

Department of Civil & Environmental Engineering

Graduate Student Handbook

Master of Science

Brigham Young University

Updated: April 2016



Table of Contents

Introduction	3
About our Master of Science Degree (MS)	3
Principles of Graduate Education at BYU.....	3
The Admission Process	3
Bachelor’s Degree—U.S. and Canadian Students.....	3
Bachelor’s Degree—International Students	3
GRE.....	4
Grade Point Average	4
Letters of Recommendation	4
Standard of Personal Conduct—BYU Honor Code.....	5
Application Fees and Deadlines	5
MS without a CEEEn Bachelor’s Degree	5
Financial Aid Options	6
Department Scholarships.....	6
Student Loans	7
Research Assistantships.....	7
Teaching Assistantships	7
On-Campus Employment.....	7
Program Requirements	7
Supervision.....	7
Receive Biannual Evaluations	7
Program of Study and Course Work	8
Submit Prospectus	9
Seminar Requirement.....	9
Examination Requirement	9
Thesis vs. Project Options	10
Thesis Option	10
Project Option.....	10
Minimum Registration Requirements	11
Time Limit	11

Apply for graduation 11

Policy for Dismissal and Grievances..... 13

Graduation Checklist 15

Masters Emphases 16

Graduate Course Descriptions 21

Introduction

This student handbook contains a summary of policies and procedures that MS-Thesis graduate students in the Department of Civil & Environmental Engineering are expected to know and follow. This handbook explains the procedures that are to be followed in the course of obtaining a degree, but does not cover every conceivable situation. Students are invited to counsel with their Graduate Committee Chair, the Graduate Advisor, or the Graduate Coordinator about special circumstances. Since timing is often important, students should discuss any concerns as early as possible.

About our Master of Science Degree (MS)

The Master of Science Degree is awarded to students who have mastered professional training in selected areas of Civil Engineering. Such training is gained through graduate course work which, unlike undergraduate course work, consists of elective courses and direct research design. Students pursuing the thesis option gain the added dimension of participating in research work (usually funded) at the cutting edge of the profession. This research work culminates in a high-quality presentation—the thesis. Alternatively, the student may elect to pursue the Project option which is typically not funded and less intensive research work. The degree normally requires a minimum of 18 months beyond the bachelor's degree.

Principles of Graduate Education at BYU

Graduate education is distinguished by advanced systematic study and experience in depth—depth in knowledge, understanding, scholarly competence, inquiry, and discovery. Graduates are equipped to teach and transmit knowledge within their disciplines, to conduct research and produce creative works, to apply their learning in the everyday world, and ultimately to extend service to their disciplines and to humanity.

Although diversity in focus, methodology, and implementation are expected across the spectrum of graduate programs at BYU, strong programs are characterized by selective admission of highly qualified students, a graduate faculty committed to excellence, and rigorous programs of study conducted in a context of faith.

The Admission Process

Bachelor's Degree—U.S. and Canadian Students

Students must have or be about to receive a bachelor's degree from an accredited institution in the United States or Canada. An official transcript with the degree posted must be received by the office of Graduate Studies before a student will be allowed to register for his or her second semester of graduate work.

Bachelor's Degree—International Students

1. *Financial Certification:* The United States government requires Brigham Young University to verify that international students can provide evidence of the financial support necessary to complete the degree program to which they are applying (exclusive of travel expenses). Financial support must be provided for at least two years for master's students and three years for doctoral students. Evidence of financial support may be furnished in any or a combination of the following ways:
 - a. Proof of necessary cash from personal savings

- b. Proof of a grant or funding from a government or agency
- c. Proof of a scholarship or assistantship from a department at BYU
- d. A Contract of Support from parents or a sponsor who will pay educational expenses, GS Form I-2 in the application
https://graduatestudies.byu.edu/sites/default/files/graduatestudies.byu.edu/files/files/forms/g_s_form_i-2.pdf

2. *English Status:* International students— whose country of origin is outside of Canada, the U.K., the Republic of Ireland, New Zealand, or Australia—also must pass the IELTS exam (with a minimum score of 7.0 total and minimum of 6.0 in each module), TOEFL Paper-Based exam (with a score of 580 or better), or the TOEFL iBT Exam (with a minimum total of 85, 22 in Speaking, and 21 in Listening, Reading, and Writing).

