaneously be registered and act as the GA for the same course (with the exception of the Graduate Seminar MSE 7800/7801). The position must be assigned by the MSE Academic Advisor. GA will be assigned to lectures with more than 20 students enrolled, course labs, or the graduate seminar.

The responsibilities of the Grading Assistant are as follows:

- 1. Must complete FERPA training and GA contract
- 2. Adhere to all responsibilities stated in the GA contract

Grading Assistant responsibilities DO NOT include:

- Lecturing
- 2. Tutoring
- 3. Substituting for absent faculty

Registration Restrictions

- Graduate credit may be transferred from other regionally-accredited institutions with department and advisor approval. Credits transferred from another institution may be used for only one degree. Up to six semester hours of transfer credit may be applied toward fulfillment of graduate degree requirements if they are of high letter grade (B or higher; 'credit only' grades are unacceptable), are recommended by the student's supervisory committee, and were taken within four years of semester of admission to the University of Utah for master's students and within seven years of semester of admission to the University of Ottah for doctoral students.
- Only nine semester hours of nonmatriculated credit, taken no more than three year prior to approval, can be applied toward a graduate degree.
- No candidate for a graduate degree is permitted to register for more than 16 credit hours in any single semester. A schedule of nine credit hours is considered a full load for doctoral degree candidates.

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- Only 3 hours of MSE <u>6980</u>/<u>7980</u> Faculty Consultations can be counted towards the PhD degree provided there is proper documentation. This can take the place of 3 MSE coursework hours on the Program of Study.
- Only 1 hour of MSE 6950 Independent Study can be used towards the PhD degree.

Qualifying Examination

Overview

Following the first academic year of the PhD program, students must advance to candidacy in order to continue in the program. Advance to candidacy must occur before the PhD Dissertation Proposal Exam can be scheduled. Students will be evaluated on the following criteria in order to advance to candidacy:

- Performance in the MSE core courses
- Performance in their research as assessed by the research advisor by grades for thesis credit hours
- Overall GPA
- Passing the Qualifying Examination

Based on the evaluation by the MSE faculty, students will either be approved to advance to candidacy in the PhD program, be removed from the PhD program, and asked to pursue a terminal MS degree, or be granted a conditional pass with required remediation actions at the discretion of the faculty. A student not passing the qualification exam portion of the candidacy evaluation may be required by the committee to re-take the prelim exam one time. If two failures occur the student will not be allowed to advance to candidacy.

Qualifying Examination

The qualifying examination will be schedule for one day each year during the first full week after commencement Spring semester. Department faculty will determine the content of the qualifying exam each year based on the content taught in the first year core courses. The exam will test students on their understanding and ability to apply core themes and topics in Materials Science and Engineering in the following 6 categories.

- Thermodynamics
- Kinetics
- Characterization
- Structure (crystal-, amorphous-, nano-, meso-, micro-, and marco- including defects) and bonding (types such as covalent, ionic, etc.)
- Mechanical Properties of Materials
- Electronic, Magnetic, and Optical Properties of Materials

The exam will consist of at least written and oral portions, however, the committee may decide to add other components if needed. The fixed questions asked in each category will be identical for each student, however in the oral section, the faculty many pursue any follow-up line of questioning in order to assess individual candidates. The questions will be conceptual in nature aimed at testing understanding in key concepts. The written portion of the exam will precede the oral portion. No resources (course notes, books, phones, internet, etc.) are allowed. At the beginning of the exam day, students will be given the written questions from each

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category and a fixed amount of time to prepare written responses. Then, students will bring their answers to their appointed oral examinations for each topic.

Scoring

Each student will receive a score from 1-5 (with 5 being excellent) for each of the six topics. The passing score will be determined by the faculty administering each topic section. The faculty should take into account the particularities of the question each year, however an absolute scale will be maintained from year to year by reserving scores of 5 for the best performances. Faculty will assign a "Pass," "Conditional Pass," or "Fail" for the whole of the prelim exam. If a "Conditional Pass" or "Fail" is given, the faculty can require remediation including but not limited to retaking the preliminary exam, taking courses, or complete other assignments.

