

CIVIL ENGINEERING, PHD

More Information: <https://engineering.case.edu/civil-and-environmental-engineering>

Degree: Doctor of Philosophy (PhD)

Field of Study: Civil Engineering

Program Overview

The Civil Engineering PhD degree program spans Structural Engineering, Geotechnical Engineering, Environmental Engineering, and Engineering Mechanics to prepare students for careers in industry, professional practice, research, and teaching. Experience has shown that job opportunities are excellent for students who receive doctoral degrees in Civil & Environmental Engineering from Case Western Reserve University. Recent doctoral degree recipients have found positions as faculty members at universities, engineers at consulting firms, state and federal agencies, aerospace firms, and the energy industry, and started their own business.

Each student's program of course work and research is tailored to their interests in close consultation with a faculty advisor. For students working toward the Doctor of Philosophy degree, a research dissertation is required.

All students pursuing graduate studies in the Department of Civil and Environmental Engineering must abide by the academic regulations and policies of the School of Graduate Studies and the Case School of Engineering and approved by the student's faculty advisor in the Department of Civil and Environmental Engineering

Admission

Requirements for admission include a strong record of scholarship in a completed bachelor's degree program in the field of Civil or Environmental Engineering, and/or master's degree in Civil and Environmental Engineering or related fields and fluency in written and spoken English.

Students with a degree other than Civil or Environmental Engineering will be evaluated for admittance on a case by case basis by the department for consideration of provisional admittance. A provisional graduate student is expected to complete appropriate course work and to meet the performance standards of the School of Graduate Studies within the first academic year of study.

Advising

In order to complete the research component of their respective degree program, each student must identify a faculty member who holds a primary or secondary appointment with the ECIV department and who is willing to serve as the student's research advisor. The research advisor will also serve as the student's permanent academic advisor.

Upon admission to the graduate program, each PhD student is selected by and assigned to a research advisor to provide mentorship on planning a PhD program of study (Academic Program). For students with no research advisor identified, a temporary assignment of academic advisor will be made by the ECIV department chairperson based on the student's academic and research interests as identified at the time of application. During the first two semesters in the program, it is strongly

suggested that each student meet with various faculty members to discuss academic objectives/goals and research opportunities.

Each student, in consultation with their advisor, must submit an Academic Program preferably during the first semester.

Students may change advisors for a variety of reasons, of which one of the most common is a change of the student's field of interest. It should be noted that a change in research advisor may require that the student start a new research project, which could result in delaying graduation. It is the responsibility of the student to inform the ECIV department chairperson in the event of a change in advisor. In addition, the student must file all appropriate forms with Graduate Studies.

PhD Policies

For PhD policies and procedures, please review the School of Graduate Studies section of the General Bulletin.

Program Requirements

In order to successfully complete the PhD Degree Program, a student must satisfy the following requirements:

- Have an approved Academic Program and complete all PhD course requirements with guidance from their research advisor and a cumulative grade point average of 3.0 or greater
- Complete a minimum of three semesters of graduate teaching assistance by enrolling in ECIV 400T, ECIV 500T, and ECIV 600T. All students fulfilling teaching duties must also complete UNIV 400.
- Successfully complete the PhD Qualifying Examination
- Successfully complete and defend the PhD Dissertation
- Fulfill the PhD residency requirement

Course Requirements and Academic Program

Each Civil and Environmental Engineering PhD student is required to have an Academic Program, approved by the academic advisor and ECIV department chairperson, that includes a minimum of 36 credit hours of coursework beyond the BS degree. Acceptable courses include suitable CWRU courses at the 400 level or higher and approved graduate-level courses taken at other institutions.

Option 1:

For students holding a BS degree in an appropriate field of study from CWRU or another degree-granting institution

Code	Title	Credit Hours
Requirements:		
ECIV coursework ^a		9
Basic Math & Science coursework		6
Elective coursework ^b		21
ECIV 701	Dissertation Ph.D.	18
Total Credit Hours		54

a This coursework excludes ECIV 651 and ECIV 701.

b These may be ECIV or non-ECIV courses.

