GRADUATE STUDENT HANDBOOK

Department of Civil and Environmental Engineering

The Civil and Environmental Engineering department offers advanced degree programs with emphasis on a variety of specialization areas leading up to the following degrees: Master of Civil and Environmental Engineering, Master of Science and Doctor of Philosophy.

Department of Civil and Environmental Engineering

Chair: Robert Griffin, Ph.D
Graduate Academic Affairs Committee Chairs: Qilin Li, PhD (Environmental)
Satish Nagarajaiah, PhD (Civil)

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In addition to being in agreement with the regulations stated in this departmental handbook, students must also be in agreement with the General Announcements and the Code of Conduct. http://ga.rice.edu/GR_policies/
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Degree Requirement

General requirements for graduate degrees can be found in the General Announcement. The requirements outlined below are specific for graduate degrees offered by the Department of Civil and Environmental Engineering. Students must meet both the university and department requirements in order to obtain degrees offered by the department.

I. DOCTOR OF PHILOSOPHY (PhD) REQUIREMENTS

1.1 The Ph.D. degree in Civil and Environmental Engineering has two sub tracks: Civil Engineering (CE) and Environmental Engineering and Sciences (EES). In both cases, to earn a Ph.D. degree, students must meet the following requirements:

- Complete 90 semester hours of approved credits past BS (60 semester hours past MS) with high standing, including core course requirements stipulated below.
- Pass a preliminary examination (see guidelines below).
- Pass a qualifying examination on course work, proposed research, and related topics.
- Complete a dissertation indicating an ability to do original and scholarly research.
- Pass a formal public oral examination on the thesis and related topics.

Ph.D. students in civil and environmental engineering (environmental track) take the preliminary exam, administered by the department faculty, after 2 semesters of course work. Ph.D. students in civil and environmental engineering (civil track) take the preliminary exam, administered by the department faculty, after 3 semesters of course work. Students who pass this exam then form a doctoral committee according to department requirements. The qualifying examination, administered by the doctoral committee after students develop a research proposal, evaluates their preparation for the proposed research and identifies any areas requiring additional course work or study. As part of the advanced degree training, we also may require students to assist the faculty in undergraduate courses and laboratory instruction.

Research hours - The number of research credit hours students register should be in agreement with the amount of time spent on thesis research. Students should speak with their advisors prior to registering for more than 3 credit hours of research.

Core Courses - Course requirements are stipulated to prepare and train students for rigorous and high quality education, research, and practice. These courses, usually completed within the first two years of graduate school, are designed to train and test the student's aptitude for higher level thinking, problem solving, and independent research. Core courses also contribute breadth beyond minimum competency as civil and environmental engineers. A minimum grade of B- must be achieved for each of these core courses, as well as a minimum average GPA of 3.0.
For the **CE sub-track**, PhD students should take at least 6 of the following 17 courses:

CEVE 500 (S) Advanced Mechanics of Materials  
CEVE 503 (F) Nonlinear Finite Element Analysis *  
CEVE 505 (F) Engineering Project Development and Management  
CEVE 519 (F) Elasticity, plasticity and damage mechanics *  
CEVE 524 (F) Time Dependent System Reliability Modeling *  
CEVE 527 (F) Computational Structural Mechanics and FEM *  
CEVE 530 (F) Concrete Building Design *  
CEVE 538 (S) Computational Nanoscience for Green Infrastructure  
CEVE 540 (S) Steel Building Design *  
CEVE 554 (F) Computational Fluid Mechanics  
CEVE 560 (F) Bridge Engineering & Extreme Events *  
CEVE 570 (S) Foundation Engineering  
CEVE 576 (S) Structural Dynamic Systems and Control *  
CEVE 578 (F) Earthquake Engineering *  
CEVE 592 (F) Modeling and Analysis of Networked Systems *  
CEVE 596 (S) Offshore and Marine Systems *  
CEVE 678 (F) Advanced Stochastic Mechanics *  
CEVE 679 (F) Applied Monte Carlo Analysis *

* Offered every two years

For the **EES sub-track**, Ph.D. students should take at least 6 of the following 9 courses:

CEVE 501 (F) Chemistry for Environmental Engineering and Science  
CEVE 504 (S) Atmospheric Particulate Matter  
CEVE 509 (S) Hydrology and Water Resources Engineering  
CEVE 511 (F) Atmospheric Processes  
CEVE 512 (S) Advanced Hydrology and Hydraulics  
CEVE 534 (F) Fate and Transport of Contaminants in the Environment  
CEVE 535 (S) Physical Chemical Processes for Water Quality Control  
CEVE 536 (S) Environmental Biotechnology and Bioremediation  
CEVE 550 (S) Environmental Organic Chemistry

Substitutions will be considered when a core course is not offered, or under special circumstances related to the professional goals of the student. Substitutions will be considered on a case-by-case basis, and will require approval by the faculty. Potential substitute courses include:

CEVE 518 (S) Contaminant Hydrogeology  
CEVE 520 (F) Environmental Remediation Restoration  
CEVE 550 (S) Environmental Organic Chemistry  
CEVE 592 (F) Modeling and Analysis of Complex Urban Infrastructure Systems *

* Offered every two years
SEMINARS – Additional Requirement

Students are required to enroll in Seminar, CEVE 601 (fall) and CEVE 602 (spring) each semester while at Rice. Please see Graduate Seminar policy on page 27.

1.2 PRELIMINARY EXAMINATION FOR DOCTORAL STUDENTS

All Ph.D. students must take the preliminary examination after completing the core course requirement. Because the core courses provide a basic level of preparation and breadth, the preliminary exam has broader latitude to probe synthesis and high-level thinking skills, rather than serving as a check on coursework.

