

**2017-18**



**B.S./M.S.  
HANDBOOK**



**Department of  
Materials Science & Engineering**  
THE UNIVERSITY OF UTAH

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# Materials Science and Engineering

## BS/MS Program

The Department of Materials Science and Engineering offers a combined BS/MS degree program intended to foster undergraduate research and to accelerate progress toward a MS degree. This is a research intensive degree and offers students interested in expanding their research skills the opportunity to work in a research lab.

Only full time domestic students currently enrolled in Major Status in the Materials Science and Engineering undergraduate program can be admitted to the combined BS/MS Program. International students are not eligible for the BS/MS degree.

### Important Department People You Should Know

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#### **Department Chair**

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# Materials Science and Engineering Teaching Faculty

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## **Faculty**

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## **Area of Specialization**

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Composites

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Computational  
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Biofuel Cells/  
Explosive Sensing

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Electronic Materials

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Ceramics

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Ceramics

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Nanotechnology/  
Electronic Materials

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Ceramics/  
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Nanomaterials

# Admissions

## Program Description

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For undergraduate students interested in a vigorous pursuit of research the BS/MS program allows the student to expand the research of the student's Senior Design Project to a MS thesis. The Senior Design requirements still must be met to complete the BS requirements.

The MS portion of the Research Project should be an expansion on the research that was done to complete the BS portion of the Senior Design as well as working with the same advisor as explained below:

- When a student interested in the BS/MS degree is discussing their research interest with an MSE faculty advisor, the student should explain in detail the elements of the Senior Design Project and the MS Research Project with the faculty prior to applying for this degree.
- Once a faculty advisor has agreed to work with the student on their Senior Project and the expanded research for their MS degree, the student and faculty will write a progress report for the student and faculty advisor to use as a guideline during the next two years. A copy of this progress report will be forwarded to the Academic Advisor to become part of the student's departmental academic records.
- Students in the BS/MS degree program will begin working on the design portion of their senior projects during their junior year. Design Projects must meet the requirements as defined in the Senior Design Project Guidelines. The MS thesis topic is an extension of the required Senior Design Project with the addition of the hands on research in the advisors research lab. Student will begin working on the research portion of their degree upon completion of the Senior Design Project. The combined program is designed to be completed in five years and to culminate with the conferral of both the Bachelor of Science and Master of Sciences degrees. The BS degree portion of the combined degree requires the completion of 122 semester credit hours. The MS degree requires the completion of 30 additional hours. The standard BS degree requires 125.5 hours.
- Upon completion of the BS/MS degree, the student will receive both degrees at the College of Engineering Convocation Ceremony. Graduation cannot be applied for through the Graduation Office until the student has completed BOTH degrees.

## Who can apply?

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Applicants for admission to the BS/MS program the student must have Major Status in the Department of Materials Science and Engineering at the University of Utah. A minimum 3.5 GPA is required for admission to the combined program. It is also suggested that an appointment be made with the Academic Advisor to make sure that all requirements and details for applying for the BS/MS program has been satisfied. Application for the combined program must be submitted to the Academic Advisor by April 1st of the student's junior year. Students will be notified of admissions decisions by May 1st.

## Application Requirements

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### **BS/MS Application Deadline: April 15<sup>th</sup>**

Only full time domestic students currently enrolled in Major Status in the Materials Science and Engineering program can be admitted to the combined BS/MS Program. International students are not eligible for the BS/MS degree.

Students should plan to have a total of two to three semesters in graduate status and may begin the process at the completion of the required 122 semester credit hours for the BS portion of the degree. Undergraduate status is maintained until the end of Spring semester senior year. Any deviation from the Program of Study for the BS/MS Program must be approved by the Academic Advisor. A separate application for Graduate School admissions will be due January 15th of Spring semester in junior year. To apply for Graduate Admission [click here](#).

#### Department Application Requirements:

- Personal Statement
  - Student must clearly indicate at the beginning of the personal statement that the application is for the BS/MS degree. The student must provide their understanding and brief description of the MS Thesis Project in the personal statement. Furthermore, students should detail why they should be selected to pursue the BS/MS degree.
- Resume or Curriculum Vitae
- Three Letters of Recommendation
  - One of the three letters must come from the senior design project advisor that has committed to serve as the student's M.S. thesis advisor. The faculty advisor must confirm in the recommendation letter that support will be provided and briefly outline the M.S. Thesis Research Project.
- Minimum 3.5 GPA
- Current Degree Audit

## Admissions to the Graduate School

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BS/MS students must apply to the Graduate School after the completion of 122 semester credit hours required for their undergraduate degree. Student must follow the regular University of Utah Graduate School application procedures. On the referral sheet that the MSE Department returns to the Graduate Admissions Office, the MSE Department will note the student has been accepted to the BS/MS program. Graduate Admissions will then approve admission without the BS having been completed.

Admission to the combined degree program guarantees admission to the Graduate School as long as a minimum GPA of 3.5 is maintained. The successful admission into the program is simply a matter of addition paperwork. Please note that application deadline is **January 15th for Fall Semester**.

Entrance criteria for the BS/MS program is consistent with criteria for the traditional MS program. To apply for admission to the Graduate School visit: <https://mse.utah.edu/graduate/admissions/>

## Degree Requirements

### Overview

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Students must complete all the degree requirements for the MSE BS. For the MS, students must complete a **minimum of 30 credit hours** in courses level 6000 or above:

- 21 hours of MSE coursework
- 1 hour of MSE Graduate Seminar (MSE [7800/7801](#))

- Maximum of 8 hours of Thesis Research (MSE [6970](#))
- 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

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All BS/MS students are required to take the following MSE core graduate courses during senior year of the BS and the first semester of their MS. These courses will count towards the 21 hours of MSE graduate 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 9 credit hours of required MSE course work will be determined by a student's faculty advisor.

