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INTRODUCTION

Welcome to graduate study in the Lyles School of Civil Engineering at Purdue University! The purpose of this handbook is to acquaint new and continuing graduate students in the program with the opportunities and requirements for graduate study and graduate degrees. Useful information for our graduate students, including this document can be found at: https://engineering.purdue.edu/CE/Academics/Graduate/Current. For additional information or explanation of matters that are unclear, please contact the Civil Engineering Graduate Programs Office by calling (765) 494-2436 or emailing cegrad@purdue.edu.

Degree Titles.
Graduate degrees awarded by the Lyles School of Civil Engineering include:

- MSCE: Master of Science in Civil Engineering
- PhD: Doctor of Philosophy

SPECIALITY GROUPS

To facilitate the management of our approximately 400 graduate students, the Civil Engineering Graduate Program is subdivided into the following 9 areas.

- Architectural Engineering
- Construction Engineering
- Environmental Engineering
- Geomatics Engineering
- Geotechnical Engineering
- Hydraulic and Hydrologic Engineering
- Materials Engineering
- Structural Engineering
- Transportation and Infrastructure Systems Engineering

Opportunities for interdisciplinary study in a number of related areas are also available.

Should a student wish to change specialty group, s/he should identify a faculty member in the new area willing to act as primary advisor. The student should then obtain a “Change of Area” form from the CE Graduate Office and obtain the required signatures.

COUNSELING

Each student is assigned an initial advisor who will counsel the student on his/her program of study, special classes, and offer academic guidance. Students may decide to change their initial advisor after meeting the faculty. If the student is funded on a research assistantship or fellowship, they must discuss their contractual obligations with the advisor providing financial support before initiating the process to change advisors. All change of advisors must be coordinated through the Civil Engineering Graduate Programs Office and changed on the Plan of Study filed through myPurdue (mypurdue.purdue.edu). Until the time a Plan of Study is filed, an email with updates to the CE Grad Office and advisor will suffice.

Selecting an Advisor

All students, particularly those pursuing a thesis option, must identify an advisor (major professor) to direct the student’s
work. Civil Engineering requires that the major professor (chair or one co-chair) be from the student's Civil specialty area. It's highly recommended that the advisor be identified and communicated to the Civil Grad Office no later than the end of the second academic semester of the student's graduate program of study. If no faculty advisor is identified to serve as a major professor, the student may be asked to leave the program.

In conjunction with the Plan of Study expectations, master's students should have their advisor identified by the end of their second semester of study; PhD students should have their advisor identified by the end of their third semester of study.

GENERAL ACADEMIC REQUIREMENTS FOR GRADUATE STUDENTS


Requirements specific to the Lyles School of Civil Engineering follow:

Prerequisites
The general requirement for admission to graduate study in the Lyles School of Civil Engineering is satisfactory completion of a four-year baccalaureate degree at a college or university of recognized standing. Because of the diversity of programs available within the School, no one kind of undergraduate preparation is stipulated. However, if deficiencies in math, physics, or specific civil engineering studies are identified by the admissions committee or advisor, they are often required to be remedied in the first one or two semesters of a student's courses.

English Proficiency Requirements
At the time of enrollment, the records of all incoming on-campus graduate students are reviewed to determine whether or not they have met the minimum written English proficiency requirements as established by the Lyles School of Civil Engineering. The minimum requirements are as follows:

Domestic Students – A GRE verbal score of at least 151 (or 470 on the old scale) and a grade of “B” or better in all undergraduate composition courses. Students testing out of all undergraduate courses in composition and writing do not meet this requirement.

International Students – A GRE verbal score of at least 151 and a minimum score of 575 on the Test of English as a Foreign Language (TOEFL-paper), 233 on TOEFL (computer based), or 22 on the Writing and Speaking Section of the internet based TOEFL (iBT).

Students, who have not met the written English proficiency requirements, must meet with their major professor at the beginning of the semester and review their writing and speaking background to determine if any course of remediation is necessary. It is the responsibility of the major professor to ensure that the student is sufficiently proficient in English to fulfill his/her obligations, and prescribe remedial actions if warranted. Neither the remediation action nor the results need to be reported to the CE Graduate Office or to the Graduate School.

Possible options for gaining English Proficiency are:
- Passing the Oral English Proficiency Test (OEPT) – this is required of any international student who will be employed as a teaching assistant, but can also be used to show general proficiency.
• Enrolling in ENGL 62000 or ENGL 62100.
  ▪ ENGL 62000 is a 5 credit hour course: Classroom Communication in ESL for Teaching Assistants. Student must be enrolled in the Graduate School and be a non-native speaker of English. Permission of department required.
  ▪ ENGL 62100 is a 3 credit hour course: Written Communication for International Graduate Students - a course in English composition for non-native English speaking graduate students.

Continuation of Studies towards the PhD Degree.
Upon successful completion of the Master’s degree, a student may wish to continue towards a PhD degree within Civil Engineering at Purdue. A formal request must be filed in the Civil Engineering Graduate Programs Office 45 days before the end of the Master’s candidate semester.

Time Constraints for the PhD Program.
Pursuit of a PhD results in highly individualized programs in which progress toward completion will take varying amounts of time. However, the Lyles School of Civil Engineering expects that satisfactory progress toward the degree shall result in the completion of all requirements within six calendar years from the time a student is first admitted in a PhD program. In the event that the six years need to be exceeded, the student and their advisor should contact the CE Graduate Office to discuss plans for completion.

Research in absentia shall not result in an increase in this recommended maximum duration, and permission for research in absentia shall be granted with this time to matriculation/completion clearly understood by the student and the advisor.

Plan of Study
The Graduate School regards the Plan of Study (POS) as an individualized curriculum designed by the advisory committee to assist a student in achieving his/her educational objectives. In order to comply with Graduate School requirements, Civil Engineering students shall compose their POS in the following manner:

  ▪ An official transcript showing the completion of an undergraduate degree must be on file with the Purdue University Graduate School. This typically takes place in the first semester of Graduate Study.
  ▪ The POS should be submitted by the end of the second semester of graduate study for Master’s students and by the end of the third semester for PhD students. Master’s students wishing to complete their degree in two semesters should plan to submit their POS by the end of their first semester.
  ▪ Students will be asked to designate all courses as either primary or related based on their area of interest.
  ▪ The student must take the courses on the POS for a letter grade. Courses with Pass/Fail or Satisfactory/Unsatisfactory options cannot be used on the POS.
  ▪ The POS shall include the specific courses the student is expected to complete and any other requirements of the particular degree he/she is seeking.
    o Minimum requirements for the specific number of course credit hours are:
      ▪ Master’s non-thesis: 30 hours of course work
      ▪ Master’s thesis: 21 hours of course work and 9 hours of CE 69800 research hours with advisor.
      ▪ PhD: 48 hours of course work and 42 hours of appropriate CE 69900 research hours with advisor.
  ▪ Research credit hours are not listed on the Plan of Study. They are recorded on transcripts.
  ▪ Changes in the POS are permitted. A justification for each revision must be provided when approval for a change is requested. This action may be accomplished by completing a Change to the Plan of Study through the on-line system in myPurdue.
  ▪ The POS will generally be composed of 50000 or 60000 level courses or their equivalent from other universities.
    o In general, most Civil Engineering courses below the 50000 level are considered prerequisites for the
graduate degree and should not be included on the Plan of Study unless the student is from a discipline other than Civil Engineering. Permission to use a 30000-40000 level course may be granted on a case by case basis.

- No more than 3 hours of 30000 or 40000 level coursework will be permitted on a student's POS.
- A 30000 or 40000 level course requires a grade of B or better to appear on a plan of study. Further, it must not have been used for a prior BS degree.

The graduate school has implemented fees for late candidate deadlines: A $200 late fee will be charged to a student who submits their POS after the deadline in the semester they wish to be a graduation candidate. A formal request must still be made of the graduate school to accept the POS after the deadline. If the request is not approved, no fee will be charged.

Poor performance in a course, such as a "D" grade, is not an appropriate reason for modifying a Plan of Study. In such cases, the course must be taken over with a grade of C or better before granting of the degree. For a course on the Plan of Study in which the student receives a "D" or "F", the grade received from taking the course the second time will be counted toward the acceptable graduation index. Such courses cannot be eliminated from the student's Plan of Study. The Graduate School's policy on satisfactory performance is reproduced below:

A graduate student is expected to maintain a graduation index representing a B average (3.0/4.0 GPA) or better. Indices below this level are marked "under 3.0 GPA" on the grade reports. The student also is expected to earn S grades for research registration. Two consecutive sessions of U grades for research registration mandate that the department take formal action and inform the student, in writing, and the Graduate School with regard to discontinuation or conditions for continuation of the student's graduate study. In any event, the student's progress should be reviewed each session by the student's department. The student's progress also may be reviewed by the Graduate School. Should the student fail to perform in either coursework or research on a level acceptable to the advisory committee, the departmental graduate committee, or the dean of the Graduate School, he or she may be asked to discontinue graduate study at Purdue.

Registration Study Requirements

Master's Degree

- At least one-half of the total credit hours used to satisfy degree requirements, including CE 69800 Research Master's Thesis, must be earned in registration on the Purdue campus where the degree is to be granted.
  - Course credits obtained via televised instruction or computer course initiated at a Purdue campus shall be considered to have been obtained in residence on that campus.
- The student must be registered for at least one credit hour in the semester prior to graduating.
  - Note that thesis option students must maintain registration for at least one credit hour of research in each semester until the degree is awarded.
- During the semester of expected graduation, the student must register for an appropriate candidate course.

PhD Degree

- At least one-third of the total credit hours used to satisfy degree requirements, including CE 69900 Research PhD Thesis, must be earned (while registered for PhD study) on the Purdue campus where the degree is to be granted.
- A Master's degree from any accredited university may contribute up to 30 credit hours toward satisfying the 90 credit hour requirement. These courses should be approved by the student's committee using the 'Master's credit transfer to PhD POS' form.
- Coursework from one and only one Master's degree may be used toward the Plan of Study for a PhD.
- An official transcript showing the completion of the master's degree must be on file with the Purdue University Graduate School if courses are to be transferred to the PhD POS.
- The student must be registered for at least one credit hour in the semester prior to graduating. The student must maintain registration for at least one credit hour of PhD research in each semester until the degree is awarded.
During the semester of expected graduation the student must register for an appropriate candidate course.

Special note on candidate registration:
- A $200 late fee will be charged to a student who has been on the graduation candidate roster for the same degree for more than two consecutive semesters.

Transferring courses to a Purdue Graduate Plan of Study
- The Graduate School allows up to 30 credits from one Master’s degree to be transferred to a PhD plan of study. These can be coursework and/or research credits.
- A student can transfer up to 12 credits of non-degree coursework to their Purdue Graduate POS.
- A student can transfer as many credits as needed from a degree seeking program – as long as they did not receive a degree from that program.
- Master's students must earn at least 16 of the required 30 credits from the Purdue WL campus.
- PhD students must earn at least 30 of the required 90 credits from the Purdue WL campus.
- The “transfer” process happens when the student submits their POS – there is no mechanism to approve transfer courses prior to the generation of the POS.
- All courses/research hours that are being transferred must be verifiable with transcripts and must have credit hours associated with them. An official transcript showing the completion of courses must be on file with the Purdue University Graduate School.
- Courses not being transferred as part of a masters degree must have earned a grade of “B” or better in order to be used on a POS.

