Graduate Student Handbook

2013–2014

Civil Engineering M.S./Ph.D
Geoengineering M.S.
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Introduction

The Department of Civil Engineering is dedicated to educating graduate students in the diverse disciplines represented within its degree programs of civil engineering and geoen ineering. Graduate study enables a student to develop in-depth knowledge in one or more specialized fields, to reach the frontiers of current knowledge, and to expand those frontiers by doing original research. More than that, graduate study should teach students how to work independently and think critically about one’s own work and that of others. The faculty in this department helps graduate students reach these goals by offering challenging courses, organizing research seminars, encouraging informal discussions, and providing guidance during all stages of a student’s research and coursework.

Information in this handbook applies to all students admitted to the graduate degree programs of the Department of Civil Engineering (i.e. civil engineering and geoen ineering). This handbook describes requirements graduate students must satisfy to complete a degree and the facilities available in the department for graduate studies. Any errors, ambiguities, inconsistencies or omissions in this document should be brought to the attention of the Director of Graduate Studies so future editions may be improved. Regulations and programs change over time, and students should consult the latest edition of this handbook. In addition, regulations in the Graduate School Catalog (http://www.catalogs.umn.edu/index.html) supersede policies described in this document, which is essentially a record of departmental practice. Students should read the Graduate School Catalog regarding the M.CE, M.GeoE, M.S., and Ph.D. degree programs.

The Department of Civil Engineering at the University of Minnesota offers specialization in the areas listed below. However, graduate students can, and often do, conduct research in topics that span more than one of these areas and/or involve other departments in CSE or other colleges at the University of Minnesota. Current thrust areas for research in the department include:

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*The information in this handbook and other University catalogs, publications, or announcements is subject to change without notice. University offices can provide current information about possible changes.*
2013-2014 Academic Calendar

Fall Semester 2013

September
2 University closed for Labor Day holiday
3 Fall semester classes begin Tuesday
10 Last day for students enrolled in fall semester to add a course without instructor approval
16 Last day for students enrolled in fall semester to cancel a class and not receive a “W” on transcript

October
28 Last day to cancel full semester classes without college approval

November
12 Spring 2014 registration begins for admitted degree-seeking students
28 University closed
29 University closed

December
6 Spring 2014 registration begins for non-degree and visiting students
11 Last day of classes for fall semester
12 Study day
13-14 Final examinations
16-19 Final examinations
23-25 University closed

Spring Semester 2014

January
1-20 University closed
21 Classes begin for spring semester
28 Last day for students enrolled in full semester to add a course without instructor approval

February
3 Last day for students enrolled in fall semester to cancel a class and not receive a “W” on transcript

March
14 Last day to cancel a full semester class without college approval
17-23 Spring break

April
8 May session and summer term registration begins for admitted degree-seeking students
10 Fall 2014 registration begins for admitted degree-seeking students
15 May session and summer term registration begins for non-degree and visiting students

Spring Semester 2014 (continued)/May Session 2014

May
2 Fall 2014 registration begins for non-degree and visiting students
9 Last day of classes for spring semester

Updated September 30, 2013
12–17 Final examinations
26 University closed

**May Session 2014 (continued)/Summer Term 2014**

**June**
13 Last day of May session
16 First day of summer term

**July**
4 University closed
11 Last day of first 4-week summer term
14 First day of second 4-week summer term

**August**
8 Last day of 8-week and second 4-week summer term

For more detailed calendar, please see [http://onestop.umn.edu/calendars/](http://onestop.umn.edu/calendars/).
# Department Directory

**Department of Civil Engineering**  
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Fax: 612-626-7750  
www.ce.umn.edu

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<tr>
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<td>5-9060</td>
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<td>Labuz, Joseph</td>
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<td>Voller, Vaughan</td>
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<td>Accounting</td>
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<td>Rampi-Lambertz, Mia</td>
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<td>Machine Shop</td>
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<td>Ralston, Tiffany</td>
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## Graduate Studies Committee:

- Environmental Engineering 4-6028 146 LaPara, Timothy
- Geomechanics Engineering 5-0866 154 Gonella, Stefano
- Structural Engineering 5-0752 236 Le, Jialiang
- Transportation Engineering 5-6347 136 Liu, Henry
- Water Resources Engineering 6-7843 161/SAFL 382 Guala, Michele
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<tr>
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Mission Statement and Program Educational Objectives

The mission of the Department of Civil Engineering is *Engineering for the Benefit of Society*. The Department of Civil Engineering creates and disseminates knowledge and technologies applied to the built and natural environments. We develop innovative solutions for the design, construction and operation of sustainable infrastructure systems that ensure the safety, health, and well-being of society. Knowledge is disseminated via classroom and outreach instruction, by mentoring and advising students, by presentations at professional meetings and by articles, books and other written documents.

The program educational objectives are such that the graduates of the civil engineering and geoengineering program will:

- practice technical proficiency and adaptability, and participate in life-long learning to meet the challenges facing the profession in civil engineering industries, government agencies, academia, or other careers;

- exhibit strong communication, interpersonal, and management skills as leaders and team members in their profession;

- realize their role as ethical professionals that protect and sustain human health, welfare, and the environment.
Definitions and Descriptions

Academic Year: The nine month academic year has two terms: fall and spring semesters (September to May). The University also has a summer session. The Department of Civil Engineering normally does not offer graduate lectures or formal laboratory courses during summer. However, graduate students may find courses in other departments and colleges to take in the summer. Please speak with your advisor on summer courses.

Advanced Doctoral Student Status: Students who have finished all coursework listed on their Graduate Degree Plan, have passed the prelim oral and written exams, and have met all thesis credit requirements are eligible for Advanced Status by filling out the “Application for 8444 Advanced Doctoral Status.” The completed form, including adviser’s signature, should be turned in to the department to forward to the Graduate School after DGS approval.

Advanced Master’s Student Status: Students who have finished all coursework listed on their Graduate Degree Plan and have met all thesis credit requirements are eligible for Advanced Status by filling out the “Application for 8333 Advanced Master’s Status.” The completed application, including the adviser’s signature, should be turned in to the department to forward to the Graduate School after DGS approval.

Adviser: The faculty member that guides the student in selection of coursework, completion of research, or both, that leads to a graduate degree. The adviser must be a member of the graduate faculty in the program the student is majoring in.

Director of Graduate Studies (DGS): The DGS is the faculty member responsible for operation of the departmental graduate programs in civil engineering and geological engineering and chairs the departmental Graduate Studies Committee. The DGS is appointed by the Civil Engineering Department Head and approved by the CSE Dean. The DGS is not an officer of the Graduate School.

Doctoral Candidate: This refers to a student who has passed the preliminary written and oral exams for the Ph.D. degree. To minimize confusion, students admitted to a Ph.D. program are referred to in this document as “students in the Ph.D. program,” whether or not they have become Doctoral Candidates.

Full-time and Part-time Graduate Students: Students registered for six or more course and/or thesis credits are full-time students. Students registered for fewer than six course and/or thesis credits are part-time students. Tuition for full-time students is assessed for 6-14 credits. Tuition is on a per credit basis for 1-5 credits or greater than 14 credits. For exceptions to these guidelines, see Advanced Student Status definitions above.

Graduate Assistants: Students who hold appointments (i.e. receive monetary stipends) that require service in return for financial support. Titles and compensation vary. Examples are Research Assistant (RA) and Teaching Assistant (TA).

Graduate Fellows: Students who hold appointments that do not require any services. Titles and stipends of graduate fellows vary. Primary examples are CSE Fellows, Sommerfeld Fellows, and CivE Fellows. It is expected that graduate fellows will carry out research towards the
completion of a Plan A Master’s thesis or a Ph.D. dissertation.

**Graduate Studies Committee (GSC):** The GSC is a committee consisting of five graduate faculty members in Civil Engineering representing the five core areas of the department (Environmental, Geological, Structural, Transportation, and Water Resources Engineering) that is responsible for administration and oversight of the graduate programs in the department. The GSC makes decisions regarding graduate admissions, fellowship awards, and travel grants. In addition, the GSC is responsible for developing/reviewing and implementing all programmatic changes including: (1) addition, removal, or alteration of graduate degree programs and program requirements and (2) review of new or significantly altered graduate courses. The members of the GSC are appointed by the Civil Engineering Department Head. The DGS serves as the (non-voting) chairperson of the committee.

**International Student:** Any student who is not a citizen or permanent resident of the United States. International students usually hold a passport bearing a student entry visa to the United States.

**Resident:** Residents of Minnesota pay tuition at the in-state tuition rate. Any Graduate Assistant who has at least a 25%-time appointment as a graduate assistant or graduate fellow, regardless of residency status, also qualifies for the in-state rate. If you have questions about your residency status, you should consult the Resident Classification and Reciprocity Office, 240 Williamson Hall, 612-625-6330. For residents of North Dakota, South Dakota, Wisconsin, or Manitoba who qualify for reciprocity privileges, tuition rates are lower than for nonresidents and are, in some cases, comparable to resident rates.

**Thesis Research:** This includes research to satisfy requirements for a M.S. Plan A degree or the Ph.D. degree.
Welcome to the Department of Civil Engineering/Geoengineering at the University of Minnesota. We are delighted that you have joined the CE/GeoE family, and we hope that you take advantage of the many opportunities here.

**Statement of General Purpose and Policies**
This handbook contains essential information for all graduate students in the Department of Civil/Geo Engineering. All students are responsible for understanding and following the information and policies contained in this document.

**The Start of Graduate Study**
Most graduate students find that the coursework of the first semester is demanding. You will not be alone if you feel a bit overwhelmed. The faculty will assume you are familiar with material covered in your undergraduate CE/GeoE courses as well as mathematics, physics, and chemistry.

If you encounter problems, or are concerned that you are having problems, you should consult with your advisor, the representative to the GSC for your area, or the DGS. It is important to remember that they are here to help you make it through graduate school. The DGS will monitor your academic progress. Like students before you, you will find that Tiffany Ralston is an invaluable source of information.
Graduate Degree Program Requirements

General Requirements
The requirements for the graduate degrees in civil engineering and in geoengineering are listed in the Graduate School Catalog. After you have read the pertinent sections in that Catalog, the following text will provide you with additional information concerning the various degree programs and how to satisfy all degree requirements.

The Department of Civil Engineering offers several forms of the Master's degree in civil engineering and geoengineering and also a PhD in civil engineering. In all degree programs, course work must include credits in the major field and credits outside the major field. These course credits can be taken in one particular field to obtain a minor or in several related fields. If a minor is declared, the student must obtain approval and select courses in consultation with the DGS of the minor field, as well as with his/her CivE faculty adviser. The “related fields” arrangement is more flexible. Courses are chosen from other departments in consultation only with the CivE faculty adviser. Courses offered in other departments may also be included in the major program if approved for that purpose by the faculty adviser and the DGS.

To receive credit toward graduate degree requirements, courses must be at the 4XXX level or higher and NOT included as a required course for undergraduate majors in Civil Engineering. For example, CE 4502 Water and Wastewater Treatment is a required course for undergraduate CE majors and cannot be taken for graduate credit. Graduate students are usually permitted and may even be required to take undergraduate courses (4XXX or lower) to fulfill gaps in their academic background. The grades from such courses will count toward the overall graduate grade point average (GPA), but should not be included on the graduate degree plan. The upper limit for acceptable 4XXX courses included on the Graduate Degree Plan is two.

Each research area in the department has a 1-credit seminar course each semester in which primarily graduate students present their research. M.S./M.C.E./M.GeoE. students can count up to 1 credit and Ph.D. students up to 2 credits of seminar toward their coursework requirements. Although there is no graduate school rule about the number of incomplete courses, the recommended departmental limit is 2.

Finally, the Graduate School limits the number S/N (pass/fail) credits to one third of the credit total. Consult with your adviser and the DGS concerning coursework questions.

A student may transfer graduate course credits into his/her degree program from other universities, non-degree seeking registrations at the University of Minnesota, and credits from other University of Minnesota units that were obtained in pursuit of graduate-level degrees that were not awarded. Credits appearing on a student's undergraduate transcript cannot be transferred into the graduate program, even if those credits were taken in excess of the B.S. degree requirements. For further details, refer to the Graduate School Catalog. The Graduate School limits transfer of credits to 40% of the total course credits in master's programs.

For the Ph.D. program, there is no official limit on the number of credits transferred from other graduate programs at recognized institutions or from a Master's program at the University of
Minnesota. There are, however, restrictions on the transfer of credits from non-degree seeking registrations at the University of Minnesota; for details, refer to the Graduate School Catalog.

The transfer of graduate credits is accomplished by listing the courses on the Graduate Degree Plan, which must be approved and signed by the adviser(s) and DGS. The department does not grant graduate credit by special examination.

Students with undergraduate preparation in disciplines other than civil engineering are frequently admitted for graduate study in the department. If you are in this category, most likely you will be required to take additional course work at the undergraduate level to compensate for specific deficiencies in your undergraduate preparation. These courses may not be included in your degree plan but will appear on your transcript and are included in the calculation of your GPA. Initially, the DGS and admissions committee determine the additional courses that a student is required to take at the time a student is recommended for admission to the graduate program. You should have been informed of these requirements in a separate letter from the graduate studies representative in your area, the DGS, or your adviser. Nevertheless, additional courses may be added at a later time if it becomes evident that a candidate has a weakness in a relevant topic area.

**Graduate Degree Plan and Examining Committees**

The Graduate Degree Plan, which describes the course work and other details of your degree program, must be completed, reviewed/signed by your adviser(s) and the DGS, and submitted to the Graduate School by the end of your second semester of graduate study. See Appendix C (Graduate Degree Plan). The DGS recommends that you complete the form as soon as possible after beginning graduate study to avoid potential problems concerning course selection and meeting degree requirements. The Graduate Degree Plan can be obtained from the graduate Secretary of Graduate Studies in CivE 122 or online at: [http://policy.umn.edu/forms/otr/otr198.pdf](http://policy.umn.edu/forms/otr/otr198.pdf). You should fill out the form as completely as possible in consultation with your adviser, who must approve and sign it. The completed form should be given to the Secretary of Graduate Studies who will then provide it to the DGS for approval and send it to the Graduate School. Final approval of the Graduate Degree Plan is done by the Graduate School. After approval by the Graduate School, this becomes your official program, and all items listed on the degree plan must be fulfilled before the degree will be awarded. A revised degree plan may be submitted at a later date if a number of changes are required, but only if approved by the adviser(s) and DGS. If only minor changes are necessary, a petition form should be used. See Appendix D (Graduate School Petition). In addition, petition forms can be obtained in CivE 122 or online at [http://policy.umn.edu/forms/otr/otr190.pdf](http://policy.umn.edu/forms/otr/otr190.pdf).

The Graduate Degree Plan (GDP) milestone must be on your student record before you are eligible to access the committee workflow. This means the GDP must be approved by the college and/or program in addition to central data entry completed by Graduate Student Services & Progress (GSSP) and the Office of the Registrar (OTR).

**Examining Committee**

The graduate examining committee consists of the adviser(s) and other faculty from both in and out of the department. The committee serves two purposes: 1) to provide guidance to the student...
during the graduate program and 2) to evaluate the quality of the work performed by the student by reading/approving the thesis and by questioning the student during a final oral exam (i.e. thesis defense). A student is allowed only one committee request in the workflow at a time.

The M.S. examining committee for the final oral exam should be entered after the degree plan is submitted and approved. Examining committees are established formally by the Dean of the Graduate School, but the DGS recommends a committee to the Dean. Students submit committee members for review via the following website: http://www.grad.umn.edu/students/examiningcommitteesnew/index.html. Students can also use this website to update members of the examining committee. Students will receive a confirmation email once their committee has been approved.

The student and his/her adviser suggest committee members deemed appropriate based on the topic of research for the student's thesis. Examining committees for master's degrees must have at least three members: two from the major field (including the student's adviser) and one from the minor or related programs outside of the department. Committee members must be graduate faculty within the University, with the exception of external committee members (see next paragraph). Students should take at least one course from each of their committee members, but there is no requirement that they must do so. Prior to submitting the names of the suggested committee members to the DGS, students must contact the faculty they intend to have on their committee and determine their willingness to serve.

Occasionally there is not sufficient expertise among the faculty to examine a student with a very narrow or specific research focus. In these instances, the college may consider a request for an expert outside the University of Minnesota to serve as a member of the student's examining committee. Students interested in including an external committee member on his or her examining committee should discuss the possibility with his or her adviser and the DGS.

The Ph.D. examining committee is also formed right after the degree plan is submitted and approved, and serves as the committee for the preliminary oral exam and the final exam (thesis defense). Ph.D. committees have at least four members: three from the student's major field (one not in the immediate research area) and one from the minor or supporting program (outside the Department of Civil Engineering).

Unlike the M.S. committee, where the adviser serves as the chair, a doctoral student’s adviser cannot serve as chair on the Ph.D. examining committee. Students must assign committee members at least one month prior to the exam. Students assign their examining committee members by going to the Graduate School website http://www.grad.umn.edu/students/examiningcommitteesnew/index.html. If you want to update your examining committee members you will also need to change it at this website. For further details on committee selection, see the above paragraph dealing with master's degree committees.
Master of Science (M.S.)

The M.S. degree is offered with three plan options: Plan A emphasizes research and preparation of a thesis; Plan B emphasizes a project; and Plan C is a coursework only option.

**M.S. Plan A**
The M.S. Plan A degree is the research option and requires completion of a master’s thesis. The Plan A requires a minimum of 30 credits, which includes at least 20 course credits plus 10 credits of thesis research. If a minor is desired, a minimum of 6 credits must be taken in a single field outside the major field. (Minor requirements in some departments exceed this minimum.) The Graduate School and the department interpret “outside the major” as “outside the department”; for example, it generally is not possible for a civil engineering major to minor in geological engineering or vice versa. Any student who wishes to pursue an internal minor should discuss this with the DGS before taking the proposed minor courses. A thesis must be written on a research project carried out by the student in consultation with a faculty adviser. The topic for the Plan A research project is normally derived from a student’s duties as a graduate research assistant and hence, originates from a funded proposal idea developed by the graduate adviser. Students can also propose an independently conceived research idea and then develop and refine the research plan in consultation with the graduate adviser. The M.S. thesis, while not of the length or complexity of a Ph.D. thesis, must represent an original contribution to the field. M.S. thesis research typically results in one or more peer-reviewed journal publications. Two unbound copies of the thesis must be presented to the Graduate School, and one bound copy to the adviser. Some research areas may require an additional (i.e. fourth) copy. The adviser may also request an electronic version of the thesis. The M.S. Plan A degree is typically completed in 21 to 24 months of full-time study.

**M.S. Plan B**
The M.S. Plan B degree is the project option and is typically pursued by students intending to continue on for a Ph.D. degree. The Plan B option requires a minimum of 30 credits, which includes at least 27 course credits. The course work is selected in consultation with a faculty adviser. In addition, the student must demonstrate ability to work independently and present the results of such work effectively by completing one or more project papers. The number of Plan B projects, not to exceed three, is determined in consultation with the faculty adviser. A wide variety of studies, including computer modeling projects, literature reviews, and the analysis of applied engineering problems have been submitted as Plan B projects. Plan B project reports should be written in a similar format as the M.S. Plan A thesis, but are not required to be archived in the University Library. Students may, if they desire, gift one to the Library to be catalogued in MNCAT as is done with full dissertations.

Collectively, the Plan B papers should represent at least 120 hours (three nominal workweeks) of effort. This does not include the time associated with assistanship duties (if the Plan B papers are based on work done as a research assistant), nor does it include time and effort associated with coursework (if the Plan B papers are an extension of papers written for a course). A maximum of 3 credits (toward the minimum 30 credits in Plan B program) may be taken as CE
8094 (Civil Engineering Research) for the Plan B project(s). The remaining 27 credits must be for regularly scheduled course work.

