



GRADUATE STUDENT HANDBOOK

UNIVERSITY OF UTAH
DEPARTMENT OF MINING ENGINEERING
SALT LAKE CITY, UT

FALL 2021

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INTRODUCTION

Congratulations on joining the graduate program in the Department of Mining Engineering at the University of Utah. The faculty and staff hope that your education will be challenging, rewarding, and enjoyable. We expect that the new tools, techniques, and skills you develop and the knowledge you gain during your stay will help you meet the exciting demands of a minerals industry career in the 21st century.

Every effort has been made to assure that this Handbook is correct; however, the information contained is not intended to modify degree requirements promulgated by the Graduate School of the University of Utah. Its requirements are specified, in detail, in the University of Utah Graduate Catalog located at <http://gradschool.utah.edu/graduate-catalog/>. Inconsistencies between requirements contained in this handbook and University requirements should be resolved with the Department's Director of Graduate Studies.

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PROGRAMS

Degree Programs: The Department offers Master of Engineering (M.E.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.) degrees in mining engineering.

Areas of expertise in the Department include rock mechanics, ground control, mine ventilation, mine systems (underground, surface, and coal), rock blasting, risk analysis, mine finance, safety management, and data engineering.

ADMISSION REQUIREMENTS

Applications for admission to the graduate program are accepted through The University of Utah Apply Yourself online application system:

https://app.applyyourself.com/AYApplicantLogin/fl_ApplicantLogin.asp?id=utahgrad.

Applicants must meet the minimum University requirements, namely, undergraduate GPA of at least 3.0, based on all undergraduate work, and a bachelor's degree from a regionally accredited college or university. If the undergraduate GPA is below 3.0, a GPA will be calculated based on the last 60 semester hours (90 quarter hours) of the undergraduate work for admission consideration.

In addition, the Department requires that all applications include a statement of purpose that clearly outlines academic goals and research and career interests, an official copy of all of all college transcripts, and three letters of recommendation. Applicants formally admitted to a graduate program will be required to submit official transcripts sent directly from previous schools to the University of Utah Office of Admissions at 201 S 1460 E, Room 250 S SSB, Salt Lake City, Utah 84112.

For applicants whose first language is not English, a qualifying English language examination is required. Official score reports must be sent directly to the University of Utah Office of Admissions at 201 S 1460 E, Room 250 S SSB, Salt Lake City, Utah 84112. Applicants who have previously completed an exam, but have lived outside of the United States for two or more years since taking the examination, must complete a new exam.

| Accepted Examinations and Required Scores | |
|---|--------------|
| iBT/TOEFL | 80 or above |
| IELTS | 6.5 or above |
| Cambridge | CPE or CAE |
| HKDSE | 4 or above |
| PTE | 54 or above |
| Password | 6.5 or above |
| EIKEN | 1 |
| TOEIC | 695 or above |
| Pearson Versant | 69 or above |
| GCSE/IGCSE | B |
| CEFR | C1+ |

ADMISSION DEADLINES

| | |
|-----------------|------------|
| Summer Semester | March 15 |
| Fall Semester | April 1 |
| Spring Semester | November 1 |

FINANCIAL SUPPORT

For qualified students, opportunities for financial support are available, including research and graduate assistantships. Typically, Graduate Assistants (GAs) are supported by scholarships. Research Assistants (RAs) are directly supported by externally funded research grants. Students receiving research or scholarship support are expected to work on research 20 hours per week, on average, during the academic year (Fall and Spring Semesters). Students receiving research or scholarship support during the Summer Semester are expected to work full-time on research or take courses on a full-time basis.

Eligibility for tuition support is subject to the Tuition Benefit Program guidelines outlined at <http://gradschool.utah.edu/tbp/tuition-benefit-program-guidelines/>.

For both GAs and RAs, support amounts are subject to change on a yearly basis. Continuation of support is not automatic and depends on funding availability and on student progress toward degree competition.

All official offers of support are meant to comply with The April 15 Resolution: <http://www.cgsnet.org/april-15-resolution>.

OUTSIDE EMPLOYMENT AND PRACTICAL TRAINING

GAs and RAs are expected to devote full-time effort to attending classes and performing research. For financially supported students, outside employment is not encouraged. However, outside employment may be permitted with approval from the student's Research Advisor and the Department Chair. Approval for outside employment must be documented.

