

Civil Engineering, Ph.D.

Curriculum in Doctor of Philosophy – Civil Engineering

A candidate for the Ph.D. degree with a major in civil engineering must comply with the rules and regulations as outlined in the WVU Graduate Catalog and the specific requirements of the Statler College and the Wadsworth Department of Civil and Environmental Engineering.

Program Requirements

The doctor of philosophy degree with a major in civil engineering is administered through the college's interdisciplinary Ph.D. program. The research work for the doctoral dissertation must show a high degree of originality on the part of the student and must constitute an original contribution to the art and science of civil engineering.

All Ph.D. degree candidates are required to perform research and follow a planned program of study. The student's research advisor, in conjunction with the student's Advising and Examining Committee (AEC) will be responsible for determining the plan of study appropriate to the student's needs. The underlying principle of the planned program is to provide the students with the necessary support to complete their degree and prepare them for their career.

Curriculum Requirements

Code	Title	Hours
A minimum cumulative GPA of 3.0 is required in all courses		
A minimum cumulative GPA of 3.0 is required in all coursework used for degree requirements		
Course Requirements *		
Any AEM, AGBI, BIOC, BIOL, BIOM, BIOS, BMEG, CE, CHE, CHEM, CPE, CS, EE, ENVP, GEOL, IENG, IH&S, MAE, MATH, MINE, PNGE, PHYS, SAFM, SENG, STAT, or WMAN courses 500-795, as approved by the student's AEC		18
Research		24
CE 797	Research	
Examinations		
Plan of Study		
Qualifying Exam		
Candidacy Exam		
Final Exam		
Dissertation		
Total Hours		42

*

Students who do not hold a baccalaureate degree in civil engineering are required to take preparatory undergraduate civil engineering courses above and beyond the minimum coursework requirements.

A minimum of forty-two hours of coursework and thirty hours of independent research beyond a bachelor's degree, or eighteen hours of coursework and twenty-four hours of independent research beyond an M.S. degree are required.

Graduate Committee

For the Ph.D. program, the student, research advisor, academic advisor, and department chairperson appoint the student's AEC. Each committee must consist of at least five members, with at least three members from CEE, and at least one from outside the department. By the end of the Ph.D. student's first semester, the student, with the advice and consent of the academic advisor, graduate coordinator, and members of the student's AEC, submits a plan of study, initiated in CEE, to the dean.

Examinations

QUALIFYING EXAM

All students must take and pass a written qualifying examination. Normally, the qualifying examination is given no later than one semester after completion of eighteen credit hours toward the doctoral degree. This examination is designed to assess the basic competency of students in the civil engineering field to determine whether or not they have sufficient knowledge to undertake independent research.

CANDIDACY EXAMINATION

In order to be admitted to candidacy, the student must pass a candidacy exam, which is designed to evaluate the student's overall ability to engage in high-level research. After passing the qualifying examination, the student must submit to the AEC a written research proposal of his/her planned

dissertation work and successfully defend it in an oral examination. The research proposal must be approved by the student's AEC. A student who has successfully completed all coursework, passed the qualifying examination, and successfully defended the research proposal, and receives the college's approval becomes a candidate for a Ph.D. degree in CE. Thereafter, the student will officially be engaged in dissertation research. At the completion of the dissertation research, the candidate must prepare a dissertation and defend it orally at the final defense conducted by the AEC.

A student who has successfully completed all coursework, passed the qualifying examination, and successfully defended the research proposal is defined as one who is a candidate for the Ph.D. degree.

FINAL EXAMINATION

At the completion of the dissertation research, candidates must prepare a dissertation and pass the final oral examination (defense) administered by their AEC.

In order to complete the Ph.D. requirements, a student must pass a final oral examination on the results embodied in the dissertation. This examination is open to the public and, in order to evaluate critically the student's competency, may include testing on material in related fields, as deemed necessary by the AEC. In addition, since the Ph.D. degree is primarily a research degree that embodies the results of an original research proposal and represents a significant contribution to scientific literature, the student must submit a manuscript on this research to the AEC.

Suggested Plan of Study

It is important for students to take courses in the order specified as much as possible; all prerequisites and concurrent requirements must be observed. A typical doctoral degree program that completes degree requirements in three years beyond an M.S. degree is as follows.

First Year

Fall	Hours	Spring	Hours
CE Course		3 Course	3
CE Course		3 Course	3
CE 797		3 CE 797	3
		9	9

Second Year

Fall	Hours	Spring	Hours
Course		3 Course	3
CE 797		6 CE 797	6
		9	9

Third Year

Fall	Hours	Spring	Hours
CE 797		9 CE 797	9
		9	9

Total credit hours: 54

Major Learning Outcomes

CIVIL ENGINEERING

Program Objectives

- Have the ability to work on multidisciplinary teams, have high technical competence, and have the ability to meet present and future challenges in a specialty area of civil and environmental engineering
- Have the ability to effectively plan and execute scientific research or other high-level investigations using the most current methods and techniques in the civil and environmental engineering fields
- Have the ability to effectively communicate the results of their research or investigations through writing and oral presentations
- Have the ability to contribute to the body of engineering knowledge and/or to economic growth by developing the science, the materials, and the technology necessary to deliver vital infrastructure services in the most cost effective manner while protecting the health, safety, and welfare of human society

Program Outcomes

- Graduates will have an ability to function on teams involving multiple civil engineering specialties.
- Graduates will have an ability to apply advanced methodologies in their specialty area.
- Graduates will have an ability to effectively communicate technical information.
- Graduates will have an ability to design and conduct experiments, analyze and interpret data, and develop recommendations.

- Graduates will have an understanding of professional and ethical responsibility.
- Graduates will have an ability to understand the impact of engineering solutions in global and societal context.
- Graduates will have a recognition of the need to engage in life-long learning.
- Graduates will have an ability to use contemporary techniques, skills, and tools necessary for engineering practice in education, industry, and/or government.

Student Learning Outcomes

- Graduates will meet the academic standards required by WVU for those in graduate school while completing courses pertinent to their specialty area and as specified in their plan of study.
- Graduates will conduct experimental or investigatory work necessary to satisfy the requirements of either the thesis option or report option for graduation.
- Graduates will write and orally defend a thesis, a report, or a dissertation.
- Graduates will serve in primary roles as graduate research assistants on research projects or on problem investigations sponsored by companies, associations, or government agencies looking for new methodology or science to resolve problems associated with the planning, design, construction, operation, and maintenance of the infrastructure or for related needs.