Table of Contents

Material Science and Engineering Introduction ................................................................. 3
  Important Department People You Should Know ............................................................. 3
  Materials Science and Engineering Teaching Faculty ....................................................... 4

Master of Science (Thesis Option) ..................................................................................... 5
  M.S. (Thesis Option) Course Work Requirements ........................................................... 5
  Transfer Credit ................................................................................................................... 6
  Exception to Coursework Requirements ........................................................................ 6
  Preparation of M.S. (Thesis Option) .............................................................................. 6
  M.S. Degree Supervisory Committee ............................................................................. 6
  M.S. Degree Preliminary Program of Study .................................................................. 7
  M.S. Degree Program of Study .................................................................................... 7
  M.S. Degree Residency Requirement ............................................................................ 8
  M.S. Degree Thesis Defense .......................................................................................... 8
  M.S. Degree Time Limit ................................................................................................ 9
  Other M.S. Degree Information .................................................................................... 9

Master of Science (Non-Thesis Option) .......................................................................... 11
  M.S. (Non-Thesis Option) Course Work Requirements .................................................. 11
  Transfer Credit .............................................................................................................. 12
  M.S. Non-Thesis Degree Supervisory Committee .......................................................... 12
  M.S. Non-Thesis Degree Preliminary Program of Study ............................................... 12
  M.S. Non-Thesis Degree Program of Study ................................................................ 12
  M.S. Non-Thesis Degree Special Project ..................................................................... 13
  M.S. Non-Thesis Degree Special Project Presentation ................................................ 13
  M.S. Non-Thesis Degree Graduation Information ......................................................... 14
  M.S. Non-Thesis Degree Time Limit .......................................................................... 14
  Other M.S. Non-Thesis Degree Information ................................................................ 14

Doctoral Degree ................................................................................................................ 15
  Ph.D. Degree Course Work Requirements .................................................................... 15
  Ph.D. Degree Required Courses for First Year .............................................................. 16
  Transfer Credit .............................................................................................................. 16
  Exceptions to Coursework Requirements ................................................................... 17
  Preparation of the Ph.D. Degree ................................................................................... 17
  Ph.D. Degree Candidacy Evaluation ............................................................................. 17
Material Science and Engineering

Introduction

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

Important Department People You Should Know

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Director of Graduate Studies
Professor Michael Scarpulla
# Materials Science and Engineering Teaching Faculty

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Academic Year 2016-2017
Master of Science (Thesis Option)

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

M.S. (Thesis Option) Course Work Requirements

- **Complete a minimum of 30 credit hours** in level 6000 (or above)
  - 22 hours are MSE coursework hours
  - 2 hours of MSE Graduate Seminar
  - Minimum of 6 hours are Thesis Research hours

- All students entering the M.S. program are required to take the following MSE core courses, regardless of where they received their undergraduate degree. * These courses will count towards the 22 hours of MSE coursework hours:
  - Thermodynamics (MSE 6032)
  - Kinetics (MSE 6034)
  - Advanced Materials Techniques: Experiment, Theory, and Characterization (MSE 6011) Engineering Materials (MSE 6001)

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

- Students are required to take 4 semesters (0.5 credit hours each semester) of MSE Graduate Seminar (MSE 7800 and MSE 7801) in sequence. One oral presentation is required. Graduate Seminar credit hours cannot be used to satisfy the 22 credit hours of MSE coursework.

- Only 3 hours of MSE 6980/7980 Faculty Consultation can be counted towards this degree provided there is proper documentation. This can take the place of 3 MSE coursework hours on the Program of Study. *See the Academic Advisor for the documentation required for these hours.*

- Only 1 hour of MSE 6950/7950 Independent Study can be used towards the M.S. degree.
All coursework must be completed at a cumulative 3.0 (B) grade point average. A minimum allowable grade for any course counted toward the degree requirements is a B-.

Transfer Credit

Only 6 credit hours that have not been used for another degree can be transferred. This is a Graduate School policy, there are no exceptions.

- With Department and advisor approval 6 credit hours may satisfy 6 of the 22 total coursework hours.
- No credit will be given for a graduate course taken at another University if a similar course has been taken at the University of Utah.