For more information, see Graduate Studies website

<http://graduatestudies.byu.edu/content/english-proficiency>

3. *Credential Evaluation Report:* International applicants who have obtained their degree(s) outside the U.S. must submit all official transcripts, diplomas, and mark sheets to the International Education Research Foundation (IERF).
4. *Transfer Letter:* International applicants transferring from another U.S. school are required to submit the International Student Transfer/Release Form (GS Form 8). The designated school official (DSO) at an applicant's current school should verify the applicant is eligible for transfer to BYU upon admission. This will release their current visa record from one school and allow us to transfer it to BYU.

GRE

All applicants are required to take the GRE examination. The following website will give students more information on the exam process. <http://www.ets.org/gre/>

The closest testing center in the Utah Valley area is:

Prometric Testing Center
350 South 400 West, Suite 250
Lindon, Utah 84042
Phone: (801) 226-2095

GRE scores are used in combination with other criteria (GPA, letters of recommendation, etc.) in making admission decisions. It is expected that all students will invest a reasonable amount of effort in preparation for the exam. GRE scores are also used to determine department scholarship awards.

Grade Point Average

To be considered for regular admission, prospective master's students must have a cumulative GPA of 3.0 or higher. Students with GPAs lower than these values may be admitted on a provisional basis if approved by the department graduate committee.

Letters of Recommendation

All applicants are required to submit at least three letters of recommendation with their application. These must be submitted online through the ApplyYourself application system.

Standard of Personal Conduct—BYU Honor Code

Students of the Civil & Environmental Engineering Department must agree to maintain University standards of personal conduct. Complete information concerning the Honor Code at Brigham Young University can be found at: <http://honorcode.byu.edu>. All who represent BYU are to maintain the highest standard of honor, integrity, morality, and consideration of others in personal behavior. As a matter of personal commitment, faculty, administration, staff and students of BYU seek to demonstrate in daily living on and off campus, those moral virtues encompassed in the gospel of Jesus Christ. BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including but not limited to plagiarism, fabrication, or falsification, cheating, or other academic misconduct.

Application Fees and Deadlines

Currently, there is a \$50 fee in applying to BYU's Graduate Programs. Online applications are required. Students must submit a complete application with the appropriate fee online at: <https://graduatestudies.byu.edu/content/admission-information>. A link for the Apply Yourself website will be on that page.

Starting Semester	US Citizens	International Students
Fall Semester (September)	Feb. 15 th	Feb.15 th
Winter Semester (January)	Sep. 15 th	Sep. 15 th
Spring Term (April)	Feb. 5 th	Feb. 5 th
Summer Term (June)	Feb. 5 th	Feb. 5 th

MS without a CEE Bachelor's Degree

Students who do not have a bachelor's degree in Civil Engineering will have to fill all the criteria outlined in this handbook as well as fulfilling the following. Students must complete the equivalent of the following courses at BYU or at another institution:

Civil Engineering Courses:

1. CEE 103 (3 credits) Engineering Mechanics—Statics
2. CEE 203 (3 credit) Engineering Mechanics of Materials
3. CEE 270 (3 credit) Numerical Methods in Civil Engineering

Basic Math:

1. Math 112 (4 credits) Calculus 1
2. Math 113 (4 credits) Calculus 2

Advanced Math:

1. *Option (1)*
 - Math 302 (4 credits) Mathematics for Engineering 1
 - Math 303 (4 credits) Mathematics for Engineering 2
2. *Option (2)*
 - Math 313 (3 credits) Elementary Linear Algebra
 - Math 314 (3 credits) Calculus of Several Variables
 - Math 334 (3 credits) Ordinary Differential Equations

Emphasis Classes:

Students must choose one of the options below and complete all of the required courses listed in the options table (and any prerequisites to the courses). These courses may be taken at BYU or transferred from another institution.