Transferring credits from an Master’s degree to a PhD Plan of Study
1. The student meets with his/her committee and provides a copy of their master's transcripts for review.
2. The committee determines the courses and credits that can be applied towards the student's PhD POS. These can include both coursework credits and research credits (maximum of 30 credits). These courses are then listed on the ‘Master’s credit transfer to PhD POS’ form.
3. The advisor signs the form and submits it to the CE Graduate Office.
4. The student can then move forward with generating his/her electronic plan of study. The masters transfer courses should NOT be listed on the PhD plan of study with the PhD courses, however the student should list the approved masters transfer courses as a note in the Comments section. Be sure to list the course number, course title, credits, and date taken. The CE Grad Office will note the overall number of masters credits being transferred in the appropriate field in the POS during the approval process and it will be approved by the committee chair.
5. The masters transfer form will remain in the student's file as a record of the approval of the transfer courses and associated credits.

Dual-Degree Programs
A dual-degree program is one in which an existing Purdue University master’s degree program is combined with an existing graduate degree program in another School/Program. Dual-degree programs formally approved by the participating academic units and the Graduate School may use a maximum of nine credit hours of 50000- and 60000-level coursework taken to satisfy the graduate degree on the master’s degree plan of study, however the final determination of the use dual counted credits will be made by the student’s advisory committee.

Registration of Graduate Students
Registration is the process of selecting courses, reserving space in those courses, receiving a schedule, and paying fees. A student is not officially enrolled until fees are paid.
Registration begins with a meeting between the student and the academic advisor (major professor). During this meeting, the student should complete a Schedule Revision Request Form (Form 23), and obtain the advisor's signature on this form and a PIN number. The student can then access myPurdue and register for most courses using the PIN number. The signed copy of Form 23 must be submitted to the CE Graduate Office. If a student needs to register for research credits (CE 69800 or CE 69900) or a course that requires special permissions, Form 23 must contain this information and the CE Graduate Office will enter the appropriate overrides.

Continuing graduate students are required to register during the appropriate time ticket via myPurdue for the next semester. Note: Summer and Fall registrations may be submitted concurrently. A Form 23 is required for each semester. If a student adds/drops courses later in the semester, he/she must inform the CE Graduate Office of these changes via email to cegrad@purdue.edu. All students must register for the Graduate Student Orientation course (CE 69100) during their first semester. A student must be registered during the semester an exam is held (preliminary exam, Master's or PhD defense exam). Students are required to register for research hours (CE 69800 or CE 69900) if they are conducting research or working on their thesis/dissertation in any capacity. Students should register for research hours commensurate with their research and writing efforts.

General Credit Requirements

There are different rules governing semester credit requirements.

- In general, a load of eight credit hours is considered full time for a graduate student for Fall, Spring and Summer.
- If a student is applying for federal financial aid, registration for at least four credit hours is required during any semester.
- Students who are funded (at least .50 FTE) must be registered for at least three credit hours.
- Students on a visa are required to maintain eight credit hours each for Spring and Fall. However, if they have received an assistantship, they may be considered full time if registered for six credit hours during Spring or Fall.
- Students on a visa are not required to be registered during the Summer unless they are graduating during the Summer.
- Students on a visa who are eligible for exam/degree only registration in their last semester of study and are not registering for a full course load, must submit a "reduction in course load" (RCL) request to the Office for International Students and Scholars (ISS) at the time of registration. This includes the Summer semester.
- Non-thesis master's students must be registered for at least one credit during their final semester in order to maintain their visa. This means that non-thesis master's international students cannot register as exam only and stay in the US. They must register for 1 credit in order to stay in the US and keep their visa valid. If they register for exam only they will need to leave the country. They can return as a visitor to participate in graduation ceremonies.
- Guidelines set by ISS should be considered primary for students on a visa.
- Each situation is unique. A student should be sure to seek the advice of their advisor and/or the CE Graduate Office before registering as less than full-time.

PhD Registration Credit.
A PhD student is expected to satisfy the requirement of 90 credit hours. Because a Master's degree can provide up to 30 hours of this requirement, the combination of courses not used to meet the Master's degree plus the hours of CE 69900 (PhD research) must be at least 60 hours. As a general practice, students should register as a full time student each semester. Once course work is complete, students shall register for a minimum of eight credits of CE 69900 to maintain full time status. At least 30 credit hours of any combination of research and coursework must be completed by registering at the West Lafayette campus.

Research in Absentia.
The policy on research in absentia is given in the Graduate Policies and Procedures Manual (August 2009), Section V, Page 6.
CLASSIFICATION OF GRADUATE STUDENTS

A. *Degree-seeking Graduate Students.* A degree-seeking graduate student may be admitted to a program that awards a master's or doctoral degree.

B. *Non-degree-seeking Graduate Students.* Purdue provides a variety of educational opportunities for students who wish to acquire knowledge and training beyond the baccalaureate degree, but do not wish to enter an advanced degree program. Non-degree-seeking students who have been admitted to graduate study must have the prerequisites or background and experience needed for any course in which they seek to enroll. They may be required to secure consent from each of the departments in which they desire to register for courses. Consultation and/or registration approval by the course instructor may be required.

ADMINISTERING GRADUATE DEGREE PROGRAMS

Steps for a Non-Thesis Master’s Degree

1. Meet all admissions conditions that apply.
2. Meet with advisor each semester to determine appropriate course enrollment.
3. Request the appointment of an advisory committee.
4. Submit a Plan of Study by the end of second semester of study. If a student intends to graduate in two semesters, POS should be submitted by the end of the first semester.
5. Register for an appropriate candidate course, alert the CE Graduate Office of candidacy, and attend the Candidate Workshop during the semester of planned graduation.
6. Arrange for Civil Engineering Exit Interview.
7. Respond to inquiries by Commencement Activities (Office of the Registrar) to arrange for participation in graduation.
8. Additional requirements may be imposed by the individual groups of specialization.

Steps for a Thesis Master’s Degree

1. Meet all admissions conditions that apply.
2. Meet with advisor each semester to determine appropriate course enrollment.
3. Request the appointment of an advisory committee.
4. Submit a Plan of Study by the end of second semester of study.
5. Thesis preparation. Determine a format check timeline with your Area Secretary.
6. Register for an appropriate candidate course, alert the CE Graduate Office of candidacy, and attend Candidate Workshop/Thesis Preparation Seminar during the semester of planned graduation.
7. Request the final examining committee and exam date by submitting a Form 8 online via the myPurdue Academic Tab at least three weeks before exam date. Submit a pdf copy of abstract to cegrad@purdue.edu.
8. Submit final thesis draft to committee three weeks before exam date.
9. Arrange for a Thesis Deposit meeting with the Graduate School Thesis Deposit Office to occur at least one week after final exam.
10. Respond to inquiries by Commencement Activities (Office of the Registrar) to arrange for participation in graduation.
11. Take and pass the Final Exam. Students should check that their advisor has submitted the approved Exam Form online and submitted rubrics to the CE Graduate Office.
12. Initiate the Graduate School Thesis Acceptance (Form 9) online.
13. Coordinate iThenticate check with advisor.
14. Arrange for CE Exit Interview with CE Grad Chair. Upload a copy of thesis to the CE Grad Chair via dropbox.
15. Coordinate final format check. Final draft must be to format check advisor at least three business days before exit interview with CE Grad Chair.
16. Pay $90 deposit fee.
17. Additional requirements may be placed by the individual groups of specialization.
18. Note: if a thesis option student wishes to switch to non-thesis, they must speak to their thesis option committee to determine if the switch is acceptable and the advisor should notify the CE Grad Office of the arrangement before any change is made to the plan of study.

Steps for the PhD Degree

1. Meet all admissions conditions that apply.
2. Meet with advisor each semester to determine appropriate course enrollment.
3. Request the appointment of an advisory committee.
4. Submit a Plan of Study by the end of third semester of study.
5. Hold annual meetings with advisory committee and submit progress reports to CE Graduate Office.
6. Request the preliminary examining committee and exam date by submitting a Form 8 online via the myPurdue Academic Tab at least three weeks before exam date.
7. Successful completion of a preliminary examination. Students should check that their advisor has submitted the approved Prelim Form online and submitted completed rubrics to the CE Graduate Office.
8. Thesis preparation. Determine a format check timeline with your Area Secretary.
9. Register for an appropriate candidate course, alert the CE Graduate Office of candidacy and attend Candidate Workshop/Thesis Preparation Seminar during the semester of planned graduation.
10. Request the final examining committee and exam date by submitting a Form 8 online via the myPurdue Academic Tab at least three weeks before exam date. Submit a pdf copy of abstract to cegrad@purdue.edu.
11. Submit final dissertation draft to committee three weeks before exam date.
12. Arrange for a Thesis Deposit meeting with the Graduate School Thesis Deposit Office to occur at least one week after final exam.
13. Respond to inquiries by Commencement Activities (Office of the Registrar) to arrange for participation in graduation.
14. Take and pass the Final Exam. Students should check that their advisor has submitted the approved Exam Form online and submitted completed rubrics to the CE Graduate Office.
15. Initiate the Graduate School Thesis Acceptance (Form 9) online.
16. Coordinate iThenticate check with advisor
17. Arrange for CE Exit Interview with CE Grad Chair. Upload a copy of thesis to the CE Grad Chair via dropbox.
18. Coordinate final format check. Final draft must be given to format check advisor at least three business days before exit interview with CE Grad Chair.
19. Pay $125 deposit fee.
20. Additional requirements may be imposed by the individual groups of specialization.

The Graduate School, Registrar and Bursar (with Board of Trustees approval) have implemented fee polices for candidate deadlines.

- A $200 late fee will be charged to a student who submits their POS after the deadline during the semester they wish to be a graduation candidate. A formal request must still be made of the graduate school to accept the POS after the deadline. If the request is not approved, no fee will be charged.
- A $200 late fee will be charged to a student who requests candidacy after the appropriate deadline for the semester. A formal request must still be made of the graduate school to add the student to the graduation candidate roster. If the request is not approved, no fee will be charged.
• A $200 late fee will be charged to a student who has been on the graduation candidate roster for the same degree for more than two consecutive semesters.
• The student has the right to appeal any of these fees.

GRADUATE ADVISORY COMMITTEE
Members of the Graduate Faculty are tenure-track faculty members at Purdue University who have been nominated by the head of a specific graduate program and an academic dean for appointment to the Graduate Faculty. The dean of the Graduate School, acting on behalf of the Graduate Council, grants graduate faculty status to Purdue faculty members. Research Faculty can be granted Graduate Faculty status. Civil Engineering requires that the major professor (chair or one co-chair) be from the student's Civil specialty area.

A special appointment may be requested by the head of a graduate program for an individual who does not meet the conditions required for regular appointment, yet who can contribute special expertise to the work of graduate students. The proposed member must hold a degree which is at least the same level as the degree the student is earning. Such a person may serve as a member or as a co-chair, but not as chair, on graduate student committees and teach graduate courses. If a student would like to request a special appointment for a potential committee member, the student’s advisor should send a request by email to the Chair of the CE Graduate Committee. This request should briefly describe how inclusion of the proposed member will benefit the student, and must be accompanied by a complete CV (as an attachment) for the proposed member. This process can be time consuming (on the order of a few months) and early planning is required.