Preparation

Students should prepare by taking the core MSE graduate courses and by studying individually over the year leading up to the exam. It is also suggested that students conduct mock examinations together. Students should be prepared to respond to the oral exam questions with organized, logical arguments using a whiteboard or similar device and drawing upon fundamental concepts in Materials Science and Engineering, especially from the core MSE courses. The written portion of the exam will allow the student to consider and organize their answers. Students should also be prepared to succinctly but thoroughly explain the technique(s) and material(s) they are working with in their research projects.

Supervisory Committee

Overview

After successfully passing the Candidacy Evaluation, PhD students must make an appointment with the MSE Academic Advisor to start building a supervisory committee.

Each supervisory committee consists of five faculty members. The committee chair and the majority of the committee must be tenure-line faculty in the MSE department. One member of the committee must be appointed from outside the student's major department. The outside member is normally from another University of Utah department. However, the dean of The Graduate School may approve requests to appoint a committee member from another university where appropriate justification and supporting documentation is provided. The supervisory committee is responsible for approving the student's academic program, preparing and judging the qualifying examinations, approving the dissertation subject and final dissertation, and administering and judging the final oral examination (dissertation defense).

Program of Study

Overview

During the third year of graduate study, PhD students are required to complete a Program of Study. This form is not a selection of courses that satisfies the minimum requirements but will be a list of all course work and research hours proposed for the PhD degree that will be approved by the Supervisory Committee. It is important that students understand that the Supervisory Committee makes the final decision for the courses that will appear on the Program of Study for the PhD.

Procedure to Complete

The procedure to complete the Program of Study form is as follows:

- Students must arrange a meeting with their Supervisory Committee Chair to present the proposed course for the Program of Study form.
- At the meeting, the Supervisory Committee Chair will review and approve the student's courses for their degree.
- In some cases, the Supervisory Committee Chair may require extra course work that exceeds the minimum requirements for a PhD degree based on the dissertation topic.
- As stated in the Graduate School's requirements: coursework used to complete requirements for one graduate program may not be used to meet the requirement of another.
- All course work must be completed in the first two years of graduate study.

Dissertation Proposal

Overview

After advancing to candidacy, but before the end of the third year (6th semester) in the program, students must complete the written and oral portions of the Dissertation Proposal Exam. An exception can be granted by a student's Supervisory Committee Chair for extenuating circumstances.

The Dissertation Proposal must occur before the Dissertation Defense and the two many not be completed within the same semester. The Dissertation Proposal Exam (written, oral, or both parts) may be repeated once if a "Fail" or "Conditional Pass" is received the first time.

Written Proposal

Students must independently prepare a written proposal for the research they will complete for their dissertation. It must be given to their Supervisory Committee at least **two weeks** prior to the date of the oral exam. Students must propose their own original research which will form the basis of their publications and PhD dissertation. The proposal should detail the prior work in the field, detail any results already obtained by the student, and lay out the research objectives and plan for meeting those objectives before completing the dissertation. The proposal should follow the NSF proposal format (or other federal agency if approved by the committee). A copy of the Dissertation Proposal will be provided to the Academic Advisor to be retained in the student's file.

Oral Proposal

Students must arrange with their Supervisory Committee to present and defend their proposal. A common format is to prepare a talk lasting 40 minutes if uninterrupted based on the same ideas and research plan contained in the Written Proposal.

The committee will ask questions, evaluate the proposal, and give feedback and suggestions to the student on the proposed research. The committee will sign the Dissertation Proposal from, which has separate "Pass,"

"Conditional Pass" and "Fail" marks. Again, the committee may require remedial actions for "Conditional Pass" or "Fail" marks.

Dissertation and Defense

Dissertation

Students should become familiar with the information on the Thesis Office website.

Students must submit a dissertation embodying the results of scientific or scholarly research. The dissertation must provide evidence of originality and the ability to do independent investigation and it must contribute to knowledge. The dissertation must show a mastery of the relevant literature and be presented in an acceptable style. The style and format are determined by departmental policy and registered with the thesis and dissertation editor, who approves individual dissertations in accordance with departmental and Graduate School policy. The approved style guides can be found here: http://gradschool.utah.edu/thesis/department-approved-style-guides-2/

At least three weeks before the final dissertation defense, students should submit an acceptable draft of the dissertation to the chair of the Supervisory Committee; committee members should receive copies at least two weeks before the examination date.