Exception to Coursework Requirements

Any deviation from the coursework requirements must be submitted on an “Exception Petition Form” and endorsed by the Supervisory Committee. All petitions must be presented to the Materials Science and Engineering faculty for review and voting during a regularly scheduled faculty meeting. “Exception Petition Forms” can be obtained from the Academic Advisor.

Preparation of M.S. (Thesis Option)

Upon acceptance into the graduate program, students must meet with their M.S. Thesis advisor to discuss their thesis project and course requirements to complete their degree. It is the responsibility of the student to initiate this meeting with their advisor. Students must have met with their advisor prior to the end of the first semester. Supervisory Committee members should be selected based on the scope of the M.S. Thesis.

M.S. Degree Supervisory Committee

After one semester of coursework, M.S. students should make an appointment with the Materials Science and Engineering Academic Advisor to complete “Request for Supervisory Committee” form. The supervisory committee will consist of three faculty members.
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.

Once the committee has signed the “Request for Supervisory Committee” form it must be returned to the Academic Advisor for approval by the Director of Graduate Studies and forwarded to The Graduate School for final approval.

**M.S. Degree Preliminary Program of Study**

After the first year of graduate study all full time M.S. students are required to complete a Preliminary Program of Study that must be approved by the Supervisory Committee and the Director of Graduate Studies. This should include all courses the student plans on taking to complete their degree. The student must complete the Preliminary Program of Study with their Supervisory Committee, which will then approve it. Failure to do so could result in loss of tuition benefit or removal from program.

**M.S. Degree Program of Study**

During the second year of graduate study all M.S. Thesis students are required to complete an official Program of Study.

This form is not simply a selection of courses that satisfies the minimum requirements but will be a list of all course work and research hours proposed for the M.S. degree that will be approved by the Supervisory Committee. It is important that the student understands that the Supervisory Committee makes the final decision for the courses that will appear on the official Program of Study.

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

- The student must arrange a meeting with their Supervisory Committee to present the proposed courses for the Program of Study form.
- At the meeting the Supervisory Committee will review the student’s proposed courses reflected on preliminary program of study. At the request of the committee modifications or changes may be required prior to approval of the Program of Study.
In some cases, the committee may require extra coursework that exceeds the minimum requirements for an M.S. degree based on the thesis project.

- As stated in The Graduate School’s requirements: coursework used to complete requirements of one master’s program may not be used to meet the requirement of another.
- All coursework must be completed in the first two years of graduate study. See *Other Graduate Program Information* for more detailed information regarding the 84 credit hour rule.
- After completing the Program of Study all M.S. students must continue to register for a minimum of three hours of thesis research until the student has defended their thesis to keep the graduate file active in The Graduate School. Failure to do this, will require the student to reapply through the University of Utah’s Admission’s Office and pay the readmission processing fee.

### M.S. Degree Residency Requirement

At least 24 credit hours must be in residency study at the University of Utah.

### M.S. Degree Thesis Defense

Students are required to defend their thesis at a formal oral presentation. The defense date is set by the Supervisory Committee and is open to the public.

Students must first check the availability of the conference room before scheduling a time with their supervisory committee.

The student must be registered for at least 3 credit hours of MSE 6970 during the semester of their 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. Combined B.S./M.S. students must submit the completed manuscript two weeks prior to oral defense. After the oral presentation, a question and answer period will be allowed. 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 thesis defense is reported on the “Report of the Final Oral Exam and Thesis for the Master’s Degree” form.

“The Supervisory Committee Approval” and “Final Reading Approval” forms must be filled out by the student and the appropriate signatures obtained before the final Thesis
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 at: [http://gradschool.utah.edu/thesis/forms/](http://gradschool.utah.edu/thesis/forms/).

The style and format for the M.S. 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’s website at: [http://gradschool.utah.edu/thesis/department-approved-style-guides-2/](http://gradschool.utah.edu/thesis/department-approved-style-guides-2/).

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.

### M.S. Degree Time Limit

As outlined by The Graduate School: “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 in meritorious cases.”

### Other M.S. Degree Information

- According to University of Utah Graduate School regulations, M.S. students must register full time every semester (excluding summers) until coursework is completed. Once coursework is completed students must register for three credit hours of thesis research until thesis defense has been completed. **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 an M.S. in one department and a M.E., M.S. or Ph.D. candidate in the same or in another department.