Master’s Advisory Committee
For each prospective master's candidate, the advisory committee consists of a minimum of three members. All committee members must be approved by the Graduate School. It is recommended that one member be from outside the student's group of specialization. The duties of this committee are to assist the student in the preparation of a Plan of Study and to advise him/her during the period of graduate work. For students with a thesis option, the committee also advises the student regarding research. The major professor will act as the chair of the student's advisory committee and be in charge of his/her research. The major professor and the student shall agree upon the additional committee members. Other members may also be added to the committee with proper approval. Once agreed upon by the major professor and the student, and with the approval of the Chair of the CE Graduate Committee, the advisory committee shall be presented to the Graduate School on the Plan of Study for approval and formal appointment. Faculty members with joint appointments in the School of Civil Engineering and another School/College at Purdue are considered as an internal committee member.

PhD Advisory Committee
Each prospective candidate for the doctoral degree shall work with a major professor who will act as the chair of the advisory committee and who will direct the research. An advisory committee of not fewer than four members, including the major professor, must be formed by the student and the advisor. All committee members must be approved by the Graduate School with at least 51% of them being Regular Purdue Graduate Faculty. The composition of this committee must be mutually acceptable to the student and the committee and should be representative of the general field of study in which the student expects to conduct research. The committee is generally composed of at least two members from the student's major group of study, one member from another group in Civil Engineering and one from outside the Lyles School of Civil Engineering. Other committee profiles may be appropriate. Committees can include appropriately credentialed persons from outside Purdue. The critical aspect is to have a committee that will help the major professor oversee the technical work and assist the student in his/her research. The names of the advisory committee members will be approved and filed through the Plan of Study Generator in myPurdue and through the Civil Engineering Graduate Programs Office and the Graduate School. Faculty members with joint appointments in the Lyles School of Civil Engineering and another School/College at Purdue are considered as an internal committee member.
MASTER'S FINAL EXAMINATION

Non-thesis Master's Final Exam.
The Master's Advisory Committee certifies to the Graduate School that the student has passed the required examinations of the Lyles School of Civil Engineering. The committee has discretion on the exam formats that range from a committee conference to a comprehensive written and oral examination. Electronic exam paperwork will be initiated by the CE Graduate Office and given to the advisor before the exam date.

Thesis Master’s Final Exam.
Students selecting the thesis option must prepare an acceptable thesis in residence. Research in absentia is not permitted for the master's degree. In general, the thesis is based on work done in the primary area of study. The work consists of assigned research, which shall be recorded with no grades given except "satisfactory" or "unsatisfactory".

1. A minimum of nine hours of CE 69800 must be satisfactorily completed before an examination is held.
2. The thesis must be prepared according to the Graduate School Thesis Office requirements.
3. Each member of the examining committee must receive a copy of the thesis at least three weeks before the date of the final oral examination.
4. The final examination committee for the master's candidate shall consist of a minimum of three members. The request for the final examination (Form 8) including the time and place must be made online via the myPurdue Academic Tab at least three weeks before the requested exam date. Exam materials will then be prepared by the CE Graduate Office and given to the advisor before the exam date. Submit a pdf copy of abstract to cegrad@purdue.edu.
5. The student should initiate a Form 9 online once a final thesis title has been decided.
6. The final examination must be taken and passed and the report submitted online before the end of the session in which the degree is expected. If the corrections cannot be completed before the end of the session, the degree will be awarded the following semester and the student can register for "degree only."
7. The Lyles School of Civil Engineering requires that master's defense exam rubrics be completed by each committee member and submitted to the CE Graduate Office following the exam. Exam paperwork will not be approved by the CE Graduate Chair unless all rubrics have been received.
8. Only the Area Format Check Advisor can approve the format check. Final draft must be to format check advisor at least three business days before exit interview with CE Grad Chair.
9. All students are required to schedule an exit interview with the CE Graduate Committee Chair.
10. All students are required to submit a copy of their thesis 24 hours before their exit interview meeting with Chair of the Graduate Committee.
11. The student must submit an electronic copy of his/her thesis to the Graduate School.

PHD EXAMINATION

PhD Preliminary Examination
After the student has completed his/her formal study to the satisfaction of the advisory committee and has an approved Plan of Study, he/she becomes eligible to take the preliminary examination. The examining committee will report the results of these examinations, written and/or oral, to the CE Graduate Office with an appropriate recommendation for the student's admission to PhD candidacy, continued preparatory study, or discontinuation. The formal request of the appointment of the preliminary examining committee and the scheduling of the examination must be made with a Form 8 online via the myPurdue Academic Tab at least three weeks before the requested exam date. Note that the Prelim Thesis Title does not need to be final. No examining committee shall have fewer than four
The Lyles School of Civil Engineering also requires that PhD preliminary exam rubrics be completed by each committee member and submitted to the CE Graduate Office. The preliminary exam paperwork will not be approved by the CE Graduate Chair unless all rubrics have been received.

If the student does not pass the preliminary examination, at least one semester must elapse before re-examination is permitted. Should the student fail the preliminary examination a second time, the student may not be given a third examination, except upon the recommendation of the examining committee and with special approval of the Graduate School. After admission to candidacy, the candidate must devote at least two semesters to research before holding the final examination.

**PhD Final Examination**

The special research carried on as part of the doctoral work is expected to make a clearly articulated contribution to the candidate's chosen field of knowledge - a contribution of sufficient importance to merit publication. The candidate must, therefore, prepare a dissertation showing the results of his/her research. The schedule that should be adhered to with regard to the submission of the thesis and final examination follows:

1. In consultation with the advisor, a student should develop a plan to prepare a dissertation 6-12 months in advance of the actual graduation date.
2. The dissertation must be prepared according to Graduate School Thesis Office guidelines.
3. Each member of the examining committee must receive a copy of the dissertation at least three weeks before the date of the final oral examination.
4. The final examining committee for the PhD candidate shall consist of a minimum of four members. The formal request for the appointment of the examining committee must be made online via the myPurdue Academic Tab at least three weeks preceding the final examination date. This formal request must specify the time and place of the examination. The final examination or dissertation defense must take place in a room with public access.
5. Upon submitting the Graduate School Form 8, the candidate shall provide the CE Graduate Programs Office an electronic copy of his/her dissertation abstract. The electronic copy should be e-mailed to cegrad@purdue.edu. The defense date will be announced by the CE Graduate Programs Office when the dissertation abstract is submitted to the CE Graduate Office.
6. The student should initiate a Form 9 online once a final dissertation title has been decided.
7. Only the Area Format Check Advisor can approve the format check. Final draft must be to format check advisor at least three business days before exit interview with CE Grad Chair.
8. The final examination must be taken and passed and the report filed in the CE Graduate Office before the end of the session in which the degree is expected. If the corrections cannot be completed before the end of the session, the degree will be awarded the following semester and the student can register for "degree only."
9. The School of Civil Engineering also requires that PhD defense exam rubrics be completed by each committee member and submitted to the CE Graduate Office. The final exam paperwork will not be approved by the CE Graduate Chair unless all rubrics have been received.
10. All students are required to schedule an exit interview with the Civil Engineering Graduate Committee Chair.
11. All students are required to submit a copy of their dissertation to the CE Graduate Programs Office 24 hours before their exit interview meeting with Chair of the Graduate Committee.
12. The student must submit an electronic copy of his/her dissertation to the Graduate School.

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**GRADUATE STUDENT APPOINTMENTS**
The School of Civil Engineering employs graduate students to assist with teaching and research. These are typically 0.5 FTE appointments and provide both tuition reimbursement and a stipend.

In all instances, the duties of the assistant must be fairly and equitably assigned, and the demands placed upon the assistant must not be unreasonable. The generally accepted measure for setting graduate assistant assigned workloads is time. As in other major research universities, Purdue assumes that a half-time appointment entails an average of 20 hours of service per week. There is the expectation that a master’s student receiving funding as a research assistant will complete a thesis, unless other arrangements have been made with the student’s advisor.

Typical Teaching Assistant duties include class or lab preparation time, laboratory contact (lectures and non-lecture), office hours for student contact, grading homework assignments, grading lab reports, and consultation with supervising staff member. However, duties do vary with every course and faculty member. Duties and expectations of a Research Assistant are specified by the respective advisor.

Students registering as Exam or Degree Only are not eligible to be funded on an assistantship, however they can be funded with an hourly position.

Policy for Contact Teaching Assistants
All graduate students for whom English is a second language must take and successfully complete the screening procedure as provided by the Department of English Oral English Proficiency Program (OEPP). Certification by the OEPP is necessary before a contact teaching assignment may be made. It is also required that all contact teaching assistants participate in a Graduate Teaching Assistant Workshop, which is typically held each August.

Students who fail to gain certification through the OEPP screening must satisfy the recommendation of the OEPP examiner. Normally the recommendation is that the student completes English 62000, a special English course designed for non-native speakers of English.

Students required to take the OEPP screening should contact the CE Graduate Programs Office to request screening information.

There are no exceptions to the policy stated above. All questions pertaining to the policy should be addressed to the Civil Engineering Graduate Programs Office.

Teaching Assistantship (TA) Training Program
A graduate student orientation and teaching assistant (TA) training program is held during the Fall semester of each academic year. Entering graduate students expecting a TA position are required to attend these sessions at least once. Graduate students entering in the Spring or Summer semesters may be required to attend the following Fall semester training program based on the recommendation of their advisor.

All entering and continuing graduate students with assistantships, as a condition of employment, should arrive on campus one week before classes begin.

Fringe Benefits and Privileges
Graduate staff employee benefits are categorized and described in the following five major sections: Tuition and Fee Remissions, Leaves of Absence, Medical Insurance, Risk Management Programs, and Miscellaneous. You can find more
School of Civil Engineering Office Space Policy for Short-Term Appointments

1. All office space for graduate students, post-doctoral associates, and visiting faculty in the Lyles School of Civil Engineering will be managed centrally by a staff member. Space for new graduate students, post-docs, and visiting faculty should be requested by the supervisor. The staff member will consult with the area coordinators before office assignments are finalized.

2. Assignment of office space in the area where the graduate student, post-doc, and visiting faculty will be working is of the highest priority. However, if office space in the requested area is not available, then the person will be placed on a waiting list. As space becomes available, the people will be moved off of the waiting list in the order in which they were placed on the list.

3. Because office space in the School of Civil Engineering is limited, there will be a prioritization of available office space as shown below.
   - Priority 1: Visiting faculty
   - Priority 2: Post-doctoral associates (funded by Purdue)
   - Priority 3: Graduate students (funded by Civil)
   - Priority 4: Graduate students (funded elsewhere at Purdue or unfunded)

4. Each office space will contain a defined amount of furniture per person (one desk, a shared bookcase, a shared file cabinet). Additional furniture, boxes, and microwaves will not be permitted. Coffee pots and refrigerators are discouraged. Office spaces cannot be used as storage areas for faculty belongings.

5. When the office occupant vacates his/her space, the office will be inspected to ensure that he/she has removed all personal items. All personal items remaining after the occupant has left Purdue will be discarded.