The doctoral dissertation is expected to be available to other scholars and to the general public. It is the responsibility of all doctoral candidates to arrange for the publication of their dissertations. The University accepts two alternatives for complying with the publication requirements:

The entire dissertation is submitted to UMI Dissertation Publishing, ProQuest Information and Learning, and copies are made available for public sale. The abstract only is published if the entire dissertation has been previously published and distributed, exclusive of vanity publishing. The doctoral candidate may elect to microfilm the entire previously published work. Regardless of the option used for meeting the publication requirement, an abstract of each dissertation is published in UMI Dissertation Publishing, ProQuest Information and Learning, Dissertation Abstracts International.

Please be sure to check the Thesis Office manuscript tracking system to see if your thesis has been uploaded to ProQuest.

Defense

PhD students must orally defend the significant contents, results, and conclusions associated with their doctoral research before the entire Supervisory Committee at an open and public defense. At the conclusion of the public participation, the committee will excuse the public and conduct further questioning on the thesis and related topics. The outcome of the defense is reported on the PhD Defense Form.

The draft or final dissertation document will serve as the written basis for the presentation and should be submitted to the Supervisory Committee **four weeks** prior to the oral defense. The Supervisory Committee will examine in detail the contents, results, conclusions and contribution made by the student's research and written dissertation.

"The Supervisory Committee Approval" and "Final Reading Approval" forms must be filled out by the student and the appropriate signatures obtained before final dissertation can be submitted to the Thesis Editor for final approval and release. These forms are the responsibility of the student and can be found on The Graduate School's website.

The earlier you defend in a given semester, the more likely you are to be able to graduate that same semester. Check the Thesis Calendar (http://gradschool.utah.edu/thesis/calendar/) to see when the submission deadline is. You need to defend far enough ahead of that deadline that you can make any changes to the text required by your committee and ensure that the manuscript adheres to your chosen style guide and Thesis Office requirements by the deadline. Be aware that if you submit your manuscript on the deadline and there are any formatting errors you will not graduate that semester. The sooner you turn your manuscript in the more likely you are to graduate in that semester. As a general rule of thumb, plan to defend in the first 2 months of the semester if you want to graduate that semester.

Registration

Student must be registered for 3 credit hours of MSE 7970 during the semester they defend. Once student defends and the dissertation has been accepted by the Supervisory Committee, the student is not required to register for another semester. International Students should check with the International Center once they have defended to make sure that they do not go out of status while completing requested rewrites.

Doctoral Degree – Other Information

Admissions

Overview

For information on admission to the PhD program visit: https://mse.utah.edu/graduate/admissions/

Graduate School Policies

Degree Residency Requirements

According to the University of Utah Graduate School regulation, "At least one year (i.e., two consecutive semesters) of a doctoral program must be spent in full-time academic work at the University of Utah. When a student proceeds directly from a master's degree to a PhD degree with no break in the program of study (except for authorized leaves of absence), the residency requirement may be fulfilled at any time during the course of study. A full load is 9 credit hours. Three hours of Thesis Research: PhD MSE 7970 also is considered a full load after the residency requirement is fulfilled."

Students registered for 9 hours of Thesis Research: PhD for two consecutive semesters will be allowed to fulfill the residency requirement. Students that are not continually registered will have to reapply to the University of Utah before continuing.

Students in the College of Engineering cannot simultaneously be candidates for a PhD in one department and a ME, MS, or PhD candidate in the same or in another department.

Degree Time Limit

A PhD student is eligible for 5 years (10 semesters) of tuition benefit, providing the students did not come in with a M.S. degree from another institution or department at the University of Utah. Students entering the Ph.D. program with a MS degree from another institution are only eligible for 4 years (8 semesters) of tuition benefit. Students, who completed a MS degree in another department at the University of Utah, will only be eligible for the number of tuition benefits they did not use towards their MS degree. In compliance with the Tuition Benefit Program, PhD students should in all practical purposes complete their degrees in 5 years.

In accordance with the Graduate School time limit requirements: "Students whose studies have been interrupted for long periods and who have been granted an extension to complete their degrees may be required to complete additional courses, pass examination, or otherwise demonstrate that they are current in their field."