**M.S. Plan C**

The M.S. Plan C degree is the coursework-only option and is recommended for working professionals who wish to pursue a Master’s degree on a part-time basis but can also be used by students intending to continue on for a Ph.D. degree. The Plan C requires completion of a minimum of 30 course credits. At least 2 courses at the 8XXX level must be completed. The student must complete a minimum of 100 hours of project work in increments of 40 hours per project or greater. The projects are to be performed as part of specific courses in civil engineering and geoengineering that comply with the M.S. Plan C project requirements. See Appendix A (Plan C Requirement List). In addition, the student must deliver at least one oral presentation of no less than 10 minutes in length. The oral presentation typically concerns one or more of the completed projects and can be completed in selected courses or seminars. Details concerning specific course requirements can be obtained from the graduate studies representative for your area of interest or your adviser. Students enrolled in the M.S. Plan C option must also complete two hours of Ethics training before they graduate.

**Peace Corps Masters International (MI) program**

The MI program is a Plan C MS degree in which the student completes one year of study and coursework in the Department of Civil Engineering at the University of Minnesota (minimum of 25 course credits) and then 2 years of service in the Peace Corps. This program is open to students interested in Environmental Engineering or Water Resources Engineering only.

The required coursework prior to Peace Corps service (25 credits) will be competed in no more than 12 months of full-time study at the University of Minnesota. Then, the students’ final five credits will be “Experiential Education” credits (“fieldwork” credits), whereby students will work closely with a faculty member to link their Peace Corps and academic experiences. Students will be expected to earn Experiential Education credits at a rate of one credit per semester while in the Peace Corps. Including the summer between years one and two, students will complete five credits during their two years in the Peace Corps. To earn Experiential Education credits, student must complete a series of fieldwork-based research reports (one report per semester). These reports will be evaluated individually by the faculty member and will reflect the theoretical and practical underpinnings of the particular project. Reports will discuss technical challenges that the student has experienced and his or her engineering approaches to solve these problems, as well as social and cultural challenges of their work and reflections on approaches for addressing those aspects of their work. Students who terminate their Peace Corps experience prior to completing experiential requirements will be required to return to Minnesota to complete experiential education requirements prior to graduating.

Courses for the 25 credits prior to Peace Corps service are as follows. Students would take a 0.5-credit ethics course, plus 12 credits per semester (typically, four courses of three or four credits each). Among the 25 credits, at least six credits (two courses) must be electives from outside the department. One elective would be in a public health-related area (for example, from the School of Public Health), and one elective would be in development studies (for example, from the Humphrey Institute of Public Affairs, the Geography Department, or the Applied Economics
Department). Courses within the department would include Civil Engineering in Developing Countries (CE 5180) and Design for Sustainable Development: Innovate (CE 5571). With this arrangement, students would have, in each of two semesters: one course from outside the department, one course in engineering related to developing countries, and two technical courses from their program (Environmental Engineering or Water Resources Engineering).

**BCE/MS Program**
Students may apply for the BCE/MS program within their last two semesters of undergraduate studies. The benefit of this program is related to the tuition used for part of your MS degree. Once admitted you will be able to register for graduate level courses at the cost of undergraduate tuition. As all requirements for both degrees must be completed in their entirety, graduate courses may not be used as electives for your bachelor’s degree. However, students may include up to 16 credits taken after the effective date of the admission offer from their undergraduate record on their MS/Civil Engineering Graduate Degree Plan in order to meet degree requirements. Students only receive two semesters of a graduate level tuition waiver. If you have not completed your bachelor’s degree within the two semesters you will start paying tuition at the Graduate School rate. You must notify the Secretary of Graduate Studies once you have completed your bachelor’s degree.

**Dual Degree Programs**

**MS/MURP**
The Department of Civil Engineering and the Humphrey Institute of Public Affairs sponsor a dual degree program that allows students to complete a M.S. degree in civil engineering (MSCE) and a master of urban and regional planning (MURP) in approximately three years. The program gives in-depth training in both disciplines. Within the civil engineering program, students can elect to specialize in either environmental engineering or transportation engineering and planning.

Students must fulfill all of the program requirements for each degree, however up to 18 credits in common can be applied to both degrees, thereby reducing the total number of credits required to complete the degrees independently. The dual-degree MSCE is the same degree as the M.S. described above and therefore has identical requirements in that 30 total credits are required. In addition, a thesis (Plan A) or project(s) (Plan B) and a final oral exam are required, except for the Plan C option. The MURP degree requires 48 credits (48 course credits for coursework only and 38.5 credits for Plan A). Students must take all required Humphrey and planning core courses, including two domain courses, and take a capstone workshop (3 credits). The MURP also requires completion of a thesis (Plan A) or professional paper (coursework-only) and completion of an internship of at least 400 hours.

Completing the two degrees independently would require 78 total credits and approximately 4 years of time. The dual degree program, however, allows sharing of 18 credits to reduce the total load to 60 credits. For the MSCE degree, the 6 credits from outside the major field must come from a selected list of Public Affairs (PA) courses. In addition, twelve credits from civil engineering courses can be applied to the MURP degree. Students who wish to pursue a Plan A option in either program will be required to complete a thesis. Faculty and staff in both
programs advise students on course selection so they can complete all degree requirements in approximately 3 years. If the Plan A option for either the MSCE or MURP degree is selected, then completion of all degree requirements will likely require longer than 3 years of study. The main advantage of pursuing a Plan A option, however, is that the student will likely be awarded a graduate assistantship for part of all of their graduate studies. A student currently enrolled in one program who decides to pursue both degrees may choose to do so, if admitted to the second program, at any point up to the time that their first degree is awarded.

For more information on MURP and the dual degree program, please see http://www.hhh.umn.edu/degrees/dual/engineering.html.

**MS/ISyE**

Students interested in industrial and systems engineering and civil engineering can combine their studies in a dual master's degree program sponsored by the Departments of Civil Engineering and Industrial and Systems Engineering. The program allows students to complete a master's degree in civil engineering (MSCE) and a master's degree in industrial and systems engineering (MS-ISYE). Students must fulfill all of the program requirements for each degree. However, students can apply up to fifteen credits in common to both degrees, thereby reducing the total number of credits needed to 45 credits. Faculty and staff in both programs advise students on course selection so they can graduate in approximately three years rather than four.

The combined program gives civil engineers a deeper technical background and exposure to questions of interest to industry clients and industrial and systems engineer’s technical background in transportation and an opportunity to see questions of interest to the public sector. The dual master's degree prepares students for jobs at consulting firms and public agencies. Because of their broader skill set, graduates will be able to assume higher level jobs in the field than graduates with a single master's degree.

Each program maintains its own admissions criteria and students must meet the requirements of each to qualify for the dual degree program. Students must apply separately to both programs, but may begin in one program and apply to the other at a later date. If a student is admitted to one program before the other, the student will need to submit a change-of-status form to the Graduate School, rather than another full application, to be considered for admission to the second program.

For more information about the program contact: John Gardner, Student Personnel Worker, Graduate Program in Industrial and Systems Engineering, 612-625-2009.

**Master of Engineering (M.CE & M. GeoE)**

The Master of Engineering (M.E.) program is designed to provide additional training in civil engineering or geological engineering to prepare students for a higher level of engineering design work. Two degrees are offered under this program: Master of Civil Engineering (M.CE.) and Master of Geoengineering (M.GeoE.). An A.B.E.T.-accredited four-year bachelor’s degree in engineering is required for admission into the M.E. program. The M.E. degree is considered a
terminal degree. Students who intend to proceed to the Ph.D. program or think they may later wish to be admitted to the Ph.D. program should apply for the M.S. program.

There are two options for the M.E. degree. The first option is Plan A or “project”. It requires a minimum of 30 course credits plus 10 thesis credits for a design project. The emphasis in the choice of major courses is in engineering design rather than in engineering science, and the supporting program is intended to emphasize the societal implications of engineering practice. A design project is a major component of the Plan A M.E. program. Although the time required to complete the design project is about the same as that for a M.S. thesis, the character of the project is quite different. Emphasis is on engineering problem solving, based on design criteria typical of professional engineering practice. Performance must be of a professional caliber that can sustain the criticism of practicing engineers as well as University faculty. While the work must represent individual effort, it need not represent an original contribution to the field.

The Plan B or “coursework only” option requires completion of a minimum of 30 course credits consisting of at least 18 credits in the major area (each area of emphasis has certain required courses), and at least 6 credits in related fields. The remaining credits are to be selected in conjunction with the student’s adviser.

**Final Exams for M.S. and M.E. Degrees**

M.S. Plan A, M.S. Plan B, and all M.E. candidates are required to pass a final oral exam in order to earn their degree. *(Note: There is no final oral exam for the M.S. Plan C option.)* The final oral exam is administered by the student’s examining committee, the composition of which is described in the Graduate School Catalog and in Section VII-B of this handbook: Graduate Degree Plans and Supervisory Committees ([http://www.catalogs.umn.edu/grad/gen/masters.html](http://www.catalogs.umn.edu/grad/gen/masters.html)). Prior to the exam, the student must complete all of the course requirements and the thesis or project(s) requirements. The thesis or project(s) are then submitted to the examining committee for review. The student must allow at least two weeks for the readers to review the thesis or project(s). For Plan A M.S. students, committee members must sign a Reviewers Report Form (available in the Graduation Packet) certifying that the thesis is ready for defense before the final exam can be scheduled.

The oral exam begins with a 30-45 minute presentation by the student. Following the presentation, which is open to the public, is a closed examination in which the candidate is questioned on the thesis, project work or presentation, and on material drawn from the candidate's course of study. The outcome of the exam (pass or fail) is decided by a vote of the committee members. If possible, final oral exams should be scheduled during the fall or spring semesters.

**Doctor of Philosophy (Ph.D.)**

Research performance, evidenced by preparation of a Ph.D. thesis on an independently pursued research topic, is the primary requirement for the Ph.D. degree. The research must represent an original contribution to the field and be suitable for publication in scholarly, peer-reviewed journals. Publications resulting from Ph.D. research are usually co-authored with the faculty adviser(s). Coursework requirements are relatively modest. Each program is designed, in
consultation with a faculty adviser, to meet the special needs of the student, and must be approved by the DGS. A typical program consists of 45 credits of coursework beyond the bachelor’s degree, plus 24 thesis credits in addition to the course credits. The Ph.D. program is designed to be completed in four to six years of full-time study from the bachelor’s degree.

The department has not set a rigid criterion on the number of credits of 8000-level coursework appropriate for Ph.D. programs because the availability of such courses varies among academic areas in the department. Nonetheless, students should be aware that the Ph.D. represents the highest level of scholarly achievement, and coursework should be selected accordingly. Ph.D. programs should thus include a strong representation of advanced-level courses in the student’s major field.

The department may not admit a student without a M.S. degree directly to the Ph.D. program. Students entering the graduate program with a bachelor’s degree typically are asked to complete the M.S. degree first before continuing on for the Ph.D. degree. The student’s performance in the M.S. program is often an important element in deciding whether to admit him or her to the Ph.D. program. Graduate course credits earned in the M.S. program may be used to meet the Ph.D. coursework requirements.

A student applying to the Ph.D. program who has completed a M.S. degree from another university or another department at the University of Minnesota initially may be admitted to the M.S. program (rather than the Ph.D. program) if the admissions committee believes that the completed M.S. degree was not equivalent in content or rigor to the departmental M.S. program in the desired area of specialization. In such cases, the student may be admitted to the Ph.D. program before receiving a second master’s degree (e.g., after 1-2 semesters of graduate coursework and/or research) upon the recommendation of the faculty adviser and approval of the DGS.

The sequence of exams and related requirements for the Ph.D. is as follows:

**Preliminary written exam**
The preliminary written exam takes one of two forms: (1) the student solves problems in a traditional exam or (2) the student prepares a National Science Foundation-style proposal on a given topic. The exam should be taken as soon as coursework is completed or nearly completed. Students should consult their adviser at least one semester before they plan to take the written exam to obtain details on the date, format, and scope of the exam. Three decisions are possible regarding the exam: (1) the student has passed; (2) the student has failed and must terminate his or her studies in the department; or (3) the student has not passed but may retake the exam the next time it is offered. The exam can be taken at most twice.

The minimum duration of the traditional exam is a half-day. The exam is prepared, administered, and graded by the faculty in a given area, who subsequently make a decision on the outcome and inform the DGS accordingly. The traditional exam may be open or closed book or a mixture of the two, and its format (number of problems, length of problems, duration of exam, etc.) is variable.
For the NSF proposal, the student is assigned a topic and given one month to prepare the proposal. The student must review and cite the relevant literature as background information, develop hypotheses and objectives, and develop a research approach to address the objectives. The student submits the completed proposal to the examining committee who reviews it for originality, technical content, organization, and writing (style, grammar, etc.). If the written proposal is approved, the student must then defend the proposal before the committee in an oral exam format. The proposal defense is considered a part of the written exam and is not a substitute for the preliminary oral exam.

**Preliminary oral exam**
After passing the written examination, the preliminary oral examination is scheduled. The oral exam should be taken as soon as possible after the preliminary written exam is passed, but it should not be scheduled during summer session, unless there are compelling reasons. You must schedule your exam with the Graduate School at least one week in advance to clear for the exam. Scheduling forms may be found at [http://grad.umn.edu/students/forms/doctoral/index.html](http://grad.umn.edu/students/forms/doctoral/index.html).

The examination usually begins with a 20-30 minute presentation by the student on the proposed research. After questions on the research topic, the examination is broadened to general questions on the student’s major and minor (related) fields. The outcome of the exam (pass, fail, or fail with approval to retake) is determined by a vote of the examining committee members. If the preliminary oral exam is passed, the student officially becomes a Ph.D. Candidate in the Graduate School and is then eligible to take thesis credits the following term. Failure to pass the preliminary oral exam may result in a recommendation to repeat the exam, convert to another program, or discontinue Ph.D. study.

**Preparation of thesis**
Begin to write parts of your thesis before you finish collecting all of your data. Literature reviews, theoretical developments, and methods sections can and should be written while you are doing your research rather than waiting to finish your experiments or statistical work. It also is a good idea to write about the results of experiments as the data are obtained. Even though it is likely that early drafts will need to undergo substantial revision later, you will find that it is much easier to make revisions than write first drafts months (or years) after you have done an experiment. In most cases, a thesis is the most complicated and lengthy document a student has had to prepare. Begin by preparing a detailed outline and start with relatively straightforward sections such as the description of experimental methods.

Theses vary greatly in style, length, and content, and advisers have varying preferences. It often is helpful to examine a few theses of students who preceded you within your research group to gain perspective on your adviser's preferences in writing style, format, and content. Advisers also have different ways of providing advice on writing theses and reviewing thesis drafts. It is to your advantage to discuss these matters with your adviser before you begin to prepare the thesis. Students should expect to have to revise drafts of theses substantially in response to constructive criticism from their adviser. Do not be dismayed by vigorous criticism.
Although advisers often are willing (or even prefer) to review portions of theses rather than receiving a completed draft; the other readers on your committee should not be expected to do so. Readers should be presented with a finished and complete draft of the thesis. It should be proofread, paginated, and contain legible tables and figures. The latter do not need to be in final form, but you should recognize that readers are less likely to have major criticisms if your thesis is in good form. The Graduate School suggests that you allow one month for the readers to review your Ph.D. thesis. Thesis/dissertation formatting guidelines are available in 160 Williamson Hall or online at: http://www.grad.umn.edu/prod/groups/grad/@pub/@grad/documents/content/gs_16_preparing_doctoral_disse.pdf

**Final oral exam**

The final oral exam, if possible, should be scheduled during the academic year. The final oral exam is open to the public and the first part consists of a 45-minute seminar, at which you present your major findings. After the seminar, the audience is invited to ask questions related to the presentation. The chair of the committee then asks the audience to leave the room, and the committee continues further questioning during a closed session. The outcome of the exam (pass or fail) is determined by a vote of the examining committee members.

After the final exam, the examining committee members typically provide comments and suggested revisions for the thesis. These revisions must be made before the thesis is submitted to the adviser for approval and signature and then submitted to the Graduate School. Students are required to submit one electronic copy of the dissertation and abstract to the Graduate School. See the Graduate School website at http://www.grad.umn.edu/students/ThesisSubmission/index.html for more information. This copy of the dissertation will then be made available through the University Library catalogue system. Another copy of the revised final thesis is required for the adviser, although the adviser may request a copy in electronic form. It is also recommended to submit a copy to each member of your committee.

**Graduate School Commencement Ceremony**

Post-baccalaureate, masters and doctoral students may participate in the Arts, Sciences, and Engineering Graduate Commencement Ceremony. For approval to be granted the academic adviser and the DGS must certify that the student has successfully defended their project or dissertation, if applicable to the student’s plan, and that the final examination has been passed or scheduled to take place at least one week prior to commencement.

Eligible students must register online by March 1st, 2014 in order to attend the commencement ceremony scheduled for **Friday, May 2nd, 2014**. For more information contact Jill Johnson, College of Science and Engineering, 612-625-0721, jill@umn.edu or look here http://gradcommencement.umn.edu/
Graduate School Summary of Procedures

Master of Science – Plans A, B, and C (M.S.)

1. Choose a research advisor for the Plan A/B/C soon after beginning study. The advisor should be a member of the CE graduate faculty and should be chosen no later than the end of the first semester of full-time graduate registration (or second semester of part-time graduate registration). Once an advisor has been chosen, notify Tiffany Ralston, the DGS assistant.

2. Complete the Graduate Degree Plan with adviser approval and submit it to the DGS Assistant. The form is due after one full-time academic semester or after completing 10 credits.

http://policy.umn.edu/forms/otr/otr198.pdf

Complete all blanks on the program form: courses, major/minor-related field, ethics seminar, calendar time taken, credits, etc. Attach a transcript.

If a student wants to change their approved degree plan, file a petition form, available at:
http://www.grad.umn.edu/current_students/forms/gs59.pdf

Return the petition form to ME 1120 for DGS approval.

3. Select research committee members in consultation with your adviser and in accordance with Graduate School Policy. The formal approval of the research committee requires online submission by the student at the following link:

http://www.grad.umn.edu/students/forms/masters/index.html

The committee members is due after one full-time academic semester or after completing 10 credits.

The Graduate Degree Plan (GDP) milestone must be on your record before you are eligible to access the committee workflow. This means the GDP must be approved by the college and/or program in addition to central data entry completed by Graduate Student Services & Progress (GSSP) and the Office of the Registrar (OTR).

Also, you are allowed only one committee request in the workflow at a time.

Plan C students do not need to submit a committee.

4. Complete the Plan A thesis or Plan B project.

For a Plan B project, up to 3 credits of directed research (CE 8094) may be applied to the course requirements. Directed research credits are for CE 8094 only.

The Plan C does not have a project or thesis. For the Plan C, you need to fill out the Plan C tracking form. It must be completely filled out and signed before returning it to the Secretary of Graduate Studies. You can find this form in the main office, CE 122.

5. Request the graduation packet via the web at:
http://www.grad.umn.edu/current_students/forms/grad_packet/index.html

If circumstances require a change of a committee member, simply resubmit your new committee:

http://grad.umn.edu/students/forms/doctora/loral/index.html

Each student must have an approved degree program form on file with the Department and the Graduate School before he or she can execute this step.

The application for degree form must be submitted to the Student Services Office (STSS Building) by the first working day of one’s expected graduation month.

