

Bachelor of Science in Environmental Engineering

This new state-supported degree was recommended by the Academic Senate on 9/10/21, concurred by the President on 9/17/21 and approved by the Chancellor's Office on 11/8/21.

Bachelor of Science in Environmental Engineering (120 units)

The Environmental Engineering degree is designed to prepare graduates for a variety of careers within the environmental engineering field. The program builds upon a strong foundation of biology, mathematics, physics, chemistry, and engineering science to prepare environmental engineers with a broad portfolio of expertise in water quality and management, pollution mitigation control, air quality control, renewable energy sources, as well as knowledge of environmental policies and regulations who will be able to serve industrial and government needs. The program includes fundamental courses and laboratories in environmental engineering, mathematics, chemistry, physics, and biology. Students will be able to explore specialized areas within environmental engineering by selecting elective courses during their senior year.

Admission Requirements

Major Declaration

Freshmen admission to engineering majors is to a 'pre-major' status (i.e., Pre-Environmental Engineering). Continuation in the major will be subject to meeting specific lower division course and GPA requirements at CSULB that evaluate the student's ability to succeed and complete the major. Transfer applicants and CSULB students seeking admission into Environmental Engineering must also meet similar major-specific requirements. To become fully admitted into

the Environmental Engineering major, all prospective students (i.e., pre-majors, undeclared, major changes) must have a minimum cumulative 2.5 GPA and complete the following lower-division courses with a minimum grade of "C" prior to earning 60 units:

Core Lower-Division Major Requirements:

- MATH 122 (Calculus I), MATH 123 (Calculus II), PHYS 151 (Mechanics & Heat)

General Education Foundations Courses:

- Written and Oral Communication

Degree Progress

First-Time Engineering freshmen pre-major and transfer students must complete the Engineering Degree Progress Requirements within their first academic year. At the end of the second full semester, typically Spring, students who have not met the requirements must either declare another major or meet with an Academic Advisor from the Engineering Student Success Center (ESSC) to determine if the student's performance in the courses merits an additional Semester to complete. Such students must submit a Degree Progress Extension Petition with the College of Engineering Dean's Office.

First-Time Freshmen: A grade of "C" or better must be achieved in MATH 122 within one calendar year.

Transfer Students: A grade of "C" or better must be achieved in MATH 123 and PHYS 151 within one calendar year.

All Engineering Majors:

All Engineering majors are expected to make satisfactory degree progress by completing attempted units, limiting repeats/withdrawals, satisfying critical benchmark courses in a timely manner, and maintaining minimum 2.0 Overall and Major GPAs. Degree Progress is monitored for all undergraduate students each semester. Petitions to attempt a course for the third time are only considered in extenuating circumstances. Students who are not making satisfactory degree progress as described above will have a hold on their registration and are required to meet with their advisor to develop an academic plan. Failure to satisfy the academic progress requirements will result in the student being disqualified from the major.

Course Requirements:

A grade of "C" or better must be achieved in all of the courses required for the major. A minimum of 120 units is required for the Bachelor's Degree.

Lower Division

Take all of the following

- MATH 122 Calculus I (4)
 - Prerequisite: A grade of “C” or better in MATH 111 and either MATH 112B or MATH 113, or appropriate CSULB Algebra and Calculus Placement.
- ENGR 101 Introduction to Engineering Profession (1)
 - Prerequisite: Freshman standing or consent of instructor.
 - Prerequisite/Corequisite: MATH 111 or MATH 113 or MATH 122
- CHEM 111A. General Chemistry (5)
 - Prerequisite(s)/Corequisite(s): MATH 112A with a grade of “C” or better, or MATH 112B or higher (may be taken concurrently).
 - Prerequisite(s)/Corequisite(s): Appropriate score on the chemistry placement test or other measures, or department consent. Students in need of additional support will be required to enroll concurrently in CHEM 95.
- ENV 101 Introduction to Environmental Engineering (1)
 - Prerequisites: None.
- ENGR 170 Introduction to Solid Modeling and Engineering Graphics (2)
 - Prerequisites: Knowledge of geometry and intermediate algebra
- **OR**
- MAE 172A Engineering Design Graphics – AutoCAD (2)
 - Prerequisites: None
- MATH 123 Calculus II (4)
 - Prerequisite: MATH 122 with a grade of “C” or better.
- ENGR 102 Academic Success Skills (1)
 - Prerequisite: ENGR 101 with a grade of "C" or better.
- ENGR 130 Health, Energy, Environment, Transportation (3)
 - Prerequisites: Completion of high school classes in geometry, algebra, chemistry, and environmental sciences.
- **OR**
- ES P 101. The Global Environment (3)
 - Prerequisites: One foundation course
- PHYS 151 Mechanics and Heat (4)
 - Prerequisite/Corequisite: MATH 122 or MATH 123 or MATH 224.

- PHYS 152 Electricity and Magnetism (4) Prerequisites: PHYS 151
 - Prerequisite/Corequisite: MATH 123
- **OR**
- EE 210 Electromagnetic Foundation in Electrical Engineering (3)
 - Prerequisites: PHYS 151 with a grade of “C” or better
 - Corequisite: MATH 123, EE 210L
- **and**
- EE 210L Electromagnetic Foundation in Electrical Engineering Laboratory (1)
 - Prerequisite/Corequisite: EE 210

- MATH 224 Calculus III (4)
 - Prerequisite: A grade of “C” or better in MATH 123 or 222.

