

## 2011-13 Cal Poly Catalog

### Natural Resources Management & Environmental Sciences Department

## ERSC—EARTH SCIENCES

### ERSC 110 Orientation in Earth and Soil Sciences (1) (CR/NC)

Understanding the depth and breadth of earth and soil sciences. Examine potential career opportunities. Introduction to both student and professional organizations. Credit/No Credit grading only. 1 activity. *Crosslisted as ERSC/SS 110.*

### ERSC 144 Introduction to Earth Systems (4)

Survey of fundamental processes of Earth science. Application of systems thinking to understanding the dynamic interactions among geological, geo-graphic, soils and human factors in shaping the Earth. 3 lectures, 1 activity.

### ERSC 200 Special Problems for Undergraduates (1–2)

Individual investigation, research, studies, or surveys of selected problems. Total credit limited to 12 units, with a maximum of 2 units per quarter. Prerequisite: Consent of department head. *Crosslisted as ERSC/SS 200.*

### ERSC 202 Soil Erosion and Water Conservation (4)

Development of an erosion and sediment control plan using climate, topography, soils and land use in relation to soil and water quality. Evaluation of soil and water conservation plans and best management practices for agriculture, urban, riparian, and rangelands. 3 lectures, 1 activity. Prerequisite: SS 121 or consent of instructor.

### ERSC 223 Rocks and Minerals (4)

Origin, composition, identification and weathering of rocks, minerals, and clays important in the development of soils. Parent materials as related to the nature and properties of soils. 3 lectures, 1 laboratory. Prerequisite: SS 121, CHEM 111 or CHEM 127.

### ERSC 250 Physical Geography (4)

Addresses the origins and patterns of the earth's diverse assemblage of climates, landforms, biota and soils. A major focus on relationship between human cultures and these earthly environments. 4 lectures. *Crosslisted as ERSC/GEOG 250.*

### ERSC 270 Selected Topics (1–4)

Directed group study of selected topics. The Schedule of Classes will list title selected. Total credit limited to 12 units. 1 to 4 lectures. Prerequisite: Open to undergraduate students and consent of instructor. *Crosslisted as ERSC/SS 270.*

### ERSC 301 Earth Sciences/Soils Science Practicum (1-2) (CR/NC)

Supervised practice in technical, educational, professional, and operational applications related to earth sciences or soil science. Students participate in faculty-supervised group or individual activities that support educational and professional goals. Credit/No Credit grading only. Total credit limited to 12 units. 1-2 activities. Prerequisite: SS 110 or SS 121. *Crosslisted as ERSC/SS 301.*

### ERSC 323 Geomorphology (4)

Recognizing and identifying major landforms and their components by interpretation of aerial photographs and topographic maps, and observations. Emphasis on analyzing common landforms in the western United States for application in soil science, physical geography, hydrology, and geology. 2 lectures, 1 laboratory, 1 activity. Prerequisite: SS 121 and GEOL 201.

### ERSC 325 Climate and Humanity (4)

Geographic perspective on the interrelationships between climate and human cultures. Effects of people on climate and the influence of climate and weather upon human activities and behavior. Focus on global human conditions which are responsible for the alteration of climate and in turn are vulnerable to climate change. 4 lectures. Prerequisite: Junior standing or consent of instructor. *Crosslisted as ERSC/GEOG 325.*

### ERSC 333 Human Impact on the Earth (4)

Global assessment of the impact of humans on the earth's vegetation, animals, soil, water and atmosphere. Emphasis on problems stemming from the interactions of human attitudes, technologies, and population with natural resources. 4 lectures. Prerequisite: Junior standing or consent of instructor. *Crosslisted as ERSC/GEOG 333.*

### ERSC 339 Earth Sciences/Soil Science Internship (1–12) (CR/NC)

Selected students will spend up to 12 weeks with an approved firm or agency engaged in work and study related to their major. A detailed written proposal and

written interim and final reports required. One unit of credit may be allowed for each full week of internship. Credit/No Credit grading. Prerequisite: Consent of internship instructor. *Crosslisted as ERSC/SS 339.*

