

Updated 9.3.13

## **Qualifying for Admission to the Graduate Program without a Bachelor's Degree in Civil or Environmental Engineering**

We recognize that some prospective students have discovered an interest in civil or environmental engineering after completing their first bachelor's degree or after deciding they want to make a career change. Our Department values this academic and career diversity. We are willing to advise students to develop an academic plan that meets the student's goals but maintains the rigor, quality, and standards that are expected by the Department and employers for graduates of our graduate programs.

To help prospective students evaluate options, we have developed this document to provide answers to common questions in our admissions criteria. Because each applicant's background is unique, it is not possible to create a document that will cover all situations. For some students, you will find that obtaining a graduate degree without an undergraduate degree in the field is not the best option for your career goals. We are happy to meet with you to review your situation in person, by phone or video chat to answer additional questions not answered by this document.

One key issue for students without civil or environmental engineering backgrounds who seek graduate degrees relates to licensure and career paths. Please be sure to read the section "*Issues to Consider*".

### **Minimum Required Coursework**

Our admission requirements for the MS and MEng degrees include a B.S./B.A. degree in an engineering field, science, or closely related area with a minimum GPA of 3.00. Courses should include calculus through differential equations, physics and chemistry, computer programming, and all the necessary prerequisites for the graduate courses that comprise the student's program of study.

Each of the specializations in Civil and Environmental Engineering graduate program has identified a minimum list of courses (shown in Table 1) from the undergraduate curriculum at PSU that are considered key knowledge building blocks for the graduate curriculum. *Note that to be enrolled in these courses students will need the necessary prerequisites, which can be found on our website <http://www.pdx.edu/cee/ceeadvising-ug>. All students without a BSCE or BSENV will be required to take the undergraduate courses for their chosen specialty shown in Table 1 unless waived by the Graduate Program or Department Chair.* In addition, students may be required to take courses from the "calculus through differential equations, physics and chemistry, computer programming" sequences.

**TABLE 1 MINIMUM REQUIRED COURSES FROM THE UNDERGRADUATE CURRICULUM FOR STUDENTS WITHOUT BSCE OR BSENVE**

PSU Course Number	Environmental / Water Resources	Geotechnical	Structural	Transportation
CE 321 CEE Materials		X	X	
CE 324 Elementary Structural Analysis			X	
CE 325 Indeterminate Structures I			X	
CE 341 Soil Classification and Properties		X		
CE 351 Trans. Sys: Planning & Design				X
CE 361 Fluid Mechanics	X			
CE 362 Hydraulics	X			
CE 364 Water Resources Engineering	X			
CE 371 Environmental Engineering	X			
CE 432 Steel Design OR CE 434 Principles of Reinforced Concrete			X	
CE 444 Geotechnical Design		X		
CE 454 Urban Transportation Systems				X

## Typical Admissions Outcomes

Students applying to our program without a BSCE or BSENVE generally fall into two categories: 1) students with a degree from another engineering discipline or closely-related field to engineering (e.g. physics with calculus, mathematics, geology, or environmental science) or 2) students with degrees other than science or engineering. The typical admissions outcomes for these groups are presented separately:

**1. Students with a bachelor's degree from another engineering discipline or closely-related field to engineering.**

Since the curriculum for engineering and science fields generally includes calculus through differential equations, physics and chemistry (equivalent to the PSU courses required for our BSCE and BSEE programs), computer programming, students with this background will meet most of the prerequisites for these courses. On a case-by-case basis, the Department will either 1) provide a Conditional Admission to the Graduate Program listing the additional coursework or, 2) at its discretion, provide a written plan of required coursework to complete before re-applying to the program. Note that once admitted as a graduate student, all tuition is assessed at the graduate rate.

**2. Students with a bachelor's degree other than science or engineering.**

To enroll in the courses shown in Table 1, students will need the required prerequisites, which can be found on our website <http://www.pdx.edu/cee/ceeadvising-ug>. For students without much math or science background, the long prerequisite chains for the courses will result in the need to enroll in **many** additional undergraduate courses. For some students the number of courses that will be required is close to the credits needed for second Bachelor's degree (see *Issues to Consider*). It is unlikely that students from this background will be admitted conditionally to the graduate program. It is more likely that the Department will, at its discretion, provide a written plan of required coursework to complete before applying or re-applying to the graduate program.

## Issues to Consider

### What are the Career Paths with a Graduate CE Degree but No Bachelor's in CE?

Employers will often expect those with graduate degrees in civil engineering to have the fundamental knowledge and skills obtained during the BSCE or BSENVF curriculum. Most traditional careers in civil engineering will require professional licensure for advancement and promotion. Not all career paths will require licensure; in general, this is more likely in transportation and environmental/water resources fields. We generally do not advise someone to consider a career in the structural or geotechnical fields without a BSCE degree.

We encourage students to seek out professionals in the field of interest and ask for informational interviews and meetings to discuss career options based on their unique situation. Other options for understanding career options would be attending professional association meetings such as ASCE, ITE or similar. Some government positions may list specific criteria such as "BS degree from an ABET-accredited university" or similar. You may want to browse position postings in the field you are considering to get an idea of typical entry requirements.

### Can I obtain an professional engineering license if I have a CE MS degree but no BS degree?

Possibly. The traditional path to licensure requires a Bachelor's degree from an ABET accredited program. Without a Bachelor's degree, you will need to read rules posted by the state boards since they control the licensing process and it differs in each state. Most likely, you will need to meet additional criteria, possibly including courses, to sit for the professional engineering exams. Links to the state boards in the Pacific Northwest:

- Oregon: <http://www.oregon.gov/osbeels/>
- Washington: <http://www.dol.wa.gov/business/engineerslandsurveyors/index.html>
- California: <http://www.bpelsg.ca.gov/>
- Idaho: <http://ipels.idaho.gov/>
- National Council of Engineering Examiners (NCEES): <http://ncees.org/>

### do I pay graduate tuition?

Once admitted as a graduate student, all tuition and fees are assessed at the graduate rate (PSU policy). This is why it may be in your best interest to not be admitted conditionally as a graduate student if you have a substantial amount of required undergraduate coursework to complete.

### When should I just consider a second BS degree?

Since most undergraduate coursework that is required will need to be completed BEFORE starting a graduate degree, each student should consider how much effort (in time and money) would be required to complete a graduate degree or just complete a second Bachelor's degree. If you already have a bachelor's degree, most of the general education will be waived (except EC 314U). Obtaining a second bachelor's degree eliminates licensure ambiguity and employer concerns about the breadth and depth of your knowledge. Even though it is in another field, your first bachelor's degree will presumably give you additional marketability.

### Can I self- evaluate how many courses I will need for a second BS degree?

Yes! If you are considering how much coursework would be required for a second Bachelor's degree, please review the courses in Table 1 in your area of interest and our prerequisite tree for the course at <http://www.pdx.edu/cee/cee advising-ug>. For each prerequisite shown, if you do not have an equivalent course you will need also take that course.