

CIVIL AND ENVIRONMENTAL ENGINEERING (PH.D.)

<https://ceps.unh.edu/civil-environmental-engineering/program/phd/civil-environmental-engineering>

Description

The goal of the Civil and Environmental Engineering program is to elucidate civil and environmental engineering technology by involving students in the design and construction of sustainable infrastructure projects that emphasize safety and public health. Our graduates enhance the quality of life for people both locally and around the world by providing safe structures such as bridges, highways, skyscrapers, tunnels and dams, and by helping to restore and maintain water quality and the environment. Civil Engineering has always been an exciting yet flexible profession filled with opportunities.

Requirements

Following admission into the program, a guidance committee is appointed for the student by the dean of the Graduate School upon recommendation of the advisor and graduate coordinator. This committee assists in outlining the student's course of study and may specify individual coursework requirements. The guidance committee administers the qualifying examination.

The student must pass a qualifying exam that includes both a written and an oral component. The content of the qualifying exam will be determined at the discretion of the guidance committee and will be based on the coursework (both graduate and undergraduate) completed to date. The qualifying exam is pass/fail. At the discretion of the guidance committee a student may conditionally pass the exam and be reevaluated after a specified time period. The qualifying exam must be completed within 18 months of admission for students that have a master's degree and within 30 months of admission for students that enter the PhD program with only a bachelor's degree.

Course Credit Requirements: The student must successfully complete at least 42 graded course credit hours beyond a bachelor's degree. These 42 course credit requirements can include 2 courses (up to 8 credits) from the accelerated masters program. Additional course credits beyond these minimum levels may be required by the guidance committee.

Requirements for Optional Minor: An identifiable group of courses (9 credits minimum) in an area outside of the civil engineering department and approved by the guidance committee must be successfully completed to provide a minor to the Ph.D. degree. A minor may be satisfied by courses taken toward a master's degree other than civil engineering, but the credits will not be applied against the 42 credit-hour minimum.

Professional Outreach Experience: A minimum of one semester as a teaching assistant or comparable experience, or preparation and submission of article(s) to refereed journal(s), or presentations at professional meetings is required. The guidance committee will evaluate whether a student's past teaching assistantship satisfies this requirement.

Doctoral Candidates: Upon successful completion of the Ph.D. qualifying examination, a doctoral student is advanced to the status of doctoral candidate. When a student achieves candidacy, a doctoral committee is established. The doctoral committee reviews research, reviews the student's progress, supervises and approves the doctoral dissertation, and administers the final examination (also known as the dissertation defense). The student must present and defend a research proposal within 6 months of achieving candidacy and no later than one year prior to the dissertation defense.

Upon completion of the dissertation, and with the approval of the doctoral committee, the student schedules an oral defense in accordance with the requirements of the Graduate School. For graduation, a B average (3.00 GPA) and successful dissertation defense must be achieved.

Student Learning Outcomes

- Identify and use advanced mathematical, computational, design, and/or experimental skills to solve complex civil and environmental engineering problems;
- Demonstrate advanced technical knowledge in a specialty discipline area within civil and environmental engineering;
- Demonstrate advanced research skills in identifying the state of the art and research needs, formulate hypotheses, design and conduct experiments, collect and analyze data, and interpret results;
- Draw on previously published results to propose, plan, and execute an independent research project that makes original and substantial contributions to advance the discipline;
- Effectively communicate and defend technical ideas, designs, or research results in oral form to technical and non-technical audiences;
- Lead the writing of manuscripts describing research results, and its impacts, in a form suitable for publication in peer-reviewed journals or another appropriate professional outlet;
- Understand and communicate how knowledge and research relate to a broader context outside of academia and the specific discipline; and
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of sustainable engineering solutions in global, social, economic, public policy, and environmental issues.