Civil engineering graduate students will be required to take their written preliminary exam on Friday before the classes of the spring semester, 1.5 years from the fall semester they enter into the program. If a student enters in the spring semester he/she needs to take the exam in the following spring semester along with other students and take the oral exam on Friday of the first week of classes. Environmental engineering students are required to take the preliminary exam in May of the year after they first enter the PhD program.

For the CE sub-track, the format of the Preliminary Exam is as follows:

Day 1: Written Exam (closed book)
2 hours — Applied Mathematics
2 hours — Structural Dynamic Systems
2 hours — Structures/Mechanics/FEM/Related Areas
2 hours — Optional Area: Random Vibrations/Stochastic Mechanics/System Reliability/Bridge Engineering/Continuum mechanics and nonlinear FEM/Atomistic Mechanics/related advanced topics (Optional area can be chosen by the student)

Day 2: Oral Exam 1 hour per student

Civil Engineering faculty examine/question the student about the written exam and additional broad set of topics to assess the students thinking ability, comprehension, problem solving skills, and overall aptitude in the field of structural engineering, structural mechanics, and system reliability.

Students will be informed of the results as they complete their oral examination. Students who fail the exam either fully or partially (conditional pass) will be requested to retake the exam or pertinent subparts. The Preliminary Exam committee decides the extent of the remedial action on a case-by-case basis. Students who fail the preliminary exam twice will not be allowed to continue in the Ph.D. program.

For the EES sub-track, the examination consists of the following.

Day 1: Written Exam

Part I: a three-hour exam on fundamentals of environmental engineering covered in the core courses. This exam does not necessarily test understanding of the specific materials covered in these courses, but knowledge in physical, chemical and biological principles of environmental engineering, as well as mathematics skills that are necessary to solve problems discussed in the courses above. Recognizing that students taking the exam may not
have taken all core courses, students will have the flexibility to answer four (4) out of all sets of questions posed by the professors of the environmental engineering and science program. Unless otherwise stated, Part I is closed-book.

Part II: a 3-hour open-book exam in specialized areas of environmental engineering. The purpose of this exam is to evaluate the student's depth of knowledge in subjects relevant to his or her research topic. The student will be given one comprehensive, in-depth question by the thesis advisor. The graduate committee will exercise quality control of the exam questions to ensure that these questions are not a simple extension of those in Part I.

Day 2: Oral Exam

The oral examination takes 30-45 minutes per student. It is a general exam on common topics of environmental engineering, with the intent to probe for high-level thinking across broad themes. A faculty committee will preside over the exam and each committee member may ask questions. The questions may or may not be related to those in the written exam.

Students will be informed of the results after all students have finished the oral exam. Students who fail the exam either fully or partially can petition for retaking the exam. Petitions will be considered on a case-by-case basis by the department chair, who will consider the advice of both the Preliminary Exam and Graduate Studies committees. Students who fail the preliminary exam twice will not be allowed to continue in the Ph.D. program.

1.3 Thesis Committee

After successful passing of the preliminary exam students should then form a doctoral committee. A thesis committee is composed of at least three members. Two, including the committee chair, must be members of the CEE faculty; in doctoral thesis committees one member must have his or her primary appointment in another department within the university. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of faculty fellow, senior faculty fellow, or distinguished faculty fellow
- Faculty who have been certified as thesis committee members by the dean of graduate and postdoctoral studies

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenured-track member of the CEE department. Additional members of the committee, who may or may not meet the above criteria, may be selected with the approval of the department chair. These would be in addition to the three required members.

1.4 Ph.D. Qualifying Exam (Thesis Proposal)

The qualifying exam must be completed before petitioning for approval of candidacy. PhD students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice. The qualifying examination will be administered by the doctoral thesis committee. The committee will evaluate the student’s preparation for the proposed research and identifies any areas requiring additional course work or study. Students who fail the qualifying examination will not be granted Ph.D. candidacy. Petition to re-take the exam will be considered on a case-by-case basis by the department chair, who will consider the advice of both the Thesis Committee and the Graduate Studies committee. To complete the qualifying exam, students must:
• Form a thesis committee. PHD students are required to form a doctoral thesis committee as soon as the preliminary exam is passed.
• Prepare a thesis proposal. The thesis proposal should contain reasonably detailed preliminary work and proposed research approach
• Defend thesis proposal during a meeting with the thesis committee. The qualifying exam/thesis proposal defense must be scheduled at least six months before the final defense.

Note: The thesis proposal defense should be documented using the “Evaluation of PhD Proposal form”. Forms should be requested by emailing atorres@rice.edu, when requesting the form please send a copy of the proposal for inclusion in your student record. After the proposal defense is completed, the original forms should be submitted to the graduate program coordinator Andrea Torres.

1.5 APPROVAL OF CANDIDACY
In thesis programs, the attainment of candidacy marks the completion of all requirements for the degree other than those related to research leading to the writing, submission, and defense of the thesis. Requirements include (a) completed required course work, (b) passed required exams, to demonstrate his/her comprehensive grasp of the subject area, (c) demonstrated the ability for effective oral and written communication, and (d) shown the ability to carry on scholarly work in his/her subject area.

• Ph.D. students must be approved for candidacy before the beginning of the ninth semester of their residency at Rice.
• Each student’s individualized time boundaries are available in Esther. Students who are approaching or who have passed their deadline to candidacy, and who have not met all requirements for candidacy must submit an extension of candidacy request. Extensions are approved on a case-by-case basis by the Office of Graduate and Postdoctoral Studies.
• The Office of Graduate & Postdoctoral Studies will impose a $125 reinstatement fee on students who are allowed to continue but have exceeded their time boundaries without prior approval.