CE Key Request Form Process

(1) Area secretary or supervisor will initiate Key Request Form

(2) Record completion date of on-line Right-To-Know training (this must be done annually):
   https://engineering.purdue.edu/Intranet/Groups/Schools/CE/Safety/RTK

(3) Room’s requiring specific training verification including in-lab safety training and completed PPE include:
   - Env – 2131-5, 2146, 3103-19, 3104, 3120, 3124, 3125, 3129, 3139, 3145
   - Geomatics – 1115-21
   - Geotech – B268, B277, B286, B290, G146, G263, G286
   - Hydro – B115
   - Mat – B150, B157, B257, B263-5, B289, G157, G159, G277
   - Trans -1122
   - UG – B115F, G150, 2158

(4) Supervisor must sign key request form verifying applicable in-lab training and attach a copy of completed PPE form to key request form

(5) Submit completed forms to CE Main Office for final processing

Registration of Graduate Assistants

To be eligible to hold a graduate staff appointment during any session, an individual must be enrolled as a graduate student in a degree or teacher license program and be registered for at least three credit hours of graduate-level course and/or
research work during the entire appointment period. (Graduate staff holding an appointment during the summer are obligated to register for a minimum of three graduate hours during at least one of the summer modules.) A graduate student will normally register for no more than 18 credit hours per fall or spring semester.

A student is eligible for the graduate staff fee remission if the appointment is in effect during the first six weeks of a semester or until July 1 of the summer session. If a graduate staff appointment terminates within the first six weeks after the start of a semester or prior to July 1 during the summer session and coursework is continued, all fees will be assessed for the semester or summer session.

Students enrolled in the summer session are eligible for summer fee remission if they held a teaching assistantship in the prior spring semester and will also be appointed to a teaching assistantship in the following fall semester. Graduate programs should notify (in writing) the Bursar's Office of graduate students who comply with the Graduate School memorandum from T. P. Adler on “Summer Tuition and Fee Waivers for Teaching Assistants.”

A student who held a teaching assistantship during the spring semester, but will not hold one during the fall semester because he or she will complete degree requirements during the summer may be granted a Graduate Tuition Scholarship for the summer session. The graduate program must submit a Graduate Fellowship Assignment (G.S. Form 90). Refer to Graduate School memorandum from T. P. Adler on “Summer Tuition and Fee Waivers for Teaching Assistants.”

GRADUATE STUDENT RESPONSIBILITIES AND RIGHTS

Academic Grades
Success in graduate studies requires performance at a high level. Only grades of A, B, or C are acceptable for fulfilling Graduate School requirements in any Plan of Study. An advisory committee may require higher performance than C in certain courses. Pass/not-pass grades are not acceptable. The student's progress will be reviewed each semester by both the Graduate School and the Lyles School of Civil Engineering. Should the student fail to perform at a satisfactory level, he or she may be asked to discontinue graduate study at Purdue. The same scholastic requirements in effect during the regular University year apply to graduate study during the summer session and in work taken at the University's regional campuses. The same grade standards apply to prerequisite courses.

Selecting an Advisor
All students, particularly those pursuing a thesis option, must identify an advisor (major professor) to direct the student's work. It's highly recommended that the advisor be identified and communicated to the Civil Grad Office no later than the end of the second academic semester of the student's graduate program of study. If no faculty advisor is identified to serve as a major professor, the student may be asked to leave the program.

In conjunction with the Plan of Study expectations, master's students should have their advisor identified by the end of their second semester of study; PhD students should have their advisor identified by the end of their third semester of study.

Integrity
Integrity in scholarship and research is an essential part of Purdue University's intellectual and social structure, and adherence to its spirit and principles must be maintained. These principles include commitment to truth, objectivity, fairness, honesty and free inquiry. Advances in scientific knowledge depend on trustworthy data and honestly, reported legitimate information in a manner that other scholars, operating in good faith, can judge and replicate. The integrity of the process of research and scholarship must depend largely on self-regulation; it is the responsibility of all who engage in the search for knowledge.
Each graduate student is required to complete the Collaborative Institutional Training Initiative (CITI) course on Responsible Conduct in Research (RCR). The Graduate School in cooperation with the Office of the Vice President for Research has developed the Purdue University Responsible Conduct of Research (RCR) program. The purpose of this program is to inculcate, promote and sustain an environment of research integrity in all graduate students, staff and faculty at Purdue University.

Purdue University Graduate School recommends a multi-pronged approach to promote Responsible Conduct of Research:

a. Attending workshops,
b. Online training/tutorial modules, and
c. Meeting Departmental or College expectations in Responsible Conduct of Research

Within the School of Civil Engineering, part (a) is met by attending the RCR seminar during the Graduate Student Orientation Seminar (CE 69100) during the first semester; part (b) is met by completing the online RCR module during the first semester as a requirement for successful completion of the Graduate Student Orientation Seminar.

More information can be found at: [http://www.purdue.edu/gradschool/research/rcr/index.html](http://www.purdue.edu/gradschool/research/rcr/index.html).

An Master's or a PhD thesis/dissertation is a document authored by an individual, describing results of original research undertaken by that individual, and asserting a position which that individual is willing to defend. This position should not be construed to prohibit joint or collaborative research endeavors. It is expected, however, that in such situations unique aspects of the broad problem will be explored by each individual and that the thesis written and presented to the final examining committee will be a personal document describing the student's independent effort and contribution. In preparation of the thesis/dissertation deposit appointment, all student and their major professor must sign a statement on Graduate School online Form 9: “Further, I certify that this work is free of plagiarism and all materials appearing in the thesis/dissertation have been properly quoted and attributed. The author's manuscript was diagnostically reviewed by iThenticate on the date indicated below and any identified items have been satisfactorily resolved.”

Copyright Permission
The use of photographs, figures, tables, or other information that is scanned from other individual documents must receive written authorization for use in a thesis or dissertation.

Harassment
It is, and has been, the policy of Purdue University to maintain the campus as a place of work and study for faculty, staff, and students, free of sexual harassment or harassment on the basis of race, color, religion, national origin, or other protected status. In providing an educational and work climate which is positive and discrimination free, faculty, staff, and students should be aware that harassment in the workplace or the educational environment is unacceptable conduct and will not be condoned. If a graduate student believes he/she has been the victim of harassment, there are a number of ways to seek assistance. For further details please contact the School of Civil Engineering Graduate Programs Office or the Dean of Students Office.

The Lyles School of Civil Engineering requires all graduate students to participate in an Equal Access/Equal Opportunity Training Session. The session is designed to provide participants with a foundation in the areas of equal access and equal opportunity. Information on discrimination, harassment, sexual harassment, disabilities, retaliation, and the process at the University for the resolution of complaints will be presented. The University's Nondiscrimination Policy Statement, Anti-harassment Policy, and Procedures for Resolving Complaints of Discrimination and Harassment will be provided to every participant. Participants are asked to assess the role personal behavior and conduct play in ensuring an inclusive university community free of discrimination and harassment. Sessions are normally held during Orientation week, however sessions are scheduled throughout the academic year and may also be completed online.
APPENDICES
APPENDIX A – ARCHITECTURAL

Master's students in the Architectural Engineering Specialization
(Non-Thesis Option)
Guidelines for Course Selection

**Group 1. Six Required Courses**
CE 41300 - Building Envelope Design and Thermal Loads or CE 41400 - Building Mechanical and Electrical System Design *
CE 51300 – Lighting in Buildings (Spring)
CE 51401 – Building Controls (Spring)
CE 51501 – Building Energy Audits (Fall)
CE 59700 – Sustainable Building Design, Construction, and Operation (Fall)
CE59700 – Indoor Air Quality (Spring)

* Note that students who join the graduate program in Civil Engineering at Purdue with the equivalent of CE 41300 or CE 41400 can substitute those with courses from Group 2. Students can take both courses (CE 41300 or CE 41400) with permission from their advisor - in this case the required number of courses from Group 1 would be 7 and CE41400 should be taken with 500-level course designation (with extra requirements) in coordination with the instructor. Also, students who have previously taken a class with similar content with one of the 500-level classes can request an approval to replace it with a course from Group 2.

**Group 2. Other elective courses: A minimum number of one course from the following list**
ME 522 - Indoor Environment Analysis and Design (Spring)
ME 51800 – Analysis of Thermal Systems (Fall)
ME 59700 – Sustainable Energy Options & Analysis (Fall or Spring)
ME 59700 – Solar Energy Engineering (Fall or Spring)
CE 69700 – Building Thermal Analysis (Spring)
CE 69700 – Airflow Modelling in the Built Environment (Fall)
ME 50500 – Intermediate Heat transfer (Fall)
ME 41300 – Noise and Acoustics (Spring)
ME 51300 – Engineering Acoustics (Fall)
EEE 55500 – Life Cycle Assessment: Principles and Applications (Fall or Spring)
ME 59700 – Sustainable Design & Manufacturing
CE 47900 – Design of Building Components and Systems (Fall or Spring)
ME 60800 – Numerical Methods in Heat, Mass, and Momentum Transfer (Spring)
ME 61000 – Boundary Layer Theory (Spring)
ME 50900 – Intermediate Fluid Dynamics (Fall)
ME 60500 – Convection of Heat and Mass (Spring)
ME 61400 – Computational Fluid Dynamics (Spring)
ME 60600 – Radiation Heat Transfer (Fall)
CS 50100 – Computing For Science and Engineering (Fall)
ECE 46200 – Object Oriented Programming Using C++ And Java (Fall)
ECE 58000 – Optimization Methods for Systems and Control (Spring)
CS 51400 – Numerical Analysis (Fall)
MA 52100 – Introduction to Optimization Problems (Fall)
MA 52700 – Advanced Mathematics for Engineers and Physicists I (Fall)
MA 52800 – Advanced Mathematics for Engineers and Physicists II (Spring)
STAT 51100 – Statistical Methods (Fall or Spring)
STAT 51200 – Applied Regression Analysis (Fall, Spring, Summer)
ME 58100 – Numerical Methods (Fall)
CE 61400 - Statistical & Econometric Methods I (Fall)
AAE 56800 - Applied Optimal Control & Estimation (Spring)
* Note that students may substitute courses from Group 2 with other that have equivalent content – permission of their advisor would be required.

**Group 3: Three courses from Graduate Offerings in the College of Engineering, or STAT, MATH, CS**

**Notes:**
1. Only one 300-level or 400-level class can be included in the MS Plan of Study.
2. CE 41400 can be offered as a 500-level class with permission from the instructor
Graduate degrees with specialization in Construction Engineering are available through Lyles School of Civil Engineering to qualified post-baccalaureate students who have obtained engineering or science degrees. A diversity of course offerings and faculty research interests provides flexibility in formulating a program of study attuned to a student's career goals. Both master's and PhD degrees are available. The official title for the master's degree is Master of Science in Civil Engineering, or MSCE. The general prerequisite to the admission into the PhD program is an earned master's degree in a related engineering field. High quality PhD applicants who do not have a master's degree might be placed in the master's program and can continue as PhD students upon the satisfactory completion of the master's degree.

**Master's Options in the Construction Engineering Specialization**

At the master's level, both a thesis and a non-thesis option are available. Every master's student must satisfactorily complete 30 credit hours to earn a master's degree. In the case of the thesis option, the 30 credits must include 9 research credit hours and 21 course credit hours. In the case of the non-thesis option, all 30 credit hours are course credit hours.

**Thesis Option**

Within the first semester of the student's enrollment, a master's student choosing the thesis option selects three faculty members who will serve on the student's examination committee. The committee is chaired by the student's major professor(s). At least one member of this committee must be a faculty member outside of the Construction Engineering area. This committee will review and approve the student's Plan of Study (POS) and conduct the final exam. The final exam generally consists of a presentation by the student on his/her thesis work, discussion of the thesis, and a question-and-answer session. The exact format of the final exam remains the discretion of the examining committee.