Curricular Practical Training (CPT) and Optional Practical Training (OPT) are two temporary employment programs designed to provide foreign students with an opportunity to gain experience in their profession. Information on these programs is available from the International Student and Scholar Services: <http://internationalcenter.utah.edu/students/employment/>

ACADEMIC PROGRAMS

The Mission of the Department of Mining Engineering is to prepare students for productive, lifelong careers in mining and related industries or disciplines; and to provide knowledge useful for producing the region's mineral resources.

The Department will educate graduates to work in any area of the mining industry, disseminate newly acquired knowledge by publication of original research, provide professional service to the mining industry and public by assisting in the environmentally responsible and safe extraction of mineral resources, and inform the public at large about the importance of mining to society.

Learning Outcomes:

- Graduates will be successful in mining engineering or other professions.
- Graduates will demonstrate a commitment to lifelong learning, for example by participation in conferences and symposia and by pursuing advanced degrees and professional licensure.
- Graduates will evidence a willingness to give professional and public service.
- Graduates will demonstrate an understanding of the importance of safety and sustainability in all activities, in the workplace and elsewhere, and will evidence that understanding by their personal behavior and their influence on the actions of their employers, their professional societies, and the communities in which they reside

PROGRAM OF STUDY: MASTER OF ENGINEERING (M.E.)

The Master of Engineering (M.E.) program is a professional, non-thesis based degree program. A total of 30 credit hours are required for the M.E. Program of Study. At a minimum, 24 hours of course based credit must be completed: twelve (12) credit hours must be major courses, six credit hours must be allied courses, and six credit hours can be either major or allied courses. The Program of Study must include six credit hours of research based credit (MG EN 6970 Thesis Research: Master's) for the preparation of an engineering report.

| M.E. Program of Study Credit Requirements | |
|---|----|
| Course Based Credit | |
| Major | 12 |
| Allied | 6 |
| Additional Major or Allied Credits | 6 |
| Research Based Credit | |
| Thesis | 6 |
| Total | 30 |

At least a 3.0 GPA must be maintained in course work listed on the Program of Study. A grade below C will not be accepted toward a graduate degree. All work for the M.E. degree must be completed within three consecutive calendar years. On recommendation of the student's Supervisory Committee, the Department Chair can modify or waive this requirement.

Make-up Courses

Make-up courses may be required, as determined by the student's Research Advisor, and must be approved by the majority of the student's Supervisory Committee.

PROGRAM OF STUDY: MASTER OF SCIENCE (M.S.)

The Master of Science (M.S.) program is a research based degree program. A total of 30 credit hours are required for the M.S. Program of Study. At a minimum, 20 hours of course based credit must be completed: Eleven credit hours must be major courses, eight credit hours must be allied courses, and MG EN 7800 Graduate Seminar must make up one credit hour. The Program of Study must include 10 credit hours of research based credit (MG EN 6970 Thesis Research: Master's) for the development of a research based thesis.

| M.S. Program of Study Credit Requirements* | |
|--|----|
| Course Based Credit | |
| Major | 11 |
| Allied | 8 |
| Seminar | 1 |
| Research Based Credit | |
| Thesis | 10 |
| Total | 30 |

At least a 3.0 GPA must be maintained in course work listed on the Program of Study. A grade below C will not be accepted toward a graduate degree. All work for the M.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.

Make-up Courses

Make-up courses may be required, as determined by the student's Research Advisor, and must be approved by the majority of the student's Supervisory Committee.

PROGRAM OF STUDY: DOCTOR OF PHILOSOPHY (PH.D.)

The Doctor of Philosophy (Ph.D.) program is a research based degree program. A total of 70 credit hours are required for the Ph.D. Program of Study. At a minimum, 48 hours of course based credit must be completed. Major courses must make up at least 29 credit hours or 18 hours beyond an M.S. Program. Allied courses must make up at least 18 credit hours or 10 hours beyond an M.S. Program. MG EN 7800 Graduate Seminar must make up one credit hour. In addition, the Program of Study must include 22 credit hours of research based credit (MG EN 7970 Thesis Research-PhD) for the development of a significant, original dissertation.

| Ph.D. Program of Study Credit Requirements | | |
|--|------------------|-----------------------|
| | No M.S. Program* | M.S. Program Complete |
| Course Based Credit | | |
| Major | 29 | 17 |
| Allied | 18 | 10 |
| Seminar | 1 | 1 |
| Research Based Credit | | |
| Thesis | 22 | 22 |
| Total | 70 | 50 |

* Normally students admitted to the PhD program are required to have completed a thesis M.S. degree. Any exceptions will be considered on a case by case basis by the faculty.

