Earth and Planetary Science

The Department of Earth and Planetary Sciences offers PhD degrees in Earth and Planetary Science. The central objective of the graduate program is to encourage creative thinking and develop the capacity for independent and original research. A strong undergraduate background in the sciences other than geology is especially helpful, and a significant number of our graduate students have their training in physics, chemistry, mathematics, engineering or astronomy. Graduate students are formally accepted into the Earth and Planetary Science program, and they normally work directly toward a PhD.

The Department offers an MA program; however, admission to the program is available only to graduates of our bachelor's degree program in Earth and Planetary Science. We do not accept applications from other majors or universities.

Admission to the University

Uniform minimum requirements for admission

The following minimum requirements apply to all programs and will be verified by the Graduate Division:

1. A bachelor's degree or recognized equivalent from an accredited institution;
2. A minimum grade-point average of B or better (3.0);
3. If the applicant comes from a country or political entity (e.g. Quebec) where English is not the official language, adequate proficiency in English to do graduate work, as evidenced by a TOEFL score of at least 570 on the paper-and-pencil test, 230 on the computer-based test, 90 on the iBT test, or an IELTS Band score of at least 7 (note that individual programs may set higher levels for any of these); and
4. Enough undergraduate training to do graduate work in the given field.

Applicants who already hold a graduate degree

The Graduate Council views academic degrees as evidence of broad research training, not as vocational training certificates; therefore, applicants who already have academic graduate degrees should be able to take up new subject matter on a serious level without undertaking a graduate program, unless the fields are completely dissimilar.

Programs may consider students for an additional academic master's or professional master's degree if the additional degree is in a distinctly different field.

Applicants admitted to a doctoral program that requires a master's degree to be earned at Berkeley as a prerequisite (even though the applicant already has a master's degree from another institution in the same or a closely allied field of study) will be permitted to undertake the second master's degree, despite the overlap in field.

The Graduate Division will admit students for a second doctoral degree only if they meet the following guidelines:

1. Applicants with doctoral degrees may be admitted for an additional doctoral degree only if that degree program is in a general area of knowledge distinctly different from the field in which they earned their original degree. For example, a physics PhD could be admitted to a doctoral degree program in music or history; however, a student with a doctoral degree in mathematics would not be permitted to add a PhD in statistics.
2. Applicants who hold the PhD degree may be admitted to a professional doctorate or professional master's degree program if there is no duplication of training involved.

Applicants may only apply to one single degree program or one concurrent degree program per admission cycle.

Any applicant who was previously registered at Berkeley as a graduate student, no matter how briefly, must apply for readmission, not admission, even if the new application is to a different program.

Required documents for admissions applications

1. **Transcripts:** Upload unofficial transcripts with the application for the departmental initial review. Official transcripts of all college-level work will be required **if admitted**. Official transcripts must be in sealed envelopes as issued by the school(s) you have attended. Request a current transcript from every post-secondary school that you have attended, including community colleges, summer sessions, and extension programs.
   If you have attended Berkeley, upload unofficial transcript with the application for the departmental initial review. Official transcript with evidence of degree conferral ***will not*** be required if admitted.
2. **Letters of recommendation:** Applicants can request online letters of recommendation through the online application system. Hard copies of recommendation letters must be sent directly to the program, not the Graduate Division.
3. **Evidence of English language proficiency:** All applicants from countries in which the official language is not English are required to submit official evidence of English language proficiency. This requirement applies to applicants from Bangladesh, Burma, Nepal, India, Pakistan, Latin America, the Middle East, the People's Republic of China, Taiwan, Japan, Korea, Southeast Asia, and most European countries. However, applicants who, at the time of application, have already completed at least one year of full-time academic course work with grades of B or better at a U.S. university may submit an official transcript from the U.S. university to fulfill this requirement. The following courses will not fulfill this requirement: 1) courses in English as a Second Language, 2) courses conducted in a language other than English, 3) courses that will be completed after the application is submitted, and 4) courses of a non-academic nature. If applicants have previously been denied admission to Berkeley on the basis of their English language proficiency, they must submit new test scores that meet the current minimum from one of the standardized tests.