All PhD students must submit a petition for approval of candidacy. Candidacy forms may be found on the Graduate and Postdoctoral website: http://graduate.rice.edu/forms. Petitions should be submitted to atorres@rice.edu. (Note, the three requested attachments will be added by the department before forms are submitted of approval). After candidacy has been approved by the Dean of Graduate and Postdoctoral Studies, the student can then schedule, in coordination with his or her research advisor, a public thesis defense.

1.6 REQUEST FOR EXTENSION OF TIME TO CANDIDACY
Each student’s individualized time boundaries are available in Esther. Students who are approaching or who have passed their deadline to candidacy, and who have not met all requirements for candidacy must submit an extension of candidacy request. Extensions are approved on a case-by-case basis by the Office of Graduate and Postdoctoral Studies. Request for extension of time to candidacy may be found on the Graduate and Postdoctoral website http://graduate.rice.edu/forms. Petitions should be filled out in consultation with your advisor and submitted to atorres@rice.edu.
1.7 PH.D DEFENSE
Candidates who pass the qualifying exam are required to write a detailed Ph.D. thesis and schedule the Ph.D. defense under the guidance of their advisor and doctoral committee. The Ph.D. thesis must be submitted to the doctoral committee at least two weeks prior to the defense. The Ph.D. defense must be scheduled according to the Rice University graduate school requirements (at least fifteen days prior to the date of the defense). Defense announcements should be submitted to the Office of Graduate and Postdoctoral Studies by filling out a form online at http://events.rice.edu/rgs/. All students must also post paper announcements in Keck Hall, Ryon Lab, and Mech Lab. Please refer to the Office of Graduate and Postdoctoral Studies website http://graduate.rice.edu/thesis/ for specific information.

The candidate will make an oral presentation for approximately an hour; the presentation will be open to the public. This will be followed by a question and answer session by the general audience and a closed door question and answer session by the doctoral committee. The candidates who successfully defend their Ph.D. will be awarded the degree of doctor of philosophy.

Note: The thesis defense should be documented using the “Evaluation of PhD Defense form”. Forms should be requested by emailing aتورسه@rice.edu when requesting the form please send a copy of your thesis for inclusion in your student record. After the defense is completed, the original forms should be submitted to the graduate program coordinator Andrea Torres.

1.8 ACCEPTENCE OF THESIS
The completed thesis must be submitted in either final or advanced draft form to the members of the thesis committee at least two weeks before the oral examination. A copy of the completed thesis must also be submitted to the department at least two weeks before the oral examination. This copy may be submitted electronically.

In the course of the examination, the thesis committee members may recommend revisions or additions, which must be incorporated in the final thesis. The final thesis must be signed by all committee members.

No later than six months from the date of the examination, candidates who successfully passed the oral examination in defense of their thesis must submit their thesis to the Office of Graduate and Postdoctoral Studies. (Refer to the Graduate and Postdoctoral Studies website http://graduate.rice.edu/thesis/ for specific instructions regarding how to submit the thesis.)

If the thesis is not ready for final signatures by the end of the six-month period, the “pass” may be revoked and an additional oral defense will need to be scheduled. Application for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the school dean, and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances.
1.9 **GRADUATION**

All degree candidates are required to apply for their degree with the Office of the Registrar during the semester in which they wish to graduate. Students who plan to graduate in December must apply for their degree through the Registrar’s Office before the end of October of the fall. Students who plan to graduate in May must apply for their degree through the Registrar’s Office before the end of February. Applications for degree can be found in ESTHER. Degrees are conferred twice a year (December and May), however, commencement happens once a year. All December degree candidates are invited to participate in May commencement activities.

1.10 **Suggested Time Lines for Ph.D. Students** (those admitted after B.S. may follow the M.S. student's guidelines initially and then switch to the following after completion of the M.S.):

- First year: Course work, begin research under direction of advisor as deemed appropriate
- End of first year (for Civil Eng. Students after 1.5 years): Take the preliminary exam
- First semester, second year (for Civil Eng. Students end of second year): Form committee and consult with committee
- Each semester thereafter (at a minimum) consult with committee; meet if necessary (at the discretion of the committee chair)
  - Ensure that you submit the fall/spring semester progress reports to the department graduate committee with the approval of your advisor
- Third or fourth year: Write and defend proposal in Ph.D. qualifying examination (this should be at least six months before the final defense) followed by petitioning for candidacy
- Final semester: Defense and submit the dissertation

**Time Boundaries set by Graduate & Postdoctoral Studies**

Ph.D. students –

- Completion of degree: within 10 years of initial enrollment in the degree program, including any period in which the student was not enrolled or enrolled part time.
- Time to candidacy: before the beginning of the 9th semester of their enrollment.
- Time to thesis defense: before the end of the 16th semester of initial enrollment.
- Time to thesis submission: no later than six months from the date of the final examination. If this deadline is missed, then the student will be required to schedule an additional defense.
II. MASTER OF SCIENCE (M.S.) REQUIREMENTS

2.1 The Master of Science degree is offered in civil and environmental engineering. For general university requirements, see Graduate Degrees in the General Announcement. To earn a MS degree, students must:

- Complete at least 24 semester hours of approved courses while maintaining a minimum average GPA of 3.0 [and at least a minimum grade of B].
- Complete at least 6 credit hours of research. Students must select a thesis committee according to department requirements and conduct original research in consultation with the committee.
- Present and defend in oral examination an approved research thesis.