Continuous Registration

All graduate students must be registered for at least one course from the time of formal admission through completion of all requirements for the degree they are seeking, unless granted an official leave of absence (see Leaves of Absence section, below). Students not on campus and not using University facilities are not expected to register for summer term. Students must, however, be registered during summer term if they are taking examinations or defending theses/dissertations. If students do not comply with this continuous registration policy and do not obtain an official leave of absence, they will be automatically discontinued from graduate study. In this case, students will be required to reapply for admission to the University through Graduate Admissions upon approval of the home department. Students should be registered for graduate level courses (6000-7000 level for doctoral) until they have completed all requirements for the degree including, the defense of dissertation.

MSE 7990 Continuing Registration: PhD is only allowed if the student is not using faculty time or University facilities except the library. Upon successfully defending the PhD dissertation, students no longer are required to register; however, those who wish to check out books from the library must register for MSE 7990. MSE 7990 is not allowed to fulfill degree requirements and is limited to four (4) semesters. Students are still responsible for the tuition and fees for MSE 7990.

Full Time Status

Full time status for graduate students at the University of Utah must meet the following conditions:

Registering for 9 credit hours and up to 11 credit hours of approved graduate study courses. Some of these credit hours may be for of Thesis Research: PhD <u>MSE 7970</u>.

Domestic graduate students are allowed to attend graduate school on a part-time basis; however, it is necessary that a part time student be registered for a minimum of 3 credit hours each semester. A letter must be submitted to the Materials Science and Engineering Administrative Office and must be received at the beginning of the student's first semester advising the Academic Advisor that the student will be part time. This student will remain

a part time student until the Materials Science and Engineering Administrative Office is notified otherwise. Part time students still need to satisfy the residency requirement for their perspective degrees.

Vacation Semesters

Please visit the International Student & Scholar Services website for more information:

http://isss.utah.edu/news.php

Leave of Absences

Domestic students who wish to take a leave of absence for a semester must complete a Request for Leave of Absence form and have it approved by their supervisory committee. The form must then be submitted to the Academic Advisor for further processing. The form must be filled out prior to the semester that will be missed. Leave of absences can be granted for up to one year. International students are not allowed to take a leave of absence.

Credit/No Credit

The only courses that will be graded with a Credit/No-Credit (CR/NC) Grade in the Materials Science and Engineering Graduate Program are MSE 7800 and MSE 7801, (Graduate Seminar) and Thesis Research: PhD MSE 7970. All other courses on the student's program of study must be taken for a letter grade.

Students will receive Credit (CR) for satisfactory research progress. If the student is not showing satisfactory progress for their research a grade of No Credit (NC) will be given.

Adding, Dropping, and Withdrawal Procedures

Adding Classes - All classes must be added within two weeks of the beginning of the semester. Adding classes after the deadline is not permitted in the College of Engineering and requires a petition letter.

Dropping Classes – A drop implies that the student will not be held financially responsible and a "W" will not be listed on the transcript. Student may drop any class without penalty or permission during the first ten calendar days of the term.

Withdrawing from Classes – means that a "W" will appear on the student's transcript and tuition will be charged. Withdrawal from Full Term Length –Beginning the eleventh calendar day and continuing through the midpoint of the term, students may withdraw from a class or the University without instructor/department permission. After midpoint of the term, students may petition the deadline for withdrawal if they have a nonacademic emergency. For more information about the petition process, please contact your Academic Advisor.

Check the <u>academic calendar</u> for specific add, drop, and withdrawal dates.

Appeals Procedures

If a student believes that an academic action is arbitrary or capricious he/she should discuss the action with the involved faculty member and attempt to resolve. If unable to resolve, the student may appeal the action in accordance with the following procedure.

1. Appeal to the Department Chair (in writing) within 40 working days; chairs must notify student of a decision with 15 days. If the faculty member or student disagrees with decision then,

2. Appeal to Academic Committee, see II Section D, <u>Code of Student Rights and Responsibilities</u> for details on Academic Appeal Committee hearings.

Americans with Disabilities Act

The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in classes, reasonable prior notice needs to be given to the instructor and to the Center for Disability and Access.