Option (1) Structures and structural mechanics

Option (2) Transportation

Option (3) Water Resources and Environmental

Option (4) Geotechnical

Options			1	2	3	4
CEEn 304	1.5 credits	Civil Engineering Materials: Metals, Woods, and Composites	X	X		
CEEn 306	1.5 credits	Civil Engineering Materials: Concrete, Masonry, and Asphalt				
CEEn 321	3 credits	Structural Analysis	X			X
CEEn 332	3 credits	Hydraulics and Fluid Flow Theory			X	
CEEn 341	3 credits	Elementary Soil Mechanics		X		X
CEEn 361	3 credits	Highway Engineering		X		
CEEn 424/or 421	3 credits	Reinforced Concrete Design/ Structural Steel Design	X			X
CEEn 431/433	3 credits	Hydrology/Hydraulic Engineering			X	

Financial Aid Options

Department Scholarships

Students intending to complete a Masters in Civil Engineering at BYU are eligible to apply for departmental scholarships each year. Applications are available in January from this website: <http://ceen.et.byu.edu/content/scholarships>. The submission deadline is in March. Check with the CEEEn office for the specific deadline date. These awards are made in June for support beginning in the Fall semester. These awards are given once-a-year, and the student is responsible for applying prior to the deadline. Selection is based on:

- Scholastic merit (particularly on the applicant’s program GPA and GRE scores).
- Need
- Contributions to the University through extracurricular activities. These scholarships may be received in addition to any assistantship or privately endowed awards listed below unless the total financial aid package exceeds the scholarship limitations stipulated by the University.
- International students are not eligible for department scholarships during the first year in the graduate program.

Student Loans

Federal Stafford Loans are available to graduate students who qualify. Only degree-seeking students who are making satisfactory academic progress will be considered for loan approval. International students are not eligible for Federal Stafford Loans. <https://financialaid.byu.edu/federal-loans>.

Research Assistantships

Several of the faculty have funds from both off-campus and on-campus sources to support students as research assistants. These awards support students at the normal current pay rate for research work up to **half-time (20 hours/week)**. This research work normally applies towards completion of the student's thesis or dissertation. Research assistantships are typically granted by faculty members in one of the three ways:

- The faculty member puts out an announcement in the department office when funds for such awards become available, and applications from students are then accepted.
- A student with an interest in a particular faculty member's area of research makes contact with that faculty member who can then give that student primary consideration as funds become available.
- The faculty member reviews a student's application for admission to graduate school and makes an award to the promising student at the time the student is admitted.

Teaching Assistantships

All graduate students are eligible for teaching assistantships with the exception of those who already have received **half-time research assistantship**. These awards support graduate students for work associated with the grading and teaching of courses. Applications are available in the department office.

On-Campus Employment

Student campus jobs other than assistantships and internships are listed at Student Employment Services. Graduate students wishing to seek on-campus employment must be registered for a minimum of two credit hours. Full-time graduate students are not permitted to work more than 20 hours at on-campus employment outside of their academic departments or 28 hours within their department. International students must be registered for at least 9 credit hours or have full-time status in order to work on campus. Special employment restrictions may apply to international students. For more information regarding on-campus employment, contact Student Employment Services at 801-422-3561.

Program Requirements

Supervision

Each graduate student is required to select a graduate committee composed of at least three members. The chair of the graduate committee, or graduate advisor, must be from the student's major department. During the first semester, the student works with their graduate advisor to select the committee.

Receive Biannual Evaluations

The progress of each graduate student will be evaluated twice each year, in January and May. The student's graduate committee chair rates each student as making satisfactory, marginal, or unsatisfactory progress. The committee chair may consult with other members of the graduate committee when determining this rating. The committee chair reports the student's progress to the graduate advisor. Students whose progress is rated as marginal or unsatisfactory will receive notification to meet with their graduate advisor and sign the evaluation.

The evaluation given to a student will include:

- Specific tasks the student must complete in order to maintain or regain a satisfactory rating
- Clear deadlines established for each of the specified tasks
- A recommendation of faculty member(s) they can contact for more information or support

Marginal progress may include the following:

- Failure to submit a Program of Study and establish a graduate committee by the end of first semester
- Failure to submit a prospectus by the end of second semester
- Poor performance in research or registering for thesis hours when little or no work has been performed
- Minimal contact with the committee chair

Unsatisfactory progress may include the following:

- Failure to submit a Program of Study since prior evaluation
- Failure to submit a prospectus since prior evaluation
- Failure to resolve any problems or fulfill any requirements indicated in a previous marginal or unsatisfactory review
- Minimal or no contact with the committee chair
- Poor performance in research or registering for thesis hours when little or no work has been performed
- Program of Study GPA below 3.0 or Program of Study course grade below 2.0
- Unacceptable ethical or professional behavior

If a student receives a marginal or unsatisfactory rating and has not improved his or her performance in accordance with the actions outlined on a previous evaluation, by the time of the next evaluation, the student should meet with his committee chair to determine possible recourse, if any, to termination. The biannual evaluation is used by the department to satisfy criteria for continuing funding. It is also used by the BYU Financial Aid Department to determine eligibility for financial aid.