### ERSC 400 Special Problems for Advanced Undergraduates (2–4)

Individual investigation, research, studies or surveys of selected problems. Total credit limited to 12 units, with a maximum of 2 units per quarter. Prerequisite: Consent of department head. *Crosslisted as ERSC/SS 400.*

### ERSC 401 Field-Geology Methods (4)

Collecting and interpreting field-geologic data. Description of sedimentary rocks and construction of stratigraphic columns. Mapping geologic structures in the field. Surficial geologic stratigraphy and surficial geologic mapping. Understanding geologic processes through field study. Communicating results of field study. 1 lecture, 3 activities. Prerequisite: GEOL 102 or GEOL 201, GEOL 241, GEOL 415, ERSC 223, ERSC 323. *Crosslisted as ERSC/GEOL 401.*

### ERSC 402 Geologic Mapping (4)

Bedrock geologic mapping on topographic maps and aerial photos. Surficial geologic mapping on topographic maps and aerial photos. Correlating and defining surficial geologic map units on the basis of soil development. Understanding landscape evolution using soil development 4 activities. Prerequisite: ERSC/GEOL 401. *Crosslisted as ERSC/GEOL 402.*

### ERSC 414 Global and Regional Climatology (4)

The earth's pattern of climates and the physical processes that account for them. Focus on interrelationships between climate and the physical/biological and cultural environments. Special emphasis on modern climate changes and their consequences. 3 lectures, 1 laboratory. Prerequisite: Junior standing. *Crosslisted as ERSC/GEOG 414.*

### ERSC 415 Applied Meteorology and Climatology (4)

Physical processes in the atmosphere that determine regional weather, climate and climate variability. Surface and satellite systems for weather observation, and weather/climate modeling. Dynamics of weather systems, including thunderstorms and hurricanes. Emphases on weather/climate affecting agriculture and other human activities. 3 lectures, 1 activity. Prerequisite: GEOG/ERSC 250 or consent of instructor. *Crosslisted as ERSC/GEOG 415.*

### ERSC 461 Senior Project I (1)

Senior project topic selection and contract development with project advisor. Statement of problems, subproblems, assumptions, objectives, hypothesis, methods of analysis and statistical design. Development of literature review and budget of time and finances. Proper format and presentation of tabular and graphic information. 1 activity. Prerequisite: MATH 118 or MATH 141, STAT 218 or CRSC 411.

### ERSC 462 Senior Project II (3)

Implementation of materials and methods. Collection, analysis and interpretation of data. Completion of formal written report under advisor supervision. Minimum 90 hours. Prerequisite: ERSC 461.

### ERSC 463 Undergraduate Seminar (2)

Review of current research, experiments, and problems related to the student's major field of interest. Preparation and presentation of reports on problems or research activities. 2 seminars. Prerequisite: ERSC 461.

### ERSC 470 Selected Advanced Topics (1–4)

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Schedule of Classes will list title selected. Total credit limited to 12 units. 1 to 4 lectures. Prerequisite: Consent of instructor. *Crosslisted as ERSC/SS 470.*

### ERSC 471 Selected Advanced Laboratory (1–4)

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1 to 4 laboratories. Prerequisite: Consent of instructor. *Crosslisted as ERSC/SS 471.*

### ERSC 544 Earth Sciences for Educators (3)

An interdisciplinary earth sciences course which emphasizes the interactions of multiple systems of air, water, land, life, and human society. Designed for teachers and students seeking teaching credential. Incorporates scientific theory, learning resources, and applications in the field. 3 lectures. Prerequisite: Graduate standing and consent of instructor. Not open to students in Soil Science specialization under MS Agriculture.

**ERSC 570 Selected Topics in Earth Science (1-4)**

Directed group study of selected topics for advanced students. The Schedule of Classes will list title selected. Total credit limited to 12 units. 1 to 4 seminars. Prerequisite: Graduate standing or consent of instructor.

**ERSC 571 Selected Advanced Laboratory (1-4)**

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Schedule of Classes will list title selected. Total credit limited to 8 units. 1-4 laboratories. Prerequisite: Graduate standing or consent of instructor.