6. Schedule the final oral examination for the defense of the Plan A thesis or Plan B project. The Plan C does not have a final oral exam.

A final examination is required for all Plan A and Plan B MS candidates. The exam is oral, and is usually 90 minutes in length. It is conducted by a minimum of three members of the graduate faculty assigned at the time the degree program form is approved. At least two faculty members must be from the major field and one from the minor or supporting program area.

It is the student’s responsibility to schedule the oral exam in consultation with their adviser and committee members.

This examination may relate to a combination of both thesis content (for Plan B programs, project and paper content) and technical course competence. The final presentation should be well-prepared and succinct, and one should allow examiners ample time for questions and comments on coursework. The formal presentation should be no more than 30 minutes in duration.

Be sure the committee is informed of impending examination, and schedule it to accommodate all examining members. For available rooms, please contact: CE 122, the main office.

File the approved final examination form with Graduate School (160 Williamson Hall). This form is due the last working day of one’s expected graduation month.

7. Complete final edit of the examined Plan A thesis or Plan B paper.

8. Check-out. To verify completion of graduate work for a degree and to provide control of inventory, keys, and office space, each student must complete a Departmental Check-out Form (available in CE 122) prior to departure from the Department or prior to beginning another degree objective within the Department.
Doctor of Philosophy (Ph.D)

1. Choose a research adviser soon after beginning study. The adviser must be a member of the CE graduate faculty and should be chosen no later than the end of the first semester of full-time graduate registration (or second semester of part-time graduate registration). Once an adviser has been chosen, notify Tiffany Ralston.

2. Complete the Graduate Degree Plan (GDP). This step must be approved before the written preliminary exam can be taken. The form is available at:

http://policy.umn.edu/forms/otr/otr198.pdf

Complete all blanks on the program: courses, major/minor-related field, calendar time taken, credits, etc. Thesis credits should be included in the course listings; however, they should not be added to the credit totals at the bottom of the program.

Master’s thesis credits may not be applied towards a Ph.D. degree.

To change an approved degree plan, file a petition form, available at:

http://www.grad.umn.edu/current_students/forms/gs59.pdf

Return the petition form to Tiffany Ralston for DGS approval.

3. Select research committee members in consultation with your adviser and within two semesters of passing the qualifying exams. To assign one’s committee for preliminary oral exam please submit selected committee members with the Graduate School at the following link:

http://grad.umn.edu/students/forms/doctoral/index.html

If circumstances require a change of a committee member, simply resubmit your new committee:

http://grad.umn.edu/students/forms/doctoral/index.html

NOTE* The Graduate Degree Plan (GDP) milestone must be on your record before you are eligible to access the committee workflow. This means the GDP must be approved by the college and/or program in addition to central data entry completed by Graduate Student Services & Progress (GSSP) and the Office of the Registrar (OTR).

4. Complete written preliminary exam. The written examination must be passed prior to scheduling the preliminary oral examination.

Submit the preliminary written exam report to the DGS Assistant, asserting passing quality.

5. Schedule oral preliminary exam after passing the written preliminary exam. Schedule this exam at least one week in advance.
Rooms may be scheduled by stopping in the main office, CE 122.

Submit the oral preliminary examination report form to 160 Williamson Hall.

6. To assign one’s committee for final exam please submit selected committee members with the Graduate School at the following link:

http://grad.umn.edu/students/forms/doctoral/index.html

At least one month prior to exam.

7. Request graduation packet via the web at:

http://www.grad.umn.edu/current_students/forms/grad_packet/index.html

The application for degree form must be picked up from the Graduate School. Submit this form to the Student Services Office (STSS Building) by the first working day of one’s expected graduation month.

8. Submit Thesis to reviewers (check with reviewers to ascertain their required reading time frame—usually a minimum of 2 weeks).

9. Schedule the doctoral final exam at least two weeks in advance at:

http://www.grad.umn.edu/current_students/finalschedule/

(The Graduate School will pass the final oral examination report to each student’s committee chairperson). A minimum of 4 committee members are required to serve on the final examining committee (three from the major and one from outside the major).

10. Submit doctoral final oral exam report (Graduate School, 160 Williamson Hall).

11. Edit examined Thesis if required.


http://www.etdadmin.com/umn

14. To verify completion of graduate work for a degree and to provide control of inventory, keys, and office space, each student must complete a Departmental Check-out Form (available in CE 122) prior to departure from the Department or prior to beginning another degree objective within the Department.
# Graduate School Contact Information

## Graduate School Office Contacts

<table>
<thead>
<tr>
<th>Service</th>
<th>Location</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate School Admissions</td>
<td>309 Johnston Hall</td>
<td>612-625-2040</td>
<td></td>
</tr>
<tr>
<td>Graduate Student Services (GSSP)</td>
<td>160 Williamson Hall</td>
<td>612-625-3490</td>
<td></td>
</tr>
</tbody>
</table>

## Graduate School Staff Contacts

<table>
<thead>
<tr>
<th>Service</th>
<th>Name</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graduate Student Services</td>
<td>Mike Brown</td>
<td>612-625-5833</td>
<td><a href="mailto:gssp@umn.edu">gssp@umn.edu</a></td>
</tr>
<tr>
<td>Master Degree Services</td>
<td>Amber Cellotti</td>
<td>612-625-4019</td>
<td><a href="mailto:gssp@umn.edu">gssp@umn.edu</a></td>
</tr>
<tr>
<td>Doctoral Degree Services</td>
<td>Stacia Madsen</td>
<td>612-625-0168</td>
<td><a href="mailto:gssp@umn.edu">gssp@umn.edu</a></td>
</tr>
</tbody>
</table>
Registration

Registration Steps – New Students
Obtain Student I.D. Card

All new International Students – Check in with International Student and Scholar Services Office. 190 Hubert H. Humphrey Center, West Bank

The Graduate School Policy requires that new graduate students meet with their advisors prior to their initial registration. Consult with your advisor to establish the first semester courses. If you don’t have an advisor yet, please see the GSC member for your research group.

Follow the registration procedures on Onestop: onestop.umn.edu

Foreign Nationals who do not have a Social Security number will register after completing the document check with the Office of International Student and Scholar Services (ISSS). The Social Security Administration Office requires you to present them a letter from ISSS verifying your F-1 status as well as full time enrollment at the time you apply for your Social Security Number. Tiffany Ralston will provide you will this letter when you arrive.

You should register for courses at least 4 working days in advance of applying for the SS#.

You are responsible for knowing the Registration Policies and Procedures set forth by the University of Minnesota each semester. Registration Policies and Policies can be found at One Stop onestop.umn.edu/. Under Registration, click on the link to Printable Policies and you will find the information for the current semester. In addition, you are also responsible for knowing the requirements of the Grading System also found at the Printable Policies page.

You must register by September 2, 2013 to avoid late registration fees. If your initial registration occurs after this date you will be assessed a $50 late registration fee ($100 limit per semester). If your initial registration occurs after Tuesday, September 17, you will be assessed a $100 late registration fee. Monday, September 2 is an official University of Minnesota Holiday; you can register online but offices will be closed. We encourage you to have your initial registration done by Friday August, 30 to avoid any problems. When in doubt please check OneStop Registration Policies.

If you need to make changes to your registration please know the policies in advance: http://onestop.umn.edu/registration/change/index.html

Students can view the class schedule and register at http://onestop.umn.edu/onestop/registration.html.

Important: Email yourself (or print) a copy of your “Enrollment Summary” before you log off of the registration system. This will be your only receipt and proof that you have registered on time should a problem occur. Make sure you complete the Hospitalization/Insurance information section if registering by computer. Every student has a student account. To view your student account online, go to onestop.umn.edu, under finances click on “Your student account.”
**Registration Steps – Current Students**

Register at Onestop in the Science Teaching and Students Services (STSS) building or online through the Student Access System (Onestop.umn.edu), according to the registration queue published in the Class Schedule. Class schedules are available through the web on onestop.

The Graduate School requires all students to register every fall and spring term from the beginning of graduate study until graduation in order to maintain active status. Maintaining active status is critical and is required in order to participate in the University community as a graduate student. This includes registering for coursework, taking examinations, submitting milestone forms, or filing for graduation. Students not registered every semester are considered to have withdrawn and their Graduate School records are deactivated. Those students whose records are deactivated and wish to resume graduate study are required to seek readmission. The Department reserves the right to reject a readmission application based on academic performance and other factors.

The University requires that graduate students holding appointments as teaching assistantships, research assistantships, and administrative fellows register for at least 6 credits during each term which he or she holds an appointment of greater than 12.5%. (This rule does not apply to summer terms if you were registered the preceding spring quarter.) Each student should check to make sure they satisfy other criteria for full-time status (i.e., some student loan deferrals require 7-credit registrations) that may apply to financial aid.

Doctoral students must register for 24 doctoral thesis credits (CE 8888) at the University of Minnesota beginning the semester after they have passed the preliminary oral exam. This is a departmental policy. The requirement of 24 doctoral thesis credits cannot be reduced by transfer of master’s thesis credits, or thesis credits taken at another institution.

International Students:
Under SEVIS (Student and Exchange Visitor Information System), it is important that all international students maintain full-time enrollment for the duration of each semester. Students who fail to maintain a full course load will be in violation of federal regulations and will be reported to INS. Except under special circumstances, students who violate their visa status will be required to leave the U.S. and make a new entry to regain legal status.

International students enrolled for the FTE course will be reported as maintaining a full-time course of study. Audit courses do not count toward full-time enrollment for international students. International students may audit courses, but must be registered for at least 6 additional course or thesis credits. International students not enrolled full-time need to submit an “Exception from Full Course of Study” form to International Student and Scholar Services (ISSS). These forms must be submitted before the semester begins to avoid being reported as not enrolled or enrolled part-time.

ISSS (www.isss.umn.edu, isss@umn.edu, 612-626-7100, 190 Humphrey) is the office dedicated to serving the University of Minnesota's international community and should be consulted.
regarding any questions concerning student visa status. International students are encouraged to subscribe to the ISSS Weekly Update. Each week an update is sent by email. The updates consist of announcements regarding changes and news about INS regulations, dates of workshops and information sessions, and important deadlines.

**Registration – Special Categories**

**Curricular Practical Training (CPT)**
Curricular Practical Training (CPT) is work authorization that allows a student to work in a job related to his/her field. ISSS offers CPT/OPT Workshops; it is highly recommended that students attend a workshop before applying for CPT.

To sign up for CPT students need to first pick up a CPT Student Request and Academic Adviser Verification form from ISSS. Students should register for CE 4170 for CPT. In order to register for CE 4170 students will need a permission number which will be issued after all paperwork is completed and signed by their advisor, and pending DGS approval. CPT should only be taken over the summer and should not hinder the student’s ability towards continued progress towards degree.

If the student is nearing completion of their degree the student should not apply for CPT, but rather OPT (see ISSS website). If a student applies for CPT near the end of his/her degree or multiple times it may not be approved by the DGS.

**GRAD 999**
GRAD 999 is a zero credit/no fee class that will maintain a student’s active status with the Graduate School. However, it will not maintain fulltime status for anything else such as a paid appointment (RA or TA), visa status, or deferred student loans. International students can get a waiver from ISSS to register for GRAD 999, but must check with ISSS before registering.

Once all degree requirements have been completed, but active status needs to be maintained to graduate, GRAD 999 can be registered for. After a student’s second registration for GRAD 999 a hold will be placed on their record. If a student is making continuous progress towards their degree a permission number may be granted for additional registrations of GRAD 999. If continuous progress in not being made, a Leave of Absence should be considered.

**Do not register for Grad 999 if you must be registered to hold an assistantship, be registered to maintain legal visa status, defer loans, or receive financial aid.**

**8333 Advanced Masters Status**
8333 is a one-credit registration option for eligible master’s students who must certify full-time status to be in compliance with requirements of the University and/or external agencies (e.g., employment as a graduate assistant; loan deferment). Students eligible for 8333 can be employed in one of the low-tuition/low-fringe job classes.
**8444 Advanced Doctoral Status**

8444 is a one-credit registration option for eligible doctoral students who must certify full-time status to be in compliance with requirements of the University and/or external agencies (e.g., employment as a graduate assistant; loan deferment). Students eligible for 8444 can be employed in one of the low-tuition/low-fringe job classes.

For more information on registration requirements, Grad 999, or FTE, please see [http://www.grad.umn.edu/students/registration/specialcategories/index.html](http://www.grad.umn.edu/students/registration/specialcategories/index.html).

**Leave of Absence (LOA)**

Graduate students are expected to maintain active status through continuous registration from the time they matriculate until their graduation. Students who are not able to maintain active status are strongly encouraged to consult with the DGS, their advisor, and student advising office to determine whether requesting a leave of absence is the most appropriate course of action.

In order to apply for a leave of LOA a student must complete the LOA form and have it signed by their advisor. Then, submit the completed form to the student advising office for the signature of the DGS. A student may request a leave for up to 2 academic years.

Once the student returns from the LOA they need to contact the student advising office for matriculating back into the Graduate Program. It is necessary that the student returns by the date specified on the LOA form, or earlier. Once the student matriculates back into the program, it will be like they never left and there is no readmission fee.

**Registration Exceptions (Cancel/Add Requirements)**

All-University policies on Cancel/Adds apply to all students in all colleges. Complete information about changing your registration can be found at the One Stop Registration Website. [http://onestop.umn.edu/special_for/graduate_students.html](http://onestop.umn.edu/special_for/graduate_students.html)

If you decide before the semester begins not to attend, you must cancel before the first day of classes to avoid being charged for a percentage of the tuition, even if your RA appointment pays for a tuition waiver. However, no additional tuition is charged when any course addition is balanced by a course cancellation, i.e., a cancellation equals the number of credits being added, or a cancellation and course addition that keeps the total number of credits within the 14 credit tuition plateaus or bands.

On occasion, a course may be cancelled by the department offering the course. Contact the department immediately to see if other arrangements have been made. If no arrangements exist, it is then your responsibility to remove the course from your record by changing your registration. Cancellations are effective the day you officially cancel not on the date you stopped attending class. You will receive billing statements from Student Accounts Receivable for any credits over the maximum allowed with your assistantship (14 credits) and for fees or additional billing charge, if applicable. If you fail to pay by the due date on your billing statement, a hold will be placed on your records. The refund schedule can be found at the One Stop Registration Website.

Updated September 30, 2013
Cancel/Add Deadline:
http://onestop.umn.edu/calendars/cancel_add_refund_deadlines/index.html

*Note: The registration request for changing your grade after the end of week 2 of classes will NEVER be granted.

**Course Approval/“Class Permission Numbers”**
Approval may be required if you want to register for some CE 5000 or 8000 level courses. See the Professor teaching the class for permission numbers. Permission numbers for courses outside the department must be obtained from the department that offers the course.

**Course Time Conflict Approval**
You may not register for courses that have less than 1 minute separation or overlapping times without approval of the instructors of both courses. If this happens you should fill out the Course Time Conflict Form found online at: policy.umn.edu/forms/otr/otr024.pdf

This form is designed to be filled out in your Web browser, printed, then submitted either in person, by mail or by fax. It cannot be submitted online.

**Registration Holds**
If you were admitted to the Graduate School with a "degree pending," you will need to provide an official transcript or other suitable material prior to registration. This is done in Johnston 309. Other holds may include Health Clearance and Visa Clearance (document check for international students). You must clear all registration holds before registering. See Tiffany Ralston if you have difficulties (e.g. transcripts that were sent but cannot be found). Each spring semester a registration hold will be placed on your record. To get the hold removed to register for the next fall semester, you will need to turn in your annual student review.

**Fees**
You are responsible for paying all fees by the due dates defined on the original fee statements. A list of fees and a schedule for payment of fees can be found at the One Stop Registration Website. Fees are billed through Student Accounts Receivable. Student services fees, late registration, and any non-refundable fees assessed are the responsibility of the student and are not covered under tuition benefits (this includes any fees associated with canceling a course).

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**Change of Status**

For students who are currently enrolled in a U of M Graduate Program

-Complete a new application if you want to:
  -add a new program
  -change to a different program
  -add or change a track
  -change to a higher degree level

-Complete the Express COS Application if you want to:
- Drop from a Ph.D program to a Masters only (in the same program your Ph.D was in)
- Add your first track to the major in which you are enrolled (if you’re not already in a track)
- drop a track (without adding a track)

Selection of Adviser(s)

Each graduate student must have a faculty adviser while in the graduate program. It is also permissible to have one or more co-advisers. The adviser(s) is an important part of your graduate program as she/he assists in selection of courses, provides guidance on research or project work, and helps you progress toward completion of your degree in a timely fashion. Graduate students typically have a much closer working relationship with their adviser than is the case for undergraduate students. Each student should meet regularly (e.g., weekly or biweekly intervals) with his or her adviser to discuss progress in coursework and in research. Regular communication with your adviser is extremely important.

Typically an incoming student is paired with an adviser during the recruitment and admissions processes. This pairing could occur via direct involvement of the student through email, phone, or face-to-face conversations with the faculty of the department. Conversely, students may be assigned an adviser based on the personal statement submitted with their application. In other cases, the Grad Studies Committee (GSC) representative is assigned as the adviser temporarily until a permanent adviser is arranged. If you do not have an adviser or do not know who your adviser is, contact the faculty representative on the GSC from your program area immediately. The Secretary of Graduate Studies initiates advisor assignments and updates in the Graduate School tracking system. As soon as you know who your advisor is let the Secretary of Graduate Studies know so your information can be updated.

For a student admitted with an academic appointment, the faculty member who is the supervisor of the research project is typically the student’s adviser because a RA usually incorporates the research performed for the funded project into their thesis. For a student awarded a graduate fellowship or wholly funded on a teaching assistantship (TA), the student’s immediate funding is not tied to a particular faculty member or project. Nevertheless, even for fellowship or TA students, promised funding beyond the initial fellowship or TA position may be in the form of a RA position that is linked to a particular faculty member. The student should consult his or her award letter for more details concerning funding and adviser(s). Students who are paying for their graduate education using funding sources from outside the University (e.g., external fellowships, employer, personal funds) are entirely flexible in selecting an adviser, but should do so in consultation with the faculty in their program area. New students should contact the faculty representative on the GSC for their program area (page 5) for further information concerning adviser selection.

Situations occasionally arise in which a change of advisers is appropriate and desirable. For example, you may find that your research interests are matched more closely with another faculty member. Changing advisers is permissible. Nevertheless, you should recognize that changing advisers is a major decision that should not be taken lightly, especially if you have been in the program for several semesters. In some cases, your adviser may have invested
substantial time and research support into your development. Furthermore, changing advisers may result in the termination of an assistantship and could delay your graduation. Whether another faculty member is available to guide you in your thesis research and whether funds will be available for a graduate assistantship are important issues that you need to consider before requesting a change. If possible, you should discuss the proposed change with your current adviser as soon as possible. If that is not possible, you should meet with the DGS. After a decision has been made to change advisers, you should notify your former and new advisers, DGS, and the Secretary of Graduate Studies to change your adviser.
Graduate Student Expectations

The departmental faculty expects that all graduate students will complete their degree programs in a reasonable amount of time and that graduate work in the department will be a positive and rewarding experience.

Satisfactory Academic Progress

All graduate students are expected to make satisfactory academic progress. In the case of those who are receiving financial support, this is a condition for continuation of support.

For master’s students, satisfactory academic progress and degree completion vary depending on the program. Under normal circumstances, full-time M.S. Plan A, M.S. Plan B, and M.CE/M.GeoE Plan A students should finish their coursework and thesis/project within two calendar years. Full-time M.S. Plan C and M.CE/M.GeoE Plan B students should finish their coursework within one calendar year plus one regular semester. Individual satisfactory academic progress expectations for master’s students should be discussed with their adviser(s).