A student receiving two consecutive marginal and/or unsatisfactory student evaluation ratings will be terminated.

Program of Study and Course Work

The Program of Study is a carefully considered plan which identifies the student's major, lists all courses required, and designates the graduate committee. Each Program of Study must meet the minimum university degree requirements and all the requirements as explained in this handbook. Necessary changes in a student's program or committee can be made if authorized by the student's committee and department graduate coordinator.

Master's degree students should outline their Program of Study under the direction of their graduate committee during their first semester, completing it no later than the third week of the second semester. Doctoral students should receive approval and submit their Program of study during the first year, with completion no later than the third week of the beginning of the second year of study.

Thirty (30) hours of coursework and directed design or research are required; one hour of seminar credit is also required. A GPA of 3.0 or higher must be maintained.

These hours must include:

- Thesis Option: 6 hours of thesis credit (CEEn 699R)
- or
- Project Option: 3 hours of project credit (CEEn 698R)

These hours include:

- Maximum of 3 credits of approved courses numbered from 300 to 499.
- In some restricted instances students seeking a master's degree may apply credit taken during the senior year at BYU toward the degree, but in no instance can this credit apply to both a baccalaureate and a graduate degree. Senior and post-baccalaureate credit combined cannot exceed 10 semester hours in a graduate program.
- Maximum of 7 hours of approved transfer or non-degree courses.
- Courses may be applied to the MS degree within five years of taking the course.

These hours may NOT include:

- Any courses with D or E grades
- Any course credit applied toward a BS degree
- Any additional seminar courses beyond one required hour
- Any skill requirement courses
- Any courses numbered below 300

Submit Prospectus

The Prospectus must be submitted by the end of the first semester. A prospectus defense may be held at the request of the committee. The purpose of the prospectus is to define the scope of the thesis or project. The prospectus establishes the minimum requirements for completion of the thesis or project and helps prevent the student from undertaking an unrealistic project. When written early in the program, the prospectus provides focus that will help expedite completion of the thesis or project.

Seminar Requirement

Students must register for and attend the weekly graduate seminar (CEEn 691R) during their first two semesters while at BYU. Official announcements regarding graduate study are made at the seminar. The seminar also serves to broaden graduate education through exposure to technical ideas in a variety of areas.

Examination Requirement

There is no written comprehensive examination requirement for the Master of Science Degree. An oral presentation of the project and defense of the thesis is required as noted below.

Thesis vs. Project Options

The intent of a thesis is to advance the state of the art, while the intent of a project is to apply the state of the art. The results of a thesis should be publishable as a journal or conference article, while the results of a project may or may not be publishable. Students completing a thesis receive 6 credit hours for their effort, while students completing a project receive 3 credit hours for their effort. Work on a thesis is more likely to be funded than work on a project. Both a thesis and a project are reviewed by a graduate committee comprised of three faculty members. A thesis is presented to the faculty committee, while a project is usually presented in graduate seminar. Expectations regarding the quality of written and oral presentation are the same for both a thesis and a project.

Thesis Option

The student must complete an original research study under the direction of the chair of the advisory committee. A written thesis must be prepared by the student and approved by the advisory committee. The thesis is orally defended before the advisory committee, although additional faculty and others may be in attendance. Copies of the thesis must be distributed to the advisory committee at least two weeks prior to the oral thesis defense.

In the oral thesis defense the student will spend approximately one-half hour presenting his or her thesis work and approximately on-half hour responding to questions from the committee. The student will be judged on mastery of the thesis subject and on the quality of thesis work. The committee may vote as follows:

1. *Pass*
2. *Pass with qualifications*: In this case the student must complete the minor revisions or requirements specified by the committee to the satisfaction of the committee chair, who then sends a written approval to the Graduate Office.
3. *Recess*: In this case the student must pass a second and final oral thesis defense no sooner than one month later. The new date must be rescheduled with Graduate Studies.
4. *Fail*: In this case the graduate degree program of the student is terminated.

