

EARTH SYSTEMS (ERTH)

ERTH 101N - Earth Systems Science. 3 Credits.

Earth Systems Science provides a formal introduction to the interacting components of the Earth System, including the solid Earth, oceans, atmosphere, and biosphere, and the interconnectedness of these components with humans. Students will focus on the practices of geoscientific inquiry while exploring content related to the formation of and processes affecting the solid Earth, water, and climate.

Gen Ed Attributes: Natural Science

ERTH 103N - Earth Systems Science Lab. 1 Credit.

Prereq. or coreq., ERTH 101N, GEO 101N, or GEO 103N. The Earth Systems Science lab provides hands-on opportunities for students to practice geoscientific inquiry. Students will examine Earth materials and conduct experiments using models of Earth processes to explore the interconnected components of the Earth system, including the solid Earth, oceans, atmosphere, and biosphere, and the interactions of these components with humans.

Gen Ed Attributes: Natural Science Lab Course, Natural Science

ERTH 191 - Special Topics. 1-18 Credits.

(R-18) Offered intermittently. Experimental offerings of visiting professors, experimental offerings of new courses, or one-time offerings of current topics.

ERTH 194 - Getting to Know Earth, Water, and Climate Science. 1 Credit.

A First-Year Experience seminar for students in Earth, Water, and Climate Science.

ERTH 303N - Weather and Climate. 3 Credits.

Offered spring. Origin, composition, structure, and dynamics of the atmosphere, gas and radiation laws, energy budget and balance, weather elements, North American weather systems, and climate change. To succeed in this course students should have comfort with basic algebra.

Gen Ed Attributes: Natural Science

ERTH 406 - Global Water Crises. 3 Credits.

Offered spring. Prereq., WRIT 101 or WRIT 201 and ERTH 101N. This course examines the impacts of a changing climate and our human population on Earth's hydrologic system with an emphasis on global water-related crises such as flooding, groundwater depletion, and contamination. The course introduces students to scientific writing for various purposes and audiences while covering major processes that control changes in water reservoirs, the relationship between climate change and water form, flow, availability, and quality, and the effects of human activities on the global water cycle. Through regular practice, structured peer review, and class discussions, students will develop skills in information literacy, including finding, evaluating, analyzing, and synthesizing information effectively from diverse sources and using information ethically.

Gen Ed Attributes: Writing in the Disciplines

ERTH 444 - Computational Methods in the Earth and Environmental Sciences. 3 Credits.

Offered intermittently. This course is designed to familiarize students with computers and the use of computers as tools in the earth and environmental sciences. Students will gain a broad overview and practical experience in the fundamentals of writing computer programs and common techniques in the management, exploration, and analysis of environmental data. Emphasis will be on learning the fundamentals of mid-level languages for data analysis and modeling. The course de-emphasizes the mathematical complexities of the methodologies in favor of generating an intuitive understanding, but we will introduce some linear algebra and statistical concepts. Level: Undergraduate

ERTH 530 - Hydrologic Modeling. 3 Credits.

Offered intermittently. Prereq., GEO 420 or NRSM 385 and ERTH 444. This course will provide a general introduction to physical and mathematical modeling of surface and subsurface hydrologic processes. The course will focus on developing a process understanding, resulting physical and mathematical descriptions, and finally numerical simulation. The class will largely be hands-on and practice driven. Students will build models across the critical zone continuum - from atmospheric and surface processes through groundwater flow. Level: Graduate