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

- Students who have completed their M.S. degrees, but do not have a Ph.D. 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 Ph.D. file. A change of graduate status will not be filed with The Graduate School until the petition has been approved by the faculty.

- See Other Graduate Program Information section for additional information.
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 M.S. degree that has emphasis on research. For students entering and accepted for an M.S. non-thesis degree and with adequate undergraduate preparation, an M.S. non-thesis degree should be completed within two years of full-time study.

M.S. (Non-Thesis Option) Course Work Requirements

- **Complete a minimum of 30 credit hours** in level 6000 (or above)
  - 19-22 hours are MSE coursework hours
  - 2 hours of MSE Graduate Seminar
  - 6-9 hours of Special Project-ME hours

- All students entering the M.S. program are required to take the following MSE core courses, regardless of where they received their undergraduate degree. * These courses will count towards the 22 hours of MSE coursework hours:
  - Thermodynamics (MSE 6032)
  - Kinetics (MSE 6034)
  - Advanced Materials Techniques: Experiment, Theory, and Characterization (MSE 6011) Engineering Materials (MSE 6001)

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

- Students are required to take 4 semesters (0.5 credit hours each semester) of MSE Graduate Seminar (MSE 7800 and MSE 7801) in sequence. One oral presentation is required. Graduate Seminar credit hours cannot be used to satisfy the 19-22 credit hours of MSE courses.

- MSE 6980/7980 Faculty Consultation does not count towards fulfillment of degree requirements.

- Only 1 hour of MSE 6950/7950 Independent Study can be used towards the M.S. non-thesis degree.
All coursework must be completed at a cumulative 3.0 (B) grade point average. A minimum allowable grade for any course counted toward the degree requirements is a B-.

**Transfer Credit**

Only 6 credit hours that have not been used for another degree can be transferred. This is a Graduate School policy, there are no exceptions.

- With Department and advisor approval 6 credit hours may satisfy 6 of the 19-22 total coursework hours.
- No credit will be given for a graduate course taken at another University if a similar course has been taken at the University of Utah.

**M.S. Non-Thesis Degree Supervisory Committee**

After one semester of course work, M.S. Non-Thesis students should make an appointment with the Materials Science and Engineering Academic Advisor to complete the “Request for Supervisory Committee” form. The Supervisory Committee will consist of three tenure track faculty members from Materials Science and Engineering; one faculty will be designated chair of the committee.

**M.S. Non-Thesis Degree Preliminary Program of Study**

After the first year of graduate study all full time M.S. students are required to complete a Preliminary Program of Study that must be approved by the Supervisory Committee and the Director of Graduate Studies. This should include all courses the student plans on taking to complete their degree. The student must complete the Preliminary Program of Study with their Supervisory Committee, which will then approve it. Failure to do so could result in removal from program.

**M.S. Non-Thesis Degree Program of Study**

During the third semester of graduate study, M.S. non-thesis students are required to complete an official Program of Study.
The procedure to complete the Program of Study form is as follows:

- The student must arrange a meeting with their Supervisory Committee to present the proposed courses for the “Application for Admission to Candidacy for the Master’s Degree” form.
- At the meeting the Supervisory Committee will review the student’s proposed courses. At the request of the committee modifications or changes may be required prior to approval of the Program of Study.
- As stated in The Graduate School’s requirements: coursework used to complete requirements of one master’s program may not be used to meet the requirement of another.
- Once approved by the Supervisory Committee the “Admission to Candidacy for the Master’s Degree” form must be returned to the Academic Advisor for processing and approval.
- This form is not simply a selection of courses that satisfies the minimum requirements but will be a list of all course work and project hours proposed for the M.S. degree that will be approved by the supervisory committee. It is important that the student understands that the supervisory committee makes the final decision for the courses that will appear on the official Program of Study.

M.S. Non-Thesis Degree Special Project

Students must also receive Supervisory Committee approval for a Special Project for satisfaction of the MSE 6590 requirement. Committee approval must be obtained before beginning the project. Guidelines for the project will be supplied by the student’s Supervisory Committee.

M.S. Non-Thesis Degree Special Project Presentation

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 M.S. 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.
M.S. Non-Thesis Degree Graduation Information

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.