For a full-time student in a Ph.D. program, satisfactory academic progress includes completion of required coursework and the Ph.D. written preliminary examination by the end of the third semester of study after completing the M.S. degree or equivalent (30 graduate credits). It also includes successfully passing the Ph.D. preliminary oral examination by the end of the fourth semester of post-M.S. study. Finally, submission and successful defense of a thesis is expected by the end of the third (post-M.S.) year of study and no later than the fourth (post-M.S.) year of study.

Part-time students are not subject to the above timetables for reasonable progress. Nevertheless, the degree should represent academic work completed within a reasonable span. Students who do not maintain regular progress, including registering each fall and spring semester, are deemed inactive. Inactive students must file a Change of Status/Readmission form if they wish to continue their studies.

As per Graduate School Policy, master’s students matriculating prior to January of 2013 must complete requirements for their degree within a seven-year period. Effective for all students matriculating following January of 2013, requirements for the master’s degree must be completed and the degree awarded within five years. These time periods begin with the earliest coursework included on the Graduate Degree Plan. Requirements for the doctoral degree must be completed and the degree awarded within five calendar years after passing the preliminary oral exam. Students may refer to the Graduate School Catalog for more information on the maximum time allowed for completion of the master's and Ph.D. degrees.

The Graduate School requires all master’s degree-seeking students to maintain an overall GPA of 2.8 (out of a possible 4.00) in courses used to satisfy the requirements for a Master's degree. If a student’s GPA is below 2.8 at the time they apply for graduation, they will be required to take additional courses to raise the GPA above 2.8 before they will be allowed to graduate. There is no Graduate School minimum GPA requirement for Ph.D. students, but the department’s minimum requirement is 3.00 overall. Grades in courses taken to make up
deficiencies in undergraduate preparation count in the GPA even though they are not part of the graduate course program and are not included on the degree program form.

All graduate students must maintain a level of research productivity judged adequate by their adviser. This is over and above the research that may be required for a research assistantship. Except in extreme circumstances, the adviser and examining committee are the final arbiters of what constitutes acceptable productivity and quality in thesis research.

Annual Student Reviews
It is Graduate School policy that departments conduct annual written reviews of graduate students and communicate the results to the student. The review will be an evaluation of the student’s progress, as measured against the published performance expectations of the department and the Graduate School. Each spring semester, graduate students will be asked to complete a review form. The form will then be given to the student’s adviser for comment and verification. The DGS then signs off on all reviews and they are subsequently placed in the student’s permanent file.

A hold will be placed on your record until the review is turned in. This will prevent you from registering for the next fall semester. So please turn in your review in a timely manner.

Ethics
The objective of the ethics training for graduate students in the Department of Civil Engineering is to provide opportunities to discuss ethical conduct as applied to research and professional practice. Graduate students are required by the Graduate School to obtain training in research and professional ethics. The department uses four modes of delivery for training in research and professional ethics: (1) a one-hour discussion during orientation, (2) group seminars, (3) graduate course on ethics, and (4) faculty-student interaction. Information can also be found at http://www.research.umn.edu/ethics.

All first-year graduate students are required to participate in the departmental new graduate student orientation held in late August. This orientation includes a one-hour discussion on ethics in research and professional practice. Attendance will be taken.

The various sub-disciplines within the department hold weekly seminars. Typically one seminar each year will be devoted to research and professional ethics in research. Invited speakers or faculty will lead discussion groups, where problems will be posed and various standards of conduct will be critiqued. Faculty representatives of the sub-disciplines on the Graduate Studies Committee will inform the DGS when the seminar will be held and will report on attendance.

A 0.5 credit course on research and professional ethics is offered periodically (CE 8581 - Research and Professional Ethics in Water Resources and Environmental Science). Consult the course catalog for more information.

Faculty are expected to discuss relevant ethics issues with their advisees as part of the mentoring process.
All students who are supported by funds originating from the National Science Foundation (NSF) must undergo training in research ethics. Currently, there are three ways to achieve compliance with this requirement: (1) completing an approved University course on the subject of Research Ethics, such as CE 8581; (2) completing a non-course “event” on the subject of Research Ethics (a list of such events can be found in https://docs.google.com/a/umn.edu/document/d/1VwNqs6wBgY1KTJnwaRoHqNMpK05vk_uvv0Hkoj-o-tE/edit); and (3) completing an online Collaborative Institutional Review Board (IRB) Training Initiative (CITI) (see https://www.citiprogram.org/ and request an instruction sheet from Tiffany Ralston or see appendix L).
Department Policies for Graduate Assistants and Fellows

Graduate Assistants
The following describes departmental policies concerning graduate assistants. University guidelines for graduate assistants are available from the Graduate Assistant Employment Office (612-624-7070, Donhowe Building, 319 15th Ave. S.E., http://www1.umn.edu/ohr/gae/). Office hours are 8:00 a.m. to 4:30 p.m., Monday through Friday.

Graduate assistants often receive appointments as teaching assistants (TAs) or research assistants (RAs) on a semester-by-semester basis for the academic year. There are no TA positions available in the summer. A summer appointment as an RA is arranged with the adviser or principal investigator in charge of a research project.

Renewal of graduate assistantships is contingent on satisfactory progress toward the graduate degree and availability of funds. See Section IX A. regarding satisfactory academic progress.

TAs are expected to help formulate and grade homework problems, laboratory projects, and exams. TAs typically have office hours during which students may seek help regarding homework or lab problems. TAs in lab courses are expected to provide instruction in and monitor laboratory work. On occasion a TA may be called upon to deliver lectures in a course. A 50% TA should expect to spend an average of 20 hours per week on TA duties. Some flexibility in weekly duties should be expected because course requirements (exams, problem sets, etc.) are not evenly distributed throughout the semester.

Duties of RAs are determined by mutual agreement between the RA and adviser/principal investigator of the project on which the RA is paid. The average time spent on department duties for a 50% time appointment is 20 hours per week. Nevertheless, when the thesis and assistantship work overlap, considerably more than 20 hours per week is required as the student is also working on his/her thesis and earning graduate (thesis) credits.

As a research assistant you should be aware that you are a part-time employee with responsibilities through your faculty supervisor to a granting agency. Before changing your work schedule or scheduling time off you should discuss the proposed change with your supervisor.

F-1 and J-1 visa holders cannot hold appointments greater than 50% time during the fall and spring terms

An assistant, who has been discharged, disciplined, or has his or her financial support terminated because of unsatisfactory job performance or unsatisfactory academic progress is entitled to a written explanation of cause and description of his or her avenues of appeal. Provided that an appeal is made within two weeks of notification, assistants will be continued on payroll until the final decision regarding the appeal is made by the DGS.
Graduate Fellows
Graduate fellowships awarded by the University or department typically provide stipend, tuition and health insurance benefits for the duration specified in the award letter. Most fellowships are for a fixed term and they are not renewable on an indefinite basis. Fellows should read their letter of award carefully. The department makes every effort to provide continuous support in the form of research or teaching assistantship after the fellowship period, provided the student has made satisfactory academic progress. Fellows should select a faculty adviser and become involved in research prior to beginning the graduate program and no later than the end of the first semester of study. Becoming actively involved in research increases the likelihood that financial support will be maintained.

Continuation of a graduate fellowship appointment is contingent upon satisfactory progress toward the graduate degree and maintenance of superior scholarship in coursework. Specific details are provided in letters of award; in addition, see Section IX A. on satisfactory academic progress. Continuation of fellowship support for students who do not maintain satisfactory academic progress, as defined in this handbook and/or their letter of award, can only be obtained through successful appeal by the student and the student's adviser. Such appeals must be presented to the DGS at least a month before the time limit of satisfactory progress expires.

A graduate fellow who is disciplined or has his or her fellowship terminated because of unsatisfactory academic progress is entitled to a written explanation of cause and explanation of his or her avenues of appeal. Provided that appeal is made within two weeks of notification, fellows will be continued on payroll until the final decision regarding the appeal is made by the DGS.

The Graduate School Fellowship Office (http://www.grad.umn.edu/fellowships/index.html) administers a variety of fellowships and awards. The Doctoral Dissertation Fellowships is awarded by the Graduate School. The department nominates its top Ph.D. candidates for this University-wide competition each spring. The nominees are selected by the GSC. Minimum requirements for consideration include a GPA greater than 3.8 and one or more peer-reviewed journal articles published. Students must have passed their preliminary oral exam and completed all their coursework to be eligible for this academic-year award. These fellowships include stipend, tuition, and health insurance benefits.

Tax Status
Only competent tax attorneys and the U.S. Internal Revenue Service can give definitive information on federal income tax matters. Only the Minnesota State Department of Taxation can give definitive information on Minnesota income tax regulations. The Federal Tax Reform Act of 1986 made major changes in the tax regulations applicable to fellowships and assistantships. The net effect in general is to make all income that a student receives subject to taxation, except for tuition waivers (and fellowships to cover other direct expenses such as books and fees), regardless of whether the income is received as a fellowship or as a research/teaching assistantship. Students are advised to keep careful financial records and consult tax specialists for further advice. The University will withhold estimated taxes from assistantships, but does not automatically withhold income taxes from fellowship payments. You can elect to have income taxes withheld by filling out the Graduate Fellowship Income Tax Withholding Request
form. For information on how to determine the withholding amount, and to download the form, see [http://www1.umn.edu/ohr/payroll/gradfellow/index.html](http://www1.umn.edu/ohr/payroll/gradfellow/index.html). For information on exclusion from FICA (Social Security and Medicare Taxes) see [http://www1.umn.edu/ohr/payroll/tax/graduate/index.html](http://www1.umn.edu/ohr/payroll/tax/graduate/index.html).

**English Proficiency for International Assistants**

The University of Minnesota requires high standards of English proficiency for nonnative English speaking students who are appointed to teaching assistant and instructor positions. Spoken proficiency is assessed in one of three ways: [Internet-based TOEFL](https://www.ets.org/toefl) (speaking subscore), SETTA (Spoken English Test for Teaching Assistants), or final exam taken after coursework in the International TA Program.

Scores on these assessments are converted into numerical English Language Proficiency (ELP) ratings which correspond to eligibility for various teaching responsibilities (i.e., higher proficiency corresponds with more demanding instructional responsibilities.) For ELP ratings lower than 1, one to three semesters of ITA Program coursework is required. For ELP ratings see [http://www1.umn.edu/ohr/teachlearn/graduate/itap/settaeligibility/index.html](http://www1.umn.edu/ohr/teachlearn/graduate/itap/settaeligibility/index.html)

For SPEAK test registration information, please see [http://www1.umn.edu/ohr/teachlearn/graduate/itap/schedule/index.html](http://www1.umn.edu/ohr/teachlearn/graduate/itap/schedule/index.html)

<table>
<thead>
<tr>
<th>ELP Rating</th>
<th>Instructional Responsibilities Allowed</th>
<th>How to Achieve This ELP Rating</th>
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</thead>
</table>
| ELP rating 1 | Eligible for all instructional responsibilities. No coursework required. | 27-30 on ibTOEFL speaking  
ELP 1 on SETTA  
Pass [GRAD 5105](http://www1.umn.edu/ohr/teachlearn/graduate/itap/gradcourse/index.html) final exam |
| ELP rating 2 or 3* | Eligible for all instructional responsibilities.  
[GRAD 5105](http://www1.umn.edu/ohr/teachlearn/graduate/itap/gradcourse/index.html) required if teaching (e.g., a class, lab, recitation, discussion, etc.)  
No coursework required if grading, tutoring, holding office hours, or proctoring. | 23-26 on ibTOEFL speaking  
ELP 2 on SETTA  
Pass [GRAD 5102](http://www1.umn.edu/ohr/teachlearn/graduate/itap/gradcourse/index.html) final exam |
| ELP rating | Eligible only to tutor, hold office hours, grade, proctor. Not eligible to teach. | 18-22 on ibTOEFL speaking  
ELP 4 on SETTA  
Pass **Foundations** final exam |
| ELP rating | Not eligible for any TA position. **Foundations** course is required. | <18 on ibTOEFL speaking  
ELP 5 on SETTA |
Department Facilities

Desk Space

We try to place all full time graduate students an assigned desk space in the Civil Engineering (CivE) Building or at an off-site laboratory if applicable (e.g., the St. Anthony Fall Laboratory). Also, an effort is made to provide all students housed at off-site labs, who are taking courses on campus, with shared desk space in the CivE Building. New students should seek desk space through Tiffany Ralston if they want a desk. See Appendix G (Graduate Students, Desk Form). We can’t guarantee you will get a desk space but we try to place everyone if possible.

Keys

All full-time graduate students may receive keys to their office and key card access to the building in which the office is located. Your U-Card will serve as your key to Civil Engineering main entrance. Keys to research laboratories are also available. Keys may be obtained by having your faculty adviser sign a Key Request Form available from the front office in CivE room 122. The deposits for graduate student offices and cabinets are $20 and labs are $10 per lab key. Deposits are charged on your student accounts and refunded to your student account when you turn the key in. No cash/checks will be exchanged. No refunds are available for lost keys and replacement keys will require a new deposit. If you lose a key or don’t return your keys upon graduation, you or your advisor will be responsible for re-keying, this could cost $100 or more!!

All graduate students are required to do Online Safety Training to gain lab access. You need to attach the proof of training confirmation to the key request form before you are given any CE Lab keys. The safety training can be found at http://www.dehs.umn.edu/training_newlabsafety.htm. Please contact the departmental Health and Safety Officer with any questions.

Mail

Mailboxes for graduate students are located next to the faculty mailboxes in the department office (CivE 122). Students should check their mailbox frequently for notices and campus mail. Students whose primary office is at SAFL should have their mail sent directly there, but should check the CivE mailboxes periodically. Please do not use the department address for personal mail.

Paychecks

Graduate assistants are typically appointed on a semester basis during the academic year (Fall/Spring) and for summer term. Fellowship recipients may be appointed for either a nine-
month academic year or 12 months. Biweekly payroll is paid every other Wednesday. Paychecks are available after 1:00 p.m. on paydays in Room 122 Civil Engineering. Direct deposit pay information is available online at http://hrss.umn.edu. It is highly recommended that you sign up for direct deposit.

All potential employees must comply with federal laws verifying the person's eligibility to work in the United States. An I-9 form must be completed and the departmental Executive Accounts Specialist must see all U.S. citizens in person. All international graduate students must go to the University Payroll Office (Suite 545, WBOB/West Bank Office Building, 1300 South 2nd Street, Minneapolis, MN) to verify employment. Appropriate documents must be presented prior to employment.

Information on payment of other fellowship and assistantship awards may be obtained from the departmental Executive Accounts Specialist in 125 Civil Engineering Building. A student who encounters undue delay in receiving his or her stipend or notices a discrepancy in the amount of the promised stipend should contact the Executive Accounts Specialist.

Copy/Faxing Facilities

The departmental copy machine is for University business ONLY. Personal copying can be done on campus (http://www.printing.umn.edu) or at one of the commercial copy centers located near campus.

The fax machine is to be used by faculty and staff for University business only. Graduate students who need something faxed for University business can bring it up to the front office and request that a staff member fax it for them. If the staff member determines that it is not University business, students will be referred to a nearby fax center.

Office Facilities

Student records and forms are maintained in the department office (CivE 122). The staff in the accounting/payroll office (CivE 125) will assist you with reimbursements for travel on funded research projects on research accounts, provided that your adviser has approved the travel. Jane Govro, in the main office (CivE 122) can assist you in ordering supplies on research accounts, provided your advisor approved the supply requests.

Supplies maintained in the department office are not for general use by graduate students. Teaching assistants (TA) should see the main office staff for supplies needed in relation to their TA responsibilities.

Phones


Updated September 30, 2013
The department has installed phones in or near all offices used for graduate student study space. These phones are for local use only. Long distance calls can be made only on faculty or main office phones, and you must have approval from your faculty adviser for all long distance calls. Personal long distance calls are not to be made on any University phone unless using a personal long distance calling card.

**Shops**

The department maintains fairly extensive machine shop facilities on the third floor of the CivE Building (next to the large structural-testing laboratory). Because of insurance limitations, graduate students are not permitted to operate equipment in the shop, but the shop staff will assist graduate students with experimental apparatus of all kinds. A budget number must be provided for all work orders. Therefore, you should discuss any proposed shop work with your adviser before proceeding. A shop is also located at SAFL as well as in many other departments across campus. Please contact Gil Huie, (huiex001@umn.edu) the shop manager with any questions.

**Travel Awards**

All current graduate students are eligible for departmental travel grants to attend professional conferences or meetings. Masters level students can receive one grant and doctoral level students can receive two grants during the course of their degree. Each travel grant is worth $500, and the student must make an oral or poster presentation at the conference or meeting in order to be eligible. The presentation must have been accepted by the conference when the application is submitted. The applicant must be a current student during the time they will be using this grant.

To complete the application process you must do the following:

- Fill out the application found here [Travel Grant Application](#)
- Complete a cost estimation & expense breakdown
- Provide confirmation that you have been accepted to present (letter, e-mail, etc.)

*All applications must be complete to be reviewed. There are three deadlines during the year and there are four grants awarded at each deadline. The deadline dates are: Sept 30, Jan 15, and April 30.*

A couple other sources of travel awards are through the Council of Graduate Students (COGS) and Graduate and Professional Student Assembly (GAPSA).

http://www.cogs.umn.edu/awards.html
https://sites.google.com/a/umn.edu/gapsa/home/grants/scholarly-travel-grants
**Scheduling Rooms in Civil Engineering**

There may be times where you need to schedule a room in Civil Engineering. To accomplish this, go to the main office CE 122, and ask for the room scheduling book. Rooms available for reservation are: CE 188, CE 194, CE 202, CE 205, and CE 210. Conference rooms that are available are CE 110A and CE 129A.

To schedule meetings in rooms CE 212, CE 213, and CE 214, and other rooms outside of CE, please go to the Office if Classroom Managements website. [http://www.classroom.umn.edu/scheduling/classroom_schedules.html](http://www.classroom.umn.edu/scheduling/classroom_schedules.html)

**Computing Facilities**

The department maintains a wide range of computer equipment within its buildings, and there are other computing facilities available on campus. Most research laboratories are equipped with computers for equipment operation, data acquisition, data analysis, and/or modeling.

University-owned desktop/laptop computers (compatible with the Active Directory architecture) are required to be set up and administered by departmental IT staff. This can take a significant amount of time so be aware that any newly purchased computer will not be immediately available for your use.

Personally-owned desktop/laptop computers are prohibited from using wired connections (i.e. the network “Etherjacks” which are available in most rooms and offices.)

Any device may use the wireless Internet access which is available in all areas of the Civil Engineering Building, including graduate offices. It is highly recommended that you configure your device, if possible, to connect via “UofM Secure”. Instructions for doing so may be found at [http://www.oit.umn.edu/wireless/setup-guides/index.htm](http://www.oit.umn.edu/wireless/setup-guides/index.htm).

Any computer using the University network, either via wired or wireless connection, must be configured securely per the guidelines described on the Safe Computing web site at [www.oit.umn.edu/safe-computing/](http://www.oit.umn.edu/safe-computing/).

**Accounts**

The University recently transitioned from University of Minnesota “Central” email accounts to Google Apps for Education accounts. For those new to the University, a Google Mail email account will be provided for you as part of the larger suite of U of M Google Apps for Education, which includes Google Mail, Google Docs/Drive, and Google Calendar.

