Graduate Courses

**CEEN 562: Environmental Geomicrobiology.** This graduate course explores the functional activities and biological significance of microorganisms in geological and engineered systems with a focus on implications to water resources. Topics include microorganisms as geochemical agents of change, mechanisms and thermodynamics of microbial respiration, applications of analytical and molecular biology tools to the field, and the impact of microbes on the fate and transport of problematic water pollutants. In this discussion based and seminar-style course, emphasis is placed on critical analysis and communication of peer-reviewed literature.

**CEEN 598: Biogeochemical Impacts on Water Sustainability.** This seminar is grounded in peer-reviewed literature relating to the biogeochemistry of watersheds and its interface with hydrology and water resources. A mixture of roundtable discussion and student presentations, this course focuses on understanding potential implications of bark beetle infestation on water supply, subsurface and terrestrial carbon and nitrogen cycling, water quality and microbial ecology.

PhD students Dina Drennan (left) and Zack Jones (right) demonstrating awe-inspiring laboratory skills. Photo credits: Thomas Cooper Lightbox Images
Undergraduate Courses

**CEEN 301: Fundamentals of Environmental Science and Engineering.** This undergraduate course covers the fundamentals of environmental science & engineering as applied to water resource management in the U.S. It covers environmental regulation and toxicology, material balance, reactor models, hydrology, environmental chemistry, and applications to water and wastewater treatment.

**CEEN 330: Environmental Engineering Field Session (co-taught).** This undergraduate summer course is comprised of intensive, hands-on modules that are intended to develop environmental engineering problem solving and the application of laboratory and field skills. Through collaboration with the local nonprofit Clear Creek Watershed Foundation, we lead teams of students through projects aimed at assessing and developing solutions to the remediation of abandoned mines and the impact of metal loading on local watersheds.

**CEEN 303: Environmental Engineering Laboratory (co-taught).** This undergraduate course introduces laboratory and experimental techniques used for generating and interpreting data in environmental science and engineering related to water, land, and environmental health. In my section of the course, we guide students in using microbial and molecular biology tools in environmental engineering applications such as bioremediation.

Photo: Undergraduate students characterizing an acidic, mining impacted wetland during summer field session.

Photo: Abandoned tailings pile and mine shaft (Idaho Springs, CO).