M.S. Non-Thesis Degree Time Limit

As outlined by The Graduate School: “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 in meritorious cases.” **M.S. Non-Thesis students have two years to complete all the requirements for this degree.**

Other M.S. Non-Thesis Degree Information

- M.S. Non-Thesis students must register for full time (9-11 credit hours) per semester (excluding summers) from the time of formal admission until all requirements for the degree are completed.

- Students in the College of Engineering cannot simultaneously be candidates for an M.S. non-thesis degree in one department and a research degree (M.S., M.E., or Ph.D.) in the same or in any other department.
Doctoral Degree

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

Ph.D. Degree Course Work Requirements

- **Complete a minimum of 54 credit hours** in level 6000 (or above)
  - 36 hours of coursework
  - 25 of the 36 must be MSE coursework hours
  - 4 hours of MSE Graduate Seminar
  - Minimum of 14 hours of Thesis Research

- All students entering the Ph.D. program are required to take the following MSE core courses, regardless of where they received their Master’s degree. *These courses will count towards the 25 hours of MSE coursework hours:
  - Thermodynamics (MSE 6032)
  - Kinetics (MSE 6034)
  - Advanced Materials Techniques: Experiment, Theory, and Characterization (MSE 6011)
  - Engineering Materials (MSE 6001)

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

- Students are required to take 8 semesters (0.5 credit hours each semester) of MSE Graduate Seminar (MSE 7800 and MSE 7801) in sequence. **Two oral presentations are required.** Graduate Seminar credit hours cannot be used to satisfy the 25 credit hours of MSE coursework.

- Only 3 hours of MSE 6980/7980 Faculty Consultation can be counted towards the Ph.D. degree provided there is proper documentation. This can take the place of 3 MSE coursework hours on the Program of Study. **See the Academic Advisor for the documentation required for these hours.**
Only 1 hour of MSE 6950/7950 Independent Study can be used towards the Ph.D. degree.

All coursework must be completed at a cumulative 3.0 (B) grade point average. A minimum allowable grade for any course counted toward the degree requirements is a B-.

Ph.D. Degree Required Courses for First Year

- **Fall Semester:** MSE 6032 Advanced Thermodynamics (3 credit hours), MSE 6001 Engineering Materials (3 credit hours), Graduate Course (3 credit hours), MSE 7970 Thesis Research: PHD (1 credit hour) and MSE 7800 Graduate Seminar I (0.5 credit hour) TOTAL: 10.5 credit hours

- **Spring Semester:** MSE 6034 Kinetics (3 credit hours), MSE 6011 Advanced Materials Techniques (3 credit hours), MSE 7801 Graduate Seminar II (0.5 credit hour), and MSE 7970 Thesis Research: PHD (4 credit hours) TOTAL: 10.5 credit hours

Exceptions will be made for University of Utah Materials Science and Engineering graduates. See Academic Advisor for information.

Transfer Credit

Only 6 credit hours that have not been used for another degree can be transferred. This is a Graduate School policy and there are no exceptions.

- With Department and advisor approval 6 transfer credit hours may satisfy 6 of the 36 total coursework hours.
- No credit will be given for a graduate course taken at another university if a similar course has been taken at the University of Utah.
- For a tuition benefit, students must be registered for 9-11 credit hours each semester (excluding summer). See University of Utah Graduate Tuition Benefit Program Section for further information.

Students who have completed a M.S. degree at the University of Utah must provide the Department a copy of the approved “Application for Admission to Candidacy” form from the Department the M.S. degree was received. Classes used for prior degree outside of Materials Science and Engineering cannot count towards a Ph.D. in Materials Science and Engineering.
Exceptions to Coursework Requirements

Any deviation from the coursework requirements must be submitted on an “Exception Petition Form” and endorsed by the Supervisory Committee. All petitions must be presented to the Materials Science and Engineering faculty for review and voting during a regularly scheduled faculty meeting. “Exception Petition Forms” can be obtained from the Academic Advisor.

Preparation of the Ph.D. Degree

Upon acceptance into the graduate program, students must meet with their Ph.D. Dissertation advisors to discuss their dissertation project and course requirements to complete their degree. It is the responsibility of the student to initiate this meeting with advisor. Students must meet with their advisor prior to the end of the first semester.

