**Environmental Resources Engineering**

**Bachelor of Science degree with a major in Environmental Resources Engineering**

See Environmental Systems for the Master of Science degree with concentrations in Environmental Resources Engineering (ERE) and Energy Technology & Policy (ETaP).

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For a complete description of the ERE program, including its program goals, see our webpage at engineering.humboldt.edu.

**Mission Statement**

The mission of the ERE program is to educate students to identify and solve complex environmental resources engineering problems. The program prepares responsible leaders who will sustain, restore and protect our natural resources and the environment.

**The Program**

Students completing this program will have demonstrated:

- an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- an ability to communicate effectively with a range of audiences
- an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

HSU offers one of the largest and oldest undergraduate accredited environmental engineering programs in the United States. While studying in one of the most environmentally interesting areas of California, Environmental Resources Engineering students will learn to apply an interdisciplinary approach to understanding and resolving resource planning and management problems in their social, economic, ethical, and historical contexts.

Program coursework and research are in three primary areas: water quality, water resources, and energy resources.

Students prepare for work in industry, private practice, or government, or for continued studies in graduate school.

Potential careers include: environmental engineer; civil engineer; groundwater engineer; energy engineer; air pollution engineer; ecological engineer; fisheries engineer; hazardous waste engineer; hydraulic engineer; hydrologist; public health engineer; public works engineer; sanitary engineer; solid waste engineer; water resources engineer; water quality engineer; building energy efficiency analyst; wind power analyst/engineer; solar power engineer; energy storage systems engineer; habitat restoration engineer.

The Environmental Resources Engineering program at Humboldt State University is accredited by the Engineering Accreditation Commission of ABET, abet.org.

**Preparation**

Students interested in becoming an ERE major should take courses in biology, chemistry, physics, mathematics, critical thinking, and oral/written communications.

**REQUIREMENTS FOR THE MAJOR**

**Modifications to General Education Requirements**

The ERE program has approval for the following GE requirements to be fulfilled by completion of all ERE major coursework. Lower Division GE Areas A2 (3 units), A3 (3 units), D (3 units), and E (3 units); Upper Division GE Area B: (3 units). In addition, the ERE program has approval for courses fulfilling requirements in American Institutions (6 units) to count as fulfilling Lower Division GE Area D requirements (6 units).

Students who change out of the ERE major are encouraged to contact the Office of the Registrar or the Academic & Career Advising Center regarding completion of GE requirements.

The following degree requirements must be fulfilled in addition to those listed below for the major, please see “The Bachelor’s Degree” section of the catalog, pp. 67-82.

- Lower Division GE Area A1: Written Communication (3 units)
- Lower Division GE Area C (9 units)
- American Institutions (6 units)
- Upper Division GE Area C (3 units)
- Upper Division GE Area D (3 units)
- Diversity & Common Ground (0-6 units)

A minimum grade of C- is required for all courses in the major. Grades of D+, D, F, WU, and NC count as failed attempts. Required courses in the major may not be repeated more than one time. If a student has two failed attempts in a required course, the student will not be able to graduate with an ERE degree.

**Lower Division**

- BIOL 105 (4) Principles of Biology
- CHEM 109 (5) General Chemistry I
- CHEM 110 (5) General Chemistry II
- ENGR 115 (3) Intro to Environmental Engineering I
- ENGR 211 (3) Solid Mechanics: Dynamics
- ENGR 215 (3) Introduction to Design
- ENGR 225 (3) Computational Methods for Environmental Engineering I
- ENGR 313 (3) Systems Analysis
- ENGR 322 (4) Environmental Data Modeling & Analysis
- ENGR 325 (3) Computational Methods for Environmental Engineering II
- ENGR 326 (3) Computational Methods for Environmental Engineering III
- ENGR 330 (3) Mechanics & Science of Materials
Environmental Resources Engineering

ENGR 331 (3) Thermodynamics & Energy Systems I
ENGR 333 (4) Fluid Mechanics
ENGR 351 (4) Introduction to Water Quality
ENGR 410 (3) Environmental Health & Impact Assessment
ENGR 416 (3) Transport Phenomena
ENGR 440 (3) Hydrology I
ENGR 492 (3) Capstone Design Project

Major Elective Program
With advice and approval of an Environmental Resources Engineering faculty advisor and the department chair, select one upper division science or natural resources course and three senior engineering design courses from the following lists to form a coherent elective program.

One science/natural resources course:
BIOL 330 (4) Principles of Ecology
CHEM 341 (5) Quantitative Analysis
CHEM 370 (3) Earth Systems Chemistry
FISH 320 (3) Limnology
GEOL 303 (3) Earth Resources & Global Environmental Change
GEOL 306 (3) General Geomorphology
PHYX 315 (3) Intro to Electronics & Electronic Instrumentation
SOIL 360 (3) Origin and Class of Soils
SOIL 363 (3) Wetland Soils

Three engineering design courses:
ENGR 418 (3) Applied Hydraulics
ENGR 421 (3) Advanced Numerical Methods for Engineers I
ENGR 434 (3) Air Quality Management
ENGR 435 (3) Solid Waste Management
ENGR 441 (3) Hydrology II
ENGR 443 (3) Groundwater Hydrology
ENGR 445 (3) Water Resources Planning & Management
ENGR 448 (3) River Hydraulics
ENGR 451 (4) Water & Wastewater Treatment Engineering
ENGR 452 (3) Design of Water Treatment & Reuse Systems
ENGR 455 (3) Engineered Natural Treatment Systems
ENGR 471 (3) Thermodynamics & Energy Systems II
ENGR 473 (3) Building Energy Analysis
ENGR 475 (3) Renewable Energy Power Systems
ENGR 477 (3) Solar Thermal Engineering
ENGR 481 (3) Selected Topics with Engineering Design
ENGR 498 (3) Directed Design Project