Project Option

For the project option, the student is required to complete a research, design, or special topic project under the guidance of the chair of the advisory committee. This project is not as extensive as the thesis study and need not be original research. Three hours of credit is allowed for the project. In order to provide adequate time to accomplish the work, the student should select and begin working on the project during the first semester of their MS study. The project should require synthesis of information from several sources and/or a comprehensive design of an engineered faculty. For design projects, cooperation with professional engineers is encouraged to solicit actual design problems and information.

A written project report is required, but not for archival purposes in the Harold B. Lee Library, as occurs with a thesis. The written text will be reviewed and corrections made by the advisory committee. The student must allow time for revising his or her report as part of the project. The project is to be presented orally to students and faculty, usually as part of a graduate seminar. The project report will be graded by the student's advisory committee and must be submitted to the committee before the oral report is given. Submittal should occur several weeks before the deadline date. After the student has made final

corrections to the project report, a completed Signature Page, along with a pdf copy of the project, should be submitted to the department. A spiral bound copy should be submitted to the committee chair.

Minimum Registration Requirements

- To maintain graduate status and registration eligibility, new students must register for a minimum of 2.0 credit hours in the first semester or term for which they have been admitted.
- International students must register for and complete at least nine credit hours each fall and winter semester while at BYU.
- Students must register for and complete at least 6 credit hours per academic year to be eligible to register the following year and to maintain an active graduate student status.
- Students must register for at least two hours of credit during any semester (including two hours during spring/summer term) in which they use university facilities, consult with faculty, thesis defense, graduate, or work as a TA/RA.
- Students must pay graduate tuition for two full time semesters.
- The master's degree must be completed within five years of admission to the master's program at BYU.

Time Limit

The Civil & Environmental Engineering program is designed to be completed in 2 years; however, the student has up to 5 years to complete the program. (For example, if they start their graduate program in Fall 2015, they must complete their program by end of Fall 2020.) If a student has not completed the necessary degree requirements by this time, their program will be terminated.

Apply for graduation

Application for graduation can be accessed online through MyBYU > School > Apply for Graduation.

In order to apply students must have:

- a) Completed all course work or are currently taking remaining classes
- b) submitted a current ecclesiastical endorsement
- c) received verbal permission from the committee chair.

After applying for graduation, students should meet with the graduate advisor to discuss steps of completion toward graduation.

Defend and finalize thesis/project

Students must have approval of their graduate committee and the graduate coordinator in order to schedule the oral examination (defense), and obtain their signatures on the Departmental Scheduling of Final Oral Examination (ADV Form 8c). Committee member signatures certify that the student and the thesis are ready for the oral exam; therefore, it is essential that students submit their thesis to the committee several days before trying to obtain approval signatures.

Scheduling the defense, by submitting ADV Form 8c to the graduate secretary, must be done at least two weeks in advance of the exam date; however, students should schedule as early as possible to avoid last-minute complications. Care should be given in establishing the date, and time of the defense with all members of the committee. The graduate secretary will determine the place. This requires advance planning. Once scheduled it cannot be changed.

The Graduate Advisor will perform a preliminary review of the thesis format at the time of scheduling, requiring a hard copy of the thesis. Defending between semesters/terms is not permitted. For the exact deadline see Graduation Deadlines (ADV Form 8), from the Office of Graduate Studies.

Members of the Graduate Committee will serve as the examining committee. Spouses, parents, and friends are welcome to attend the oral examination; small children should not attend. Refreshments are neither required nor expected.

The examination format is as follows:

- The student's research is presented.
- The general audience is excused.
- Questions are asked by committee members.
- The decision (pass, pass with qualifications, recess or fail) is announced.

The presentation should last approximately 30 minutes. Consideration should be given to the following expectations:

1. A well thought-out, well-organized, cogent summary of the student's work including:
 - An explanation of how the current work relates to the student's discipline
 - The rationale behind the project in the context of available literature
 - If the student has been part of a research team or lab, an explanation of the student's intellectual contribution to the project and a description of how the student's work fits into the broader research conducted in this lab
 - The questions or issues the current work was designed to address
 - The way the design, method, and/or approach addressed those questions
 - The analysis of data gathered
 - The results, outcomes, final products, or performance
2. An interpretation of results, findings, contributions, insights, and conclusions and their significance. What does this work add to existing knowledge?
3. A discussion of implications the work suggests for future research or creative endeavor.
4. A discussion of any applied or clinical implications suggested by the work.
5. Thoughtful, well-founded responses to all questions the committee members might ask.