Supervisory Committee members should be selected based on the scope of the Ph.D. Dissertation.

Ph.D. Degree Candidacy Evaluation

Students must first advance to candidacy in order to continue in the PhD program. Advancement to Candidacy must occur before the PhD Thesis 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 graduate GPA
- Passing the Preliminary Exam

Each year, the Materials Science and Engineering faculty will designate a Candidacy Exam Committee of three (3) faculty to evaluate the students on the above criteria. Students with prior MSE undergraduate or Masters Degrees who matriculate in Fall Semester will be evaluated after grades are posted for Spring Semester – i.e. 2 semesters after starting the program. Students who matriculate Spring Semester will be evaluated after grades are posted the following Spring Semester – i.e. 3 semesters after starting the program.
In unusual circumstances, students who matriculate in the Fall and hold degrees from other disciplines can petition the Candidacy Exam Committee to defer candidacy evaluation for 1 year (i.e. after 4 semesters). Students who matriculate in the spring Semester and hold degrees from other disciplines can petition the Candidacy Exam Committee to defer candidacy evaluation for 1 year (i.e. after 5 semesters). The Committee will require approval from the research advisor before granting such extensions. The Preliminary Exam must be passed by the time of this evaluation.

Based on the evaluation by the Materials Science and Engineering faculty, students will either be approved to advance to candidacy in the Ph.D. 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 Committee. A student not passing the Preliminary Examination portion of the Candidacy Evaluation may be required by the committee to re-take the Preliminary Examination one time. If two failures occur the student will not be allowed to advance to candidacy.

### Ph.D. Degree Preliminary Examination

The exam will be scheduled for one day each year during the first full week after commencement Spring Semester.

The Candidacy Exam Committee will determine the content of the Candidacy Exam each year in consultation with other faculty, especially those teaching the 1st year courses. It will test the candidate 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 macro- including defects) & 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 candidate, however in the oral section the faculty may pursue any follow-up line of questioning in order to assess individual candidates. The fixed
questions will be conceptual in nature aimed at testing understanding of 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, candidates will be given the written questions from each category and a fixed amount of time to prepare written responses. Then, they will bring their answers to their appointed oral examinations for each topic.

Each candidate 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 committee for each year but will typically be ≥23. The faculty should take into account the particularities of the questions each year, however an absolute scale will be maintained from year to year by reserving scores of 5 for the best performances within approximately 5 year timespans. The committee will also assign a “Pass”, “Conditional Pass”, or “Fail” on the Candidacy Evaluation Form which will be placed in the student’s file. If a “Conditional Pass” or “Fail” is given, the Committee can require remediation including but not limited to retaking the Preliminary Exam, taking courses, or complete other assignments.

Preliminary examinees 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.

**Ph.D. Degree Supervisory Committee**

After successful passing of the Candidacy Exam, Ph.D. students must make an appointment with the Materials Science and Engineering Academic Advisor to complete “Request for Supervisory Committee” form. The supervisory committee will consist of five faculty members.

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

Once the committee has signed the “Request for Supervisory Committee” form it must be returned to the Academic Advisor for approval by the Director of Graduate Studies and forwarded to The Graduate School for final approval.

**Ph.D. Degree Preliminary Program of Study**

During the second year of graduate study all full time Ph.D. students are required to complete a Preliminary Program of Study that must be approved by the Supervisory Committee and the Director of Graduate Studies. This should include all courses the student plans on taking to complete their degree. The student must complete the Preliminary Program of Study with their Supervisory Committee, which will then approve it. *Failure to do so could result in loss of tuition benefit or removal from program.*

**Ph.D. Degree Program of Study**

During the third year of graduate study, all full time Ph.D. students are required to complete an official 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 Ph.D. degree that will be approved by the Supervisory Committee. It is important that the student understands that the Supervisory Committee makes the final decision for the courses that will appear on the Program of Study for the Ph.D.

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

- The student must arrange a meeting with their Supervisory Committee to present the proposed courses for the Program of Study form.

- At the meeting the Supervisory Committee will review the student’s proposed courses reflected on preliminary program of study. At the request of the committee modifications or changes may be required prior to approval of the Program of Study.
In some cases, the committee may require extra course work that exceeds the minimum requirements for a Ph.D. degree based on the dissertation topic.