COURSES - For students focusing on environmental engineering, coursework must include one course in each of the following areas and achieve a minimum grade of B-: environmental chemistry, water treatment, hydrology, and air quality. For students focusing on civil, structural engineering, and mechanics, coursework must include one course in each of the following areas: structural engineering, mechanics, advanced mathematics, dynamic systems, system reliability and earthquake engineering. Comparable course work completed previously may be substituted for these core courses.

SEMINARS , Additional Requirement: Students must register for CEVE 601 (Fall) and CEVE 602 (Spring) each semester while at Rice. Please see Graduate Seminar policy on page 27.

Students take the oral exam only after the committee determines the thesis to be in a written format acceptable for public defense. Normally, students take two academic years and the intervening summer to complete the degree.

Students must submit the fall/spring semester progress reports to the department graduate committee with the approval of their advisor.

Please note: Students intending to extend their studies into the Ph.D. degree program should note that the department does not grant an M.S. degree to candidates who have not written a master’s thesis.

2.2 MS APPROVAL OF CANDIDACY

Each thesis student must petition for candidacy. Students may take the final oral examination in defense of their thesis only after the Dean of Graduate and Postdoctoral Studies approves their candidacy. Master's students must be approved for candidacy before the beginning of the fifth semester of their residency at Rice. Student's individualized time boundaries are available in Esther. Students who are approaching or who have passed their deadline to candidacy, and who have not met all requirements for candidacy must submit a request for extension. Extensions are approved on a case-by-case basis by the Office of Graduate and Postdoctoral Studies. The Office of Graduate & Postdoctoral Studies will impose the $125 reinstatement fee on students who are allowed to continue but who have exceeded their time boundaries without prior approval.

A MS thesis committee should be formed during the last semester of the MS study or sooner. A MS thesis committee is composed of at least three members. Two members, including the committee chair, must be members of the CEE faculty with their primary appointment in the CEE department; you may have all three members within the CEE
faculty for MS committees ONLY. At least three members of the committee must meet one of the following requirements:

- Tenured or tenure-track members of the Rice faculty
- Research faculty holding the rank of faculty fellow, senior faculty fellow, or distinguished faculty fellow
- Faculty who have been certified as thesis committee members by the dean of graduate and postdoctoral studies

The committee chair need not be the thesis director. The chair, however, must be either a tenured or tenured-track member of the CEE department. Additional members of the committee, who may or may not meet the above criteria, may be selected with the approval of the department chair. These would be in addition to the three required members.

2.3 REQUEST FOR EXTENSION OF TIME TO CANDIDACY
Each student’s individualized time boundaries are available in Esther. Students who are approaching or who have passed their deadline to candidacy, and who have not met all requirements for candidacy must submit an extension of candidacy request. Extensions are approved on a case-by-case basis by the Office of Graduate and Postdoctoral Studies. Request for extension of time to candidacy may be found on the Graduate and Postdoctoral website [http://graduate.rice.edu/forms](http://graduate.rice.edu/forms). Petitions should be filled out in consultation with your advisor and submitted to atorres@rice.edu.

2.4 MS DEFENSE
Master’s students must defend their theses before the end of the eighth semester of their residency at Rice. The MS defense must be scheduled and announced to the public according to the Rice University graduate school requirements (at least one week prior to the date of the defense). Defense announcements should be submitted to the Office of Graduate and Postdoctoral Studies by filling out the following form: [http://events.rice.edu/rqs/](http://events.rice.edu/rqs/). All students must also post paper announcements in Keck Hall, Ryon Lab, and Mech lab. Please refer to the Office of Graduate and Postdoctoral Studies website [http://graduate.rice.edu/thesis/](http://graduate.rice.edu/thesis/) for specific information.

Note: The thesis defense should be documented using the “Evaluation of MS Defense form”. Forms should be requested by emailing atorres@rice.edu, when requesting the form please send a copy of your thesis for inclusion in your student record. After the defense is completed, the original forms should be submitted to the graduate program coordinator Andrea Torres.

2.5 ACCEPTENCE OF THESIS
The completed thesis must be submitted in either final or advanced draft form to the members of the thesis committee at least two weeks before the oral examination. A copy of the completed thesis must also be submitted to the department at least two weeks before the oral examination. The department copy may be submitted electronically to atorres@rice.edu.

In the course of the examination, the thesis committee members may recommend revisions or additions, which must be incorporated in the final thesis. The final thesis must be signed by all committee members.

No later than six months from the date of the examination, candidates who successfully passed the oral examination in defense of their thesis must submit their thesis to the Office of Graduate and Postdoctoral Studies. Please refer to
the Graduate and Postdoctoral Studies website [http://graduate.rice.edu/thesis/](http://graduate.rice.edu/thesis/) for specific instructions regarding how to submit the thesis.

If the thesis is not ready for final signatures by the end of the six-month period, the “pass” may be revoked and an additional oral defense will need to be scheduled. Application for an extension without reexamination must be made by the candidate with the unanimous support of the thesis committee, endorsed by the school dean, and approved by the Office of Graduate and Postdoctoral Studies. Extensions of this six-month period for completion without reexamination will be granted only in rare circumstances.

### 2.6 GRADUATION

All degree candidates are required to apply for their degree with the Office of the Registrar during the semester in which they wish to graduate. Students who plan to graduate in December must apply for their degree through the Registrar’s Office before the end of October of the fall. Students who plan to graduate in May must apply for their degree through the Registrar’s Office before the end of February. Applications for degree can be found in ESTHER. Degrees are conferred twice a year (December and May), however, commencement happens once a year. All December degree candidates are invited to participate in May commencement activities.

