

# ENVIRONMENTAL SCIENCES (ENVR)

## **ENVR-150C Intro to Environmental Science 3 Credits**

An introductory course focusing on the scientific analysis of environmental issues. Using core concepts from physics, chemistry, biology and earth science, students will examine key issues associated with sustaining biodiversity, natural resources, environmental health, and human societies. Topics will include ecological principles; land, water and energy use; epidemiology and toxicology; air, water and solid waste pollution; ecological economics; and environmental policy, law and planning. This course fulfills the University Lab Science CORE requirement. The course has a corresponding laboratory course.

Co-Requisite: ENVR-150CL

Terms Typically Offered: Fall.

## **ENVR-150CL Intro to Environmental Science Lab 1 Credit**

An introductory complementary lab course focusing on the methods of collection and analysis of environmental samples. The Environmental Science laboratory focuses on environmental issues such as climate variation, atmospheric pollution and non-point-source water pollution. The course is made up of laboratory exercises with up to two field labs. In this course, students learn to investigate the natural world through the process of the "scientific method." Lab exercises provide an opportunity to make scientific observations, ask questions, develop explanations, design experiments and gather data. The lab exercises are designed to provide a basic understanding of how scientists investigate the world and the terminology that is used. Students have the opportunity to put the lab experience into real world scientific investigation. The course culminates in a field research project. Laboratory Course for 3 hours and lab fees.

Co-Requisite: ENVR-150C

Terms Typically Offered: Fall.

## **ENVR-205C Introduction to Geology 3 Credits**

An introductory course focusing on the study of the kind and arrangement of materials composing the earth's crust and the geological processes at work on and within the earth's surface. This course covers the fundamentals of geology: Rocks, minerals, geologic time, plate tectonics, earthquakes, volcanoes, surface processes, and earth resources. This course fulfills the University Lab Science CORE requirement. The course has a corresponding laboratory course.

Terms Typically Offered: Fall.

## **ENVR-205CL Introduction to Geology Laboratory 1 Credit**

Corresponding laboratory for identification of rocks and minerals. Introduction to topographic maps and how they are used to interpret geologic processes and geologic history. Interpretation of geologic maps and data relating to earthquakes and plate tectonics. Course will consist of local field excursions and laboratory exercises.

Pre- or Co-Requisite: ENVR-205C

Terms Typically Offered: Fall.

## **ENVR-305 Intro to Soil Sciences 3 Credits**

Quantitative study of the chemistry of the solid, liquid, and gas phases in soils and sediments. Topics include solid and solution speciation, mineral solubility, ion exchange and adsorption reactions, oxidation-reduction, and the chemistry of organic contaminants and toxic trace elements in soil. Lecture, 3 hours.

Prerequisite: CHEM-121 and ENVR-150C

Terms Typically Offered: Spring, even years.

## **ENVR-305L Intro to Soil Sciences Lab 1 Credit**

Pre- or Co-Requisite: ENVR-305

Terms Typically Offered: Spring, even years.

## **ENVR-320 Hydrology 3 Credits**

Introduction to the scientific study of the hydrologic cycle. Covers the measurement and evaluation of hydrologic phenomena including the use of statistical methods. Explores computer techniques in hydrology with applications to water resource development and water quality problems, particularly those in California. Lecture, 3 hours.

Prerequisite: CHEM-121 and ENVR-150C; or permission of instructor

Terms Typically Offered: Spring, odd years.

## **ENVR-335 Intro to Atmospheric Sciences 3 Credits**

Covers the structure of the atmosphere and man's impact upon it, especially the causes and consequences of air pollution. Addresses air quality standards and the stratospheric and tropospheric ozone. Also introduces the chemistry of air pollution and air pollution control strategies. Lecture, 3 hours.

Prerequisite: CHEM-121 and ENVR-150C; or permission of instructor

Terms Typically Offered: Fall, even years.

## **ENVR-405 Intro to Geo Info System (GIS) 3 Credits**

In this introductory course, students become familiar with the hardware and software components of a Geographic Information System and review GIS applications. Topics include data structures and basic functions, methods of data capture and sources of data, and the nature and characteristics of spatial data and objects. Topics covered include the fundamentals of data structures, georeferencing, data classification, querying, cartography, and basic spatial data analysis. The course provides an overview of the capabilities of GIS software and applications of GIS. Class time is divided between lectures and GIS exercises that reinforce critical concepts. Students must complete a term project as part of the course and should appreciate the utility of Geographic Information Systems in decision-making. Lecture, 3 hours.

Prerequisite: ENVR-150C; or permission of instructor

Terms Typically Offered: Fall, odd years.

## **ENVR-430 Environmental Policy and Impact Analysis 3 Credits**

Explores the principles and theories of analyzing environmental interactions. Provides a critical analysis of methodologies for assessing the physical, biological, and social impacts on the environment by human activities. Synthesizes the subject matter through preparation of an environmental impact report. Lecture, 3 hours.

Terms Typically Offered: Spring, odd years.



**ENVR-450 Ug Research Or Internship Program 1-4 Credits**

This course may be taken for a maximum of 4 units in one semester. A maximum of 6 combined units credit for ENVR-450 or ENVR-485 apply to graduation. This course is designed with the purpose of providing students the opportunity to conduct research off-campus at universities or STEM companies in the community. This course promotes early entry into the workplace for the student through part-time employment. This course requires actual work experience be sought in a biotech or STEM-focused business firm providing an opportunity to integrate classroom teaching in practical application under the direct supervision of the assigned instructor. Students are responsible for completing a project report and presenting their research results in ENVR-499C.

**ENVR-485 Undergraduate Research 1-4 Credits**

Problems in advanced laboratory research with emphasis on research techniques. Research is carried out under the supervision of the instructor with weekly conferences to discuss results and direction. Emphasis will be placed on project management, safety, instrumentation, and research documentation skills. A written proposal and report emphasizing the literature background of the problem and the experimental results are required. The results of the research project will also be presented in an oral format in ENVR-499C. This course is a variable credit course. At least two units are required for all Environmental Sciences Majors.. A minimum of 50 hours of laboratory work is required per unit. May be repeated. Lab fee.

**ENVR-488 Environmental Sciences Senior Project 2 Credits**

An advanced course providing the opportunity for a student to create a novel and independent intellectual work by comparing, contrasting, and synthesizing recent research and his/her cumulative knowledge and understanding in Environmental Sciences. The precise nature, scope and format of the project must be developed and approved under the guidance of the instructor and in collaboration with the student's academic advisor. Senior projects are typically initiated in the Fall. The project results must also be presented in ENVR-499C. Lab fee.

**ENVR-499C Capstone Seminar/Environmental Studies 2 Credits**

This course includes a senior thesis covering an approved research topic, analysis and evaluation of current research in the environmental sciences, and the integration of faith and the sciences. An oral presentation of the senior thesis in a classroom setting is required. In-class presentations by faculty and guests are part of the course. Laboratory research in an on-campus research program or an approved off-campus research program may be required for the senior thesis. This course fulfills the Core Curriculum Capstone requirement for Environmental Science majors.  
Terms Typically Offered: Spring.

