

CIVIL AND ENVIRONMENTAL ENGINEERING (MS)

Offered at: San Luis Obispo Campus

<https://ceenve.calpoly.edu/graduate-programs/>

The Master of Science in Civil & Environmental Engineering prepares students to tackle the infrastructure and environmental challenges of today and tomorrow through a practice-oriented, research-supported curriculum. The program allows students to deepen their expertise in areas such as construction, environmental, geotechnical, structural, transportation, and water resources engineering. Emphasizing technical mastery and real-world problem solving, the program integrates advanced coursework with a culminating thesis or comprehensive exam. Students work closely with faculty mentors on projects that often address industry-relevant or community-based needs. With strong ties to both public and private sectors, the program equips graduates with the skills to lead in professional engineering practice or pursue doctoral-level education.

Requirements for Admission

Students apply via Cal State Apply (<https://www.calstate.edu/apply/>) and must submit a personal statement describing their motivations for graduate study and/or their goals for their graduate education, contact information for three references who will provide letters of recommendation, and an official transcript. No GRE scores required.

International Students must meet all the standard eligibility criteria and demonstrate proficiency in English (English Proficiency Exam Requirements)

Prerequisites: Bachelor's degree in engineering or a closely related field with strong grades in undergraduate coursework. Undergraduate coursework must include math through differential equations/linear analysis, at least one year of calculus-based physics, and fundamental engineering courses in statics, dynamics or fluid mechanics, and mechanics of materials. Applicants with relevant work experience or equivalent coursework may be considered for conditional acceptance.

Minimum GPA: 3.0 in major coursework, 2.5 overall

Application due date: Applications are accepted for Fall and Spring semesters. Please see Graduate Student Dates and Deadlines (<https://www.calpoly.edu/admissions/graduate-student/dates-and-deadlines/>) for application deadlines.

Advancement to Candidacy

Completion of at least 6 units of graduate coursework with cumulative and higher ed GPA of 3.0 or higher and an approved culminating experience proposal.

Culminating Experience

Complete one of the following:

- **Comprehensive Exam Option:** The comprehensive exam will give an opportunity for the student to demonstrate technical mastery of the discipline, including the ability to address open-ended engineering problems and synthesize knowledge. The exam will be composed of a written document, a 20-minute presentation, and an oral examination, all of which will be reviewed by a three-member committee. While the written document and presentation will be based on a specific topic, the oral exam may cover a breadth of knowledge within the student's area of specialization.
- **Thesis Option:** Along with a faculty advisor, students will work on a specific research topic, preparing a written thesis and presenting to the public as a 30-45-minute defense, after which a three-person committee will have the opportunity to privately ask related questions.

A blended program provides a potentially accelerated route to a graduate degree, with simultaneous conferring of both Bachelor's and Master's degrees. Students in the blended program are provided with a seamless process whereby they can progress from undergraduate to graduate status. Students are required to complete all requirements for both degrees. The Blended BS/MS program in Civil & Environmental Engineering is thesis only.

Blended Options

BS Civil Engineering + MS Civil & Environmental Engineering

BS Environmental Engineering + MS Civil & Environmental Engineering

Units Double Counted

6 units of 5000 level graduate program courses can be double counted towards undergraduate degree requirements. The graduate culminating experience may not be applied toward double-counted units.

Requirements for Admission for the Blended Program

Students apply directly to the program and not through Cal State Apply; please contact the department graduate coordinator.

- Prerequisites: must be a current BS student in Civil Engineering or Environmental Engineering. Students must have completed all lower division classes and the GWR prior to transitioning to graduate status.

- Minimum GPA: 3.0 (major GPA)
- Timeline for admission: The CE/ENVE Blended M.S. program accepts applications for both the fall and spring semesters. Students are encouraged to submit their applications as early as three semesters prior to their anticipated undergraduate graduation (typically the end of the junior year). The final opportunity to apply is at the beginning of the semester immediately preceding the anticipated undergraduate graduation term. (For example, students planning to complete their undergraduate degree in the spring semester must apply early in the preceding fall semester). Please see the MS Civil & Environmental Engineering website (<https://ceenve.calpoly.edu/graduate-programs/>) for specific deadlines and more details.
- Application materials: Statement of purpose describing their proposed research project as well as their larger goals for graduate study; contact information for three references who will provide letters of recommendation. One of these references must be the intended department faculty research advisor.

Program Learning Objectives

1. Apply and synthesize technical knowledge to provide solutions to advanced Civil and Environmental Engineering challenges.
2. Integrate principles of sustainability, resilience, and restoration into engineering solutions.
3. Communicate and collaborate with diverse stakeholders in an inclusive, effective, equitable, and professional manner.
4. Implement systems thinking in engineering designs and solutions that promote public health, safety, and welfare on a local and global scale.
5. Pursue life-long professional development through study, licensure, certification, leadership, and service.
6. Acknowledge, understand, and incorporate the needs of diverse and vulnerable populations in outreach and engineering practice.
7. Demonstrate independent thinking and decision-making skills.

Code	Title	Units
REQUIRED COURSES		
CE 5591	Graduate Seminar I	1
CE 5592	Graduate Seminar II	1
Culminating Experience		
Select from the following:		1
CE/ENVE 5597	Comprehensive Examination	
CE/ENVE 5599	Thesis ¹	
Project Management		
CE 5575	Engineering Project Management	4
Computational Literacy		
Select from the following: ²		4
CE 5502	Finite Element Analysis of Structures	
CE 5504	Finite Element Analysis of Continua	
CE 5529	Modeling and Simulation in Transportation	
CE 5536	Advanced Modeling in Water Resources	
CE 5537	Groundwater Contamination	
CE 5581	Advanced Geotechnical Engineering	
CE/ENVE 5599	Thesis ¹	
Sustainability, Resilience, and Diversity		
Select from the following: ²		4
CE 5523	Transportation Systems Planning	
CE 5526	Transportation Safety	
CE 5533	Sustainable Urban Stormwater Management	
CE 5537	Groundwater Contamination	
CE 5541	Extreme Events and Climate Change in Water Resources	
CE 5553	Ductile Design of Steel Structures	
CE 5557	Seismic Analysis and Design	
CE 5558	Structural Health Monitoring	
CE 5583	Geotechnical Earthquake Engineering	
Technical Electives		
Select any 4000-5000 level classes from the College of Engineering; the College of Science and Mathematics; the College of Agriculture, Food, and Environmental Sciences; and/or, the College of Architecture and Environmental Design ^{1, 2, 3}		15
Total Units		30

- ¹ A combined total of 6 units of ENVE 5599 are required for the thesis option. Thesis-option students may apply a maximum of 4 units of ENVE 5599 to meet the Computational Literacy requirement and a maximum of 1 unit of ENVE 5599 toward Technical Electives.
- ² Courses may only be used once for degree credit.
- ³ A minimum of 3 units must be at the 5000 level, a maximum of 12 units can be taken at the 4000 level, and technical electives must be approved by an advisor.