It is likely that the graduate committee will request revisions of the thesis. Students should discuss the revisions with committee members, and do their best to comply with their requests. After the student is finished making revisions, the committee chair will need to sign the Report of Committee Action for Final Oral Examination (ADV Form 10), indicating that all qualifications requested by the committee have been approved.

Note: Students should allow at least a full week following their defense to finish all remaining requirements before leaving campus.

Submit revised thesis to graduate committee and graduate advisor. After revisions to the thesis have been approved, students should give the thesis to the graduate advisor. A color copy is not necessary; however, it should be printed on both sides. After a review of formatting, the student will obtain department approval from the graduate coordinator on the form, Approval for Submission of Dissertation, Thesis, or Selected Project (ADV Form 8d).

Submit thesis to college office. Students must then submit their thesis and Approval of Submission of Dissertation, Thesis, or Selected Project (Form 8d) to the college administrative assistant in 270 CB. She will check the format and obtain the dean's approval signature. The college office will not be able to process these documents immediately; therefore, students must plan well in advance in order to meet specified deadlines. See Graduation Deadlines (ADV Form 8).

Submit thesis for binding. After receiving college approval, students are required to order two bound copies of the thesis, one for their committee chair and one for the CE department. The designated colors are blue cover with gold lettering. Students may also order additional copies for their own use. All copies are ordered through BYU Print and Mail Services online at: www.printandmail.byu.edu/theses. Students are responsible for payment of all copies.

Submit ETD. Students are required to submit an electronic version of their thesis (ETD) to the library. Current instructions for preparing and submitting an ETD are available at <http://etd.byu.edu/>. The ETD will be reviewed by the department graduate advisor and the college administrative assistant.

Note: All blank pages must be removed from the PDF of the thesis prior to submitting the ETD. Renumber pages as required.

Submit final documentation to the Office of Graduate Studies. After final ETD approval, students must submit a copy of the title page of their thesis and ADV Form 8d to the Office of Graduate Studies in the FPH.

Submit Exit Survey – Students are given a survey to complete. Comments are used to further strengthen the graduate program. These comments are kept confidential.

Walk for Commencement and Convocation – Students wishing to walk during commencement and convocation can order their cap and gown online. Students are permitted to walk early as long as they have had their oral examination before the graduation ceremonies. Students must submit the Permission to Walk Early form to the Advisement Center in 242 CB. The form can be obtained from the graduate advisor.

Policy for Dismissal and Grievances

A student's graduate status may be terminated for the following reasons:

- Failure to satisfactorily complete the conditions of acceptance
- Failure to fulfill the university's minimum registration requirement
- A request to withdraw
- Consecutive and unsatisfactory ratings or two less than satisfactory ratings are received in succession.

- Failure to make what the department or the university deems to be satisfactory progress towards a graduate degree
- Failure on the final oral examination (defense of thesis)
- Violation of the university's standards of conduct or Honor Code
- Failure to comply with the time limit (five years for a master's degree)

A student dismissed or facing dismissal may request review of termination or impending termination. Such requests should be submitted in writing to the department chair. A student who wishes further consideration may request review by the college dean. Ultimately, a final request for review may be made to the Dean of Graduate Studies who may appoint a committee to review the matter. All requests for review of termination must be initiated within one year of the semester in which the termination takes place.

Graduation Checklist

- Choose a committee chair during the application process
- Submit program of study during 1st semester of graduate work
- Submit prospectus by end of 1st semester
- Complete all provisions during first year (if admitted provisionally)
- Fulfill seminar attendance requirement during first year
- Complete all courses on program of study prior to applying for graduation
- Apply for graduation in semester of defense by university deadline
- Meet with graduate advisor after applying for graduation
- Submit best draft of thesis to committee chair at least one month prior to defense
- Submit defense draft to all committee members at least 2 weeks prior to scheduling defense
- Schedule oral exam at least two weeks prior to exam and by university deadline
- Review thesis format with graduate advisor prior to oral exam
- Pass oral exam
- Submit Exit Survey
- Complete Exit Interview (optional)
- Obtain department and college approval of thesis by university deadlines
- Submit EDT
- Submit title page of thesis and ADV Form 8d to the Office of Graduate Studies by university deadline
- Submit PDF of thesis to Print and Services
- Submit request to secure thesis, ADV Form 8e, to the Graduate Studies Office (if applicable)
- Update address on My BYU for receipt of diploma
- Convocation and Luncheon

Masters Emphases

The following pages list the emphasis options and courses associated with those emphases.