As stated in The Graduate School’s requirements: coursework used to complete requirements of one graduate program may not be used to meet the requirement of another.

All coursework must be completed in the first two years of graduate study. See Other Graduate Program Information for more detailed information regarding the 84 credit hour rule.

**Ph.D. Degree Residency Requirement**

According to University of Utah Graduate School regulations, “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 Ph.D. 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: Ph.D. (course number 7970) also is considered a full load after the residency requirement is fulfilled.”

Students registered for 9 hours of Thesis Research: Ph.D. 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.

**Ph.D. Degree Dissertation Proposal Examination**

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 the student’s Supervisory Committee and the Materials Science and Engineering Department for extenuating circumstances.

The Proposal Exam must occur before the Dissertation Defense and the two may 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: The student 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. The student must propose their own original research which will form the basis of their publications and Ph.D. 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: The student 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 Evaluation of Dissertation Proposal form which has separate “Pass”, “Conditional Pass”, and “Fail” marks for the written and oral portions. Again the committee may require remedial actions for “Conditional Pass” or “Fail” marks.

Prior to the Dissertation Proposal Exam the Academic Advisory will prepare the “Report of Qualifying Examination” form. This form must be completed and signed by the Supervisory Committee at the time of the Dissertation Proposal Exam. The completed form must be returned to the Academic Advisor for processing.

Ph.D. Degree Thesis Defense

Ph.D. students must orally defend the significant contents, results, and conclusions associated with the student’s 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 thesis defense is reported on the “Report of the Final Oral Exam” 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. It is expected that the dissertation will provide a “contribution to the knowledge” in the student’s area of research and that the dissertation is “acceptable for publication.” The style and format for the Ph.D. Dissertation are determined by Departmental policy and registered with the Thesis Editor, who approved individual theses in accordance with Departmental and The Graduate School policies. The approved style guides can be found on The Graduate School’s website at: http://gradschool.utah.edu/thesis/department-approved-style-guides-2/.

“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 at: http://gradschool.utah.edu/thesis/forms/.

The student must be registered for 3 credit hours of MSE 7970 during the semester they defend. Once the 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.

**Ph.D. Degree Time Limit**

A Ph.D. student is eligible for 5 years 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 M.S. degree from another institution are only eligible for 4 years of tuition benefit. Students, who completed a M.S. 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 M.S. degree.

In compliance with the Tuition Benefit Program Ph.D. 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.”
MSE 7990 Continuing Registration: Ph.D.

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 Ph.D. 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.

Other Ph.D. Degree Information

- All Ph.D. graduate students are required to be a Grading Assistant for one semester without compensation during their graduate studies in order to receive their degree. Students that need to fulfill their Grading Assistant requirement must have a thorough understanding of the material being covered and cannot be registered for the course at the same time they are the Grading Assistant for that course.

- Students in the College of Engineering cannot simultaneously be candidates for a Ph.D. in one department and a M.E., M.S., or Ph.D. candidate in the same or in another department.

- See Other Graduate Program Information Section for additional information.
Other Graduate Program Information

Full Time Student 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 M.S. and Ph.D. students, some of these credit hours may be for thesis research (MSE 6970 for M.S. students or MSE 7970 for Ph.D. students.)

Part Time Student Status

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.

84 Credit Hour Rule for Research Assistant Graduate Students

Graduate students are allowed to take graduate level courses that were approved by the Supervisory Committee and will advance their thesis/dissertation; however there is a limit of 84 credit hours of coursework that is allowed to be covered under the TBP at resident rates. International students must plan to accomplish coursework during their first 84 credit hours covered by Tuition Benefits or they will be responsible for payment as outlined by The Graduate School regarding the 84 Credit Hour Rule. Payment of tuition over the 84 hour rule will be calculated at the non-resident rate.

Continuous Enrollment
All students must maintain minimum registration from the time of formal admission through completion of all requirements for their degree. Minimum registration is three (3) credit hours of thesis hours upon completion of coursework requirements for degree.

International students must be registered for 9 semester hours Fall and Spring Semesters. Students who do not take a vacation semester for Summer Semester must be registered for 3 hours of Thesis Research to meet INS regulations.