In addition, at least a 3.0 GPA must be maintained in course work listed on the Program of Study. A grade below C will not be accepted toward a graduate degree. All work for the Ph.D. degree must be completed within five consecutive calendar years. Requests to exceed established time limits must be recommended by a candidate's Supervisory Committee and approved by the Director of Graduate Studies and the dean of the Graduate School.

Make-up Courses

Make-up courses may be required, as determined by the student's Research Advisor, and must be approved by the majority of the student's Supervisory Committee.

ACADEMIC GUIDELINES

RESEARCH ADVISOR

Incoming students who have designated a Research Advisor during their admission process should schedule a meeting with their Advisor within their first week at the University to outline a tentative Program of Study and begin developing research goals.

Incoming students who have not designated a Research Advisor during their admission process should schedule a meeting with the Director of Graduate Studies within their first week at the University to outline a tentative program of study for the first semester. During the first month, the student should organize meetings with Department faculty to identify potential thesis topics and a Research Advisor. Thesis topic and Research Advisor selection should be finalized by the end of the student's first semester.

It is essential that the student and Research Advisor identify in writing a Program of Study and expected tasks when the student agrees to study under the Advisor. Subsequent changes in the Program of Study or expected tasks should be mutually agreed to by the student and the Research Advisor.

Changing Research Advisors

Termination of a Research Advisor/student relationship has rarely occurred and should be pursued only after all efforts have been made for reconciliation. Either the student or the Research Advisor may terminate the relationship. Importantly, termination of the relationship does not imply dismissal from the Mining Engineering Graduate Program. However, neither the Research Advisor nor the Department are obligated to provide financial assistance for the student upon termination of Research Advisor/student relationship. In addition, if a Research Advisor/student relationship is terminated and the student remains active in the Program, it is the student's responsibility to reconstitute a Supervisory Committee and identify a new Research Advisor.

If the Research Advisor is dissatisfied with student performance and verbal communications fail to achieve the desired outcome, the advisor should communicate in writing the reasons for dissatisfaction, the processes necessary to correct deficiencies, and the time line for correction, which must be at least three weeks. A copy of the letter must be sent to the Department Chair. If the deficiencies identified in the letter persist for more than three weeks, the advisor may terminate the relationship. Upon termination, the student is expected to organize and submit data and research materials to the Research Advisor.

If a student is dissatisfied with her or his Research Advisor and verbal communication fails to achieve the desired outcome, the student should communicate in writing the reasons for dissatisfaction, the

process necessary to mediate the situation, and a time line for correction, which must be at least three weeks. A copy of the letter must be sent to the Department Chair. If the deficiencies persist for more than three weeks, the student may terminate the relationship with their Research Advisor. Upon termination of the Research Advisor/student relationship, the student is expected to organize and submit data and research materials to the Research Advisor before the student identifies a new Advisor or leaves the program.

SUPERVISORY COMMITTEE

Students should select a Supervisory Committee in consultation with their Research Advisor. The supervisory committee is responsible for approving the student's Program of Study; preparing and judging the qualifying examinations (Ph.D.); approving the engineering report (M.E.), thesis (M.S.), or dissertation (Ph.D.) proposal; reading and approving the engineering report, thesis, or dissertation; and administering and judging the final defense.

For M.S. and M.E. degree programs, Supervisory Committees must have at least three members. Two members must be from the Mining Engineering Department. For the Ph.D. degree program, Supervisory Committees require at least five members. Three members must be from the Mining Engineering Department. For all degree programs, adjunct faculty, approved by the Graduate School, may serve as members of a Supervisory Committee; however, adjunct faculty may not serve a Supervisory Committee Chair, unless specifically approved by the Dean of the Graduate School.

Occasionally, it may be necessary for a student to reorganize their Supervisory Committee. Members of a Supervisory Committee can be changed with written approval from the student's Research Advisor and the Department Chair. Supervisory Committees are an influential and important component of a student's graduate program. Request for changes to the Committee should include a reasonable justification.

GRADUATE RECORD FILE

Students will have an Electronic Graduate Record that includes formal documentation of the student's Supervisory Committee and Program of Study. The Graduate Record can be accessed by logging into the Campus Information Systems (<http://cis.utah.edu>).

Upon selection of a Supervisory Committee, students should submit the Request for Supervisory Committee form (<http://www.mining.utah.edu/graduate/gradforms.php>) to the Director of Graduate Studies, so the student's Committee can be formalized and approved in the student's Graduate Record. No later than one semester before graduation students should submit the Graduate Program of Study form (<http://www.mining.utah.edu/graduate/gradforms.php>) to the Director of Graduate Studies so the student's Program of Study can be formalized and approved in the student's Graduate Record.