### 2.7 SUGGESTED TIME-LINE FOR MS STUDENTS

- First year: Course work, begin research under direction of advisor as deemed appropriate
- End of first year (for Civil eng. Students after 1.5 years): Take the preliminary exam if intending to continue for a Ph.D in the ENVE program.
- First semester, second year: Form committee and consult with committee; meet if necessary (at the discretion of the committee chair) followed by petition for candidacy
- Second year, second semester: Write and defend thesis

**Time Boundaries set by Graduate & Postdoctoral Studies**

Masters Students -

- Completion of degree: within 5 years of initial enrollment in the degree program, including any period in which the student was not enrolled or enrolled part time
- Time to candidacy: before the beginning of 5th semester of enrollment
- Time to thesis defense: before the end of 8th semester of enrollment
- Time to thesis submission: no later than six months from the date of the final examination. If this deadline is missed, then the student will be required to schedule an additional defense.
III. MASTER OF CIVIL AND ENVIRONMENTAL ENGINEERING (MCEE) REQUIREMENT

The Master of Civil and Environmental Engineering (MCEE) is a professional non-thesis degree requiring 30 semester hours of approved course work. Students who have a BS or BA degree in any field of engineering or related study may apply. They will complete 30 hours of graduate level courses (24 semester hours must be at Rice University) in our Civil Engineering or Sustainable Environmental Engineering and Design sub-tracks including the required core courses and a final project.

For the final project, students must choose an advisor to work with in the first semester, and register for CEVE 590 with the advisor's approval to conduct the project in the second semester.

Graduate courses from other departments might count towards the MCEE degree, but need prior approval by CEE Graduate Committee Chairs. Depending on their background, some students may need to fulfill pre-requisites or take remedial engineering courses in addition to the required 30 semester hours to earn the MCEE degree. Students can transfer up to 6 credits of graduate-level courses equivalent to the required courses. For more information on how to transfer credits please email atorres@rice.edu. All professional masters' students must maintain a minimum average GPA of 3.0.

3.1 COURSES

Civil Engineering track

Core Courses: MCEE students in the Civil Engineering track must take at least 6 of the following core courses.

CEVE 500  (S) Advanced Mechanics of Materials  
CEVE 503  (F) Nonlinear Finite Element Analysis *  
CEVE 505  (F) Engineering Project Development and Management  
CEVE 519  (F) Elasticity, Plasticity and Damage Mechanics *  
CEVE 524  (F) Time Dependent System Reliability Modeling  
CEVE 527  (F) Computational Structural Mechanics and FEM*  
CEVE 530  (F) Concrete Building Design *  
CEVE 538 (S) Computational Nanoscience for Green Infrastructure  
CEVE 540  (S) Steel Building Design *  
CEVE 560  (F) Bridge Engineering and Extreme Events *  
CEVE 570  (S) Foundation Engineering  
CEVE 576  (S) Structural Dynamic Systems and Control *  
CEVE 578  (F) Earthquake Engineering *  
CEVE 592  (F) Modeling and Analysis of Complex Urban Infrastructure Systems *  
CEVE 596  (S) Offshore and Marine Systems *  
CEVE 678  (F) Advanced Stochastic Mechanics *  
CEVE 679  (F) Applied Monte Carlo Analysis *

Electives: Students can take up to 2 courses from the following list of electives:

CAAM 453 (F) Numerical Analysis  
CEVE 455  (S) Numerical Methods for Partial Differential Equations  
MECH 502  (S) Vibrations
MECH 517 (S) Finite Element Methods
MECH 511 (S) Continuum Mechanics
MECH 665 (S) Analysis of Vibrations in Nonlinear Systems *

Students can take up to 2 courses that will aid in their professional development from the following list:

ANTH 532 (S) The Social Life of Clean Energy
CEVE 507 (S) Energy and the Environment
CEVE 406 (S) Global Environmental Law and Sustainable Development
CEVE 528 (S/F) Engineering Economics
ECON 437 (F) Energy Economics (pre-req. ECON 301 OR ECON 370)
ENGI 529 (F) Engineering Leadership and Ethics
NSCI 511 (F) Science Policy and Ethics
NSCI 610 (F) Management for Science/Engineering

* Offered every two years

Sustainable Environmental Engineering and Design track

Required Courses† (Total 19 credits)

CEVE 501 (F) Chemistry for Environmental Engineering and Science (w/o lab)
CEVE 502 (F) Sustainable Engineering Design
CEVE 509 (S) Hydrology and Water Resources Engineering
CEVE 511 (F) Atmospheric Processes
CEVE 534 (F) Fate and Transport of Contaminants in the Environment
CEVE 536 (S) Environmental Biotechnology
CEVE 601 (F) or CEVE 602 (S) Professional Seminar

Electives. At least three courses from the list below (integration of sustainability and engineering):

A. Engineering Science and Technology (choose up to 2) (all are 3 credits each)
CEVE 504 (S) Atmospheric Particulate Matter
CEVE 505 (F) Engineering Project Development & Management
CEVE 508 (S) Introduction to Air Pollution Control
CEVE 510 (F) Principles of Environmental Engineering
CEVE 518 (S) Contaminant Hydrogeology
CEVE 520 (F) Environmental Remediation Restoration
CEVE 533 (S) Nanoscience and Nanotechnology
CEVE 535 (S) Physical Chemical Processes for Water Quality Control
STAT 485 (S) Quantitative Environmental Decision Making
CEVE 450 (S) Remote Sensing
CEVE 550 (S) Environmental Organic Chemistry
CEVE 592 (F) Modeling and Analysis of Complex Urban Infrastructure Systems
B. Sustainable Resource Management (choose up to 1) (all are 3 credits each)
ANTH 532 The Social Life of Clean Energy
CEVE 406 (S) Global Environmental Law and Sustainable Development
CEVE 507 (S) Energy and the Environment
CEVE 528 (S/F) Engineering Economics
ECON 437 (F) Energy Economics (pre-requisites ECON 301 OR ECON 370)
ENGI 529 (F) Engineering Leadership and Ethics
NSCI 511 (S) Science Policy and Ethics
NSCI 610 (F) Management for Science/Engineering

* Offered every two years
† If a required course or equivalent has been taken, it can be replaced with an Engineering Science and Technology elective.