With your University U of M Google Apps account comes approximately 5GB of storage space as part of Google Docs/Drive. Google Docs/Drive is a powerful service for working collaboratively and for sharing large files within the University and those with non-University Google accounts. You can find out more about Google Apps here: [http://www.oit.umn.edu/google/](http://www.oit.umn.edu/google/).
To learn more about Google Apps for the University of Minnesota, visit www.umn.edu/google/.

In addition, the University's Office of Information Technology (OIT) will provide another account, which is often referred to as an “x.500 ID” or “Internet ID” or “Internet Account.” This account will be used for authenticating to departmental and University resources and may still include email access for some at the University.

The “Internet ID” can be used to access a considerable amount of information, it is important to select a secure password and to follow best practices for safer computing. For information regarding selecting a secure password as well as other security-related information, visit the University’s Safe Computing website, safecomputing.umn.edu.

For more information regarding University accounts, check OIT’s account website by going to www.oit.umn.edu/accounts/

For answers to many questions about general information technology services at the University, start browsing from www.oit.umn.edu/help/.

Another useful University service for storing and sharing files is NetFiles, which allows you to store up to 5GB of data and share files with persons inside and outside the University. This is an improving service used for working collaboratively and sharing large files. You may read more about NetFiles at the main NetFiles webpage, www.umn.edu/netfiles/

**Departmental Instructional Computing Lab**
The department maintains an instructional computing laboratory in CivE 221 for use by both graduate and undergraduate students in carrying out course assignments (not research).

The lab currently contains 25 PC’s, operating under Microsoft Windows 7. The computers have standard software (e.g., Microsoft Office) along with specialty software used in civil engineering. For example, Civil3D is used to teach our AutoCAD course and MINEQL+ is used by environmental engineering courses. The laboratory is usually open for student use eight to ten hours a day, five days a week throughout the semester. A lab attendant is on duty to assist you. The laboratory is periodically reserved for courses and can also be reserved for class tutorials on an ad hoc basis. A weekly schedule is posted on the door to CivE 221.

A black-and-white laser printer is available in the room. *An account must be set up (by cash payment) before printing.* See the lab attendant to do so.

**College Instructional Computing Lab**
The College of Science and Engineering maintains a public computer lab in CivE 230 which is usable by any student with a CSE Labs account. An account is available for any student who is currently enrolled in the College. See help.cselabs.umn.edu/account.

The lab in CivE 230 contains 45 PC’s operating under Microsoft Windows 7, a laser printer.
Each semester, each student in CSE Labs is given a $60 quota of free printing. This allows a user to print, without charge, 750 black and white pages, or 375 color pages, or a combination of both (where one color page is equivalent to two black and white pages).

CSE Labs operates 11 other public labs; see help.cselabs.umn.edu/ for complete information. These are the labs that have color printers and scanners for your use:

Keller 4-250 – color printer and scanner and open 24/7 with U-card access  
ME 308 – color printer and scanner  
Lind 150 – color printer and scanner  
ME 302 – Open 24/7 with U-card access

Other University Campus Resources

Office of Information Technology - www.oit.umn.edu/  
We oversee information technology (IT) at the University by providing guidance to central and collegiate units and managing the system-wide IT enterprise  
This is a site to look at before and after you arrive on campus by clicking the link to Students.
  - Initiate your Internet ID  
  - Activate your accounts for campus resources  
  - Purchase certified computer bundles  
  - Get your computer ready for the University network  
  - Download and install antivirus software  
  - Purchase discounted hardware and software  
  - Learn about your internet account and passwords  
  - Set-up your University email account  
  - Manage your account

Digital Technology Center - www.dtc.umn.edu/  
The Digital Technology Center (DTC) is a hub of innovation and excellence at the University of Minnesota in the digital technologies serving the industrial, educational, and public needs of the state of Minnesota and the nation. The DTC integrates research, education, and outreach in digital design, computer graphics and visualization, telecommunications, intelligent data storage and retrieval systems, multimedia, datamining, scientific computation, and other digital technologies. The DTC's first-rate laboratory facilities offer researchers the tools to make progress in these areas. The DTC houses the Laboratory for Computational Science and Engineering for computational science and engineering and visualization, and the Usability Laboratory for evaluations of computational solutions. Additional, specialized laboratories assist with research projects.

Minnesota Supercomputing Institute - www.msi.umn.edu/  
The Supercomputing Institute for Advanced Computational Research is an interdisciplinary research program spanning all colleges of the University of Minnesota. The Institute provides supercomputing resources and user support to faculty and their research groups. It is a linchpin program in the University's broad-based digital technology effort, provides a focal point for
collaborative research on supercomputing within the University and the State, and provides an interdisciplinary focus for undergraduate and graduate education related to supercomputing and scientific computing. The Institute's hardware and software resources and technical support are available to researchers at the University of Minnesota and other post-secondary educational institutions in the State of Minnesota.

**University Technology Training Center** - uttc.umn.edu

The University Technology Training Center (UTTC) is the premiere source of information technology training at the University of Minnesota – Twin Cities campus. Staffed by people who actually use the software they train on, UTTC offers training on a variety of applications used by University students, staff, and faculty. Our mission is to provide the University community with:

- Up-to-date technology training, instructor-led and online, on-demand
- Efficient, economical learning through short, non-credit courses
- Knowledgeable, qualified instructors in a supportive learning environment

UTTC is a part of the Office of Information Technology (OIT).

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**Libraries**

The University of Minnesota library system, with over 7.1 million volumes, is the 15th largest university collection in the United States. Bibliographic and other services of professional librarians are available to graduate students, and the library system is an invaluable asset for research. The main library site is [http://www.lib.umn.edu](http://www.lib.umn.edu) and the Science and Engineering Library is available at [http://sciweb.lib.umn.edu/](http://sciweb.lib.umn.edu/). The physical sciences and engineering collections are housed primarily in Walter Library. College of Science and Engineering librarians in Walter Library can explain how to use the library services (including LUMINA). Students need a University identification card to withdraw books or periodicals from the library system. The department does not maintain major library collections in its facilities, but small collections are maintained by some research areas.

**Bookstores and Libraries, Directories**
- University Bookstores - [www.bookstores.umn.edu](http://www.bookstores.umn.edu)
- University Library - [www.lib.umn.edu](http://www.lib.umn.edu/)
- Workshop, Tutorials and Guides - [http://www.lib.umn.edu/services/workshops/registration](http://www.lib.umn.edu/services/workshops/registration)
- Minneapolis Public Library - [www.mplib.org](http://www.mplib.org)
- St. Paul Public Library - [www.stpaul.lib.mn.us/](http://www.stpaul.lib.mn.us/)

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**Facilities Management Problems**

**During Business Hours**

Any Facilities Management problem in Civil Engineering (i.e., plumbing leaks, water leaks, falling ceiling tiles, vermin, too hot, too cold, etc.) should be reported to the main office, CE 122,
5-5522. A Facilities Management Service Request will be submitted right away. It is important that your concerns be reported in a timely manner.

**After Business Hours and On Weekends**
After business hours building problems or emergencies should be reported to Facilities Management, 4-2900.

**Security**

We are occasionally subjected to thieves who roam the halls looking for easy pickings. Do not leave your office unattended and unlocked. You are encouraged to ask politely for the identity and purpose of any stranger you encounter in the building after regular office or evening class hours.

The Security Monitor Program offers a free walking/biking escort service to and from campus locations and nearby adjacent neighborhoods. To request an escort from a trained student security monitor, please call 624-WALK shortly before your desired departure time and walk safe. Visit [www1.umn.edu/police/escort.html](http://www1.umn.edu/police/escort.html) for additional information.

**General Information**

**Student Identification “U Card”**

Student ID “U Cards” can be obtained at G22 Coffman Memorial Union from 8:00am-4:30pm weekdays or at the University Rec Center from 11:00am-1:00pm weekdays and on Saturdays from 11:00 am to 1:00 pm. Additional information can be found at: [http://www1.umn.edu/ucard/umtc/home.html](http://www1.umn.edu/ucard/umtc/home.html)

**Tuition Benefits and Waivers**

Tuition benefits are available to graduate assistants who hold appointments of at least 12.5% for the entire semester. This benefit is capped at a maximum of 14 credits per semester during the academic year and 14 credits for the combined May session/summer term. An assistantship will allow the appointee a tuition benefit that is double the percentage worked. For example, a 25% appointment provides a 50% tuition benefit and a 50% appointment provides a 100% tuition benefit up to the capped amount. If a graduate assistant's appointment ends for any reason (other than graduation) before it is completed, she/he may be billed for some or all of the semesters’ tuition.

Although tuition benefits are available to assistants with 12.5% appointments, only those who work a minimum of 25% appointments are eligible for resident rates. The tuition benefit offered
to assistants with 12.5% appointments is 25% of in-state tuition; however, the appointee would be required to pay the balance of the non-resident tuition rate if she/he is not a resident of MN or a state with a reciprocity agreement. A student may combine appointments (12.5% RA, 12.5% TA) to achieve a 25% appointment.

Department fellowship recipients receive tuition waivers for up to 14 credits per semester, as do Graduate School fellowship recipients. The Executive Accounts Specialist will process the waiver.

It is very important that students check their fee statements carefully. If the tuition benefit or waiver does not appear on the fee statement, students should see the Secretary of Graduate Studies.

The tuition benefits and waivers associated with assistantships and fellowships do not pay for miscellaneous fees such as the student services fee or for any books required for courses. Fees may be paid in 145 Williamson Hall or online at http://onestop.umn.edu/onestop/Tuition_Billing/UM_Pay.html.

**Health Service and Hospitalization Insurance**

University Policy requires that all students registering for 6 or more credits to have health plan coverage. Students may satisfy University Policy in one of three ways:

**Graduate Assistant Health Plan:**
The Graduate Assistant Medical Plan is available to departmental fellowship recipients and graduate assistants who hold appointments of 25% or more a semester. The University subsidizes the cost of health coverage and pays a portion of the health insurance premium equal to twice the appointment percentage (50% for a 25% appointment, 100% for a 50% appointment). To receive this coverage fellowship recipients and graduate assistants must apply for it during the first semester of their assistantship and enroll by the enrollment deadline. For most students, this deadline is within two weeks of your starting date. Consult the Office of Student Health Benefits (410 Church Street SE, N323, 612-624-0627, www.bhs.umn.edu/insurance/graduate/) for further information.

**Private policy:**
Students carrying their own insurance policy will not be required to purchase the University-sponsored Student Health Benefit Plan. To ensure that you will not be billed for the University-sponsored plan, provide the following when you register for classes online: The name of the company providing your health plan; the company phone number; and your health plan member ID. You must register this information each semester when you register.

If you are registering for 6 or more credits and FAIL to provide the required information when registering, you will automatically be charged for the Student Health Insurance plan. If you think that you have been billed incorrectly, contact a One Stop counselor 624-1111.
University-Sponsored Student Health Benefit Plan:
Full-time students who are not covered through a private policy or the Graduate Assistant Health Plan must enroll in the University-sponsored Student Health Benefit Plan. Questions regarding this program should be directed to the Student Insurance Office (Boynton Health Service, 624-0627)

The University of Minnesota mandates that all international students and their dependents must be enrolled in the University sponsored Student Health Benefit Plan (SHBP) unless they are covered by a United States-based employer-sponsored health plan or the Graduate Assistant Medical Plan provided by the University of Minnesota.

Note: you do not need to enroll during the summer to receive continued insurance coverage, provided you have held at least a 50% RA appointment during fall and spring semesters. If you have any questions, please contact the Graduate Assistant Insurance Office at 624-0627.

Information regarding sick leave, vacation, parental leave, workers compensation/unemployment compensation, and travel insurance is available from the Graduate Assistant Office at http://www1.umn.edu/ohr/gae/.

Transcripts

Unofficial Transcripts:
You may view your unofficial transcript online or request a copy in person. One Stop does not send unofficial transcripts by mail. You may not request a transcript by phone.
http://onestop.umn.edu/grades_and_transcripts/unofficial_transcripts.html

Official Transcripts:
The online request is the most convenient way to order an official transcript. Transcripts requested online are available in either printed or electronic (a secure, certified PDF) format. Payment for fees must be paid with a credit or debit card. According to University policy, official transcripts will not be issued for you if you have certain types of holds on your record. You can review your holds online. To find out what the fees are check here:
http://onestop.umn.edu/grades_and_transcripts/official_transcripts/fees_service_types.html

Parking and Transportation

Parking and Transportation Services works with local public transit providers to provide the best possible service to meet the transportation needs of the University community. The University also provides FREE shuttle service between campuses! Visit Parking Services at www1.umn.edu/pts/
For information on parking, busing, the rail, bicycle, maps, events.
Student Parking Contracts “Lottery for 24-Hour Contract Parking”
These contracts are sold through a lottery system each semester. Sign-up for Fall is typically in mid-July, sign-up for Spring is on November 25 – check their website for updates. Locations may vary each quarter, but include spaces on the East Bank, West Bank, and St. Paul campuses. Information on this can be found at: www1.umn.edu/pts/park/contract/studentcontracts.html

Free Campus Shuttle
You can get wherever you need to go at the University on the campus shuttle system. For example, the St. Paul Campus is only a 15-minute ride using the Campus Connector. All campus shuttles are free and use a color-coded bus stop mapping system. Visit www1.umn.edu/pts/bus/shuttle.html for additional information, including maps and schedules.

Metropass
The Metro Transit provides most of the regular route bus service in the Twin Cities and has excellent bus service. The Twin Cities Campus Busing Guide is available from Parking and Transportation Services and Metro Transit. To learn more about the buses available to your area, call the Transit Information Center at 612-373-3333 or visit one of the campus kiosks at: Parking and Transportation Services. Additional information can also be found at www1.umn.edu/pts/bus/metropass.html.

U-Pass/unlimited bus rides
The U-Pass is the ultimate transit pass that provides unlimited rides 24 hours a day. It's valid on all regular metro-area bus routes, as well as express, local, limited-stop, or Downtown Zone routes. Metro Transit is the primary bus line running in the Twin Cities area, providing service to just about any destination you desire. U-Pass may not, however, be used on some special event services. To order the U-Pass go to www1.umn.edu/pts/bus/upass.html

Academic Code of Conduct
Scholastic dishonesty is not tolerated in the Department. According to the University Student Conduct Code, scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using old exams or other test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. You may expect your teachers and advisors to define these terms and set clear scholastic honesty rules and expectations. Familiarize yourself with the University of Minnesota Academic Misconduct Policy, found at: http://www.policy.umn.edu/Policies/Education/index.htm.

Professional Code of Contact
You are expected to promote and safeguard the comfortable learning and professional environment of the Department, and to treat everyone with the respect and courtesy that you
would like to receive from them. Threatening or harassing conduct and language are not tolerated. Report any such behavior to the head of the Department, the DGS, or faculty members, as you deem appropriate. Any student behaving unprofessionally is subject to appropriate disciplinary action, in accordance with the University Student Conduct Code. Familiarize yourself with this code, found at http://www1.umn.edu/regents/policies/academic/Student_Conduct_Code.pdf.

**Human Resources**

The Department adheres to University of Minnesota Human Resources Policies and Procedures, including but not limited to benefits, compensation, medical leaves, and parental leaves. Contact Nicole Pilman with any questions or concerns related to human resources policies and procedures.

**Sexual Harassment**

Sexual harassment is a serious issue. As students we may be sexually harassed by advisor or other faculty members. Sometimes it’s difficult to tell whether a faculty member’s behavior constitute harassment or not. If you feel uncomfortable with a faculty member’s behavior, say something either to a faculty member or to someone who can help you find answers and services.

Teaching assistants responsible for classroom or laboratory instruction are expected to maintain standards of professional ethics appropriate for any member of a university faculty.

**What is Sexual Harassment?** (Text from the Board of Regents Policy)

**Sexual Harassment**

Sexual harassment includes unwelcome sexual advances, requests for sexual favors and/or other verbal or physical conduct of a sexual nature. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual’s employment or academic advancement in any University activity or program;

Submission to or rejection of such conduct by an individual is used as the basis for employment or academic decisions affecting such individual in any University activity or program; or

Such conduct has the purpose or effect of unreasonably interfering with an individual’s work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program.

**Sexual Violence**

Sexual Violence is any sexual behavior between two or more people to which one person does not or cannot consent. This includes all forms of sexual violence including sexual harassment.
Available Resources
The following programs and resources are available to individuals who have been sexually harassed or exploited in any way.

You can call any of these resources if you feel uncomfortable with someone’s behavior, even if you aren’t sure whether it qualifies as harassment, even if you aren’t sure that it wasn’t just your own misinterpretation, or even if you believe you did something to justify the other person’s behavior. These resources can help you understand what happened and help you find ways to respond to the situation.

If your advisor or another faculty member sexually harasses you or otherwise behaves inappropriately toward you, you can contact the Graduate Student Liaison Committee for confidential assistance in determining what your options for handling the situation may be. Even if you decide not to do anything at all, the Committee can help identify your options. You can contact the Graduate Student Liaison Committee.

For your protection, we recommend using the free campus Escort Service. Call 624- WALK (624-9255) and the dispatcher will send a uniformed escort to walk you to your destination.

Campus Escort Service 612-624-WALK
24 hours a day, 7 days a week. (612-624-9255) Free
walking and biking security escort service to and from campus locations and nearby adjacent neighborhoods.
Crisis Connection 612-379-6363
Urgent Mental Health Counseling at Boynton 612-625-8475
First Call for Help 651-291-0211
Law Clinics, 190 Mondale Hall 612-625-5515
Disability Services, McNamara Alumni Center, Suite 180 612-626-1333
Office of Equal Opportunity and Affirmative Action 612-624-9547

Located in 274 McNamara Alumni Center, this is the place to file an informal or formal complaint. You can also ask questions about your options and choices.

AURORA Center for Advocacy & Education, 407 Boynton
On-campus resource for victims of sexual assault, relationship violence, stalking and harassment.

