ENVIRONMENTAL ENGINEERING

The Environmental Engineering Graduate Program (http://www.colorado.edu/even/) focuses on the fundamental and applied understanding of the processes which govern our natural and engineered environmental systems.

The program consists of over 35 research and instructional faculty members and about 70 graduate students, covers topics ranging from drinking and wastewater treatment, water reuse, ecosystem processes, fate and transport of contaminants, alternative energy, air quality, sustainability and global engineering. The program offers MS, Professional MS, and PhD degrees in environmental engineering.

For more information, visit the Environmental Engineering Program (https://www.colorado.edu/even/prospective-students/) website.

Course code for this program is EVEN.

Master's Degrees

- Environmental Engineering - Master of Science (MS) (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/environmental-engineering/environmental-engineering-master-science-ms/)
- Environmental Engineering - Professional Master of Science (MSENV) (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/environmental-engineering/environmental-engineering-professional-master-science-msenv/)

Doctoral Degree

- Environmental Engineering - Doctor of Philosophy (PhD) (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/environmental-engineering/environmental-engineering-doctor-philosophy-phd/)

Certificate

- Architectural Lighting - Graduate Certificate (https://catalog.colorado.edu/graduate/colleges-schools/engineering-applied-science/programs-study/engineering-applied-science/architectural-lighting-graduate-certificate/)

Faculty

While many faculty teach both undergraduate and graduate students, some instruct students at the undergraduate level only. For more information, contact the faculty member's home department.

Balaji, Rajagopalan (https://experts.colorado.edu/display/fisid_118480/)
Professor, Chair; PhD, Utah State University

Bielefeldt, Angela R. (https://experts.colorado.edu/display/fisid_110322/)
Professor; PhD, University of Washington; P.E.

Cook, Sherri M. (https://experts.colorado.edu/display/fisid_154773/)
Assistant Professor; PhD, University of Michigan Ann Arbor

Crimaldi, John P. (https://experts.colorado.edu/display/fisid_115733/)
Professor; PhD, Stanford University

Emery, William J. (https://experts.colorado.edu/display/fisid_106038/)
Professor Emeritus; PhD, University of Hawaii

Evans, Thomas
Assistant Professor; PhD, University of Colorado Boulder

Gooseff, Michael N. (https://experts.colorado.edu/display/fisid_155922/)
Professor; PhD, University of Colorado Boulder

Hannigan, Michael P. (https://experts.colorado.edu/display/fisid_122655/)
Professor; PhD, California Institute of Technology

Henze, Daven K. (https://experts.colorado.edu/display/fisid_144858/)
Associate Professor; PhD, California Institute of Technology

Hernandez, Mark T. (https://experts.colorado.edu/display/fisid_107635/)
Professor; PhD, University of California, Berkeley

Hertzberg, Jean R. (https://experts.colorado.edu/display/fisid_105315/)
Associate Professor; PhD, University of California, Berkeley

Javernick-Will, Amy N. (https://experts.colorado.edu/display/fisid_146430/)
Associate Professor; PhD, Stanford University

Kasprzyk, Joseph R. (https://experts.colorado.edu/display/fisid_151506/)
Assistant Professor; PhD, Pennsylvania State University

Klees, Rita C. (https://experts.colorado.edu/display/fisid_145391/)
Scholar in Residence; PhD, University of Colorado

Korak, Julie A. (https://experts.colorado.edu/display/fisid_155070/)
Assistant Professor; PhD, University of Colorado Boulder

Kuchenrither, Richard D.
Scholar in Residence; PhD, University of Colorado Boulder

Linden, Karl G. (https://experts.colorado.edu/display/fisid_143747/)
Professor; PhD, University of California, Davis

Livneh, Ben (https://experts.colorado.edu/display/fisid_151999/)
Assistant Professor; PhD, University of Washington

Mansfeldt, Cresten (https://experts.colorado.edu/display/fisid_165411/)
Assistant Professor; PhD, Cornell University

McKnight, Diane M. (https://experts.colorado.edu/display/fisid_110517/)
Professor; PhD, Massachusetts Institute of Technology