Option 2:

For students holding an MS degree in an appropriate field of study from CWRU or another degree-granting institution

Code	Title	Credit Hours
Requirements:		
ECIV coursework ^a		9
Elective coursework		9
ECIV 701	Dissertation Ph.D.	18
Total Credit Hours		36

a This coursework excludes ECIV 651 and ECIV 701.

Each PhD student is required to complete the required coursework credits before taking the PhD Qualifying examination.

The selection of these courses should be done with guidance from the student's permanent academic advisor and may include classes outside of the department.

PhD Qualifying Examination and Advancement to Candidacy

A student shall be admitted to PhD candidacy only after they have passed the PhD Qualifying Examination. The Qualifying Exam is intended to evaluate student's progress in research and assess the students' knowledge in the student's chosen major program area of Civil and Environmental Engineering. The Qualifying Exam requires an oral examination and may include a written prospectus. PhD students take the PhD Qualifying Exam in the timeframe described by the Case School of Engineering policy and in consultation with their research advisor.

The PhD Qualifying Exam is conducted by a PhD Qualifying Committee charged with evaluating the student's preliminary research and future research plan. The PhD Qualifying Committee consists of at least four members of the University faculty, including the student's research advisor and additional faculty members recommended by the advisor. The committee chair must hold a primary or secondary appointment in the ECIV department and is customarily the research advisor. At least one other member must hold a primary or secondary appointment in the ECIV department. And at least one committee member must be from outside the department.

Upon passing the qualifying exam, the PhD student will advance to PhD candidacy. The results of the committee's assessment and recommendation will be submitted to the ECIV department chairperson as well as the School of Graduate Studies.

Dissertation Committee

Within a year of advancement to candidacy, a Dissertation Committee is formed and serves in the role of both Advisory Committee and Defense Committee. The Dissertation Committee consists of at least four members of the University faculty, including the student's research advisor and additional faculty members recommended by the advisor. The committee chair must hold a primary or secondary appointment in the ECIV department and is customarily the research advisor. At least one member must hold a primary or secondary appointment in the ECIV department. And at least one committee member must hold a primary appointment that is outside the department.

Members of the Dissertation Committee are expected to provide constructive criticism and helpful ideas generated by the research problem from the viewpoint of their particular expertise throughout the development and completion of the dissertation. Each member will make an assessment of the originality of the dissertation, its value,

the contribution it makes, and the clarity with which concepts are communicated, especially to a person outside the field. The doctoral student is expected to arrange meetings and maintain periodic contact with each committee member. A meeting of the full committee for the purpose of assessing the student's progress should occur at least once a year until the completion of the dissertation.

The PhD Oral Defense

A PhD candidate is required to pass a final oral examination, called the defense. Policies are described in the School of Graduate Studies "Academic Regulations for Doctoral Examination". The defense must be scheduled with the School of Graduate Studies no later than three weeks before the date of the examination. The candidate must provide to each member of the committee a copy of the completed dissertation two weeks before the examination so that the committee members have an opportunity to read and discuss it in advance. The student shall also provide an announcement containing a title, abstract, date, time, and location of the defense to the ECIV Department Assistant or Student Affairs Specialist for general distribution at least 10 days in advance of the thesis defense.

The dissertation defense committee is responsible for certifying that the quality and suitability of the material presented in the dissertation meet acceptable scholarly standards.

The PhD Residency Requirements

All PhD students shall fulfill the PhD residency requirements set forth by the Case School of Engineering and the School of Graduate Studies. Graduate students are considered to be in residence when they are fully engaged in academic work. As resident students, they may teach at the University, take graduate courses, assist in course development, and engage in research or in other scholarly activities at the University. Regardless of the nature of the work, the student's regular presence at the University is expected during fulfillment of the residency requirement.

The formal fulfillment of residency requires continuous registration in at least six consecutive academic terms (fall, spring and/or summer) from matriculation to a period not exceeding five years after the first credited hour(s) of dissertation research (ECIV 701). The period while students are on a leave of absence does not count towards fulfilling the residency requirement.