Optional Practical Training for F-1 Students

Optional Practical Training (OPT) is the opportunity to apply knowledge gained in the classroom and/or research lab experience to a practical work experience off-campus after graduation. Optional Practical Training is authorized by Immigration Service. This authorization can take several months to obtain so students need to apply well in advance of graduation. The maximum amount of time granted to work in F-1 Optional Practical Training is 12 months.

Working before practical training has been authorized by the Immigration Service constitutes illegal employment that will jeopardize your legal status in the United States. So it is important that students coordinate their OPT request with the International Center.

Health Insurance and Family Leave

Graduate students have an option to obtain affordable health insurance coverage through the Graduate School as part of the Tuition Benefit Program. TAs and RAs are generally eligible. If a student prefers a different insurance policy, reimbursement can be obtained up to the cost of the plan available through the Graduate School. See link here.

The MSE Department supports graduate students seeking family medical leave and/or reasonable accommodation as outlined generally under Policy 5-200 Leaves of Absence (health related) of the University of Utah Regulations that cover family medical leave and/or reasonable accommodation for conditions such as illness, pregnancy leave, military leave, foster care, adoption, hardship leave, care for elderly parents, or care for children.

Graduate students in the MSE graduate programs and employed by the MSE Department as either an RA or TA are entitled to up to 12 weeks for a family medical leave of absence beginning within the time of employment. A leave will not extend beyond the time of the thesis defense or other final date marking the completion of examinations needed for the program.

Orderly Dismissal Policy for Graduate Students

In some cases, a student may not satisfy the requirements and expectations of the MSE PhD program triggering an assessment of the student's status in the program. These include reasonable rate of progress towards completing the requirements of the degree program. While expectations for scholarly output and rate thereof is left to the judgement of the advisor and supervisory committee, a general guideline is that PhD students in the MSE department are encouraged to present at conferences and workshops and should have at least three first-authored papers accepted to reputable peer-reviewed journals before graduation and multiple conference presentations and papers. The student's supervisory committee (or a majority thereof) will be the deciding body. The maximum sanction for unacceptable academic performance is dismissal from the Program

(see Student Code, University Policy 6-400; http://www.regulations.utah.edu/academics/6-400.html). In cases requiring dismissal from the Program, a "Recommendation for Change of Graduate Classification" form will be filed with the Graduate Records Office. The student may appeal the decision, following the procedure outline in the Student Code (University Policy 6-400).

If any of the criteria listed below are not met, the advisory committee will have discretion to either:

- 1. Dismiss the student from the program immediately.
- 2. Place the student on academic probation for 1 semester. In this case, the student's committee will provide a list of specific milestones which the student must accomplish in order to be reinstated to good standing. If these milestone are not accomplished within 1 semester, the student will be dismissed from the program.

Criteria Graduate students must:

- 1. Maintain a minimum cumulative GPA of 3.0
- 2. Passing all required examinations within specified times limits (e.g. for PhD students the candidacy exam, dissertation proposal, and thesis defense).
- 3. Continuously maintain an official advisor and supervisory committee from the 3rd semester through completion of the program.
- 4. Continually make acceptable progress toward the degree as determined by the supervisory committee + thesis advisor.

Graduation

Overview

The following process is recommended to help students prepare for graduation:

- During the semester before your graduation date, students should check their Electronic Graduate Record File in CIS. For more information on how to access the Electronic Graduate Record File click here.
- If students have questions or issues surrounding graduation, they should make an appointment with the MSE Academic Advisor. It is important that you communicate with the Academic Advisor about your intended graduation date and progress.

In order to graduate, students must meet all of the University of Utah requirements as well as the department requirements for graduation.

For graduation deadlines and how to apply <u>click here.</u> Students can also find information on the Commencement Ceremony <u>here</u>.

Recourses

Overview

Our students' success and well-being are paramount in providing a world-class education. Take advantage of the numerous resources and services created to help students of all kinds prosper during their time at the U. For more information, please visit https://mse.utah.edu/masters-program-of-study/

- Office of Undergraduate Research
- <u>International Center</u>

- <u>Learning Abroad</u>
- Counseling Center
- Dean of Students
- <u>Disability Services</u>
- Equal Opportunity & Affirmative Action
- <u>LGBT Resource Center</u>
- <u>Student Wellness</u>
- <u>Veterans Support Center</u>
- Women's Resource Center
- <u>Leave of Absence</u>