Milford, Jana B. (https://experts.colorado.edu/display/fisid_103268/)
Professor

Miller, Shelly L. (https://experts.colorado.edu/display/fisid_110394/)
Professor; PhD, University of California, Berkeley

Neupauer, Roseanna M. (https://experts.colorado.edu/display/fisid_134747/)
Professor; PhD, New Mexico Institute of Mining and Technology

Pellegrino, John (https://experts.colorado.edu/display/fisid_130902/)
Research Professor; PhD, University of Colorado Boulder

Rosario-Ortiz, Fernando L. (https://experts.colorado.edu/display/fisid_146165/)
Director, Professor; DEnv, University of California, Los Angeles

Ryan, Joseph N. (https://experts.colorado.edu/display/fisid_101037/)
Professor, Faculty Director; PhD, Massachusetts Institute of Technology

Silverstein, JoAnn (https://experts.colorado.edu/display/fisid_101482/)
Professor; PhD, University of California, Davis

Summers, Scott R. (https://experts.colorado.edu/display/fisid_113151/)
Professor; PhD, Stanford University

Vance, Marina E. (https://experts.colorado.edu/display/fisid_158217/)
Assistant Professor; PhD, Virginia Polytechnic Institute and State University

Walker, Michael Edward (https://experts.colorado.edu/display/fisid_155103/)
Instructor; PhD, Illinois Institute of Technology

Writer, Jeffrey Hawkins
Instructor; PhD, University of Colorado Boulder

Young, Wendy Mores (https://experts.colorado.edu/display/fisid_146942/)
Senior Instructor; PhD, University of Colorado Boulder

Courses

EVEN 5131 (3) Air Pollution Control Engineering
Introduces air quality regulations, meteorology and modeling. Examines methods for controlling major classes of air pollutants, including particulate matter and oxides of sulfur and nitrogen, as well as control technology for industrial sources and motor vehicles. Requires interdisciplinary design projects.
Equivalent - Duplicate Degree Credit Not Granted: MCEN 5131 and MCEN 4131 and EVEN 4131
Requisites: Restricted to any College of Engineering and Applied Science graduate students or to Mechanical Engineering or Environmental Engineering undergraduate majors only.

EVEN 5444 (3) Analytical Methods, Experimental Design, and Applied Data Analysis
Focuses on experimental design and applied statistical methods for data analysis in the environmental engineering field. Students learn how to design and interpret experiments considering multiple variables, avoid confounding effects, and identify interactions between variables. Statistical tools are applied to analytical methods to validate environmental analytical samples. Students learn how to decipher analytical methods to ensure that environmental samples are collected and analyzed following robust quality assurance/quality control procedures.
Requisites: Restricted to College of Engineering and Applied Science graduate students or BS/MS Concurrent Degree Students only.
Recommended: Prerequisite an undergraduate statistics course.
Grading Basis: Letter Grade

EVEN 5514 (3) Bioremediation
Advanced study on biological processes used to treat toxic organic and inorganic compounds contained in contaminated water, air, and soil; design and evaluation of in situ toxic compound biotransformation; fundaments of phytoremediation; critical reviews of current literature on bioremediation.
Equivalent - Duplicate Degree Credit Not Granted: CVEN 5514

EVEN 5584 (3) Sustainable Engineering Design
Introduces students to sustainable design and quantitative sustainability assessment methods. Students will develop an understanding of quantitative sustainable design and how to navigate engineering decision-making. Students will learn tools for economic (life cycle costing, LCC) and environmental (life cycle assessment, LCA) sustainability assessments, and how to link these tools to engineering design decisions under uncertainty. Students will design engineered technologies individually and in teams, with special attention to energy and water technologies. Main course objectives are that students will have the ability to assess the relative sustainability of design alternatives using quantitative tools and to complete the detailed design of civil/environmental engineering infrastructure while navigating trade-offs across and within dimensions of sustainability.
Requisites: Restricted to graduate students only.
Grading Basis: Letter Grade

EVEN 5830 (1-3) Environmental Engineering Special Topic
Supervised study of special topics of interest to students under instructor guidance.
Repeatable: Repeatable for up to 9.00 total credit hours.
Requisites: Restricted to graduate students or concurrent degree sub plans (C-AREN, C-CVEN, C-ARENCVEN, C-EVENCVEN or C-EVEN) only.