**MS in Civil Engineering: Structures Emphasis
Course Offerings (updated September 2015)**

Course No	Course Title	Credit Hours	Semester Offered
CEEn-MeEn 507	Linear Finite Element Methods	3	F
CEEn 508-MeEn 535	Structural Vibrations	3	F
CEEn-MeEn 504	Computer Structural Analysis and Optimization	3	F
CEEn-MeEn 523	Aircraft Structures	3	W
CEEn 525	Bridge Structures	3	F
CEEn 528	Masonry Design	3	W even years
CEEn-MeEn 602	Composite Structures	3	F
CEEn-MeEn 604	Continuum and Solid Mechanics	3	W
CEEn-MeEn 607	Nonlinear Finite Element Methods	3	W
CEEn 521	Seismic Resistant Steel Buildings	3	F
CEEn 529	Timber Design	3	W

For further information on the Structures Engineering emphasis within the Department contact:

Mega Structures & Cities:	Dr. Balling	422-2648	balling@byu.edu	Rm: 368 G
Concrete & Masonry:	Dr. Fonseca	422-6329	fonseca@byu.edu	Rm: 368 R
Composites & Aircraft:	Dr. Jensen	422-2094	david@byu.edu	Rm: 368 E
Steel & Seismic:	Dr. Richards	422-6333	prichards@et.byu.edu	Rm: 368 N
Structural Analysis & Finite Element Methods:	Dr. Scott	422-6324	michael.scott@gmail.com	Rm: 368 S

**MS in Civil Engineering: Geotechnical Emphasis
Course Offerings (updated September 2015)**

Course No	Course Title	Credit Hours	Semester Offered
CEEn 540	Geo-Environmental Engineering	3	F
CEEn 442	Foundation Engineering	3	F
CEEn 544	Seepage and Slope Stability Analysis	3	W
CEEn 545	Geotechnical Analysis of Earthquake Phenomena	3	W
CEEn 547	Groundwater Modeling	3	F
CEEn 563	Pavement Design	3	F
CEEn 641	Advanced Soil Mechanics	3	F even years & W odd years
CEEn 644	Advanced Foundation Engineering	3	F odd years
CEEn 645	Field and Laboratory Testing of Soils	3	To be determined
CEEn 648	Groundwater Contaminant Transport	3	W

Geotechnical Engineering is strongly aligned with a number of related fields including, among others, Structural Engineering, Environmental Engineering, Water Resource Engineering, and Geology. As a result, supplemental courses selected from these disciplines within the department and other disciplines outside the department may be appropriate for individual students. A course list for graduate study will depend on an individual student's career goals, research objectives, and individual interests. Therefore, we strongly recommend that graduate students interested in Geotechnical Engineering consult with a geotechnical faculty member as they develop a final study list.

For further information on the Geotechnical Engineering emphasis within the Department contact:

Dr. Rollins	422-6334	rollinsk@byu.edu	Rm: 368 K
Dr. Jones	422-7569	njones@byu.edu	Rm: 242 L
Dr. Franke	422-1349	kfranke@et.byu.edu	Rm: 368 P

**MS in Civil Engineering: Water Resources/Environmental Emphasis
Course Offerings (updated September 2015)**

Course No	Course Title	Credit Hours	Semester Offered
CEEn 414	Engineering Applications of GIS	3	F
CEEn 531	Principles of Hydrologic Modeling	3	F
CEEn 535	Hydraulic Design of Channels and Control Structures	3	W
CEEn 547	Seepage and Groundwater Modeling	3	F
CEEn 555	Environmental Chemistry	3	F
CEEn 648	Groundwater Contaminant	3	W
CEEn 551	Water Treatment Facilities Design	3	F
CEEn 651	Wastewater Treatment Facilities Design	3	W
CEEn 654	Industrial Waste Treatment	3	Sp
CEEn 635	Sediment Transport & River Restoration	3	Sp
CEEn 439	Water Resources Study Abroad	3	W/Sp
STAT 511	Statistical Methods for Research 1	3	F
CEEn 514	Geospatial Software Development	3	W
CEEn 534	Hydroinformatics	3	F