- CE 205 Analytical Mechanics I - Statics (3)
 - Prerequisite: PHYS 151 with a grade of “C” or better
 - Prerequisite/Corequisite: MATH 123

- CE 206 Computer Programming and Civil Engineering Applications I (1)
 - Prerequisites: MATH 122, PHYS 151 all with a grade of “C” or better
 - Corequisite: CE 206L

- CE 206L Computer Programming and Civil Engineering Applications Laboratory (1)
 - Prerequisites: MATH 122, PHYS 151 all with a grade of “C” or better
 - Corequisite CE 206

- BIOL 201 General Microbiology for Health Professionals (4)
 - Prerequisite: CHEM 111A or CHEM 140 with a grade of “C” or better and GE Foundation requirements.

- CHEM 227 Fundamentals of Organic Chemistry (3)
 - Prerequisites: CHEM 111A or CHEM 112A with a grade of “C” or better; CHEM 111B or CHEM 112B is recommended

- CHE 200 Chemical Engineering Fundamentals (3)
 - Prerequisites: CHEM 111A, MATH 122, PHYS 151, all with a grade of “C” or better.

Upper Division

Take all of the following

- MATH 370A Applied Mathematics I (3)
 - Prerequisites: MATH 123 with a grade of “C” or better. Exclude freshmen.

- CE 335 Fluid Mechanics (3)
 - Prerequisites: CE 205 and MATH 224 all with a grade of "C" or better

- CE 307 Probability and Statistics in Civil Engineering (2)
 - Prerequisites: CE 206
- IST 355 International Environmental Issues (3)
 - Prerequisites: Completion of GE Foundation. GWAR portfolio score or 11 or higher on the GWAR placement exam.
- CHE 340 Environmental Sensors and Measurements (2)
 - Prerequisite: PHYS 152 or EE 210 and EE 210 L, CHE 200 all with a grade of “C” or better.
- MAE 330 Engineering Thermodynamics (3)
 - Prerequisites: MATH 224, PHYS 151 or equivalent, and CHEM 111A all with a grade of "C" or better or consent of instructor.
- CE 364 Environmental Engineering I: Fundamentals (2)
 - Prerequisite: CHEM 111A , BIOL 200/BIOL 201 or MICR 200 all with a grade of “C” or better.
 - Prerequisite/Corequisite: CE 335 and CE 364L
- CE 364L Environmental Engineering Laboratory (1)
 - Prerequisite: ENGL 100B or GE Written Communication (Area A2) with a grade of “C” or better.
 - Prerequisite/Corequisite: CE 364
- CHE 433 Green Engineering I: Alternative Energy (3)
 - Prerequisite: CHE 220 or MAE 330 all with a grade of “C” or better.
- CHE 455 Environmental Compliance (3)
 - Prerequisite: CHEM 227 or CHE 220 or CE 364 all with a grade of “C” or better.
- CE 464 Environmental Engineering II: Unit Processes (3)
 - Prerequisite: CE 335 and 364 all with a grade of “C” or better.
- CHE 445 Pollution Prevention (3)
 - Prerequisites: CHE 220 or MAE 330 with a grade of “C” or better
- CHE 485 Air Pollution (3)
 - Prerequisite: CHEM 227, or CHEM 220, or CE 364 all with a grade of “C” or better.
- CE 481 Professional Practice in Civil Engineering (1)
 - Prerequisites: Senior standing

- ENV 480 Environmental Assessment Reports Writing (1)
 - Prerequisites: ENGL 100B or GE Written Communication (Area A2), with a grade of “C” or better.
- ENV 490 Senior Design Projects (3)
 - Prerequisites: Completion of all 300- and lower level courses in the major, and senior standing. Consent of advisor is required.

Take six units of electives from one of the following focus areas:

Water Quality

- CE 466 Environmental Systems Design (3)
 - Prerequisites: C E 335 and C E 364 all with a grade of “C” or better.
- ENV 463: Environmental Microbiology (3)
 - Prerequisites: CE 364 and BIOL 201 all with a grade of “C” or better.
- ENV 465 Water Quality Control and Recycling (3)
 - Prerequisites: CE 364 with a grade of “C” or better.
- CHE 446 Industrial Pollution Mitigation and Control (3)
 - Corequisite: ChE 445

Environmental Resources Management

- CE 435 Hydrology and Water resources Engineering(3)
 - Prerequisites: CE 335 with a grade of “C” or better
- CE 437 Engineering Hydraulics (3)
 - Prerequisites: CE 335, and MATH 370A all with a grade of “C” or better.
- CE 439 Fundamentals of Groundwater Flow and Contaminant Transport (3)
 - Corequisite: CE 437
- ENV 462 : Solid Waste Management and Landfill Design (3)
 - Prerequisites: CE 364 with a grade of “C” or better.
- CHE 475 Environmental Pollution (3)
 - Prerequisite: CHEM 220 or CHEM 227 or CE 364 all with a grade of “C” or better.
- CHE 446 Industrial Pollution Mitigation and Control (3)
 - Corequisite: ChE 445

Air Quality

- ENV 411: Environmental Sustainability (3)
 - Prerequisites: CE 335, MAE 330, CHE 433
- ENV 415: Indoor Air Quality, Design, Construction, and Commissioning (3)
 - Prerequisites: CE 335, MAE 330
- CHE 475 Environmental Pollution (3)
 - Prerequisite: CHEM 220 or CHEM 227 or CE 364 all with a grade of “C” or better.
- CHE 446 Industrial Pollution Mitigation and Control (3)
 - Corequisite: ChE 445

EFFECTIVE: Fall 2022

- Campus Code: CE__BS02U1
- CSU Degree Program Code: 09221
- CIP Code: 14.1401
- College: 52, College of Engineering
- Career: UNGR
- Department: Civil Engineering and Construction Engineering Management (CECEM)
- Delivery Type: Fully Face-to-Face
- Major Pathway: STEM