QUALIFYING EXAMINATION

Written and oral qualifying examinations are required of students admitted to the Ph.D. program.

These exams should be scheduled after the majority of the student's course work is complete.

Typically, the written examination is scheduled first, and the oral examination is scheduled following successful completion of the written exam. The maximum time between the written and oral exams is one month.

Upon completion of the Qualify Examinations students should submit the Qualifying Examination Report from (<http://www.mining.utah.edu/graduate/gradforms.php>) to the Director of Graduate Studies. An examination or parts of an examination judged deficient may be repeated at the discretion of the majority of the student's Supervisory Committee.

PROPOSALS

M.E., M.S., and Ph.D. candidates must prepare formal written proposal for presentation to the student's Supervisory Committee. Proposals should be concise, typically not more than three pages. In general,

M.S. and Ph.D. proposals should include a hypothesis, a brief background of the research topic, and research plan.

After presentation of the proposal, students should submit Institutional Review Board approval (if required), approved written proposals, and the Proposal Defense form (<http://www.mining.utah.edu/graduate/gradforms.php>) to the Director of Graduate Studies.

ENGINEERING REPORT, THESIS, AND DISSERTATION

Engineering reports, theses, and dissertations must follow the SME Book Publishing Style Guide, which is available at <http://www.mining.utah.edu/>. Theses and dissertations must also follow the Graduate School's A Handbook for Theses and Dissertations, which is available at

<http://gradschool.utah.edu/thesis/handbook/>. The Handbook contains information on The Graduate School's policies and procedures for preparing a thesis or dissertation, having it reviewed by the Thesis Editor, and uploading it as a PDF for electronic publication, which is the final requirement for M.S. and Ph.D. graduation. The Handbook includes an explanation of the University of Utah format, examples of pages and forms, and a discussion of copyright issues. Engineering reports are approved by the Department, not by the Graduate School, and are not submitted to the Thesis Office.

Engineering reports do not need to conform to the Graduate School's Handbook.

FINAL DEFENSE

The required final examination for all degree options is an oral defense of the engineering report (M.E.), thesis (M.S.), or dissertation (Ph.D.). The defense date is set by the Supervisory Committee and is open to the public. At least three weeks before this final oral examination, the student should submit an acceptable thesis draft to the Committee Chair; Committee members should receive copies at least two weeks before the examination date. After the oral presentation, a question and answer period must be allowed. At the conclusion of the public participation, the committee will conduct further questioning on the thesis and related topics.

After the oral defense, students should submit the Report of the Final Oral Examination form (<http://www.mining.utah.edu/graduate/gradforms.php>) to the Director of Graduate Studies. Approval of the defense is by the majority of the Supervisory Committee.

For M.S. and Ph.D. programs, the masters and doctoral Supervisory Committee Approval and Final Reading Approval forms (<http://gradschool.utah.edu/thesis/forms/>) should be presented to the Supervisory Committee at the Final Defense. These forms are required for submission of theses and dissertations to the Thesis Office.

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, including the final oral defense, unless granted an official leave of absence. Students not on campus and not using University facilities are not expected to register for summer semester. Students must, however, be registered during summer semester if they are taking examinations or defending theses/dissertations. In addition, students must maintain registration during the summer semester if they are receiving financial support from the Department. If students do not comply with this continuous registration policy and do not obtain an official leave of absence, they will be discontinued from graduate study.

Leaves of Absence

Students who wish to discontinue their studies for one or more semesters may request a leave of absence from the Department Chair, which may be granted subject to the approval of the Dean of the Graduate School in the following circumstances:

Leaves of absence will generally be granted and reviewed on a yearly basis for reasons relating to illness, military service, pregnancy and/or child care, or residence outside the state of Utah.

Leaves may also be granted and reviewed on a yearly basis to students who, in the judgment of the Department Chair, are engaged in work considered beneficial to their academic goals, such as temporary teaching or professional positions or employment which will ultimately allow the student to complete the degree.

Leaves for other reasons may be granted and reviewed on a yearly basis when the Department Chair believes the leave is in the best interest of both the student and the University.

While on a leave of absence, a student may continue to get health care coverage through the Graduate School.

RESIDENCY ENROLLMENT REQUIREMENT* AND ENROLLMENT STATUS

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

Students are considered full-time if 1) they are registered for nine or more credit hours; or 2) after the residency enrollment requirement has been met, they are registered for three credit hours of classes within the range of 6970-6989, 7970-7989.