24-Hour Crisis Line: 612-626-9111
Business Line: 612-626-2929
Minneapolis Suicide Hotline (24 hours) 612-873-2222
University Counseling and Consulting Services (340 Appleby Hall) 612-624-3323
University Police Non-Emergency: 612-624-2677
Emergency: 911
University of Minnesota Medical Center Information: 612-273-3000
Grievances

Graduate students should discuss any problems related to their academic program, research, or assistantship responsibilities with their adviser, the DGS, and any other faculty member(s) they deem appropriate. Grievances should be resolved at the lowest level possible and a student should only seek resolution at a higher level when absolutely necessary. For further information, students may consult the Student Conflict Resolution Center in 254 Appleby Hall or at 612-624-7272, sos@umn.edu, http://www.sos.umn.edu/students/index.html.
<table>
<thead>
<tr>
<th><strong>Frequently Called Phone Numbers</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bookstore, Coffman Union</strong></td>
<td>625-6000</td>
</tr>
<tr>
<td><strong>Boynton Health Services</strong></td>
<td></td>
</tr>
<tr>
<td>Appointments</td>
<td>625-3222</td>
</tr>
<tr>
<td>General Information</td>
<td>625-8400</td>
</tr>
<tr>
<td>Medical Information</td>
<td>625-7900</td>
</tr>
<tr>
<td>Mental Health</td>
<td>624-1444</td>
</tr>
<tr>
<td><strong>Center for Teaching and Learning</strong></td>
<td>625-3041</td>
</tr>
<tr>
<td><strong>College of Continuing Education Information</strong></td>
<td>624-4000</td>
</tr>
<tr>
<td><strong>CSE Computer Labs</strong></td>
<td>625-0876</td>
</tr>
<tr>
<td><strong>Disability Services</strong></td>
<td>626-1333</td>
</tr>
<tr>
<td><strong>Email Information (OIT)</strong></td>
<td>301-4357</td>
</tr>
<tr>
<td><strong>Facilities Management</strong></td>
<td>624-2900</td>
</tr>
<tr>
<td><strong>Financial Aid Office</strong></td>
<td>624-1111</td>
</tr>
<tr>
<td><strong>Graduate Assistant Employment Office</strong></td>
<td>624-8647</td>
</tr>
<tr>
<td><strong>Graduate Assistant Insurance Office</strong></td>
<td>624-0627</td>
</tr>
<tr>
<td><strong>Graduate School: Admissions</strong></td>
<td>625-3014</td>
</tr>
<tr>
<td>Fellowship Office</td>
<td>625-7579</td>
</tr>
<tr>
<td>Final Oral Scheduling</td>
<td>625-0168</td>
</tr>
<tr>
<td><strong>Graduate Student Services</strong></td>
<td>625-3490</td>
</tr>
<tr>
<td>Graduation for Masters</td>
<td>625-4019</td>
</tr>
<tr>
<td>Graduation for Doctoral</td>
<td>625-0168</td>
</tr>
<tr>
<td><strong>Preliminary Oral Scheduling</strong></td>
<td>625-0168</td>
</tr>
<tr>
<td>Programs, Petitions, and Thesis Proposals</td>
<td>625-3490</td>
</tr>
<tr>
<td><strong>International Student &amp; Scholar Services</strong></td>
<td>626-7100</td>
</tr>
<tr>
<td><strong>Law Library, Circulation</strong></td>
<td>625-4300</td>
</tr>
<tr>
<td><strong>Law Library, Reference</strong></td>
<td>625-4309</td>
</tr>
<tr>
<td><strong>Office of Equal Opportunity/Affirmative Action</strong></td>
<td>624-9547</td>
</tr>
<tr>
<td><strong>Office of Information Technology (OIT) Helpline</strong></td>
<td>301-4357</td>
</tr>
<tr>
<td><strong>Student Academic Success Services</strong></td>
<td>624-3323</td>
</tr>
<tr>
<td><strong>Student Accounts Receivable</strong></td>
<td>624-1111</td>
</tr>
<tr>
<td><strong>Walter Library – Circulation</strong></td>
<td>624-3366</td>
</tr>
<tr>
<td><strong>Walter Library - Reference</strong></td>
<td>624-0224</td>
</tr>
</tbody>
</table>
Other Miscellaneous Information

- Boynton Health Services – Graduate Assistant Health Plan –
  www.shb.umn.edu/twincities/graduate-assistants.htm
- Center for Teaching and Learning – www1.umn.edu/ohr/teachlearn/
- The Spoken English Test for Teaching Assistants (SETTA) -
  www1.umn.edu/ohr/teachlearn/graduate/itap/learnaboutthesetta/index.html
- Council of Graduate Students (COGS) - www.cogs.umn.edu
- Disability Service - ds.umn.edu/
- Student Unions & Activities - sua.umn.edu/
- Graduate and Professional Student Assembly (GAPSA) - http://www.gapsa.umn.edu/
- Graduate Assistants Human Resources: Employment Services - www.umn.edu/ohr/gae
- Graduate School - www.grad.umn.edu
- Graduate School Fellowship Office – www.grad.umn.edu/fellowships
- Graduate School Forms Doctoral - www.grad.umn.edu/current_students/doctoral/index.html
- Graduate School Forms Masters - www.grad.umn.edu/current_students/masters/index.html
- Graduate School Restructuring - www.grad.umn.edu/deans-office/restructuring/index.html
- Graduate Student Services and Progress (GSSP) - www.grad.umn.edu/students/index.html
- International Student and Scholar Services (ISSS) - www.isss.umn.edu
- Office for Equity and Diversity - www.academic.umn.edu/equity/
- OneStop Student Services (Class Schedule, Register, etc.) - onestop.umn.edu
- Student Conflict Resolution Office - www.sos.umn.edu/
- University Department Directory - www1.umn.edu/systemwide/directories/
- University Websites or People Search - http://search.umn.edu/
- Womens Center - www1.umn.edu/women/

Minnesota, Minneapolis, and St. Paul
- State of Minnesota - www.state.mn.us
- City of Minneapolis - www.ci.minneapolis.mn.us/
- City of St. Paul - www.stpaul.gov/

Policies and Codes of Ethics
- Graduate School Policies & Governance –
  www.grad.umn.edu/deans-office/policies_goverance/index.html
- Equity, Diversity, Equal Opportunity, and Affirmative Action -
  www1.umn.edu/regents/policies/administrative/Equity_Diversity_EQ_AA.html
- Student Conduct Code - www1.umn.edu/regents/policies/academic/Student_Conduct_Code.html
- Student Education Records -
  www1.umn.edu/regents/policies/administrative/Student_Education_Records.pdf
Emergency and Security Procedures

Please review the following emergency and security procedures. If you have any questions, contact the Department of Civil Engineering staff in room 122 CivE or telephone: 612-625-5522.

Chemical Spills:

**Contact:** Kathy Wabner, Civil Engineering Health & Safety Officer
149 Civil Engineering Building, 612-625-1125

**After Hours:** Emergency Response call Facilities Management, 612-625-0011
If life threatening dial 9-1-1

**Spill Kits:** Currently none available. See Kathy Wabner about chemical spills.

Closing Offices:

**Policy:** Only the President or one of his designates can close the University. University Relations has the responsibility to notify the campus community and the public if the University is to be closed.

Emergency Procedures:

**Contact:** University Police (9-1-1 in emergencies, 612-624-2677 in non-emergencies). In case of fire or medical emergency, position someone outside the building to lead ambulance or fire personnel to the emergency location.

**Fire Emergencies:** Elevators will shut down automatically when there is a fire alarm. All employees should familiarize themselves with fire exits, stairwells and extinguishers located in the building. Evacuate the building immediately when a fire alarm is sounded and do not return until the fire department has approved re-entry into the building. There are refuge areas located on the 4th floor landing in the main stairwell and the 4th and 5th floor landings in the east stairwell. Report the use of fire extinguishers so they can be inspected and refilled.

**Injuries:** If an employee is injured on the job, the supervisor is responsible for notifying the department administrator and obtaining a “Report of Incident” form to complete. This form must be completed within 24 hours of the injury. Failure to comply may result in loss of Worker's Compensation Rights and a fine levied against the department.

**TXT-U:** TXT-U is the University's emergency notification text messaging system. Students with an active Internet ID and University of Minnesota email address are automatically added to the TXT-U system. However, only those with cell phone numbers included in their University personal information will receive emergency text messages. To be sure you will receive TXT-U messages in an emergency, verify your information by going to your TXT-U page.

**Minnesota Employee Right to Know Act (MERTKA):**

**Training:** All new graduate students and employees of the Department of Civil Engineering are required to attend safety-training sessions, follow safety guidelines, and read the “Laboratory Safety Plan” before working in any laboratory. Copies of the “Lab Safety Plan” are online.

*Updated September 30, 2013*
Safety/Security:

Escort Service: The University offers free walking and biking security escorts 365 days a year to and from campus and adjacent neighborhoods. Contact 612-624-WALK (9255) to request a security escort.

Building Hours: The Civil Engineering Building is open from 7:00 a.m. until 10:00 p.m. For laboratory safety and security, authorized personnel are asked to use a buddy system when working in the Civil Engineering Building after hours. Authorized personnel and custodial staff are asked to report unusual incidents or unauthorized people to the University Police.

Emergency Telephones: Special automatic dial security telephones are located in the elevators, hallways on the 6th and 7th floor, and in the refuge areas in the main stairwell and the east stairwell.

Threats & Violence:

Guidelines:
1. Any individual should call 9-1-1 for police assistance if he or she observes violence taking place or believes/feels there is an immediate threat to someone's safety.

2. All faculty, staff, and student workers should communicate to an administrator-supervisor any knowledge of violence or threat related behaviors including possession of a weapon in the workplace. Students and other non-workers should call 9-1-1.
EQUAL OPPORTUNITY STATEMENT

The University of Minnesota shall provide equal access to and opportunity in its programs, facilities, and employment without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression.

Inquiries regarding compliance may be directed to the Director, Office of Equal Opportunity and Affirmative Action, University of Minnesota, 274 McNamara Alumni Center, 200 Oak Street S.E., Minneapolis, MN 55455, (612) 624-9547, eoaa@umn.edu. Web site at diversity.umn.edu/eoaa.

This publication/material is available in alternative formats upon request. Please contact

Department of Civil Engineering
CE 143
500 Pillsbury Drive SE
Minneapolis, MN 55455
612-625-9581

Updated September 30, 2013
### Appendix A: Plan C Requirement List

Courses that meet Plan C M.S. degree project, oral presentation, and/or ethics requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 4412</td>
<td>Reinforced Concrete Design II <em>(60 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 5094</td>
<td>Independent Study* <em>(50 hours)</em></td>
<td></td>
</tr>
<tr>
<td>CE 5180</td>
<td>Air Quality Engineering <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 5180</td>
<td>Design for Sustainable Development*(60 hours)*</td>
<td>3</td>
</tr>
<tr>
<td>CE 5212</td>
<td>Transportation Policy, Planning and Deployment <em>(40 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 5311 / GeoE 5311</td>
<td>Experimental Geomechanics <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 5321 / GeoE 5321</td>
<td>Geomechanics <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 5341</td>
<td>Wave methods for nondestructive testing <em>(40 hours)</em>#</td>
<td>4</td>
</tr>
<tr>
<td>CE 5415</td>
<td>Masonry Structures* <em>(50 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 5542</td>
<td>Experimental Methods in Env. Engineering <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 5552</td>
<td>Environmental Microbiology Lab <em>(40 hours)</em></td>
<td>1</td>
</tr>
<tr>
<td>CE 8022</td>
<td>Numerical Methods for Free and Moving Boundary Problems*</td>
<td>3</td>
</tr>
<tr>
<td>CE 8200</td>
<td>Transportation Seminar</td>
<td></td>
</tr>
<tr>
<td>CE 8202</td>
<td>Networks and Places: Transportation, Land Use, and Design <em>(40 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 8214</td>
<td>Transportation Economics <em>(50 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 8219</td>
<td>MS-Plan C Project for Transportation Engineering*</td>
<td>2</td>
</tr>
<tr>
<td>CE 8300</td>
<td>Geomechanics Seminar</td>
<td></td>
</tr>
<tr>
<td>CE 8302 / GeoE 8302</td>
<td>Soil/Rock Plasticity and Limit Analysis *(40 hours)</td>
<td>4</td>
</tr>
<tr>
<td>CE 8341</td>
<td>Dynamics of Soils and Foundations <em>(40 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 8400</td>
<td>Structures Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CE 8401</td>
<td>Fundamentals of Finite Element Method <em>(50 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8402</td>
<td>Nonlinear Finite Element Analysis <em>(50 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8441</td>
<td>Ductile Behavior of Steel Structures <em>(50 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8461</td>
<td>Structural Reliability <em>(50 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8490</td>
<td>Optimization and Random Vibration <em>(50 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8490</td>
<td>Fracture and Sealing <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8500</td>
<td>Environmental Seminar</td>
<td>1</td>
</tr>
<tr>
<td>CE 8502</td>
<td>Environmental Fluid Mechanics II <em>(40 hours)</em>#</td>
<td>4</td>
</tr>
<tr>
<td>CE 8504</td>
<td>Theory of Unit Operations <em>(40 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 8505</td>
<td>Biological Processes <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8506</td>
<td>Stochastic Hydrology <em>(50 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 8508</td>
<td>Ecofluid Dynamics <em>(40 hours)</em></td>
<td>4</td>
</tr>
<tr>
<td>CE 8511</td>
<td>Mechanics of Sediment Transport <em>(50 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8542</td>
<td>Organic Environmental Chemistry <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8581</td>
<td>Research and Professional Ethics in Water Resources and Environmental Science</td>
<td>0.5</td>
</tr>
<tr>
<td>CE 8601</td>
<td>Introduction to Stream Restoration <em>(40 hours)</em></td>
<td>3</td>
</tr>
<tr>
<td>CE 8602</td>
<td>Stream Restoration Practice <em>(50 hours)</em></td>
<td>3</td>
</tr>
</tbody>
</table>

* Meets minimum 40 hour project requirement (total hours indicated in parentheses)

# Meets oral presentation requirement.

† Ethics training
Civil Engineering MS Plan C
Student Tracking Form

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Student ID#</th>
</tr>
</thead>
</table>

**Project Courses:** 100 project hours, at least 40 hours per project are required

<table>
<thead>
<tr>
<th>Term &amp; Yr</th>
<th>Dept &amp; Course No.</th>
<th>Title</th>
<th># of Project hours</th>
<th>Instructor</th>
<th>Instructor’s signature and date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Ethics Training:** each year students are required to have an ethics seminar, course, or training

<table>
<thead>
<tr>
<th>... First Year</th>
<th>Description &amp; date:</th>
<th>... Second Year</th>
<th>Description &amp; date:</th>
</tr>
</thead>
</table>

**Oral Presentation:** one oral presentation of at least 10 minutes

<table>
<thead>
<tr>
<th>Topic:</th>
<th>Instructor signature &amp; date:</th>
</tr>
</thead>
</table>

My Signature below indicates that I have completed the above requirements of a Civil Engineering MS Plan C.

---

Student Signature  

---

Signature of Advisor  

---

Signature of DGS  

---

Updated August 22, 2012
Graduate Degree Plan

DIRECTIONS—Use this form to declare your degree plan. Review your major field’s student handbook and confer with your faculty adviser and Director of Graduate Studies (DGS) to ensure your plan fulfills minimum graduate education and program requirements. Obtain original signatures from your faculty adviser, co-adviser (if applicable), major field DGS, and minor field DGS (if applicable) indicating their approval and submit to your graduate program for review. A copy of your plan will be sent to your University email following final review.

PART 1. Student information

University ID
University email
@umn.edu
Student name (Last, first, middle)

PART 2. Degree information

Degree sought
Major
Track (if applicable)
Minor (if declared)
Language Requirement (if required)

If Master’s Degree (check one)
- Plan A
- Plan B
- Plan C
Number of thesis credits, if applicable
- 10 Master’s Plan A thesis credits (8777)
- 24 Doctoral thesis credits (8888)
- 4 Doctoral thesis credits (8888)—D.M.A. only
- 12 Doctoral thesis credits (8888)—Ed.D. only

PART 3. Transfer coursework

List all transfer work in chronological order. Official transcripts must be attached unless previously submitted with your application for admission. NOTE: Course type “other” refers to outside of major and/or minor field coursework. A course cannot be used to meet both “major” and “other” course requirements.

<table>
<thead>
<tr>
<th>Term and year</th>
<th>Check one</th>
<th>Department &amp; course number</th>
<th>Course title</th>
<th>Number of semester credits</th>
<th>Grade</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Major</td>
<td></td>
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<tr>
<td></td>
<td>Other</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

TRANSFER COURSEWORK ONLY

To request copies of this form in an alternative format, please call the Disabilities Services liaison at 612-625-9578. The University of Minnesota is an equal opportunity employer and educator. This form is printed on paper made from no less than 20 percent post-consumer waste.
PART 4. University of Minnesota coursework

List University of Minnesota coursework required by your Graduate Program in chronological order, beginning with earliest term and year. Do not include the following: xxxx-8777, xxxx-8888, xxxx-8666, Grad 999, xxxx-8333, or xxxx-8444, coursework not applied to the degree. NOTE: Course type “other” refers to outside of major and/or minor field coursework. A course cannot be used to meet both “major” and “other” course requirements.

<table>
<thead>
<tr>
<th>Term and year</th>
<th>Check one</th>
<th>Department &amp; course number</th>
<th>Course title</th>
<th>Number of semester credits</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PART 5. Course totals (transfer and UMN coursework)

Major course credit total __________ Other/minor course credit total __________ Total course credit total __________

PART 6. Approval

<table>
<thead>
<tr>
<th>Adviser name</th>
<th>Adviser signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Co-adviser name</td>
<td>Co-adviser signature</td>
<td>Date</td>
</tr>
<tr>
<td>DGS (major field) signature</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>DGS (minor field) signature</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>College signature</td>
<td>Date</td>
<td></td>
</tr>
</tbody>
</table>

Graduate program/college office use only: note any exceptions to University policy

College signature

Administrative officer

Date
Graduate Student Petition form

DIRECTIONS—All petitions require review and recommendation by the adviser, co-adviser (if applicable), the Director of Graduate Studies (DGS), and college. If you are declaring a minor or making changes to minor field coursework, the signature of the DGS for the minor is required.

Once all signatures are obtained, please submit the completed petition to your graduate program. A copy of the petition will be emailed to you at your university email account upon final processing.

Use this Petition form for the following:

1. Request to change coursework on your approved Graduate Degree Plan (GDP), including transfer work.
   - Write “Remove from my GDP” and identify courses by department, course number, title, number of credits, grade, term and year that you wish to remove and/or “Add to my GDP” identifying courses in the same manner. If changes are substantial, please submit a revised GDP form in lieu of a petition.
   - Attach appropriate transcript(s), if transferring coursework from another institution; all coursework to be transferred must be complete, with grades. If the coursework is currently listed on your approved GDP but was not previously graded, no departmental signatures are required.

2. Request to change or remove the language requirement on your approved GDP.

3. Request to add or remove a minor.
   - For doctoral students, minors must be declared on the GDP prior to taking the preliminary oral examination.
   - For master’s students, minors must be declared prior to the final examination (if applicable); or prior to filing for degree conferral (if no final examination requirement).

If none of the above conditions apply, consult your program, college, or Graduate Student Services and Progress.

To request copies of this form in an alternative format, please call the Disabilities Services liaison at 612-625-9578. The University of Minnesota is an equal opportunity employer and educator. This form is printed on paper made from no less than 20 percent post-consumer waste.
## Graduate Student Petition form

To ensure privacy online, open in Adobe Reader (free at Adobe.com). Please add the required signature(s) in blue or black ink.

### PART 1. Student information

<table>
<thead>
<tr>
<th>University ID</th>
<th>University email</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@umn.edu</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student name</th>
<th>First</th>
<th>Middle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PART 2. Degree information

<table>
<thead>
<tr>
<th>Degree sought</th>
<th>Major</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track (if applicable)</td>
<td>Minor (if declared)</td>
</tr>
</tbody>
</table>

### PART 3. Petition request

Describe your request below. To make changes to the Graduate Degree Plan, list courses by DEPARTMENT, COURSE NUMBER, TITLE, NUMBER OF CREDITS, GRADE, TERM and YEAR.

### PART 4. Approval

<table>
<thead>
<tr>
<th>Adviser name</th>
<th>Co-adviser name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adviser signature</td>
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<td>Date</td>
</tr>
<tr>
<td>College signature</td>
<td>Date</td>
</tr>
</tbody>
</table>

office use only
processed
administrative officer ________ date ________
Preliminary Written Exam Form

This document is to certify that,

Last name

First name

has taken the doctoral preliminary written exam on,

Date

Committee Member: Pass Pass with reservations Fail Remove Reservations

1.

2.

3.

4.

