

ENVIRONMENTAL ENGINEERING, BACHELOR OF SCIENCE

College of Engineering

Environmental engineers are responsible for designing processes and infrastructure to ensure society has access to safe water, clean air, and healthy ecosystems. Environmental engineers apply knowledge from physics, chemistry, biology and the social sciences to problems in a variety of areas including water & wastewater treatment and ecosystem remediation, analysis of chemical fate and transport in the natural environment, and modeling of hydrologic & atmospheric flows. As climate change creates new challenges, such as in the form of droughts and intense weather events, the field of environmental engineering evolves to meet society's needs. As an environmental engineering student at UC Davis, you will gain skills that enable you to design sustainable solutions for society.

The Environmental Engineering major started in 2017 and was accredited by the Engineering Accreditation Commission of ABET (<https://www.abet.org/>) in 2022.

Students are encouraged to adhere carefully to all prerequisite requirements. The instructor is authorized to drop students from a course for which stated prerequisites have not been completed. Exclusive of General Education units, the minimum number of units required for the Environmental Engineering major is 142 (75-80 units in lower division and 63-71 units in upper division).

| Code | Title | Units |
|--|---|-------|
| Lower Division Required Courses | | |
| <i>Mathematics</i> | | |
| MAT 021A | Calculus | 4 |
| MAT 021B | Calculus | 4 |
| MAT 021C | Calculus | 4 |
| MAT 021D | Vector Analysis | 4 |
| MAT 022A | Linear Algebra | 3 |
| MAT 022B | Differential Equations | 3 |
| <i>Chemistry</i> | | |
| CHE 002A | General Chemistry | 5 |
| CHE 002B | General Chemistry | 5 |
| CHE 008A | Organic Chemistry: Brief Course | 2 |
| <i>Physics</i> | | |
| PHY 009A | Classical Physics | 5 |
| PHY 009B | Classical Physics | 5 |
| Choose GEL 050 & GEO 050L or ATM 060: | | 4-5 |
| GEL 050 & 050L | Physical Geology and Physical Geology Laboratory | |
| or ATM 060 | Introduction to Atmospheric Science | |
| ENG 006 or ECS 032A | Engineering Problem Solving Introduction to Programming | 4 |
| <i>Biological Sciences</i> | | |
| BIS 002A | Introduction to Biology: Essentials of Life on Earth | 5 |

Engineering

| | | |
|---------------------|------------------------------------|---|
| ENG 003 or ENG 003Y | Introduction to Engineering Design | 4 |
| ENG 035 | Statics | 4 |

Civil & Environmental Engineering

Choose 6-10 units: 6-10

| | | |
|---------|---|--|
| ECI 003 | Civil & Environmental Infrastructure & Society ¹ | |
| ECI 016 | Spatial Data Analysis | |
| ECI 040 | Introduction to Environmental Engineering | |

Lower Division Composition/Writing; choose one; a grade of a C- or better is required 4

| | | |
|---------|--|--|
| COM 001 | Major Works of the Ancient World | |
| COM 002 | Major Works of the Medieval & Early Modern World | |

| | | |
|---------|---------------------------------------|--|
| COM 003 | Major Works of the Modern World | |
| COM 004 | Major Works of the Contemporary World | |

| | | |
|---------------------|----------------------------|--|
| ENL 003 or ENL 003V | Introduction to Literature | |
|---------------------|----------------------------|--|

| | | |
|---------|--|--|
| NAS 005 | Introduction to Native American Literature | |
|---------|--|--|

| | | |
|---------|---|--|
| UWP 001 | Introduction to Academic Literacies (Recommended) | |
|---------|---|--|

| | | |
|----------|---|--|
| UWP 001V | Introduction to Academic Literacies: Online (Recommended) | |
|----------|---|--|

| | | |
|----------|---|--|
| UWP 001Y | Introduction to Academic Literacies (Recommended) | |
|----------|---|--|

Lower Division Required Courses Subtotal 75-80

Upper Division Required Courses

Microbiology

| | | |
|---------|---------------------------|---|
| MIC 102 | Introductory Microbiology | 3 |
|---------|---------------------------|---|