MSE 6032, MSE 6034, and MSE 6011 are usually completed during a student's senior year in the BS program. These courses are taken as non-matriculated graduate credit and will need to be formally transferred to the MS once admitted by the Graduate School. For more information on this, please see Request for Graduate Credit below.

## Graduate Seminar

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Students are required to take 2 semesters (0.5 credit hours each semester) of MSE Graduate Seminar in sequence.

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

One oral presentation is required. Graduate Seminar credit hours cannot be used to satisfy the 21 credit hours of MSE coursework.

## Thesis Hours

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Students must complete at least 8 hours of Thesis Research (MSE [6970](#), 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.

## Request for Graduate Credit

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The transfer of graduate courses while taken as an undergraduate student must be done within the first semester of the MS program. The Request for Graduate Credit in BS/MS form can be found here:

[http://registrar.utah.edu/\\_pdf/notification-graduate-credit.pdf](http://registrar.utah.edu/_pdf/notification-graduate-credit.pdf)



Students are required to submit the form to the MSE Academic Advisor for approval before turned into the Registrar's Office. Once the form has been approved by the Registrar's Office, the courses that were moved to the graduate career cannot be moved back to the undergraduate career to clear requirements for the completion of the undergraduate degree.

## Registration Restrictions

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- 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 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

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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

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During the first semester of graduate study, MS students are required to complete an 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

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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.

# Thesis and Defense

## Thesis

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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/>

## Defense

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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 website:

<http://gradschool.utah.edu/thesis/forms/>

## Registration

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Students must be registered for at least 3 credit hours of MSE [6970](#) 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.

# BS/MS Other Information & Policies

## Graduation

### Overview

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Upon successful completion of the combined degree program, both the Bachelor's and Master's degrees are awarded simultaneously. Students must apply for graduation to the Registrar's Office for both the Bachelor's and Master's degree to be awarded in the appropriate semester. Both applications must be completed and turned into the Graduation Office by the deadline for the appropriate semester. Students must satisfy all the Department of Materials Science and Engineering and University of Utah requirements for each degree. Reminder that Coursework may not be applied to more than one degree.

BS/MS students are required to complete two graduation applications. To apply for graduation for both the BS and MS visit: <http://registrar.utah.edu/graduation/index.php>

## Policies

### Grading Policy

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Materials Science & Engineering Undergraduates are required to take all MSE courses and receive a grade of "C" or better in order to advance to higher level MSE courses. If a student does not receive a "C" or better in a MSE course they will be required to retake the course. Failure to receive a "C" or better on the second attempt will result in dismissal from the program.

A cumulative grade point average of 2.3 or higher must be maintained for all courses completed towards a degree in Materials Science and Engineering. Students who fall below the GPA of 2.3 will be put on probation. Students on probation must raise their cumulative GPA above a 2.3 within 12 months or they will be dropped from the program.

### Adding, Dropping, and Withdrawal Procedures

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**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 [academic calendar](#) for specific add, drop, and withdrawal dates.

## Repeating Courses

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When a College of Engineering class is taken more than once, only the grade for the second attempt is counted. Grades of W, I, or V on the student's record count as having taken the class. The MSE Department enforces these guidelines for other courses as well (e.g., math, physics biology, chemistry). Attempts of courses taken at transfer institutions count as one attempt. This means a student may take the course only one time at the University of Utah. Courses taken at the University of Utah may not be taken a second time at another institution. If a second attempt is needed, it must be at the University of Utah. Please work with your Academic Advisor to determine the value of repeating courses. Students should note that anyone who takes a required class twice and does not have a satisfactory grade the second time may not be able to graduate. It is the responsibility of the student to work with the department of their major to determine how this policy applies in extenuating circumstances.

Students must meet with the MSE Academic Advisor before attempting to repeat a course a second time.

## Major Declassification

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It is the goal of the Materials Science and Engineering Department to successfully graduate all Materials Science and Engineering students. However, any student who does not perform satisfactorily may be dropped from the program. "Satisfactory performance" must be evaluated individually, but generally consists of meeting the standards of professional and ethical conduct that are expected of engineers (and hence engineering students), and maintaining satisfactory academic progress. While it is impossible to give an exhaustive list of actions that could cause us to revoke Major Status, examples include:

- Cheating or plagiarizing
- Abuse of faculty or teaching assistants
- Other serious violation of the [student behavior code](#)
- Failing to pass major required courses within the boundaries of the repeat policy
- Allowing your cumulative GPA to drop below a 2.3

## Leave of Absence

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A Leave of Absence allows degree-seeking undergraduate students who have registered for and completed university credit classes to request an extension of their enrollment eligibility for a maximum period of seven consecutive semesters (including summers). Requests are reviewed on a case-by-case basis and may be granted for the following reasons: illness (personal or familial), military service, humanitarian or religious service, or participation in a University of Utah sponsored program. To apply for a leave of absence and for more information visit: <http://registrar.utah.edu/handbook/leave.php>

## Appeal Procedures

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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, [Code of Student Rights and Responsibilities](#) for details on Academic Appeal Committee hearings.

## American with Disabilities Act

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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](#).

## Resources

### Overview

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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 a list of complete resources [click here](#).

- [Office of Undergraduate Research](#)
- [International Center](#)
- [Learning Abroad](#)
- [Counseling Center](#)
- [Dean of Students](#)
- [Disability Services](#)
- [Equal Opportunity & Affirmative Action](#)
- [LGBT Resource Center](#)
- [Student Wellness](#)
- [Veterans Support Center](#)
- [Women's Resource Center](#)