EVEN 5959 (3) International Environmental Impact Assessment
Provide elements needed to develop Environmental Impact Assessments (EIA) in countries around the world. Familiarizes students with terms and definitions used in environmental practice. Explains the application of methodologies/tools used globally in EIA studies, taking into consideration the cause-effect relationships between project activities and the environment. Overview of World Bank and regional evaluation criteria driven by local ecosystems, society, and regulations. Case studies focus on the application of tools/methodologies and criteria in various international scenarios.
Equivalent - Duplicate Degree Credit Not Granted: EVEN 4959
Requisites: Requires prerequisite or corequisite course of EVEN 3414 (minimum grade C-). Restricted to graduate students or concurrent degree sub plans (C-AREN, C-CVEN, C-ARENCVEN, C-EVENCVEN or C-EVEN) only.
Recommended: Prerequisite or corequisite EVEN 3550.

EVEN 5979 (1-3) Introduction to Humanitarian Aid
Addresses the humanitarian-development nexus and gives an overview of the main ethical and professional principles, standards, and key stakeholders involved in humanitarian aid. Students will learn the historical and legal frameworks that shaped these principles, and examine their applicability to the challenges faced by humanitarian actors today. Increasing frequency, intensity, complexity, and length of emergency situations require new approaches and coordination among historically divided humanitarian and development actors.
Requisites: Restricted to students with 57-180 credits (Junior or Senior) or graduate students only.
Recommended: Prerequisite CVEN 4839/5919 Global Development for Engineers.
Grading Basis: Letter Grade

EVEN 5989 (1-3) Disaster Risk Reduction
Explores disaster governance, the decentralization of disaster resources and responsibilities, and best practices and tools in preparedness and mitigation. Students will examine the intersection of development, climate change, and disasters, by studying the impact of crisis events on human, social, and political behavior, and associated responses from impacted populations. Students will learn how to use data, tools, and geospatial techniques (GIS) that can inform and enhance vulnerability assessments, mitigation planning, and response operations.
Requisites: Restricted to students with 57-180 credits (Junior or Senior) or graduate students only.
Recommended: Prerequisite CVEN 4839/5919 Global Development for Engineers, or EVEN 5979, Introduction to Humanitarian Aid.
Grading Basis: Letter Grade

EVEN 5999 (1-3) Refugees and Displacement
Examines the processes and policies contributing to and driving refugee and migration flows, as well as response strategies. The focus will be on forced displacement, which currently impact the lives of almost 80 million people worldwide. This course covers solutions, particularly in the settlement context, for the appropriate provision of covered living space to adequately shelter displaced populations, while also promoting safer, healthier settlements that link emergency shelter and settlement assistance to longer-term recovery efforts. Previously offered as a special topics course.
Requisites: Restricted to students with 57-180 credits (Junior or Senior) or graduate students only.
Recommended: Prerequisites CVEN 4839/5919, EVEN 5979 and EVEN 5989.
Grading Basis: Letter Grade

EVEN 6504 (3) Advanced Physical-Chemical Processes for Water and Water Reuse Treatment
Teaches the process fundamentals of (1) granular activated carbon adsorption (2) UV, ozone and advanced oxidation processes (3) membrane filtration and reverse osmosis treatment and (4) ion exchange. These processes, as applied to impaired water sources, including brackish/saline/saltwater and wastewater reuse, will address water quality parameters including pathogenic microorganism, background organic matter, specific organic contaminants, metals and salts.
Requisites: Requires prerequisite course of CVEN 5524 (minimum grade C-).
Grading Basis: Letter Grade

EVEN 6940 (1) Master's Candidate for Degree
Registration intended for students preparing for a thesis defense, final examination, culminating activity, or completion of degree.

EVEN 6950 (1-6) Master's Thesis
Repeatable: Repeatable for up to 6.00 total credit hours.

EVEN 6960 (1-3) Master's Report
Offers report research under faculty supervision. Faculty advisor consent required.
Repeatable: Repeatable for up to 3.00 total credit hours.

EVEN 8990 (1-10) Doctoral Dissertation
Repeatable: Repeatable for up to 10.00 total credit hours.