We recommend that the student:

☐ Pass the Exam ☐ Pass with Reservations ☐ Fail

Advisor Signature

Date

Return to Tiffany Ralston in CE 143 after completion
DEPARTMENT OF CIVIL ENGINEERING ANNUAL STUDENT REVIEW  
2013-2014

Name:  
Student ID#:  
Email:  
Sem/Yr entered CE program:  
Expected graduation date:  
Adviser(s):  

Degree:  
☐ MS only  
☐ PhD  
☐ MCE / MGeoE  
☐ Plan A  
☐ Plan B  
☐ Plan C  

To be completed by student

Program Milestones – check all items completed

All Students  
☐ Graduate Degree Plan  
☐ Course work completed  
☐ Thesis credits completed  

Ph.D. Students Only  
☐ Written preliminary exam  
☐ Oral preliminary exam  
☐ Final Exam

Personal Accomplishments – attach separate sheet if necessary

Cumulative GPA in CE program:  
Number of course credits completed:  
Number of course credits remaining:  

Funding during current school year – check as many boxes as apply  
☐ TA  
☐ RA  
☐ Fellowship  
☐ Personal  
☐ Funds  
☐ Other

List grants, fellowships, or other awards that you have received (include full name of source and amount received).

List meetings at which you gave an oral or poster presentation during the last 12 months.

Give full citation of any publications you have (indicate if in press or already published).
List your teaching experiences and include dates (*TA, Preparing Future Faculty, etc.*).

List CE-related outreach activities you have conducted (*Include dates*).

List any additional accomplishments/comments/explanations.

Student’s Signature ____________________________ Date ______________
To be Completed by Adviser:

Comments:

Please verify your advisees’ information at: https://www.umreports.umn.edu → Graduate School Reports → Graduate School Active Advising Assignments

Adviser’s Signature __________________________________________________________________________ Date

Comments:

DGS Signature __________________________________________________________________________ Date
GRADUATE STUDENTS

Please fill out or e-mail me your office information. I need this form returned to me IMMEDIATELY

IT IS IMPORTANT FOR THE FRONT OFFICE TO HAVE THIS INFORMATION.

TO: Graduate Students

Please fill in the form below and return to the Secretary of Graduate Studies.

Name__________________Student ID # __________________

Office Phone: ________________________________

E-mail: ________________________________

Room: ________________________________

Desk #: ________________________________

Advisor: ________________________________
BUILDING ACCESS REQUEST/AUTHORIZATION FORM

As an advisor or principal investigator, I request that the person named below receive the following access to the Civil Engineering Building for work or research related purposes.

Advisor/PI NAME ____________________________ Advisor/PI Signature ____________________________ Date _________________

STUDENT/EMPLOYEE/VISITOR NAME: ____________________________________________________________

Student/Employee ID#: ____________________________ Student/Employee Email: ______________________________

_____ Student    _____ Visitor    _____ Other

<table>
<thead>
<tr>
<th>Room Number</th>
<th>Key Code/Key #</th>
<th>Deposit Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example: 122</td>
<td>Example: 156 GX1/1</td>
<td></td>
</tr>
<tr>
<td>UCard Building Access</td>
<td>600953</td>
<td></td>
</tr>
</tbody>
</table>

Deposit required for each key: $10.00 for all laboratories
$20.00 for computer labs, offices, and cabinets

Expected End Date: _________________

Keys must be returned to Room 122 CivE in order to receive a deposit refund.

Your privilege to use this building will be terminated and disciplinary action will be initiated for the following:

1. Passing along or loaning keys to anyone else.
2. Tampering with or disabling any lock and/or security system on any door.
3. Having in your possession a key which is not assigned to you.
4. Carrying out any action which jeopardizes the safety of any individual or the security of this facility or any equipment within it.

I agree to the terms as mentioned above:

__________________________________________ Date _________________

______________________________

__________________________________________ Date _________________

1 Everyone requiring lab access is REQUIRED to complete online safety training and attach proof of completion to this sheet before keys to laboratories are issued. Training sessions that must be completed are: Introduction to Research Safety, Chemical Safety, and Chemical Waste Management available online at: http://www.dehs.umn.edu/training_newlabsafety.htm

2 Your deposit will be forfeited and a hold placed on your student record if your key(s) is not returned within 30 days of your intended end date.
DEGREE COMPLETION STEPS
Master’s Plan A

In order to receive your degree, the following procedures must be completed. You must maintain active student status by registering every fall and spring semester until your degree is awarded. All forms must be submitted to the Graduate Student Services and Progress (GSSP) office unless otherwise noted. Contact your graduate program office for program-specific requirements and deadlines.

1. Complete Graduate Degree Plan
   Submit at least one semester prior to anticipated graduation

2. Assign members to master’s final exam committee
   Complete at least one month prior to exam via www.grad.umn.edu/students/forms/masters/index.html

3. Request Graduation Packet
   The packet will include the Graduate Application for Degree form and Reviewers’ Report form. You can request it in person or online up to one semester before your master’s final exam.

4. Submit Graduate Application for Degree
   Submit to One Stop by the first business day of anticipated month of graduation

5. Submit Reviewers’ Report
   Submit prior to master’s final exam to obtain the Final Examination Report form.

6. Submit Final Examination Report
   Must be submitted no later than the last business day of anticipated month of graduation.

7. Submit Thesis
   Submit by the last business day of anticipated month of graduation. Consult your Graduation Packet for formatting guidelines.

Questions?
Contact the Graduate Student Services and Progress office (160 Williamson Hall).
www.grad.umn.edu/students/masters/index.html

Renae Faunce
Graduate Degree Plans & Committee Assignments
gscmte@umn.edu
612-625-5833

Amber Cellotti
Degree Progress & Completion
gsmast@umn.edu
612-625-4019
In order to receive your degree, the following procedures must be completed. You must maintain active student status by registering every fall and spring semester until your degree is awarded. All forms must be submitted to the Graduate Student Services and Progress (GSSP) office unless otherwise noted. Contact your graduate program office for program-specific requirements, deadlines, and to determine if your program requires a committee.

1. **Complete Graduate Degree Plan**
   Submit at least one semester prior to anticipated graduation

2. **Assign members to master’s final exam committee**
   If applicable, complete at least one month prior to exam via www.grad.umn.edu/students/forms/masters/index.html

3. **Request Graduation Packet**
   The packet will include the Graduate Application for Degree form and the Final Examination Report/Final Report form. You can request it in person or online up to one semester before your master's final exam.

4. **Submit Graduate Application for Degree**
   Submit to One Stop by the first business day of anticipated month of graduation

5. **Submit Final Examination Report/Final Report**
   Submit by the last business day of anticipated month of graduation

---

**Questions?**
Contact the Graduate Student Services and Progress office (160 Williamson Hall).
http://www.grad.umn.edu/students/masters/index.html

**Renae Faunce**
Graduate Degree Plans & Committee Assignments
gscmte@umn.edu
612-625-5833

**Amber Cellotti**
Degree Progress & Completion
gsmast@umn.edu
612-625-4019
In order to receive your degree, the following procedures must be completed. You must maintain active student status by registering every fall and spring semester until your degree is awarded. All forms must be submitted to the Graduate Student Services and Progress (GSSP) office unless otherwise noted. Contact your graduate program office for program-specific requirements and deadlines.

1. **Complete Graduate Degree Plan**
   - Submit at least one semester prior to your preliminary oral exam

2. **Assign members to preliminary oral exam committee**
   - Complete at least one month prior to exam via www.grad.umn.edu/students/forms/doctoral/index.html

3. **Complete Preliminary Written Exam Report**
   - Must be on file to be authorized to take preliminary oral exam

4. **Schedule preliminary oral exam**
   - Notify GSSP of scheduled exam at least one week in advance

5. **Submit Preliminary Oral Report**
   - Submit for your record to reflect doctoral candidacy

6. **Assign members to doctoral final exam committee**
   - Complete at least one month prior to exam via www.grad.umn.edu/students/forms/doctoral/index.html

7. **Request Graduation Packet**
   - Packet will include the Graduate Application for Degree form and Reviewers’ Report form.
   - You can request it in person or online up to one semester before your doctoral final exam.

8. **Schedule doctoral final exam**
   - Notify GSSP of scheduled exam at least one week in advance

9. **Submit Graduate Application for Degree**
   - Submit to One Stop by the first business day of anticipated month of graduation

10. **Submit Reviewers’ Report**
    - Submit prior to your defense

11. **Submit Doctoral Final Exam Report**
    - Submit no later than the last business day of anticipated month of graduation

12. **Submit dissertation/project**
    - Submit by the last business day of anticipated month of graduation. Consult Graduation Packet for formatting guidelines.

**Questions?**

Contact the Graduate Student Services and Progress office (160 Williamson Hall)
http://www.grad.umn.edu/students/doctoral/index.html

**Renae Faunce**
Graduate Degree Plans & Committee Assignments
gscmte@umn.edu
612-625-5833

**Stacia Madsen**
Degree Progress & Final Exams
gsdoc@umn.edu
Prelim Exams
gradssp@umn.edu
612-625-0168
Completing the CITI RCR Tutorial for NSF-Funded Projects
Instructions for New Users

The Collaborative IRB Training Initiative (CITI), hosted by the University of Miami Medical School, offers training to meet the research ethics training requirement to work on a project funded by the National Science Foundation (NSF). This training is to be used only by undergraduate and graduate students working on NSF-funded projects. It does not satisfy any part of the University’s RCR requirements for faculty or postdocs. To access this curriculum for the first time and complete the requirement:

1. Go to: https://www.citiprogram.org/.
2. Register as a "new user".
3. Select "University of Minnesota" from the list of participating institutions.
4. Create a user name and password and complete the rest of the member information. Please use only your UMN ID (sometimes called your X.500 ID) and email address – e.g., you@umn.edu. Do not use a gmail or other email account. Your password does not have to be the same one you use for your UMN accounts, but you must be able to remember it in case you need to re-enter the CITI system.
5. Do not apply for CME/CEU credits for completing the tutorial. You will be charged for them and this option does not apply to you.
6. Go directly to question 6 ("RCR Course Enrollment") and select the version of the RCR course you will complete. Select the version that most closely relates to your field or major.
7. You do not need to answer any of the other questions on this page. If you think you need to complete any of the other training listed on the page, such as human subjects protection training, check with your supervisor or lead scientist to ensure the training is necessary. See directions at the end of this list if you are required to complete human subjects protection training.
8. Click the “Continue” button at the bottom of the questionnaire.
9. The "Main Menu" page lists the courses you selected to complete. Select the "enter" link to begin the RCR course, or the "Add a course" link to make changes.
10. You can stop work on the tutorial at any point. To reenter the tutorial, return to the CITI website listed above and enter your user name and password, then select the appropriate module to reenter.
11. A report of your completion will be sent to RCR Programs and will be added to your University online training record. You do not need to report anything.
12. It is strongly recommended that you print or download a copy of your CITI completion certificate for your own records. The University does not receive or store individual copies of the detailed completion certificates from CITI.

Directions for completing CITI human subjects protection course, if required:

1. On the "Select Curriculum" page, go to question 1 ("Select the group. . .") and select either Group 1 or Group 2, based on the type of research you do. Do not select “I have completed my Basic training at University of Minnesota and would like to complete my Refresher course requirements.”
2. Go to question 2, and select only “I have not previously completed an approved Basic Course.”
3. For question 3, select “Not at this time”.
4. Go to question 5 ("RCR Course Enrollment") and select the version of the RCR course you will complete.
5. Continue directions above.
6. To record completion of the human subjects protection training, go to http://www.research.umn.edu/reo/education/core.html. On this page, click the title to expand the "Additional courses" section, then scroll to the bottom of the page and look for the "report completion. . . " links and click the one for the curriculum you completed, then follow the directions. It is recommended that you keep a copy of your CITI completion certificate for your own records. The University does not receive or store individual copies of the detailed completion certificates from CITI.
General CE Classes

CE 5094 - Civil Engineering Research
(1.0 - 4.0 cr [max 4.0 cr]; Prereq-#; fall, spring, every year)
Research or independent study in concrete, structural steel, soils, hydraulics, hydrology/municipal, environmental, or transportational problems. Investigations, reports, tests, designs.

CE 5170 - Internet Based Study
(1.0 - 5.0 cr [max 15.0 cr]; Prereq-Upper div CSE; A-F or Aud, fall, offered periodically)
Internet based teaching with bi-weekly exercises on topic of concern.

CE 5180 - Special Topics
(1.0 - 4.0 cr [max 4.0 cr]; Prereq-#; A-F or Aud, fall, spring, offered periodically)
Topics vary depending on faculty and student interests.

CE 8094 - Civil Engineering Research
(1.0 - 4.0 cr [max 12.0 cr]; Prereq-#; fall, spring, summer, every year)
Research or independent study in concrete, structural steel, soils, hydraulics, hydrology, and municipal, environmental, or transportational problems. Investigations, reports, tests, or designs.

CE 8333 - FTE: Master's
(1.0 cr; Prereq-Master's student, adviser and DGS consent; No Grade, fall, spring, summer, every year)
(No description)

CE 8444 - FTE: Doctoral
(1.0 cr; Prereq-Doctoral student, adviser and DGS consent; No Grade, fall, spring, summer, every year)
(No description)

CE 8490 - Special Topics
(1.0 - 4.0 cr [max 8.0 cr]; Prereq-#; A-F or Aud, fall, spring, offered periodically)
Topics vary depending on faculty and student interests.

CE 8666 - Doctoral Pre-Thesis Credits
(1.0 - 6.0 cr [max 12.0 cr]; Prereq-Doctoral student who has not passed prelim oral; no required consent for 1st/2nd registrations, up to 12 combined cr; % for 3rd/4th registrations, up to 24 combined cr; doctoral student admitted before summer 2007 may register up to four times, up to 60 combined cr; No Grade, fall, spring, summer, every year)
TBD

CE 8777 - Thesis Credits: Master's
(1.0 - 18.0 cr [max 50.0 cr]; Prereq-Max 18 cr per semester or summer; 10 cr total required [Plan A only]; No Grade, fall, spring, summer, every year)
(No description)
CE 8888 - Thesis Credit: Doctoral
(1.0 - 24.0 cr [max 100.0 cr]; Prereq-Max 18 cr per semester or summer; 24 cr required; No Grade, fall, spring, summer, every year)
(No description)

Stream Restoration Certificate

CE 8601 - Introduction to Stream Restoration
(3.0 cr; A-F or Aud, fall, every year)
Background material required to participate in a stream restoration project. How to assimilate geologic, hydrologic, and ecological data at watershed and reach scales to plan a restoration project and evaluate/critique existing stream restoration projects.

CE 8602 - Stream Restoration Practice
(2.0 cr; =ESCI 8602, EEB 8602; Prereq-8601 or Geo 8601; S-N only, summer, every year)
Field experience, group design project. Students provide a stream restoration context for each other’s elective coursework, complete critical assessments of stream restoration projects, and design a stream restoration site.
Environmental/Water Resource Engineering Classes

CE 5511 - Urban Hydrology and Land Development
(4.0 cr; Prereq-CE 4501; A-F or Aud, fall, every year)
Urban hydrology for small watersheds and the management of storm water quality and quantity.

CE 5541 - Environmental Water Chemistry
(3.0 cr [max 4.0 cr]; Prereq-3501, Chem 1021, Chem 1022; A-F or Aud, fall, every year)
Introduction to water chemistry. Physical chemical principles, geochemical processes controlling chemical composition of waters, behavior of contaminants that affect the suitability of water for beneficial uses.

CE 5542 - Experimental Methods in Environmental Engineering
(3.0 cr; Prereq-3501, Chem 1021, Chem 1022; A-F or Aud, fall, spring, offered periodically)
Tools necessary to conduct research in environmental engineering and chemistry. Theory of operation of analytical equipment. Sampling and data handling methods, statistical analyses, experimental design, laboratory safety. Lecture, laboratory.

CE 5543 - Introductory Environmental Fluid Mechanics
(4.0 cr; Prereq-3502 or AEM 4201 or ChEn 3005; A-F or Aud, fall, odd academic years) Divergence theorem, Convective flux, Mass conservation, Biological reactions, Random walk and diffusive flux, Receptors and channels, Momentum conservation, Navier-Stokes equations, Boundary layer, Chemotaxis, Phototaxis, Shear dispersion, Turbulent flows.

CE 5551 - Environmental Microbiology
(3.0 cr; Prereq-[Upper div or grad] student; A-F or Aud, fall, every year)
Role of microorganisms in environmental bioremediation, pollution control, water/wastewater treatment, biogeochemistry, and human health. Lecture.

CE 5552 - Environmental Microbiology Laboratory
(1.0 cr; Prereq-5551 or &5551; A-F only, fall, every year)
Basic microbiological techniques: isolation, identification/enumeration of bacteria, BOD, biodegradable kinetics, disinfection. Lab.

CE 5561 - Air Quality Engineering
(3.0 cr; Prereq-Grad student in engineering or #; A-F only, spring, every year)
Introduction to air pollution problems/solutions, local to global. Quantitative analysis of chemistry and physics of atmospheric pollutants. Sources, sinks, and controls; atmospheric transport and transformation; air quality management and regulation; health impacts; global issues.
CE 5570 - Design for Sustainable Development: Discovery
(1.0 - 3.0 cr [max 3.0 cr]; Prereq-Juniors or seniors with minimum 3.0 GPA or grad student; A-F only, fall, every year)
Intensive, experiential learning opportunity on infrastructure, development, environment issues in Delhi, India.

CE 5571 - Design for Sustainable Development: Innovate
(3.0 - 4.0 cr [max 8.0 cr]; Prereq-#; A-F only, fall, spring, every year)
Hands-on training evaluating technologies to improve health/quality of life in developing countries. Students work in teams/students in India to select technology or service. Design business serving low-income community in India.

CE 5572 - Design for Sustainable Development: Create I
(2.0 cr [max 4.0 cr]; Prereq-#; A-F only, spring, every year)
Hands-on experience regarding entrepreneurship/social entrepreneurship.

CE 5573 - Design for Sustainable Development: Create II
(1.0 cr [max 2.0 cr]; S-N only, spring, every year)
Weekly discussion on social or environmental venture.

CE 8500 - Environmental Seminar
(1.0 cr [max 3.0 cr]; Prereq-grad CE major or #; S-N or Aud, spring, every year)
Broad coverage of topics in environmental engineering and science. Speakers consist primarily of graduate students in these areas, but presentations may also be given by University faculty and guest speakers.

CE 8501 - Environmental Fluid Mechanics I
(4.0 cr; Prereq-3502 or equiv or #; A-F or Aud, fall, every year)
Basic laws of mass, energy, and momentum transport in environmental fluid flow. Exact and approximate solutions for viscous flow. Irrotational flow; gravity waves. Similitude and inspectional analysis. Laminar boundary layers and slender flows. Application to engineering and environmental problems.

CE 8502 - Environmental Fluid Mechanics II
(4.0 cr; Prereq-8501 or #; A-F or Aud, fall, spring, every year)
Reynolds equations. Developed and developing turbulent boundary layers and slender flows, and their interaction with inviscid flow. Jets, plumes, wakes and shear layers. Statistical description of turbulence; data analysis.

CE 8503 - Environmental Mass Transport
(4.0 cr; Prereq-3502, 3501 or equiv or #; A-F or Aud)
Principles of intraphase and interfacial chemical transport and fate in the environment, specifically the processes of diffusion, dispersion, and convection. Application to surface water and atmospheric mixing, dispersion in groundwater, and transport between these media.
CE 8504 - **Theory of Unit Operations**  
(4.0 cr; Prereq-5541; A-F or Aud, fall, spring, offered periodically)  
Theoretical basis, design, operation of chemical/physical processes used in treating/controlling water quality. Adsorption, ion exchange, sedimentation, thickening, filtration, gas transfer, coagulation, flocculation, membrane processes, disinfection.

CE 8505 - **Biological Processes**  
(3.0 cr; Prereq-4502, 4501 or #; A-F or Aud, spring, every year)  
Theoretical principles underlying chemical and biological wastewater treatment processes, including aerobic and anaerobic treatment for organic carbon and nutrient removal. Mathematical models of microbial growth kinetics and mass transport in suspended growth and attached film applications are developed.

