

Environmental Sciences

Chair, Department of Earth and Environmental Sciences

- Emily Finzel

Program Coordinator

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Undergraduate major: environmental sciences (BA, BS)

Undergraduate minor: environmental sciences

Faculty: <https://environmentalsciences.uiowa.edu/people>

Website: <https://environmentalsciences.uiowa.edu/>

Courses

Environmental Sciences Courses

ENVS:1000 First-Year Seminar 1 s.h.

Small discussion class taught by a faculty member; topics chosen by instructor; may include outside activities (e.g., films, lectures, performances, readings, visits to research facilities). Requirements: first- or second-semester standing.

ENVS:1080 Introduction to Environmental Science 3-4 s.h.

Biological and physical character of the Earth; interaction of humans with the environment, including impacts on ecosystems, climate, natural processes, resources; alternative options, including sustainability, waste management, energy, land reform. GE: Sustainability. GE: Natural Sciences with Lab; Natural Sciences without Lab. Same as EES:1080.

ENVS:1081 Introduction to Environmental Sciences Laboratory 1 s.h.

Laboratory component of EES:1080. Requirements: completion of 3 s.h. in EES:1080 or ENVS:1080; or 3 s.h. of transfer equivalent. GE: Natural Sciences Lab only. Same as EES:1081.

ENVS:1085 Fundamentals of Environmental Science 4 s.h.

Interdisciplinary study of how Earth's natural systems interact, how these systems affect society, and how they respond to human activity; how environmental problems can be solved and avoided by drawing upon knowledge in disciplines as diverse as ecology, anthropology, economics, chemistry, and political science; blended instructional environment, including traditional lectures, discussions in TILE classrooms, laboratory, online learning, peer-reviewed writing exercises, and service learning. Offered fall semesters. GE: Sustainability. GE: Natural Sciences with Lab. Same as EES:1085.

ENVS:1115 The History of Oil 3 s.h.

Historical perspective on business, science, geology, technology, politics, environment, and culture of the global oil industry; the rise of oil as the most influential international business of the last 150 years, the material foundation of economies, a major force in world politics, a shaper of daily life, and a guide to understanding Earth's deep history. Offered fall semesters. GE: Sustainability. GE: Historical Perspectives. Same as EES:1115, GEOG:1115, HIST:1115.

ENVS:2001 Second-Year Field Trip for Earth and Environmental Sciences 1 s.h.

Opportunity for students to begin developing an appreciation of earth system and earth history scales; application of classroom learning to field-based inquiry; real-world examples of introductory course material in an outdoor classroom setting. Prerequisites: EES:1030 or EES:1050 or EES:1080 or ENVS:1080. Requirements: geoscience or environmental sciences major. Same as EES:2001.

ENVS:2010 Interdisciplinary Environmental Seminar 1 s.h.

Discover research, explore careers, and build connections. Requirements: first- or second-year standing. Same as EES:2010, GEOG:2010.

ENVS:2020 Earth's Climate System 3 s.h.

Overview of climate science and how we understand Earth's climate system through interconnected relationships between oceans, atmosphere, biosphere, and geosphere; introduction to climate archives, systems science, climate modeling, and mechanisms responsible for ancient and modern climate change. Recommendations: EES:1030, EES:1050, EES:1080, EES:1085, or GEOG:1020. Same as EES:2020.

ENVS:2200 Historical Geology 4 s.h.

Framework of earth history that is essential to understand how the earth system works; investigation of physical, biological, atmospheric, oceanographic, and chemical history of the earth to prepare for further earth and environmental science courses. Prerequisites: EES:1030 or EES:1050 or EES:1080 or ENVS:1080 or EES:1085 or ENVS:1085. Same as EES:2200.

ENVS:2673 Ecology 3 s.h.

Adaptations of organisms to their physical and biological environments; organism-environment interactions; population biology; interactions between species; ecology of communities, ecosystems; human impact on ecosystems. Recommendations: a basic statistics or calculus course. Same as BIOL:2673.

ENVS:3001 Third-Year Field Trip for Earth and Environmental Sciences 1 s.h.