**Non-Thesis Option**

A master's student choosing the non-thesis option selects three faculty members who will serve on the student's examination committee. The Construction Engineering graduate representative will, by default, serve as the chair of the committee. At most one faculty member can be outside of the Construction Engineering area.

A master's student with the non-thesis option will take a minimum of 30 credit hours of coursework towards their degree (courses to be included in the POS) using the courses listed in the following groups.

**Group 1. Required: Four foundational courses - CE 520, CE 521, CE 523, CE 527**

Note: Students who join the graduate program in Civil Engineering at Purdue with the equivalent of one of the four required courses can substitute one of the required courses with any course in Group 2 or Group 3.

- CE520- Construction Project Controls
- CE521- Construction Business Management
- CE523- Selection and Utilization of Construction Equipment
- CE527- Analytical Methods for the Design of Construction Operations

**Group 2. A minimum number of three courses from the following prescribed list:**

- CE 524 - Legal Aspects in Engineering
- CE 522 - Computer Applications in Construction
- CE 597 - Infrastructure Planning
- CE 597 - Decision Making under Uncertainty
- CE 597 – Build Environment Modeling
- CE 597 - Sustainable Building Design, Construction and Operation
- CE 597 - Advanced Modeling and Visualization of Construction Operations
- CE 597 - Virtual Reality Technologies for Construction
- CE 597 - Trenchless Technologies for Infrastructure Renewal
- CE 597 - Advanced Project Management
CE 497 - Building Information Modeling

Group 3. Remainder of the courses from Graduate Offerings in CE, STAT, MATH, IE, NUCL, ME, MGMT, EE, ABE, ENE, CHME, ECON, CS

PhD Program
If not already decided upon the entry into the PhD program, students should aim to select an advisor/major professor no later than the end of their first semester at Purdue. During the first semester of residence of a student admitted to the Ph.D. program, the major professor, in consultation with the student, will appoint a Dissertation Committee which will have the responsibility of reviewing and approving the student's plan of study and providing guidance toward the completion of the requirements for the degree. The Guidance Committee will consist of at least three faculty members. The advisor will be a member of the Construction Engineering faculty and will act as the chair of the Guidance Committee.

Any students enrolled in the PhD program must satisfactorily complete 90 credit hours, of which a minimum of 48 credit hours are of course work beyond the bachelor's degree and a minimum of 42 credit hours are of PhD research work. At least 9 credit hours must be from outside Civil Engineering. Up to 30 credits of a master's degree program may be applied towards the PhD degree. At least one-third of the total credit hours used to satisfy degree requirements must be earned (while registered for doctoral study) in continuous residence on the Purdue campus where the degree is to be granted. A student must have an overall grade point average of not less than 3.0 in all courses taken while a graduate at Purdue and every course taken at Purdue University must be completed with a grade no lower than "C."

In addition to satisfying the course work and credit hour requirements, a PhD student must satisfy the following requirements to earn the PhD degree.

   a) Pass a Ph.D. qualifying examination no later than the second semester of residence in the Ph.D. program. Based on the review of the student's qualifications and on the recommendation of the student's Guidance Committee, the qualifying exam may be waived.

   b) Pass a Ph.D. preliminary examination consisting of written and oral portions, and present a Ph.D. dissertation proposal to be admitted to candidacy.

   c) Pass a final examination in defense of the dissertation, and complete other Graduate School requirements regarding the deposit of copies of final dissertation.

   d) Submit a petition for the degree.

All requirements for the Ph.D. degree must be completed within four years from the end of the semester in which the student passes the Ph.D. preliminary examination. In special cases, based on petition by the student to the Head of the School of Civil Engineering, this time limit may be extended. The total elapsed time of a completed Ph.D. degree program at Purdue University, from admission to completion of the final examination, shall be no more than eight calendar years.

Doctoral students are advised to review the guidelines provided by the Graduate School catalog, and also the Manual for Preparing Graduate Theses.

The PhD Dissertation Committee
The duties of the Dissertation Committee shall be:

   a) To meet with the student during the first semester of residence to develop a plan of study.

As part of the meeting, the student will prepare and present a resume of his/her background. This resume will also include courses and grades for those courses taken at Purdue and elsewhere which are to be credited towards the coursework requirements for the Ph.D. Courses not yet taken or completed but included in the program of study should also be shown. Satisfactory completion of the approved plan of study will constitute the fulfillment of the Ph.D. course work requirements. Receipt of a failing grade (e.g. "F") in any course on the program of study will constitute unsatisfactory performance and may result in the student being dropped from the program.
b) To approve or otherwise act on requests for change in the plan of study.

c) To review the student's progress on a regular basis.
The student shall be informed as to whether or not satisfactory progress is being made. In the event of continued unsatisfactory
performance, the Dissertation Committee may recommend to the Graduate Committee that the student be dropped from the Ph.D.
program. In such a case, the Civil Engineering Graduate Committee shall review the recommendations and submit their findings to the
School Head of Civil Engineering who shall make the final decision.

**Qualifying Examination**
The purpose of the qualifying examination is to determine if the student meets minimum requirements for continuing the Ph.D.
program. The examination will be given during the first or second semester following admission to the Ph.D. program. The
examination shall be administered by the faculty in the CEM area. The type of examination (oral, written, oral/written) shall be
determined by the guidance committee. The student shall be informed beforehand concerning the type and scope of the examination.
This examination typically covers basic material relating to Civil and Construction Engineering and Management subjects.

A majority vote of the guidance committee with not more than one dissenter will be required to pass the examination. If a student fails
his/her first qualifying examination, a second examination may be given only upon the recommendation of the guidance committee no
sooner than one month nor later than six months from the date of the first examination. If the guidance committee does not
recommend a second examination, or if the student does not pass the second examination, he/she will be informed he is being
dropped from the Ph.D. program.

**The Ph.D. Preliminary Examination**
In order to be formally admitted to candidacy for the Ph.D. degree, a student should have passed the preliminary examination, and
must have submitted a Ph.D. dissertation proposal. The preliminary examination covers subjects and material which are germane to
the student's dissertation area and topic.

The student must complete all requirements for admission to candidacy at least two semesters prior to taking the final Doctoral
Examination in defense of the dissertation. A student must be registered for at least two semester between the semester the
preliminary exam is held and the semester the final Doctoral Examination is held. Thus, a student who holds the preliminary exam in
the spring semester may take the final Doctoral Examination in the spring semester of the following calendar year as long as he/she
has registered in both the summer and fall semesters.

The Preliminary Examination shall consist of two parts as follows: a) A written component, and b) An oral exam. The Examination will
be administered by the Guidance Committee. The student in consultation with his/her dissertation advisor will decide when the
preliminary examination may be taken. The majority of the course work should have been completed prior to the examination.

A majority vote of the Dissertation Committee, with not more than one dissenter, will be required to pass the examination. If a student
fails his/her first preliminary examination, it must be taken no sooner than one semester nor later than one year after the first attempt.
If a student fails to take a second examination or fails the second examination, he/she will be informed that he/she is being dropped from the Ph.D. program. A student who passes the preliminary examination is admitted to candidacy.

**The Doctoral Examination**
If the Dissertation Committee finds the dissertation to be satisfactory, the student will be called for a final oral Doctoral Examination
covering the subject matter of the dissertation. The examination will be conducted by the Dissertation Committee subject to the
approval of the School Head of Civil Engineering and the Dean of the Graduate School. A majority vote with no more than one
dissernter is required to pass the examination.

At least three weeks before filing the request for the Doctoral Examination, the Dissertation Format Approval process has to be
completed. The Dissertation Format Approval is filed with the request for the Doctoral Examination. Typically, the request for Doctoral
Examination will be reviewed by the Graduate School and approved within three weeks of receipt of the request (refer to Graduate
School Guidelines for information pertaining to deadlines).
The Doctoral Examination must be given no earlier than two semesters after the student completes all requirements for admission to candidacy. The student must be registered for at least 3 credit hours during the semester in which the final oral examination is given.

A notice of the Doctoral Examination including time and place shall be sent to all Civil Engineering faculty members, at least two weeks prior to the examination date. The examination shall be open to interested faculty, staff and students. Every member of the Dissertation Committee must receive a copy of the dissertation at least two weeks before the date of the doctoral examination. In the case of a failure on the final oral examination, one additional examination will be permitted, if recommended by the Dissertation Committee. The second examination will be scheduled at a time set by the Dissertation Committee, no earlier than one semester after the first attempt, but within one year of the first attempt.

**Summary of Requirements to PhD Degree**
The following steps, not necessarily in order, must be completed prior to the awarding of the Ph.D. degree.

a) Have a Ph.D. Guidance Committee appointed and develop a program of study.

b) Pass a qualifying examination (no later than the second semester of residency).

c) Pass Preliminary Exam (written and oral + presentation of dissertation proposal).

d) Complete research on dissertation topic and submit dissertation

e) Successfully defend thesis before Dissertation Committee.

f) Follow the current process of dissertation deposit to submit required copies of the dissertation in the required format to Library Thesis Deposit office and the Graduate school.
Within the School of Civil Engineering, graduate study in Environmental Engineering is available to qualified post-baccalaureate students with engineering or science degrees. A diversity of course offerings and faculty research interests provides wide flexibility in formulating a program of study attuned to a student’s professional goals. General pre-requisites for the Master’s program include: (1) math through differential equations, (2) one year college chemistry, (3) one year college physics, (4) CE 340 (Introduction to hydraulic engineering) and CE 350 (Introduction to environmental engineering) or equivalent. Strong applicants who meet most but not all of these pre-requisites may be admitted conditionally with the specification that all these pre-requisites are met prior to graduation.

**Masters Options**

At the master’s level, both a non-thesis and a thesis option are available. The 30-credit requirement for a master’s degree is satisfied by completing 30 course credits (non-thesis option) or 21 course credits plus a thesis (9 credits) for the thesis-option. Many non-thesis students gain 3 course credits through an independent study project overseen by a faculty member. These projects may involve laboratory, computational, and/or scientific literature review work. The M.S. thesis option is available to those students who gain approval from an advising faculty member. Choice between these options is strongly dependent upon the student’s own professional and personal interests, the ability of the student and faculty member to reach mutual agreement on a thesis topic, and availability of resources for conducting thesis research. Student research may involve experimental work in the laboratory or field, or may focus on theoretical or computational studies. Each master’s student selects three faculty members who will serve on the student’s examination committee. This committee will be asked to review and approve the student’s Plan of Study (i.e., list of courses), and conducts the “final exam”. In the case of a non-thesis master’s student, the exam generally consists of a conference of the committee to review the students’ record in the absence of the student. In the case of a thesis student, the final exam generally consists of a presentation by the student on their thesis work, discussion of the thesis, and a question and answer session. In either case, the exact format of the exam remains the discretion of the examining committee.

**PhD Requirements**

The doctoral degree requires 48 course credit hours beyond the bachelor’s degree in addition to an acceptable dissertation. Up to 30 credits of a master’s degree program may be applied towards the PhD degree. Due to the diversity in student’s professional goals within the program, there is no requirement to take a qualifying exam. The preliminary exam and final exam are administered according to the rules stated in the School of Civil Engineering Graduate Program Handbook. Prior to the oral preliminary exam, the plan of study must be submitted and the student prepares and submits a research proposal to the examining committee, the content of which is generally the main discussion point of the oral exam. It is at the discretion of the examining committee whether the student will be asked written questions. Responses to any written questions may be discussed during the oral exam. Because publication of any PhD thesis research in peer-reviewed science and engineering journals is highly encouraged and valued, the main chapters of the PhD thesis may be composed of text and figures consistent with journal article content, and may include submitted manuscripts.