CE 8506 - **Stochastic Hydrology**  
(4.0 cr; Prereq-Stat 3021 or equiv or #; A-F or Aud)  
Analysis and synthesis of hydrologic series and systems; derived distributions; uncertainty and risk analysis; flood frequency analysis; multivariate time series analysis; correlation and spectral analysis; series of long-range dependence; linear estimation; geostatistics; sampling networks; hydrologic forecasting.

CE 8507 - **Advanced Methods in Hydrology**  
(4.0 cr; Prereq-8506; A-F or Aud)  
Notions of scale-invariance, scaling, and multiscaling in geophysical processes; methods of multiscale analysis; wavelet transforms; time-frequency-scale analysis and fractal analysis. Applications in atmospheric, hydrologic, and geomorphologic processes.

CE 8508 - **Ecological Fluid Mechanics**  
(4.0 cr; Prereq-3502 or equiv; A-F or Aud, fall, every year)  
Fluid mechanics of microbiological processes in lakes, rivers, and wetlands. Small-scale fluid motion, nutrient uptake, growth kinetics, ecosystem metabolism, scaling, lab/field microstructure measurements.

CE 8511 - **Mechanics of Sediment Transport**  
(3.0 cr; =ESCI 8511; Prereq-3502 and 4501 or #; A-F or Aud, fall, every year)  

CE 8521 - **The Atmospheric Boundary Layer**  
(4.0 cr; Prereq-CSE or COAFES grad student or #; A-F or Aud, summer, offered periodically)  
Land-atmosphere interactions and turbulent transport in the atmospheric boundary layer (ABL), the lowest part of the atmosphere. ABL development and dynamics. Turbulence, surface energy balance, spectral analysis, similarity theory. Flow over homogeneous and heterogeneous surfaces. Atmospheric stability, measurement, simulation of turbulent fluxes.
CE 8541 - Aquatic Chemistry
(3.0 cr; Prereq-4541 or #; A-F or Aud, spring, offered periodically)
Advanced course on water chemistry; physical chemical principles and geochemical processes controlling
the chemical composition of natural waters, soil- and sediment-water interactions. Emphasizes behavior
of inorganic contaminants in natural waters and engineered systems and dissolved natural organic matter.

CE 8542 - Chemistry of Organic Pollutants in Environmental Systems
(3.0 cr; Prereq-[4541, 5541] or #; A-F or Aud)
Structural characteristics and physico-chemical properties of organic contaminants in aquatic systems.
Emphasizes PCBs, PAHs, dioxins, insecticides, herbicides, and chlorinated solvents. Factors affecting
their transport/transformation. Structure- and property-activity relationships, their use in predicting
organic chemical behavior.

CE 8551 - Environmental Microbiology: Molecular Theory and Methods
(4.0 cr; A-F or Aud, fall, even academic years)
Introduction to microbial genetics and molecular phylogeny. Application of nucleic-acid techniques in
environmental microbiology and microbial ecology.

CE 8552 - Groundwater Microbiology: Laboratory
(4.0 cr; Prereq-grad CE major or #, exposure to basic environ engr and microbiol; A-F or Aud)
Subsurface microbial ecology, biogeochemical cycling, metabolic classification of subsurface bacteria,
modeling bacterial transport, diagnosis of microbial induced fouling (MIF) events, bioremediation of
contaminated aquifers. Lectures and four lab hours per week.

CE 8553 - Biofilms
(3.0 cr; Prereq-4551 or #; A-F or Aud)
Science/engineering concepts to investigate formation/function of biofilms. Properties/composition of
biofilms, transport/transformation processes in biofilms, communication in biofilms, mathematical
modeling. Applications in environmental engineering.

CE 8561 - Analysis and Modeling of Aquatic Environments I
(3.0 cr; Prereq-One sem grad work or #; A-F or Aud, spring, every year)
Introduction to hydrologic transport and water quality simulation in natural water systems. Deterministic,
process-oriented water quality model development. Mixed cell models, advection, turbulent
models to management problems.

CE 8562 - Analysis and Modeling of Aquatic Environments II
(3.0 cr [max 6.0 cr]; Prereq-One sem grad work or #; fall, spring, offered periodically)
Models for transport/transformation of pollutants, nutrients, particulates, ecosystems, etc., from recently
completed theses, articles, or research in progress. Students review assigned recent papers, make
presentations, and analyze a topic of their choice.
CE 8563 - **Industrial Waste Treatment**
(3.0 cr; Prereq-3501, 4501, 4502, or equiv or #; A-F or Aud)
Introduction to industrial waste treatment. Individual industries, emphasizing constituents of the waste-stream and how best to recycle, recover, or reduce wastes. Cost concerns and regulations. Field trips to various industries to gain first-hand knowledge of processes involved in treatment.

CE 8571 - **Hydraulic Measurements**
(3.0 cr; Prereq-3502 or #; A-F or Aud)
Lab and field methods and instruments for measuring hydraulic pressure, velocity, and discharge.

CE 8572 - **Computational Environmental Fluid Dynamics**
(4.0 cr; Prereq-grad student in CSE or COAFES or #; A-F or Aud, spring, offered periodically)
Finite difference methods, their application to solution of one-/two-dimensional problems in environmental fluid dynamics. Stability, convergence, consistency, and accuracy of numerical schemes. Navier-Stokes equations, their physical meaning, and their numerical solution. Turbulence modeling: RANS and LES.

CE 8581 - **Research and Professional Ethics in Water Resources and Environmental Science**
(0.5 cr; =[WRS 8581]; Prereq-[Environmental engineering or water resource science] grad student or #; S-N or Aud, spring, every year)
Ethics of water resources science and environmental engineering research/practice. Societal responsibility, plagiarism, recording-keeping, authorship, confidentiality, conflicts of interest, professional relationships, fraud, reporting misconduct. Meets during first eight weeks of spring semester.
Geomechanics Engineering Classes:

CE 5311 - Experimental Geomechanics
(3.0 cr; Prereq-Upper div CSE or grad, 4301, GeoE 4301 or #; A-F or Aud, fall, odd academic years)

CE 5341 - Wave Methods for Nondestructive Testing
(4.0 cr; Prereq-[AEM 2021, AEM 3031] or #; A-F or Aud, fall, offered periodically)
Introduction to contemporary methods for nondestructive characterization of objects of civil infrastructure (e.g., highways, bridges, geotechnical sites). Imaging technologies based on propagation of elastic waves such as ultrasonic/resonant frequency methods, seismic surveys, and acoustic emission monitoring.
Lecture, lab.

CE 5351 - Advanced Mathematics for Civil Engineers
(3.0 cr; Prereq-[[Math 2263 or Math 2374 or equiv], [sr or grad student] in civil engineering]] or #; A-F or Aud)
Emphasizes skills relevant for civil engineers. Mathematical principles explained in an engineering setting. Applications from various areas in civil engineering.

CE 8300 - Seminar: Geomechanics
(1.0 - 3.0 cr [max 4.0 cr]; =[GEOE 8300]; S-N or Aud, fall, spring, every year)
Presentations on various topics.

CE 8301 - Fracture of Geomaterials
(3.0 cr; =[GEOE 8301]; Prereq-CSE grad student, 5321, GeoE 5321 or #; A-F or Aud, fall, offered periodically)

CE 8302 - Soil/Rock Plasticity and Limit Analysis
(4.0 cr; Prereq-CSE grad student, CE 4300 or #; A-F or Aud, spring, odd academic years)

CE 8311 - Advanced Rock Mechanics
(3.0 cr; =[GEOE 8311]; Prereq-CSE grad student, 4311 or GeoE 4311 or #; A-F or Aud, fall, offered periodically)
Stress transformations; principal stresses and directions. Friction and behavior of rock joints; stability of frictional sliding. Elastic waves; acoustic emission and seismic measurements. Fragmentation and rock breakage.
CE 8321 - Thermoporoelasticity  
(4.0 cr; = [GEOE 8321]; Prereq-CSE grad student, 5321 or GeoE 5321 or #; A-F or Aud, fall, offered periodically)  

CE 8322 - Storage and Flow of Granular Materials  
(3.0 cr; Prereq-CSE grad student, 4301 or #; A-F or Aud, fall, offered periodically)  

CE 8331 - Modeling Geomechanical Processes  
(3.0 cr; = [GEOE 8331]; Prereq-CSE grad student, 5321 or GeoE 5321; A-F or Aud, fall, offered periodically)  

CE 8336 - Boundary Element Methods I  
(3.0 cr; = [GEOE 8336]; Prereq-CSE grad student; A-F or Aud, fall, even academic years) Introduction to boundary element methods for elastostatics; stress discontinuity, displacement discontinuity, and direct boundary integral methods. Derivation of basic mathematical solutions from the theory of elasticity. Applications in geomechanics.

CE 8337 - Boundary Element Methods II  
(3.0 cr; = [GEOE 8337]; Prereq-8336, GeoE 8336 or #; A-F or Aud, fall, offered periodically)  
Transient and nonlinear problems.

CE 8341 - Dynamics of Soils and Foundations  
(4.0 cr; Prereq-Basic courses in soil mechanics/dynamics or #; A-F or Aud)  

CE 8351 - Advanced Groundwater Mechanics I  
(3.0 cr; Prereq-4351 or GeoE 4351, CSE grad student or #; A-F or Aud, fall, spring, offered periodically)  
Solute transport; shallow flow in leaky aquifers; complex variable methods in groundwater flow. Analytic element method: potentials for line sinks, line doublets, line dipoles, area sinks, and special analytic elements; singular Cauchy integrals; analytic elements in domains with closed boundaries.
CE 8352 - Advanced Groundwater Mechanics II
(3.0 cr; =GEOE 8352; Prereq-4351, CSE grad student or #; A-F or Aud, fall, offered periodically)
Applying complex methods, including conformal mapping, in groundwater mechanics; solving problems with free boundaries using the hodograph method; drains in aquifers with free boundaries; superposition of solutions with drains; singular Cauchy integrals; boundary elements.

CE 8361 - Engineering Model Fitting
(3.0 cr; Prereq-CSE grad student or #; A-F or Aud, fall, even academic years)
Parameter estimation and inverse modeling for civil and geological engineering. Formulating engineering model fitting problems; comparing and selecting various fit criteria; implementing numerical algorithms; analyzing and interpreting results using both statistical and qualitative tools; designing future measurement plans.
Structures Engineering Classes

CE 5411 - Applied Structural Mechanics
(3.0 cr; Prereq-[Upper div CSE or grad student] or #; A-F or Aud, fall, every year)
Principal stresses and failure criteria in 3 dimensions. Introduction to plane elasticity, energy methods, torsion of beams, and bending of unsymmetrical beams.

CE 5414 - Prestressed Concrete Design
(3.0 cr; Prereq-[Grade of at least C- in 4401, [upper div CSE or grad student]] or #; A-F or Aud, fall, every year)
Design of prestressed concrete structures. Time dependent effects, behavior, flexure, shear, torsion, deflections, continuous systems.

CE 5415 - Masonry Structures
(3.0 cr; Prereq-[Grade of at least C- in 3401, [upper div CSE or grad student]] or #; 4401 recommended; A-F or Aud, fall, offered periodically)

CE 8022 - Numerical Methods for Free and Moving Boundary Problems
(3.0 cr; Prereq-8401 or #; A-F or Aud)
Examples of free and moving boundary problems: metal solidification, filling, polymer molding, flow in porous media, ground freezing. Solutions: analytical, fixed finite difference, fixed finite element, front tracking schemes, general deforming finite element methods.

CE 8400 - Seminar: Structures
(1.0 cr [max 3.0 cr]; S-N or Aud, fall, spring, every year)
Content depends on instructor and student. Sample topics: theory of elasticity, optimization, reliability, wave propagation, soil dynamics, experimental equipment, wind forces on structures, structural failures, modern construction practices.

CE 8401 - Fundamentals of Finite Element Method
(3.0 cr; Prereq-4411 or #; A-F or Aud, spring, every year)
Elements of calculus of variations; weak and strong formulations of linear continuum and structural problems. Isoparametric elements and numerical integration. Basic concepts of error analysis and convergence. Analysis of plates and shells. Introduction to mixed methods and time dependent problems.

CE 8402 - Nonlinear Finite Element Analysis
(3.0 cr; Prereq-4401 or #; offered alt yrs; A-F or Aud)
CE 8411 - **Plate Structures**
(3.0 cr; Prereq-5411 or #; offered alt yrs; A-F or Aud)

CE 8412 - **Shell Structures**
(3.0 cr; Prereq-CSE grad or #; A-F or Aud, fall, offered periodically)

CE 8413 - **Fracture and Scaling**
(3.0 cr; Prereq-5411; A-F only, spring, offered periodically)
Linear elastic fracture mechanics, cohesive fracture, scaling, strength statistics.

CE 8421 - **Structural Dynamics**
(3.0 cr; Prereq-[3401, AEM 2012] or #; & 4411 recommended; A-F or Aud, fall, every year)

CE 8422 - **Earthquake Engineering**
(3.0 cr; Prereq-8421 or #; A-F or Aud, spring, offered periodically)
Introduction to earthquake engineering; response spectra; energy absorption capacity of structures; estimation of damping; earthquake resistant design; seismic design codes; base isolation; soil-structure interaction. Blast resistant design. Wind effects on structures.

CE 8431 - **Structural Stability**
(3.0 cr; Prereq-CSE grad student or #; A-F or Aud, fall, spring, offered periodically)
Classification of discrete/continuous conservative/nonconservative systems. Buckling analysis of, e.g., structural members, frameworks, and plates by classical/numerical methods. Offered alternate years.

CE 8432 - **Analysis of Thin-Walled Members**
(3.0 cr; Prereq-5411 or #; offered alt yrs; A-F or Aud)
Analysis of thin-walled structural members based on Vlasov theory and its modifications. Members with open and closed cross sections. Second-order effects and buckling. Influence of inelastic material behavior on buckling.

CE 8441 - **Ductile Behavior of Steel Structures**
(3.0 cr; Prereq-4411 or eqiv; A-F or Aud, fall, even academic years)
CE 8442 - **Nonlinear Analysis of Structural Systems**  
(3.0 cr; Prereq-4411, 4413 or #; offered alt yrs; A-F or Aud)  
Advanced theory and computational techniques for analyzing complex structural building systems. Using comprehensive geometric and material nonlinear analysis for designing steel and composite structures.

CE 8443 - **Fracture of Materials and Structures**  
(3.0 cr; Prereq-4401 or #; A-F or Aud, spring, every year)  

CE 8451 - **Behavior of Reinforced Concrete Structures**  
(3.0 cr; Prereq-4412 or #; A-F or Aud, fall, spring, every year)  
Advanced topics; experimental and theoretical background to design code provisions. Moment-curvature analysis of members. Shear; torsion; disturbed regions. Beam column joints; shear walls. Effects of earthquake loading. Limit analysis.

CE 8461 - **Structural Reliability**  
(3.0 cr; Prereq-[4412, 4413] or #; A-F or Aud)  
**Transportation Engineering Classes**

**CE 5211 - Traffic Engineering**
(3.0 cr; Prereq-3201, Stat 3021 or equiv; spring, offered periodically)
Principles of vehicle and driver performance as they apply to the safe and efficient operation of highways. Design and use of traffic control devices. Capacity and level of service. Trip generation and traffic impact analysis. Safety and traffic studies.

**CE 5212 - Transportation Policy, Planning, and Deployment**
(4.0 cr; =[PA 5232]; Prereq-3201 or equiv; fall, every year)

**CE 5213 - Transit Planning and Management**
(3.0 cr; Prereq-CE Jr, Sr, CE Grad student or #; A-F only, fall, every year)

**CE 5214 - Transportation Systems Analysis**
(4.0 cr; Prereq-3201; fall, every year)
Systems approach, its application to transportation engineering/planning. Prediction of flows and level of service. Production functions, cost optimization, utility theory, demand modeling, transportation network analysis, equilibrium assignment, decision analysis, multidimensional evaluation of transportation projects.

**CE 5253 - Asphalt and Portland Cement Concrete Materials**
(4.0 cr; Prereq-[3402, upper div CSE] or grad student or #; spring, offered periodically)

**CE 8200 - Seminar: Transportation**
(1.0 cr [max 3.0 cr]; S-N or Aud, fall, spring, every year)
Content depends on instructor and student. Sample topics: traffic safety, traffic flow theory, transportation materials, transportation planning, transportation economics.

**CE 8202 - Networks and Places: Transportation, Land Use, and Design**
(4.0 cr; =[01169]; A-F or Aud, spring, every year)
Relationship between land use and transportation. Developing synthetic design skills for linking land use transportation in urban/regional settlements. Economic, political, legal, institutional frameworks for planning. Parallel computer lab, practicum assignment.
CE 8211 - Theory of Traffic Flow  
(4.0 cr; fall, every year)  

CE 8212 - Advanced Travel Demand Modeling and Supply Analysis  
(3.0 cr; Prereq-5211 or equiv, Stat 3021; fall, spring, odd academic years)  
Application of random utility theory to model travel demand; deterministic and stochastic trip assignment; network design problems; transportation planning software.

CE 8213 - Advanced Transportation Technologies Seminar  
(1.0 cr; = [ME 8772]; S-N or Aud, fall, spring, offered periodically)  
Advantaged technologies specifically related to transportation. Topics drawn from core science/technology areas of human factors, intelligent vehicles, traffic modeling/management, sensing, communications, and controls.

CE 8214 - Transportation Economics  
(4.0 cr; A-F or Aud, spring, offered periodically)  

CE 8215 - Transportation Data Analysis  
(3.0 cr; Prereq-[8210 or 8211], [STAT 5021 or equiv]; spring, odd academic years)  
Maximum likelihood methods for generalized linear models, with logit/probit models. Linear regression as special cases. Applications to gap acceptance, discrete choice, speed/headway distributions, accident modeling. Introduction to Bayesian inference.

CE 8216 - Urban Traffic Operations  
(3.0 cr)  
Capacity analysis techniques for urban streets, optimal traffic signal timing, coordination, real time control. Traffic signal hardware, including detectors/controllers. Operational techniques for traffic management. Use of computer program packages in traffic engineering practice. Freeway operations/control.

CE 8217 - Transportation Network Analysis  
(4.0 cr; A-F only, fall, odd academic years)  
CE 8231 - Advanced Pavement Engineering
(3.0 cr; Prereq-4231 or #)
Advanced concepts in pavement analysis and design; computation of stresses and strains in flexible and rigid pavement systems; review of Boussinesq theory, Burmeister model, and Westergaard model; load transfer in rigid pavements; temperature induced stresses; mechanics of drainage.

CE 8233 - Advanced Bituminous Materials Characterization
(3.0 cr; Prereq-[3402, grad student] or #)
Applications of viscoelasticity, rheology, elastoplasticity, and fracture mechanics to bituminous materials characterization. Lectures, discussions of advanced research reading assignments, laboratory assignments.
CE Graduate Check Out Sheet

All masters and doctoral degree students are required to submit this sheet to Tiffany Ralston, 149 CE, after all degree requirements are complete. (This includes students completing residual work subsequent to degree completion or in transition to the doctorate.)

Student: ________________________ Date: ____________________
(Please Print)

Degree: ________________________
(If M.S. indicate plan A or B)

I.D.: ________________________

I attest that, to the best of my knowledge, I have returned all books, papers, equipment, etc. belonging to the Dept. or its personnel.

Student: ________________________

Advisor: ________________________

Check in with:
Payroll – 125 CE

Department Office –122 CE:
(Keys, access card)

Email Address: ________________________

Professional Position Taken: ________________________

Address: ________________________

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