Opportunity for students to apply their major coursework to real-world problems; field trip to visit parks, mines, and/or quarries in Missouri and Arkansas that illustrate many of the lessons learned in EES:2410 and EES:3500. Prerequisites: EES:1030 or EES:1050 or EES:1080 or ENVS:1080 or EES:2410. Requirements: geoscience or environmental sciences major, and junior standing. Same as EES:3001.

ENVS:3010 Interdisciplinary Environmental Seminar 1 s.h.

Role of sciences in environmental issues and problems; progression from observation to evaluation to design of better questions and experiments. Requirements: third- or fourth-year standing. Same as EES:3010, GEOG:3003.

ENVS:3020 Earth Surface Processes 3 s.h.

Basic geomorphic and environmental processes that shape the earth's surface; emphasis on erosion, transport, deposition by land mass movement (creep, landslides, earth flow), fluid agents (wind, water, ice); methods used to study these processes. Recommendations: EES:1050 or EES:1080 or ENVS:1080 or GEOG:1020 or EES:1085 or ENVS:1085. Same as EES:3020, GEOG:3020.

ENVS:3050 Geology of Iowa 2 s.h.

Exploration of geologic history responsible for landscape, soil, rocks, fossils, water, and natural resources of Iowa; background of Iowa's natural history; preparation for K-12 educators to deliver earth and environmental science content in their own classrooms, utilizing natural landscapes in Iowa. Same as EES:3050.

ENVS:3051 Geology of Iowa Field Trip 1 s.h.

Exploration of the geologic history responsible for landscape, soil, rocks, fossils, water, and natural resources of Iowa; field-based examples of Iowa's natural history; preparation for K-12 educators to deliver earth and environmental science content in their own classrooms utilizing the natural landscapes in Iowa. Recommendations: EES:3050. Same as EES:3051.

ENVS:3095 Field Ecology 4 s.h.

Analysis and interpretation of patterns and underlying physical and biotic basis for regional and local distributions of plants and animals of eastern Iowa; field observation, sampling, and laboratory analysis; conduction of several field research projects requiring collection, statistical analysis, and interpretation of data in short reports; field-oriented course. Prerequisites: BIOL:2673. Recommendations: advanced undergraduate standing or graduate standing in ecology, environmental sciences, or geoscience.

ENVS:3096 Winter Ecology 2 s.h.

How seasons occur, thermoregulation, microhabitats, what animals are active, and winter plant identification; local area fieldwork.

ENVS:3097 Introduction to Bird Study 2 s.h.

Basic identification skills, bird banding, and bird ecology; Hageboeck Hall of Birds at the UI Museum of Natural History; local field study.

ENVS:3100 Earth and Planetary Remote Sensing 4 s.h.

Remote sensing of the earth's surface from aircraft, satellites; aerial photograph interpretation; remote sensing systems, methods, data analysis using electromagnetic spectrum and digital processing techniques, including visible, infrared, microwave radiation; remote sensing applied to geologic and environmental problems. Prerequisites: EES:1030 or EES:1050 or EES:1080 or EES:1085. Same as EES:3100.

ENVS:3110 Chemical Evolution of the Oceans 3 s.h.

Investigation of various physicochemical states oceans have assumed over the past 4 billion years of Earth history; use of isotope geochemistry as a proxy for ancient ocean conditions; focus on integrated Earth system science, paleoceanographic and paleoclimate modeling, role of chemical stratigraphy in deciphering past climate states of ocean-atmosphere system; relationship between chemical changes in ocean/atmosphere and biological systems of the Earth. Same as EES:3110.

ENVS:3230 Special Topics 0-4 s.h.

Contemporary issues in environmental science.

ENVS:4001 Fourth-Year Field Trip for Earth and Environmental Sciences 2 s.h.

Application of core course learning to real-world examples; students develop a broader understanding of interrelated aspects of earth and environmental sciences as truly integrated scientific endeavors; field trip to Big Bend National Park to highlight a wide range of geoscience and environmental science studies and provide students an opportunity to apply all aspects of their training to the amazing geologic landscape of southwest Texas; capstone field experience for students heading into their senior year. Prerequisites: EES:2831. Requirements: geoscience or environmental sciences major, and senior standing. Same as EES:4001.