**Environmental Engineering and Related Course Offerings**

In addition to the catalog courses listed below, new courses with “59700” designators are routinely offered within the environmental engineering program. Students are encouraged to evaluate whether these additional courses would help address their specific education and research needs.

**CE Environmental Engineering Courses**

CE 45600 Wastewater Treatment  
CE 55000 Physico-Chemical Processes of Environmental Engineering  
CE 55400 Aquatic Chemistry  
CE 55500 Microbial Degradation of Organic Pollutants
CE 55700 Air Quality Management
CE 55800 Sampling and Analysis of Air Pollutants
CE 55900 Water Quality Modeling

Related Courses in CE (partial list)
CE 440 Urban Hydraulics
CE 540 Open Channel Hydraulics
CE 542 Hydrology
CE 544 Subsurface Hydrology
CE 545 Sediment Transport
CE 546 Computational River Hydraulics
CE 547 Transport Processes in Surface Waters
CE 549 Computational Watershed Hydrology
CE 641 Statistical Hydrology
CE 642 Advanced Hydrology
CE 593 Environmental Geotechnology

Related Courses on Campus (partial list)
ABE 52600 Watershed Systems Design
ABE 56500 Agricultural Systems Engineering
ABE 59100 GIS Applications Using ArcView
ABE 60100 Applied Finite Element Analysis
AGRY 54000 Soil Chemistry
AGRY 54400 Environmental Organic Chemistry
AGRY 56000 Physical Properties of Soils
AGRY 58200 Environmental Fate of Pesticides
ATMASTER'S 55100 Atmospheric Chemistry
BCHM 56100 General Biochemistry I
BCHM 56200 General Biochemistry II
CHM 56300 Organic Chemistry
CHM 57700 Physical Chemistry
CHM 57800 Physical Chemistry
CHM 51000 Chemical Engineering Thermodynamics
FOR 50100 Limnology
FOR 50200 Watershed Hydrology, Ecology & Mgmt
FOR 54000 Wetlands Ecology
STAT 51100 Statistical Methods
STAT 51200 Applied Regression Analysis
B.1 Master's degree students

The first decision an incoming Geomatics Master's student has to make is whether he/she is going to choose between the Thesis or Non-Thesis option. The thesis option consists of 7 courses and 3 research courses, totaling 30 credit hours. The non-thesis student takes 10 courses (also 30 credit hours).

The student will follow, as an example, any of the four tracks shown below in the table. The tracks have an enormous amount of overlap though. Non-thesis (and often thesis) students have to take six core courses sometime during their studies at Purdue. Typically a MASTER'S student follows the core-courses CE502, 503, (506), 510, and 545 in the fall, and CE(506), 508 and 511 in the spring. The core course CE506 is offered either in the fall or in the spring semester.

All students are advised to defer the desired electives MATH511 and STAT511 to the summer semester. The reason is that it is very rare that Geomatics courses are offered during the summer.

 Depending on whether the student is employed as a TA (or RA), the most often occurring course loads over the Fall/Spring/Summer/Fall semesters are either 4/4/2/0 or 3/3/2/2.

The advisor initially assigned to all new incoming graduate students is the representative of the Geomatics area in the Civil Engineering Graduate Committee. After a month or so, the student will finalize his/her selection of the academic advisor.

The Masters study will be concluded with a 2 hour oral exam. The student selects with his/her advisor a Master's Advisory Committee that preferably consists of three Geomatics faculty members, and an external faculty member. The latter member is most often the instructor of one of the elective courses, i.e. “external to Geomatics” classes. The exam for the thesis-option student can be characterized by a “student driven” exam: the student presents during 45-60 minutes his/her findings of the research, followed by questions of the committee members. The exam for the non-thesis student can be characterized as “faculty driven”.

With exceptions the student may be given a waiver for the core courses. In this instance, the student should be prepared to detail the arguments to his/her advisor and instructor of the course for which the waiver is sought, by supplying textbooks, lectures notes, etc. The instructor may choose the student to submit to an exam in the course for which the waiver is requested.

B.2 PhD degree students

Some of the core courses may not be required for PhD students who have already a master's degree from another school or department with a very similar program as the Geomatics Master’s degree program at Purdue. Common practice is that the far majority of the PhD students go through the Geomatics Master’s program at Purdue first. The 30 credit hours course work for the Master’s non-thesis student, or the 21 credit hours course work for the thesis option student count towards the minimum 48 credit hours course work for the PhD degree. Popularly speaking, the PhD student may “cash-in” his/her first 30 of the 48 required credit hours for a (non-thesis) Master's degree.

In most instances, the Master's exam in Geomatics is considered as the PhD qualifying exam.

This exam is different from the PhD Preliminary Examination. During the latter exam the Geomatics PhD student is subjected to various written exam’s by the embers of the PhD Advisory Committee. The oral part of this exam consists mainly of the presentation of the research proposal of the candidate. Only after the student has passed the written and oral exams of the Preliminary Examination the student is admitted to Purdue as a PhD candidate.
B.3 All Geomatics Graduate Students

Registration in the Geomatics Seminar, CE691, is required of all graduate students in the fall and spring semesters. The seminar is generally held once a week. It is also intended for student presentations of their research. All Master’s and Doctoral students make a presentation once a year. Attendance by all Geomatics graduate students is mandatory.

Geomatics (Thesis and) Non-Thesis Masters Required Courses

(30 credits total needed for degree)

<table>
<thead>
<tr>
<th>Track</th>
<th>Photogrammetry</th>
<th>Geodesy</th>
<th>Remote Sensing</th>
<th>GIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Core</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 502 (F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 503 (F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 506 (S)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 508 (S)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 511 (S)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CE 545 (F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Track-Specific</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 510 (F)</td>
<td>CE 510 (F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 603 (S)</td>
<td></td>
<td>CE 603 (S)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CE 605 (?)</td>
<td>CE 605 (?)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAT 511 (Su), STAT 512, MATH 511 (Su), CE 562, AAE 532 (F), AAE 575 (F), AAE 590 (F), AAE 690, EE 301 (F), EE 538 (F), EE 577 (S), EE 637 (S), EE 638 (S), EAS ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B.4 Course Numbers and Titles of Core and Elective Courses for Geomatics

Notes: myPurdue still has most of our CE courses under a 597 temporary number, see below

You must sign up for 0 credit seminar each semester unless conflict: CE69100-004, 12974

If you think that you already know the material in a required course, then you must see the instructor of that course and get the instructor’s permission to skip it.

Brief course number / title

CE 502=analytical, ce59700-041, 34369 (fall semester)
CE 503=photo 1, ce59700-ptr, 46282 (fall semester)
CE 506=data 1 (spring semester)
CE 508=gis (spring semester)
CE 510=coord sys, ce59700-PT3, 48031
CE 511=gps (spring semester)
CE 545=remote sensing, ce59700-063, 47986 (lab), and ce59700-064, 47987 (lec)
CE 603=photo 2
CE 605=data 2
CE 612=phys geodesy
STAT 511= statistical methods
STAT 512=regression and anova
MATH 511=linear algebra applications
CE 562 = geometric hwy design
AAE 532 = orbit mechanics (fall semester)
AAE 575 = introduction to satellite navigation and positioning (GPS) (fall semester)
AAE 590 = remote sensing sys design (fall semester)
AAE 690 = orbit estimation
EE 301 = signals and systems (fall semester)
EE 538 = digital signal processing I (fall semester)
EE 577 = engineering aspects of remote sensing (spring semester)
EE 637 = digital image processing I (spring semester)
EE 638 = digital image processing II (spring semester)

B.5 PURDUE DISTANCE EDUCATION IN GEOMATICS

One or two graduate courses of the Geomatics program may be available through Purdue’s ProEd. See [http://engineering.purdue.edu/ProEd](http://engineering.purdue.edu/ProEd). The intent of this Distant Learning (DL) program is that students obtain a Master’s degree in two and a half years, or five years.

Questions may be asked to [ProEd@purdue.edu](mailto:ProEd@purdue.edu) (877-598-4233, or 765-494-7015), or to Prof. J.S. Bethel, [bethel@ecn.purdue.edu](mailto:bethel@ecn.purdue.edu) (765-494-6719).

The DL course schedule may vary from year to year, mainly dependent on whether a minimum of four DL students sign up for the course that may be offered through ProEd. The current (Aug 2010) Geomatics DL schedule is:

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2010</td>
<td>CE 510 Coordinate Systems and Conformal Mapping</td>
</tr>
<tr>
<td></td>
<td>CE 503 Digital Photogrammetric Systems</td>
</tr>
<tr>
<td>Spring 2011</td>
<td>CE 511 GPS Positioning</td>
</tr>
<tr>
<td></td>
<td>CE 603 Exploitation of Spaceborne Imaging Systems</td>
</tr>
<tr>
<td>Fall 2011</td>
<td>CE 506 Adjustment of Geospatial Observations</td>
</tr>
<tr>
<td></td>
<td>CE 545 Multi and Hyperspectral Remote Sensing</td>
</tr>
<tr>
<td>Spring 2012</td>
<td>CE 605 Advanced Geospatial Estimation</td>
</tr>
<tr>
<td></td>
<td>CE 508 Geographic Information Systems</td>
</tr>
</tbody>
</table>
C.1 Master’s Track for Hydraulics and Hydrology (HH) Specialty Area in Civil Engineering

Any student enrolled in the Master’s program (MSCE degree) is expected to finish 30 credit hours of graduate study. Of these 30 credit hours, all students are expected to take a set of core courses as indicated in Table 1. The remaining elective credits can be satisfied by taking other courses relevant to the student’s research and career objectives, as approved by the student’s committee. The 30 total credit hours can be satisfied by taking any one of the following three tracks: (i) MSCE with thesis; (ii) MSCE with report; and (iii) MSCE with coursework only. All students are expected to maintain a minimum of 3.0 GPA in order to stay eligible for both financial assistance as well as graduation. Only courses selected with consent of the student advisor and subsequently approved by the committee may count towards degree requirements. In addition, all students are expected to register for CE 69100 (CRN 12972 CE Sem-Gr Stdnt Orient) in their first semester and for CE 69100 (CRN 12971 CE Sem-Hydraul & Hyd) for all semesters.

Table 1. Core courses and sample elective courses for the Hydraulics and Hydrology graduate program.

<table>
<thead>
<tr>
<th>Core Courses (Choose 1 from each category*)</th>
<th>Sample Elective Courses*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 54200 Hydrology or CE 54900 Computational Watershed Hydrology (Merwade)</td>
<td>STAT 51200 or STAT 51300</td>
</tr>
<tr>
<td>CE 54400 Subsurface Hydrology (Govindaraju/Aubeneau)</td>
<td>ME50900; ME57900; ME61100; ME61400; EAPS 58400</td>
</tr>
<tr>
<td>CE 54000 Open Channel Flow or CE54500 Sediment Transport Engineering (Lyn)</td>
<td>ABE52700, ABE53100, ABE59100, ABE69100</td>
</tr>
<tr>
<td>CE 54300 Coastal Engineering, CE 59700 Environmental Fluid Mechanics, or CE54700 Transport Processes in Surface Waters (Troy)</td>
<td>EAPS59100; ASM54000</td>
</tr>
<tr>
<td></td>
<td>CHM51000; CHM54000</td>
</tr>
</tbody>
</table>

*As offered; not all courses are offered during a given 2-year period, and this list does not cover all courses that can be used as technical electives.