Students that do not comply with the continuous registration policy will have their supervisory committees terminated and their records inactivated. Students who wish to reactivate their file must reapply to The Graduate School and comply with the deadlines set by the Admissions Office.

**Vacation Semesters**

Coordination of a Vacation Semester must be done with the student’s advisor. Permission for a vacation semester must be given in writing to the student with a copy of the approval for the vacation semester, to the Academic Advisor for the students file. Payroll arrangements must be discussed and be included in the written permission. Vacation semesters must be approved before the previous semester has ended.

In accordance with the International Center’s policy, within the first 15 days of the start of the semester students must contact the International Center and inform them of the intent to take a vacation semester. Otherwise the student will be reported as being out of status. If a student falls out of status they must apply for reinstatement with the local Salt Lake’s Citizen Immigration Service (CIS) Office, or return home and re-enter the U.S. on a new SEVIS I-20 to regain lawful status.

**Vacation semesters that are taken during Fall or Spring Semester, need to reapply to the International Admissions Office for readmission to the next semester.**

Students must attend school full time for two consecutive semesters before they are eligible for a vacation semester. The only exception is if the student entered the U.S. to attend Spring Semester as their first semester, then you may take the first Summer Semester as a vacation semester. Students must return to school after their vacation semester. If the student does not return to school following the vacation semester, then that semester is not considered a vacation semester and the student must leave the U.S. immediately.
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.

University of Utah Graduate Tuition Benefit Program

Tuition benefits are available for matriculated graduate students providing they meet the eligibility requirements, financial support, registration hours, and job code title as set forth in the Tuition Benefit Program (TBP) Guidelines. Benefits are available for full and partial in-state and out-of-state tuition depending on support level provided by the student’s graduate advisor. Tuition Benefits are available for two years of benefits for a master’s students and four to five years for doctoral students.

Those students that are receiving a tuition benefit will also receive student health insurance. For more details concerning the Graduate Tuition Benefit Program and Student Health Insurance Benefits, check with the Academic Advisor.

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 MSE 6970 or MSE 7970 (Thesis Hours). 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.

Writing Thesis/Dissertation

The University Writing Program offers graduate writing courses designed to help students compose different types of scholarly documents, improve their writing style, and increase their writing productivity. Students should discuss the course options with their advisors if they are interested. These courses can count towards the 36
coursework hours for Ph.D. students. Students are encouraged to take these courses prior to reaching 84 credit hours so that they are covered by the tuition benefit. Students should see the Academic Advisor for a current list of courses being offered.

Information on guidelines for writing and formatting the M.S. Thesis or Ph.D. Dissertation are available from the Thesis Editor in The Graduate School. Students are strongly encouraged to use *A Handbook for Theses Dissertations* when writing their Thesis or Dissertation. The current copy of *A Handbook for Theses Dissertations* can be found at: [http://gradschool.utah.edu/thesis/handbook/](http://gradschool.utah.edu/thesis/handbook/). The handbook must be used in conjunction with the styles accepted by the Materials Science and Engineering Department.

### Scheduling Conference Room

The Department policy on scheduling defense presentations is:

- Once the student’s thesis/dissertation has been approved by their advisor the student must discuss with their advisor concerning the defense. During the meeting the student with the advisor must come up with three possible dates for the defense.
- The student next needs to check with the Department for availability of the conference room for the three possible dates discussed with the advisor. The Department will hold all three dates that are available until the student has checked with their supervisory committee members.
- The student next checks with their supervisory committee on the three dates and times that the conference room is available.
- Notify the Department, immediately after setting the date and time that the student’s supervisory committee members, the Department will then release the other two dates.

This must be done within two weeks of checking with the Department for available dates. The Department will release all three dates if the student does not notify them within the two weeks.

Failure to follow this policy will result in the conference room not being free on the date the student wishes to defend.

### Applying for Graduation

All graduate students are required to apply for graduation. It is recommended that
students apply for graduation for one semester after they plan to successfully defend their Thesis or Dissertation. For example if a student plans on defending Fall Semester they should apply for graduation for Spring Semester.

See http://www.sa.utah.edu/regist/graduation/applying.htm for deadlines and the application.

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. Details can be found at http://gradschool.utah.edu/tbp/insurance-information/.

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 milestones 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 time 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.