3.2 MCEE FINAL PROJECT

All MCEE students must complete a 2-credit final project with a faculty member in the CEE department. Through the final project, MCEE students must demonstrate professional written and oral communication skills:

A. Students write well-organized, coherent papers with few grammatical errors
B. Students demonstrate ability to describe scientific issues and techniques in writing and in presentation
C. Students deliver a professional presentation on par with a solid conference presentation
D. Student responses to questions demonstrate a facility with the issues and techniques immediately relevant to the topic.

Note: The final project presentation should be documented using the “MCEE Evaluation of Presentation form”. Forms should be requested by emailing atorres@rice.edu, when requesting the form please send a copy of your report/slides for inclusion in your student record. After the presentation is completed, the original forms should be submitted to the graduate program coordinator Andrea Torres.

3.3 ADDITIONAL REQUIREMENTS

All MCEE students are required to take one semester of seminar CEVE 601 (fall) or 602 (Spring) and adhere to the minimum residency requirement of one fall or spring semester in full-time or part-time graduate study. Please see Graduate Seminar policy on page 20.
Semi Annual Performance Review

An annual performance review will be conducted on all graduate students by the Graduate Studies Committee. The purpose of the review is to ensure that students make adequate academic progress and that the faculty provides timely feedback to the students’ academic development.

The review will be a comprehensive evaluation of the student’s academic performance including course work, research, professional development and other relevant activities. It will be conducted at the end of every fall and spring semester. Additional reviews may be done upon request of the faculty. Students will be reviewed based on the following:

• Course work grades. Transcripts including the spring semester grades will be reviewed. For students who are not doing research (e.g., MCEE students), this will be the only document that will be reviewed.

• An annual report submitted by the graduate student to the advisor by May 15. The report will include 1) a summary of academic activities. This includes but is not limited to manuscripts published, submitted or in preparation, conference presentations, awards, professional organization membership, and other research related activities; 2) a one page description of research progress and plans for the coming year. It is very important for the students to set clear and realistic research objectives for the coming year based on consultation with the research advisor and thesis committee. These objectives will be used to judge the student's research progress in the next review.

• An evaluation letter from the research advisor. The letter must be submitted to the Graduate Studies Committee by May 31 in the year when the review is conducted.

• Other materials deemed necessary by the Graduate Studies Committee.

A written assessment of the student’s academic progress resulting from the review will be sent to the student before the beginning of the fall semester. Students whose academic progress is judged inadequate by the annual review will receive a warning, and be placed on probationary status. Note that an “Unsatisfactory” grade on Ph.D. or M.S. thesis research will most likely result in an unfavorable review. The student will be given a specific time frame within which improvement must be made to the satisfaction of the research advisor and the Graduate Studies Committee. Failure in demonstrating satisfactory improvement will result in dismissal.

It is strongly recommended that students meet with their advisors at least once per semester to define and adjust research objectives and milestones so that the expectations for research and the criteria for adequate progress are clear.
Seminar Policy
The CEVE Graduate Seminar is a one-credit course offered each term as CEVE 601 in the fall and CEVE 602 in the spring.

Objectives
The objectives of the graduate seminar series are to:
• broaden the research and professional horizon of our students and faculty in the general field of civil and environmental engineering;
• keep our students and faculty connected to the scientific community and well informed of emerging research and practice areas in civil and environmental engineering;
• strengthen the sense of community and promote intellectual exchange within and beyond the department;
• promote the attendance to university-level talks by prominent thinkers and leaders.

Attendance requirement
All CEVE graduate students are required to take the graduate seminar course every semester while registered at Rice. Students are allowed to miss up to 3 departmental seminars without excuse. In addition to our departmental seminars, students are strongly encouraged to attend specialty seminars in the department, as well as seminars, lectures and other scientific activities outside of the department.

S/U grades will be given based on attendance and feedback from the advisors. Students are responsible for signing the roster and providing it to the seminar host at each seminar to note their attendance. A grade of U will be given to any student that fails to meet the above requirements. Exception may be given to students with legitimate excuses (e.g., medical reasons, long field trips or conducting research at an off-campus site). Requests for exception must be made before, not after, the absence whenever possible.

Official “Departmental Seminars” will be held on Fridays from 2:00 PM-3:00 PM. In addition to seminars that are part of the official seminar course, there may be specialty seminars that are of interest to specific research groups. Specialty seminars are not mandatory, but highly encouraged, and will be announced specifically as “Specialty Seminar”. The seminar schedule, along with other departmental and university events, is maintained on the Rice Events Calendar: http://www.ceve.rice.edu/EventsList.aspx?t=365 as well as in OwlSpace under the 601/602 course listing’s schedule tab. The schedule will continue to develop during the semester. Therefore, students should check the schedule frequently. Seminar announcements will also be made via email and posted flyers.