**MSCE with Thesis.** The minimum course requirements for an MSCE with thesis are 21 credit hours (4 core + electives) and 9 research credit hours. All MSCE students that receive financial support (either by a research assistantship, teaching assistantship, or fellowship) are expected to finish their MSCE with a thesis. Any student who chooses this track, and then decides to pursue a non-
thesis MSCE degree may lose his/her financial assistantship. MSCE thesis students must follow the School of Civil Engineering regulations, which require an oral exam held by the student’s M.S. committee, in addition to completion of the written thesis.

**MSCE with Report**: Typically a student in this track will satisfy 24-27 credit hours through courses (four core + electives) and 3-6 credit hours of independent study. All students choosing the Report option must submit a written report, prepared under the guidance of the student’s research advisor and approved by the MSCE committee as a graduation requirement.

**MSCE with Coursework Only**: A student in this track will satisfy all 30 credit hours through courses (four core + electives). All courses must be selected in agreement with the student's designated academic advisor and be approved by the committee. Students in this track are also expected to maintain a minimum GPA of 3.0 to remain eligible for financial assistance and graduation. Students in this track can graduate as soon as 30 credit hours are satisfied - which is possible in 2 long semesters.

**Major Milestones in the MSCE Program**

All students admitted to the MSCE program are initially assigned an initial academic advisor. However, students should select an advisor based on mutual research interests, available projects, and funding offers. In certain circumstances, a student may be co-advised by two faculty members depending on the research project selected by the student. Regardless of their MSCE track (thesis/report/coursework), all Master’s Hydraulics and Hydrology students are expected to choose their designated academic advisor in the first semester after enrolling in the MSCE program. Major milestones in a Master’s program are listed in Table 2 including a tentative timeline.

### Table 2

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Suggested Timeline*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selecting an academic advisor (all tracks)</td>
<td>By end of 1st semester</td>
</tr>
<tr>
<td>Preparing a plan of study (all tracks)</td>
<td>By end of 2nd or 3rd semester</td>
</tr>
<tr>
<td>Submitting a thesis/report (MSCE with thesis/report track)</td>
<td>By middle of 4th long semester</td>
</tr>
<tr>
<td>Master’s thesis defense or Master’s report approval</td>
<td>At least 2 weeks prior to end of 4th long semester, as stipulated by university requirements</td>
</tr>
</tbody>
</table>

*: Fall and Spring semesters are considered as “long” semesters

**Minimum GPA requirements and Research Grades**

In addition to maintaining a minimum GPA of 3.0, all MSCE students are expected to obtain an “S” (satisfactory) grade for their research credits. Any other grade (U - unsatisfactory or I - Incomplete) may become a cause for suspension from research assistantship. Two consecutive U or I grades are potential cause for termination from the program.

**C.2 PhD Track for Hydraulics and Hydrology (HH) Specialty Area in Civil Engineering**

Any student enrolled in the PhD program is expected to finish 48 credit hours of course work and 42 credit hours of PhD research. Students with an MSCE degree from Purdue or other reputed university may be able transfer up to 30 credit hours toward satisfying the total 90 credit hour requirement. All students are required to take four core courses from the four selections listed in Table 1. Students can fulfill their course requirement by taking appropriate elective courses, examples of which are listed in Table 1.

**Major Milestones in PhD Program**
1. **Selecting an advisor:** If not already decided upon entry into the HH program, students should aim to select an advisor no later than the end of their first semester at Purdue. Typically students who are funded by individual projects are advised by the faculty member(s) directing those projects, but fellowship students can select their advisor from willing faculty members.

2. **Plan of study:** Students should aim to produce a viable plan of study by the end of their first PhD year; the plan can be revised at a later date if necessary. The plan of study will include the PhD committee.

3. **Prelim Exam:** The PhD student's prelim exam should come no later than 1 year from intended graduation, and ideally no later than 2 years following completion of their M.S. This exam involves the preparation of a research proposal in both written and oral form; the oral presentation is typically public, and the written proposal is prepared for the student's PhD committee. This exam follows the guidelines stipulated by the School of Civil Engineering and the University.

4. **Committee meetings:** Once formalized, the student should aim to meet with his/her committee at least annually. These meetings are important in order to keep committee members informed of the student's progress, and to give committee members a chance to provide feedback prior to the student's PhD defense. Appropriate forms certifying the annual meetings should be completed.

5. **Publications:** Students should aim to have their research published in peer-reviewed journals, preferably submitting these manuscripts prior to completing their PhD degree.

6. **PhD defense:** The most significant milestone in a PhD student's time at Purdue is the PhD thesis defense. This is carried out in accordance with University and School of Civil Engineering policy.

7. **Signing of the PhD thesis:** This last step is completed after the committee and the major professor have satisfied themselves that the thesis has been completed as per committee instructions and feedback.

Major milestones in a PhD program are listed in Table 3 including a tentative timeline.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Suggested Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selecting an academic advisor</td>
<td>By end of 1st semester or sooner</td>
</tr>
<tr>
<td>Preparing a plan of study</td>
<td>By end of 2nd year or sooner</td>
</tr>
<tr>
<td>Preliminary Exam</td>
<td>By end of 2nd post-M.S. year or sooner</td>
</tr>
<tr>
<td>PhD Thesis Defense</td>
<td>By end of 3rd post-M.S. year</td>
</tr>
</tbody>
</table>

**Minimum GPA requirements and Research Grades**

In addition to maintaining a minimum GPA of 3.0, all PhD students are expected to obtain an “S” (satisfactory) grade for their research credits. Any other grade (U – unsatisfactory or I – Incomplete) may become a cause for suspension from research assistantship. Two consecutive U or I grades are potential cause for termination from the PhD program.

**Students with Fellowships**

All students with Fellowship awards are expected to choose an academic advisor in the first semester after their admission to the graduate program. M.S. students awarded a Purdue fellowship who elect to conduct a “coursework-only” M.S. will lose the remainder of their fellowship funding. All PhD fellowship awardees are eligible to receive up to four years of support to finish their degree. The eligibility for continued support is dependent upon student overall academic performance including research work. Fellowship awards typically support a student for 1-2 years, and then a mutually-agreed upon advisor takes the responsibility to support the student for subsequent two to three years until the student gets a PhD degree. Therefore, it is critical for a fellowship student to select an academic advisor as soon as possible after enrolling in the PhD program. The student is expected to choose an appropriate research topic in agreement with the selected advisor. An unsatisfactory (U) grade for research in any semester may disqualify a student from receiving fellowship support if the student does not show signs of improvement after receiving warning/s from the advisor. If, for some reason, a fellowship student decides to change the area of research or the advisor, the student is responsible for finding a new advisor,
who must then take the advising as well as financial responsibility of supporting the student towards completion of the PhD degree. Depending on the department and the area of the new advisor, additional criteria related to PhD degree (e.g., format for preliminary exam) may apply.
Master's and PhD Core Courses in Materials Engineering

A set of four core courses is required for all Master's and PhD students in Materials Engineering. The objective of having core courses requirement is to ensure that all graduate students develop common basic technical background. Students may include, at most, one 400 level course in their plan of study.

The core program will consist of:

1) CE53000  Properties of Concrete
2) CE53500  Bituminous Materials
3) CE53800  Experimental methods in Construction Materials Research
4) CE59700  Structure Property Relationships and Behavior of CE Composite Materials
5) One course in statistical data analysis (i.e.: STAT 511, STAT 512, STAT 514)

Note: the requirement for the core statistical course can be waived if the student took similar course somewhere else

In addition to these core courses, the students will typically select several elective courses either from the material area or from other areas as deemed necessary based on their plan of study.

The most recent Materials area list of course offerings included:

CE63100  Advanced Concrete and Aggregate
CE59700  Sustainable Binders
CE59700-  Advanced Topics in Classical and Computational Solid Mechanics
CE59700  Foundations of Steel Corrosion in Concrete
CE 59700  Fracture Mechanics of Concrete Materials and Structures
CE 59700  Condition Assessments, Repair, and Life-Cycle Analysis for Concrete

In addition, possibilities exist to arrange for "on-demand" courses, i.e.:

CE69700  Cement chemistry
CE59700  Properties of concrete at Early Ages
Structural Engineering Graduate Degree Overview

Degree Requirements

<table>
<thead>
<tr>
<th>Master of Science in Civil Engineering</th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Thesis: 30 cr. hrs. course work</td>
<td>90 cr. hrs. (min)</td>
</tr>
<tr>
<td>Thesis: 21 cr. hrs. course work</td>
<td>Preliminary oral exam</td>
</tr>
<tr>
<td>9 cr. hrs. research</td>
<td>Dissertation</td>
</tr>
<tr>
<td>Thesis</td>
<td>Oral dissertation defense</td>
</tr>
<tr>
<td>Oral thesis defense</td>
<td></td>
</tr>
<tr>
<td>Committee: Major Professor + 2</td>
<td>Committee: Major Professor + 2 faculty</td>
</tr>
<tr>
<td>faculty members</td>
<td>members + 1 non-CE faculty member</td>
</tr>
<tr>
<td>Plan of study must be submitted before the start of final semester</td>
<td>Plan of study must be submitted before scheduling the Preliminary oral exam</td>
</tr>
</tbody>
</table>

Course Offerings

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 57000 Adv. Structural Mechanics</td>
<td>CE 57100 Earthquake Engineering</td>
</tr>
<tr>
<td>CE 57300 Structural Dynamics</td>
<td>CE 57200 Prestressed Concrete Design</td>
</tr>
<tr>
<td>CE 57600 Adv. Reinforced Concrete Design</td>
<td>CE 57900 Structural Stability</td>
</tr>
<tr>
<td>CE 58400 Foundation Analysis and Design</td>
<td>CE 59500 Finite Elements in Elasticity</td>
</tr>
<tr>
<td>CE 59100 Adv. Structural Steel Design</td>
<td></td>
</tr>
<tr>
<td>CE 67600 Behavior of Reinforced Concrete Members</td>
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Note: CE69100 Seminar – Structures is required every semester of attendance

Offered Occasionally:

CE 57500 Experimental Methods in Structural Engineering
CE 57700 Analysis of Plates and Shells
CE 57800 Plasticity in Structural Engineering
CE 59200 Plastic Design of Steel Structures
CE 67100 Behavior of Metal Structures
CE 67300 Advanced Structural Dynamics
CE 67500 Finite Element Analysis
CE 69700 Bridge Engineering
CE 69700 Seismic Design of Steel Structures
Other Courses to Consider

CE 53000 Properties and Production of Concrete
CE 58000 Advanced Geotechnical Engineering
CE 58300 Slopes and Retaining Structures

A&AE 55400 Fatigue of Structures and Materials
A&AE 55500 Mechanics of Composite Materials
A&AE 55800 Finite Element Methods in Aerospace Structures
A&AE 65400 Fracture Mechanics

Master’s Degree Requirements for Structural Engineering

Study Options
Graduate students focusing their studies on subject matter related to structural engineering and engineering mechanics may design their plans of study to fit their individual interests and needs, with the understanding that normally there should be exposure to both analysis and design subject matter. Both thesis and non-thesis programs are acceptable.