For further information on the Water Resources/Environmental Engineering emphasis within the Department contact:

Environmental:	Dr. Borup	422-6311	borupb@byu.edu	Rm: 242 G
Environmental:	Dr. Williams	422-7810	pwilliams@byu.edu	Rm: 242 F
Water Resources:	Dr. Hotchkiss	422-6234	rhh@byu.edu	Rm: 368 C
Water Resources:	Dr. Miller	422-6331	wood_miller@byu.edu	Rm: 368 L
Water Resources:	Dr. Nelson	422-7632	jimn@byu.edu	Rm: 242 K
Hydrology:	Dr. Ames	422-3620	dan.ames@byu.edu	Rm: 242 J

**MS in Civil Engineering: Transportation Emphasis
Course Offerings (updated September 2015)**

I. Core Classes (discuss options with your faculty advisor)

Course No.	Course Title	Credit Hours	Semester Offered	Transportation Emphasis		
				Traffic	Planning	Pavement
STAT 511	Statistical Methods for Research	3	F/W	●	●	●
CEEn 505	Concrete Materials	3	W	○	○	●
CEEn 562	Traffic Engineering	3	F	●	●	○
CEEn 563	Pavement Design	3	F	○	○	●
CEEn 565	Urban Transportation Planning	3	F	● *	●	○
CEEn 662**	Traffic Simulation & Analysis	3	W	●	●	○
CEEn 664**	Transportation Site Planning	3	W	● *	●	○
CEEn 691R	Seminar	1	F/W	●	●	●
CEEn 698R/699R	Project (3 cr.) or Thesis (6 cr.)	3 or 6	F/W/Sp/Su	●	●	●
Required Core Sub Total:				16–22	19–22	13–16
● Required				○ Recommended		

* Either CEEEn 565 or CEEEn 664 or both depending on student preference and needs

** CEEEn 562 is a prerequisite

II. For those desiring to pursue the “soft” side of transportation engineering (i.e., traffic or planning), select courses beyond the required core classes (9–15 credit hours) from the “recommended” core classes or from the following list (Note: Students are allowed a maximum 6 credits at the 400 level in their graduate program). Be sure to check the latest Graduate Catalog to confirm semester offerings.

1.	CE En	414	Engineering Applications of GIS	3 cr.	F
2.	CE En	461	Geometric Design of Highways	3 cr.	W
3.	CE En	514	Geoinformatics (advanced GIS)	3 cr.	W
4.	CE En	594R	Pavement Management	3 cr.	on demand
5.	CE En	594R	Asphalt Mixture Design/Analysis	3 cr.	on demand
6.	CE En	594R	Technical Writing for Publication	3 cr.	on demand
7.	CE En	694R	Soil Physics	3 cr.	on demand
8.	Geography	410	Urban Planning Methods	3 cr.	W
9.	Geography	424	Urban Transportation Planning	3 cr.	W
10.	Geography	510	Professional Planning Studio	3 cr.	F
11.	Statistics	512	Statistical Methods for Research 2	3 cr.	W
12.	Public Mgt.	675	Local Gov't I: Form of Gov't and Service Delivery	3 cr.	W
13.	Public Mgt.	676	Local Gov't II: Planning, Land Use, and Growth	3 cr.	F
14.	Public Mgt.	628	Public Program Evaluation	3 cr.	F

For more detailed Public Management course information, contact Catherine Cooper, 762 TNRB (2-9173).

For more detailed Geography course information, contact Dr. Michael J. Clay, 690 SKWT (2-6359).

III. For those desiring to pursue the “hard” side of transportation (i.e., pavements and materials), select courses beyond the required core classes (15–18 credit hours) from the “recommended” core classes, from the CE En 594R and other course offerings within the CEEEn Department, from classes offered by the Geology Department, or from other courses relevant to your course of study as agreed upon by your graduate committee.

For further information on the Transportation Engineering emphasis within the Department, contact:

Traffic:	Dr. Saito	801-422-6326	msaito@byu.edu	368 J Clyde Bldg.
Planning:	Dr. Schultz	801-422-6332	gschultz@byu.edu	368 S Clyde Bldg.
Pavement:	Dr. Guthrie	801-422-3864	guthrie@byu.edu	368 D Clyde Bldg.

Graduate Course Descriptions

<http://graduatestudies.byu.edu/content/civil-and-environmental-engineering-courses>