Seminar committee
The seminar committee currently consists of five faculty members: Drs. Alvarez, Li, Padgett, Shahsavari and Stanciulescu.

This committee organizes the seminar program for the department, including identifying speakers that will enrich the intellectual landscape of students, enhance the professional development of junior faculty or enhance the visibility of the department, inviting the speakers, and organizing and advertising their visit. Dr. Stanciulescu and Li will be the faculty contact person for any concerns or requests related to the seminar course in Fall 2015 (rouzbeh@rice.edu).

Jennifer Mashburn is the seminar coordinator. Please copy her on all correspondence.
Guidelines for Dismissals, Petitions, Appeals, Grievances, and Problem Resolution

Dismissal. Dismissal from the program can result from 1) failure in meeting any university or departmental requirements, 2) a disciplinary violation resulting in a University sanction, and 3) inadequate academic progress.

A student who is failing to meet departmental or university requirements, such as failing to meet grade requirements, failing to pass required examinations by the required time, or failing to advance to candidacy or defend her/his thesis within the required time, is subject to dismissal without further warning.

When a student is judged not to be making adequate academic progress - particularly research - based on the annual performance review or additional reviews conducted by the research advisor, he or she will be warned in writing of the possibility of dismissal and be placed on probationary status. Specific requirements for improvement within a specified time period will be made. If the student does not meet the stated requirement within the time frame specified, he or she will be dismissed by the graduate program. A written notice of dismissal will be sent to the student 15 days before the date of dismissal.

Reduction and termination of financial support. Active participation in required research activities is a basic condition for continued financial support. When a graduate student is placed on probationary status due to inadequate academic progress, the research advisor may decide to reduce or suspend the financial support to the student. Student who are absent from required research activities for continuous two weeks without permission and without mitigating circumstances may be subject to termination of financial support. In addition, they will be judged to be not making adequate academic progress. Thus, if absences have to occur, they must be pre-arranged with the student's advisor, except for medical and family emergencies, in which cases timely notification is required.

Petitions and Appeals. Graduate students may petition for exceptions to academic requirements, regulations, and judgments. A petition regarding University requirements, regulations and judgments must be submitted to the Office of Graduate and Postdoctoral Studies; such a petition must be accompanied by a recommendation from the Department. When the Department's recommendation is negative, or when the petition requests a major exception, the Office of Graduate and Postdoctoral Studies may also obtain the recommendation of the School of Engineering (when relevant) and the Graduate Council.

A petition regarding departmental requirements, regulations, or judgments must be submitted to the Department Chair. Students petitioning must provide documents that support or justify the petition. The petition will be handled by the departmental Petitions, Appeals, and Grievances Committee, which consists of at least three faculty members independent of the cause for the petition. After investigation, the committee will submit a written report to the department chair, describing the circumstances, the decision, and the rationale for the decision. The department chair will convey the final decision to the student.

Petitions regarding academic decisions must be submitted in writing within 15 days from the time that the student knew or should reasonably have known of the decision being petitioned, or within 15 days after an informal effort to resolve the situation has not been successful. Petitions seeking exceptions to academic requirements or regulations should be submitted in writing at least 30 days before the requirement or regulation takes effect. Late petitions may be dismissed, except for unusual situations when a delay is found justifiable by the unit receiving the petition. Petitions will be acknowledged in writing (including emails) immediately upon their receipt.
A student (or other parties affected by the decision) is allowed only one level of appeal from a decision regarding a petition. In general, the appeal process will be resolved at the lowest level possible. An appeal must be submitted within 15 days from receipt of the decision that is being appealed. Late appeals will be dismissed, except for unusual situations when a delay is justified. Appeals will be acknowledged in writing (including emails) immediately upon their receipt.

A petition/appeal should indicate the requirement, regulation, or judgment that is the subject of the petition/appeal, the specific exception requested, and the grounds for the request. An appeal must indicate why the decision involving the earlier petition was incorrectly decided. Grounds for a petition/appeal could be procedural errors by academic or administrative personnel or special circumstances found to be mitigating by the unit receiving the petition/appeal. Disagreement over evaluation of academic quality will not be considered as an appropriate basis for petitions/appeals unless the evaluation is found to be patently unreasonable by the unit receiving the petition/appeal. Petitions involving a violation of University policy or improper conduct by University personnel will be handled as grievances (see Grievances).

Petitions and appeals will usually be resolved within 30 days of their submission. When such resolution cannot be achieved within 30 days, students will be informed of the delay before the 30 days are over. A resolution of the petition or appeal must be achieved within 60 days.

All time frames in this procedure refer to academic calendar days, and exclude mid-term, inter-term and summer recesses. (This exclusion does not apply to a student who is enrolled during the summer.) All petitions and appeals, as well as responses to petitions and appeals, must be in writing. Email communication is considered to be “in writing”.

Grievances. A grievance is a complaint regarding inappropriate conduct by other students, faculty members, or staff. Inappropriate conduct encompasses both inappropriate personal conduct, such as sexual harassment, as well as inappropriate official conduct, such as violation of University policies. Specific policies exist to address grievances based on discrimination or sexual harassment and these policies must be followed in situations involving these issues. Grievances against another student may be raised with the assistant dean of student judicial programs and addressed under the Code of Student Conduct. In other cases, a student may present a grievance in writing at the lowest appropriate level, typically the department or school. If a satisfactory resolution is not obtained at that level, the student may appeal the outcome of the grievance by presenting the problem at the next administrative level, such as the school, Office of Graduate and Postdoctoral Studies, Provost, or President. Grievances against non-faculty staff members may also be brought to the Employee Relations Director in Rice’s Human Resources office.