Structural Engineering Seminar
All structural engineering graduate students are required to register for the Structural Engineering Seminar, CE 69100, for each semester they are in residence. Attendance at all seminars is required of all graduate students unless explicit exception is granted.

Certification/Examination Requirements
Successful completion of all courses on the plan of study with a minimum GPA of 3.00 is required for certification for the master’s degree. In addition, the following regulations are applicable.

Non-Thesis Students
Certification for receipt of the master’s degree may be by conference of committee unless the student has received two or more C grades for courses listed on the plan of study, in which case satisfactory performance on a suitable examination, oral and/or written, is required.

Thesis Students
Certification for receipt of the master’s degree is contingent on committee acceptance of a formal oral defense of the thesis.

Requirement for Incoming Ph.D. students
Students admitted to the Ph.D. program in Structures shall have an adviser (agreeing to direct their Ph.D. research) by the end of their third semester in the program (summers excluded). If a student loses his/her adviser later, then they shall identify a new adviser (agreeing to direct their Ph.D. research) in no more than six months from the time when they lost their (previous) adviser.

Students not meeting these requirements shall be dropped from the Ph.D. program in Structures.
Master’s Core Courses in Transportation and Infrastructure System’s Engineering

A set of core courses is required for all master’s students in Transportation & Infrastructure Systems Engineering. The objective of such a core program is to guarantee that all master’s students have a basic set of skills. The core courses are not required for PhD students who already have a master’s degree from another school or department if they have taken equivalent courses elsewhere. Students may include, at most, one 400 level course in their plan of study.

The core program will consist of:
1) CE 561: Transportation Systems Evaluation,  
2) CE 594: Transportation System’s Analysis, and  
3) One Course in Quantitative Methods:
   
   STAT 512: Regression Analysis, or STAT 517: Statistical Inference, or IE 535: Linear Programming, or MA 527: Advanced Mathematics for Engineers and Physicists I.

Notes:
(i) Between STAT 512 and 517, students interested in pursuing a PhD are encouraged to take STAT 517.
(ii) Students lacking a basic statistical background are required to take STAT 511 outside the plan of study.

Study Options
Each graduate student has many courses from which to select a program of study and each program is tailored to fit the specific needs of the student. The master’s degree may be thesis or non-thesis. Because most of the financial support is for research, a high percentage of the students take the thesis option and the graduate assistant support when available. Non-thesis master’s students are required to complete three credit hours of directed study in CE 597.

Transportation Students’ Seminar
Registration in the Transportation Seminar, CE 691, is required of all graduate students in the fall and spring semesters. The seminar is generally held once a week. It is intended for student presentations of their research. All master’s and doctoral students make a presentation once a year. Attendance by all TIS graduate students is mandatory.
A. INTRODUCTION
The Transportation Engineering and Infrastructure System’s (TIS) Group at Purdue University administers two sequential examinations to its PhD students prior to their final examination to ascertain the adequacy of their preparation to conceive and undertake their chosen research topic. The first of these, the qualifying examination, tests the student on the basis of his/her coursework to ensure that he/she has acquired adequate breadth and background knowledge in the relevant primary or related disciplines. The second is a preliminary exam (which is oral) that tests the depth of the student’s knowledge in a specific research area, their ability to communicate that knowledge to fellow researchers, and their capability to produce a successful thesis in the subject area.

Only those students who have passed their qualifying exam are allowed to apply for the preliminary exam. The preliminary exam is held within one (1) year following the qualifying exam. For the preliminary exam, the composition of the committee may be same or different from that for the qualifying exam. However, both committees should be chaired by the same person: the student’s major academic advisor and thesis supervisor. This document presents the requirements for the PhD Qualifying and Preliminary Examinations in the Transportation Engineering and Infrastructure Systems (TIS) Group.

B. THE QUALIFYING EXAMINATION

1. What is the Qualifying Exam? The qualifying exam is a written examination session that is administered once a year – at the beginning of the Fall semester (the week of the second Monday in September). This is a four-day take-home exam in the four (4) different subject areas. It is the responsibility of the student to apply for the qualifying examination well in advance of the intended examination date (see the next item “Applying for …” below). The qualifying exam should be taken in September of the following year after the student joins TIS as a PhD student. For students who join the PhD program in January, the date for their qualifying exam will be September of the following year.

2. Applying for the Qualifying Exam and Forming the Committee: Before the end of the Spring semester that precedes the qualifying exam, the student should apply for the qualifying exam. The process, at a minimum, consists of the following steps:
   • File the PhD plan of study (POS) with the Graduate School and obtain approval.
   • Collect and complete a qualifying exam request form from the TIS PhD exam coordinator
   • Form the qualifying exam committee with advice from the student’s major academic advisor. There should be at least four (4) subject areas, and the committee should consist of at least one approved faculty member for each subject area. The names, subject areas and associated coursework (see Item B.3 below), and contact information for each committee member should be indicated on the qualifying exam request form
   • Submit the qualifying exam request form to the TIS PhD exam coordinator for review and approval
   • Receive, subsequently, from the TIS PhD exam coordinator, notification of acceptance of the student’s qualifying exam plan.

3. Subject Areas and Courses for the Qualifying Examination: There should be at least four (4) different subject areas, and each area must have a sequence of at least two courses taken at the graduate level. At least one (1) subject area must consist of two (2) courses within TIS. In addition, at least one (1) subject area must consist of two (2) courses outside of TIS in a relevant methodological area (such as Statistics, Operations Research, Economics, etc.).

4. Administering the Qualifying Exam: The qualifying exam is a written session that is administered as a four-day take-home exam in each of the subject areas. Where the number of subject areas exceeds four (4), the number of days for the take-home exam shall be adjusted accordingly. All students in a given exam session take the exam at the same time.

5. Passing the Qualifying Exam: After the qualifying examination, the chair of the examining committee convenes a face-to-face meeting or teleconference of the committee to make a decision on whether the candidate has passed the examination. The student must pass all the subject areas in the qualifying exam. The final decision to pass or fail the student is made at the discretion of the examining committee.

6. Repeating the Qualifying Exam: The examining committee has the option to recommend a second qualifying exam if a student does not pass the qualifying exam in his/her first attempt. This decision is made by the examining committee shortly after the first exam on the basis of the outcome of that exam. The second qualifying exam, if approved, will be held in the following January. Failure to pass the exam in the second attempt disqualifies the student from further pursuing a PhD in the TIS area.
C. THE PRELIMINARY EXAMINATION

1. What is the Preliminary Exam? The preliminary exam is held within one (1) year following the qualifying exam. The exam consists of an oral research presentation by the student and follow-up questions by the faculty regarding the presentation. Applying for, and scheduling the preliminary exam is the responsibility of the student and thus he/she should consult all members of the preliminary exam committee and other TIS faculty to establish an appropriate date for that exam.

2. Applying for the Preliminary Exam and Forming the Committee: Only those students who have passed their qualifying exam are allowed to apply for the preliminary exam. Before the end of the Fall semester of the qualifying exam, the student is responsible for setting in place the necessary administrative procedures for the preliminary exam. The process, at a minimum, consists of the following steps:

- Form the preliminary exam committee, with advice from the student’s major academic advisor. See Item C.3 below.
- Choose a date for the preliminary examination.
- Meet the Graduate Administrative Assistant of the School of Civil Engineering to notify of the student’s intent to have a preliminary exam and to fill any appropriate forms. The names and contact information of each preliminary exam committee member should be indicated on any required paperwork. At this meeting, the student must fill and submit Purdue University Form 8 for the preliminary exam as required by the Graduate School. This form must be submitted at least three weeks before the date of the preliminary exam. After receiving the form, the CE grad office will process it and then submit it to the graduate school. After approving the form, the Graduate School will generate the necessary paperwork for the preliminary exam and will send it to the CE graduate office so that it can be signed during the preliminary exam.
- Receive subsequently, from the CE Graduate Office, notification of acceptance of the student’s preliminary exam plan.

3. Composition of Committee Members: For the preliminary examination, the committee should comprise of faculty identified by the student and his/her major academic advisor for purposes of that exam. For the preliminary exam, the composition of the committee may be same or different from that for the qualifying exam. However, both committees should be chaired by the same person: the student’s major academic advisor and thesis supervisor. There should be a minimum of four (4) graduate school certified faculty members for the preliminary exam. At least one of these should be outside the TIS area.

4. Administering the Preliminary Exam: The preliminary exam consists of an oral research presentation by the student and follow-up questions by the faculty regarding the presentation. The examining committee and other TIS faculty attend this exam. After the exam, each member of the committee completes a rubric; at the end of the exam, the committee chair submits the completed rubric to the CE Graduate Office.

5. Passing the Preliminary Exam: During the Preliminary Exam, the student is typically expected to exhibit:

- A clear understanding of the research problem at hand
- An awareness of relevant background literature and current efforts in the research area of interest
- Some initial progress toward solving the research problem (data collection/processing, framework/methodologies, and preliminary results, etc.)
- A reasonable plan to execute the remainder of the thesis research.

At the end of the preliminary exam, the examining committee votes on whether the student should proceed with their PhD program. Other faculty members who are present may provide input for the decision.

6. Repeating the Preliminary Exam: The examining committee has the option to recommend a second preliminary exam if a student does not pass the preliminary exam in their first attempt. The decision on the second preliminary exam is made by the examining committee shortly after the first exam based on the outcome of the first exam. The student should request a new Form 8 from the CE graduate office. The second preliminary exam should take place at least in the next semester session (summer session included) following the first preliminary exam. Failure to pass the exam in the second attempt disqualifies the student from further pursuing a PhD in the TIS area.

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Frequently-asked Questions

(a) Is the TIS PhD qualifying exam the same as the preliminary exam?

No. Under the new rules, TIS separates these two examinations.
(b) Should the members of the qualifying exam committee be identical to those of the prelim? exam committee?
No. They need not be identical. The qualifying exam committee is the same as the “PhD examining committee”. The preliminary exam committee is the committee that signs the plan of study. The preliminary exam committee is the same as the “PhD advisory committee”.

(c) For the qualifying exam, can a student specify a committee member for an area even though that member did not teach him/her that course but the area is that member’s area of expertise?
This is generally not allowed but may be allowed in exceptional cases only, for example, when the original faculty member, for some reason, is unavailable at the time of the exam.

(d) For the qualifying exam or preliminary exam, can a student specify a committee member who is not a faculty member? For example, staff? Or visiting professor? Etc.
The examining committee for the qualifying exam should involve only Purdue faculty members. The examining committee for the preliminary exam should involve only Purdue faculty members that are certified by the Graduate School but in special circumstances, non-Purdue faculty or Purdue non-faculty can be approved by the graduate school to serve on that committee.

(e) Can student include a 400-level course in any of his/her areas?
Each subject area in the qualifying examination must have a sequence comprising at least two courses taken at the graduate level. The two courses that constitute the minimum requirement should at least be at 500 level.

(f) Can a student include independent/individual/special studies (CE 597 and CE 697) as a subject area?
No. It is not allowed.

(g) Should a student file his/her Plan of Study before scheduling or taking his/her qualifying exam?
Yes. The PhD Plan of Study should be filed and approved before the end of the Spring semester in the calendar year of the qualifying exam. However, the student need not take all courses listed in the Plan of Study before applying for the qualifying examination.

(h) How soon should a student take the qualifying exam after joining the TIS program as a PhD student?
Those who join in August take the qualifying exam in September of the following year. For those who join in January, the qualifying exam will be in September of the following year.