* The Residency Enrollment Requirement does not refer to nor fulfill State Residency Requirements

APPLY FOR GRADUATE DEGREE

All graduate candidates for graduation must submit an Application for Graduate Degree (<http://registrar.utah.edu/handbook/graduategraduation.php>) with the Registrar's Office, Graduation Division. Deadlines for submission are listed below. Applications will not be accepted more than one year in advance.

A separate Application for Graduate Degree is required for each major.

| TERM | DEADLINE TO APPLY |
|---------------------------------|-------------------|
| Fall 2021 Graduation (December) | September 3 † |
| Spring 2022 Graduation (May) | January 21 † |
| Summer 2022 Graduation (August) | May 25 †† |

*Applications received by March 1st will have names included in the Spring Convocation Programs. All graduate students must adhere to the Graduate School's policies and procedures in order to graduate.

GRADUATION OVERVIEW AND THESIS RELEASES

For graduation in a specific semester, deadlines for completion of the final defense and for submission of theses and dissertations to the Thesis Office vary. Current deadlines are available at: <http://gradschool.utah.edu/current-students/graduation-overview-for-masters-candidates/>, <http://gradschool.utah.edu/current-students/graduation-overview-for-doctoral-candidates/>, and <https://gradschool.utah.edu/thesis/>.

GENERAL GUIDELINES

Access: Students will have access to WBB using their UCard. Initial UCard activation should be requested from the Administrative Manager. Card readers are located at the entrances of the FASB. Keys will be provided so that students can access their office and laboratory spaces. Keys should not be loaned or transferred to other students and should be surrendered at the time of departure from the University.

Computers: Students are encouraged to use the computer labs in WBB 102 and WBB 306. Use should not conflict with or disrupt scheduled courses. Access to computers labs is by Ucard. Students may log into the computers using their CIS login. Ucard activation should be requested from the Administrative Manager.

Students should not install software or make modifications on the computers in these labs without authorization from the Department Chair. Violation of these conditions will result in loss of access to the lab facilities and, potentially, disciplinary action.

In addition, computers are available in most research laboratories. Use of these computers should be primarily restricted to research and course work. Violation of this condition may result in loss of access to the lab facilities and disciplinary action.

Mailboxes: Each student will be provided a mailbox, located in the Department office.

Offices: Each student is entitled to a desk, located either in a common graduate student office or a research laboratory. Students are expected to establish office hours, which should be approved by the student's research advisor.

Purchasing: Purchase requests for research projects and office supplies must be approved in advance by the student's Research Advisor. Approved purchase requests should be submitted to the Administrative Manager.

Safety (Field): Before performing field research, the College of Mines and Earth Sciences Field Safety Manual should be review and a formal Safety Plan should be outlined.

Safety (Laboratory): Students are required to have training in the use of laboratory equipment and supplies. Student should also be made aware laboratory guidelines, hazards, and Material Safety Data Sheets. In general, it is the responsibility of the faculty member in charge of each research laboratory to provide students with necessary safety training. It is the responsibility of the student to request such training before laboratory use. Laboratory safety assessments, performed by faculty, are scheduled regularly, and students are encouraged to participate in these assessments.

Travel: Student travel in conjunction with research or course work for which reimbursement is expected must be approved in advance by research advisors. Airline tickets and vehicle rentals should be arranged through the Administrative Manager.

University Vehicles: Travel necessary for research or other educational experiences may require use of University vehicles. University vehicle drivers must have a valid driver's license and current automobile insurance. In addition, drivers must complete the University's approved safety training, which must be renewed annually. Without specific and documented approval, University vehicles may not be used for transporting non-University personnel or for personal use.

STUDENT RIGHTS AND RESPONSIBILITIES

The Code of Student Rights and Responsibilities (Student Code) is available at <http://regulations.utah.edu/academics/6-400.php>. The purposes of the Student Code are to set forth the specific authority and responsibility of the University to maintain social discipline, to establish guidelines that facilitate a just and civil campus community, and to outline the educational process for determining student and student organization responsibility for alleged violations of University regulations.

DISMISSAL

In the unusual case that a student fails to make satisfactory progress toward the timely completion of a graduate degree, the Department faculty may consider dismissal of the student from the Mining Engineering Graduate Program. Research Advisors are obligated to provide students with timely and regular written feedback regarding academic deficiencies that may lead to dismissal. Justification for dismissal must be considered at a Departmental faculty meeting and the decision to dismiss from the program must be approved by a majority vote of the Department faculty. The student's rights and responsibilities in the case of dismissal are clearly defined in Policy 6-400: Code of Student Rights and Responsibilities, Section IV.