Engineering

| | | |
|---------|-----------------------|---|
| ENG 106 | Engineering Economics | 4 |
|---------|-----------------------|---|

Civil & Environmental Engineering

| | | |
|---------|---|---|
| ECI 100 | Introduction to Fluid Mechanics for Civil & Environmental Engineers | 4 |
|---------|---|---|

| | | |
|---------|--|---|
| ECI 114 | Probabilistic Systems Analysis for Civil & Environmental Engineers | 4 |
|---------|--|---|

| | | |
|---------|---|---|
| ECI 115 | Computer Methods in Civil & Environmental Engineering | 4 |
|---------|---|---|

| | | |
|---------|--------------------------------|---|
| ECI 123 | Urban Systems & Sustainability | 4 |
|---------|--------------------------------|---|

| | | |
|----------|---|---|
| ECI 140A | Environmental Analysis of Aqueous Systems | 4 |
|----------|---|---|

| | | |
|----------|---|---|
| ECI 140B | Chemical Principles for Environmental Engineers | 4 |
|----------|---|---|

| | | |
|----------|---|---|
| ECI 140D | Water & Wastewater Treatment System Design (Discontinued) | 4 |
|----------|---|---|

| | | |
|---------|------------------------|---|
| ECI 141 | Engineering Hydraulics | 3 |
|---------|------------------------|---|

| | | |
|----------|-----------------------------------|---|
| ECI 141L | Engineering Hydraulics Laboratory | 1 |
|----------|-----------------------------------|---|

| | | |
|---------|----------------------------|---|
| ECI 144 | Groundwater Systems Design | 4 |
|---------|----------------------------|---|

| | | |
|-------------|------------------------------|---|
| ECI/ATM 149 | Air Pollution (Discontinued) | 4 |
|-------------|------------------------------|---|

| | | |
|----------|---|---|
| ECI 193A | Civil & Environmental Engineering Senior Design | 4 |
|----------|---|---|

| | | |
|----------|---|---|
| ECI 193B | Civil & Environmental Engineering Senior Design | 4 |
|----------|---|---|

Choose one: 4

| | |
|---------|--------------------------------------|
| ECI 153 | Deterministic Optimization & Design |
| ECI 155 | Water Resources Engineering Planning |

Choose one: 4

| | |
|----------|--|
| ECI 142 | Engineering Hydrology |
| ECI 145 | Hydraulic Structure Design |
| ECI 146 | Water Resources Simulation |
| ECI 153 | Deterministic Optimization & Design |
| ECI 155 | Water Resources Engineering Planning |
| ECI 189A | Selected Topics in Civil Engineering: Environmental Engineering |
| ECI 189B | Selected Topics in Civil Engineering: Hydraulics & Hydrologic Engineering |
| ECI 189I | Selected Topics in Civil Engineering: Water Resources Engineering |
| ECI 189J | Selected Topics in Civil Engineering: Water Resources Planning |
| ECI 198 | Directed Group Study ³ |
| ECI 199 | Special Study for Advanced Undergraduates ³ |

*Civil & Environmental Engineering (ECI) Electives*4 units of Upper Division ECI electives are required. ² 0-4*Upper Division Composition Requirement*

Choose one; a grade of C- or better is required: 0-4

| | |
|--------------|--|
| UWP 101 | Advanced Composition |
| or UWP 101V | Advanced Composition |
| or UWP 101Y | Advanced Composition |
| UWP 102E | Writing in the Disciplines: Engineering |
| UWP 102G | Writing in the Disciplines: Environmental Writing |
| UWP 104A | Writing in the Professions: Business Writing |
| or UWP 104AV | Writing in the Professions: Business Writing |
| or UWP 104AY | Writing in the Professions: Business Writing |
| UWP 104E | Writing in the Professions: Science |
| UWP 104T | Writing in the Professions: Technical Writing |

Passing the Upper Division Composition Exam.

Upper Division Required Courses Subtotal 63-71

Total Units 142-146

¹ ECI 003 is designed for lower division students and is not open to upper division students; students who do not take this course will substitute 4 units of additional letter graded upper division Civil & Environmental Engineering (ECI) coursework; see Civil & Environmental Engineering.

² If ECI 003 was not completed in the Lower Division requirements.

³ Up to 4 units.