The procedures for handling grievances are analogous to those for handling petitions and appeals. Students submitting grievances must so indicate in their submissions.

Problem Resolution. During the course of graduate studies, problems that do not fall under the category of grievances, described above, may arise in the relationship between a graduate student and his/her program or his/her advisor. Students should attempt to resolve such problems by informing the appropriate faculty members and working together to resolve the problem. When attempts to resolve the problem informally are unsuccessful, the following problem-resolution procedure will be used:

1. The student will submit the problem in writing to the department chair, who will then attempt to resolve it.
2. If the student remains unsatisfied, the problem will be presented to the department Graduate Studies Committee for resolution. Both the student and the program chair will submit a written record of their views to this committee.

3. If the student remains unsatisfied, the problem will be referred to a standing subcommittee of the Graduate Council and composed of three faculty members (representing diverse disciplines within the university) and a graduate student, with the Dean of Graduate and Postdoctoral Studies as an ex-officio member. A written report of proceedings at stage 2 will be presented to the Chair of Graduate Council for forwarding to the subcommittee, along with all other written materials generated during the investigation. The decision of this subcommittee is considered final.

The time frame for handling problem resolution is similar to that for handling petitions, appeals, and grievances. Students may seek guidance on any of these procedures through discussions with the Office of Graduate and Postdoctoral Studies.

Title IX:

Rice encourages any student who has experienced an incident of sexual, relationship, or other interpersonal violence, harassment or gender discrimination to seek support. There are many options available both on and off campus for all graduate students, regardless of whether the perpetrator was a fellow student, a staff or faculty member, or someone not affiliated with the university.

Students should be aware when seeking support on campus that most employees are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. The therapists at the Rice Counseling Center and the doctors at Student Health Services are confidential, meaning that Rice will not be informed about the incident if a student discloses to one of these Rice staff members. Rice prioritizes student privacy and safety, and only shares disclosed information on a need-to-know basis.

If you are in need of assistance or simply would like to talk to someone, please call Rice Wellbeing and Counseling Center, which includes Title IX Support:

3311/(713) 348-3311

Policies, including Sexual Misconduct Policy and Student Code of Conduct, and more information regarding Title IX can be found at safe.rice.edu
Academic Regulations and Good Standing

Graduate students must meet the following minimums, deadlines, and course or grade requirements to remain in good standing and to graduate from the university. Please also refer to the general announcements http://ga.rice.edu/GR_regulations/

Residency

PhD students must complete at least four fall and/or spring semesters in full-time study at Rice University. Minimum residency for master’s programs is one fall or spring semester of full-time graduate study, with the exceptions of professional master’s program in the school of engineering. For this program, minimum residency is one fall or spring semester in full-time or part-time study.

Full-Time Study

Semester course load for full-time students is nine hours or more for the fall and spring semesters. Full-time enrollment during the summer semester is at least six hours. Graduate programs at Rice generally require full-time study.

Time to Degree

PhD students are required to complete their program, including thesis defense, within 10 years of initial enrollment in the degree program. All master’s students are required to complete their program, including thesis defense, within five years of initial enrollment. In both cases, students have a limit of six additional months from the date of defense to submit their theses to the Office of Graduate and Postdoctoral Studies. These time boundaries include any period in which the student was not enrolled or enrolled part time, for whatever reason. Failure to meet any university time to degree deadline may result in the student not being able to continue in their degree program.

Time to Candidacy

PhD students must be approved for candidacy before the beginning of the ninth semester of their enrollment at Rice. All master’s students must be approved for candidacy before the beginning of the fifth semester of their enrollment at Rice.

Time to Defense

PhD students must defend their theses before the end of the 16th semester of their enrollment at Rice.

Master’s students must defend their theses before the end of the 8th semester of their enrollment at Rice.
Time to Thesis Submission

Candidates who successfully pass the oral examination in defense of the thesis must submit the thesis must submit the thesis to the Office of Graduate and Postdoctoral Studies no later than six months from the date of the examination.

Standard of Conduct

Students are expected to live up to the high standards Rice sets for its community members, as described in the Code of Student Conduct. Graduate students should be in compliance with the Code of Student Conduct at all times and not have holds from Student Judicial Programs or other offices.

Continuous Enrollment

Students must maintain continuous program involvement and enrollment during fall and spring semesters unless granted an official leave of absence.

Course Registration

Currently enrolled students register in April for the fall semester and in November for the spring semester. Students are strongly encouraged to meet with their advisor to discuss their courses for the upcoming semester.

Drop/Add

During the first two weeks of classes, students may change their registration, add or drop courses without penalty. After the second week, the following conditions apply for add and drops. Graduate students:

- May not add courses after the second week of classes, except in extenuating circumstances and with the approval of the Office of Graduate and Postdoctoral Studies (a $75 penalty fee per course will be assessed). The student’s request to add a course first must be supported and approved by the student’s advisor along with the course instructor and then forwarded to the Dean of Graduate and Postdoctoral Studies for consideration.
- May drop courses through the seventh week without penalty.
- May not drop courses after the end of the seventh week of classes, except in extenuating circumstances and with the final approval of the Office of Graduate and Postdoctoral Studies (a $75 penalty fee per course will be assessed). The student’s request to drop a course first must be supported and approved by the student’s advisor, the course instructor, the appropriate department chair, and the school dean. Afterward, it should be forwarded to the Dean of Graduate and Postdoctoral Studies for consideration. Students who receive approval to drop a course after the designated drop deadline will receive a grade of “W” (late drop with approval) for that course.