Candidates for the Ph.D. degree must pass the oral qualifying examination by the end of the second year and complete a thesis to the satisfaction of the appointed thesis committee. Students must have two research propositions to present at the qualifying examination, each developed under the supervision of a different professor on substantially different topics.

Curriculum

Electives, as per specialized study list

The Master of Arts degree requires 24 semester units of upper division and graduate courses with at least 12 units of graduate coursework), followed by a comprehensive oral examination. The M.A. program is **open only to students who have completed their undergraduate degree in our department.**

Curriculum

Electives, as per specialized study list	24
12 units must be graduate courses	
12 units may be graduate or upper-division courses	

Earth and Planetary Science

EPS 200 Problems in Hydrogeology 4 Units
Current problems in fluid flow, heat flow, and solute transport in the earth. Pressure- and thermal-driven flow, instability, convection, interaction between fluid flow and chemical reactions. Pore pressure; faulting and earthquakes; diagenesis; hydrocarbon migration and trapping; flow-associated mineralization; contaminant problems.
Rules & Requirements

Prerequisites: PHYSICS 7A-7B, Chemistry 1A-1B, MATH 53 and 54; open to senior undergraduates with appropriate prerequisites

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics C200 and Geology C200

EPS 203 Introduction to Aquatic and Marine Geochemistry 4 Units
Introduction to marine geochemistry: the global water cycle; processes governing the distribution of chemical species within the hydrosphere; ocean circulation; chemical mass balances, fluxes, and reactions in the marine environment from global to submicron scales; carbon system equilibrium chemistry and biogeochemistry of fresh and salt walter; applications of natural and anthropogenic stable and radioactive tracers; internal ocean processes.
Rules & Requirements

Prerequisites: Chemistry 1A, Mathematics 1A, or 16A. C82 recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Bishop

EPS 204 Elastic Wave Propagation 3 Units
Wave propagation in elastic solids; effects of anelasticity and anistropy; representation theorems; reflection and refraction; propagation in layered media; finite-difference and finite-element methods.
Rules & Requirements

Prerequisites: 104 or equivalent; 121; PHYSICS 105

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics 204

EPS 207 Laboratory in Observational Seismology 3 Units
Group problem solving of current seismological topics. Analysis, inversion, and numerical modeling of seismic waveform data to investigate questions regarding the physics of the earthquake source and seismic wave propagation. Application of current developments and techniques in seismological research.
Rules & Requirements

Prerequisites: 121 or 130 or 204 or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics 207

EPS 209 Matlab Applications in Earth Science 2 Units
Introduction to Matlab programming with toolboxes. Applications come from Earth sciences and related fields including biology. Topics range from image processing, riverbed characterization, landslide risk analysis, signal processing, geospatial and seismic data analysis, and machine learning to parallel computation. Designed for beginning graduate students.
Rules & Requirements

Prerequisites: Some programming experience in any language

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

EPS 210 Exploration, Ore Petrology, and Geochemistry 4 Units
Overview of geological, petrological, and geochemical analysis of ore forming processes including sedimentary, magmatic, hydrothermal, and geothermal resources. Geochemical rock buffers and hydrothermal phase equilibria. Electro-geochemistry of near surface oxidation of primary ores related to climate change, hydrological evolution, and tectonics. Exploration for earth materials for conventional and sustainable technologies including multiple junction semiconductor photo-voltaic cells. Mass balance modeling of ore-forming systems and soils. Environmental management of exploration sites. Lab includes macroscopic and X-ray identification of ore and alteration minerals and ore microscopy. Field trips use digital GIS mapping methods for rock type, structure, mineralization, and wall rock alteration. Integration interpretation of geophysics with geology.
Rules & Requirements

Prerequisites: 101 or 271; 100A-100B; 118 recommended

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Brimhall

Formerly known as: Geology 205

EPS 212 Advanced Stratigraphy and Tectonics 3 Units
Evolution of the earth in response to internal, surficial and extraterrestrial processes.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geology 212

EPS 216 Active Tectonics 3 Units
This course is a graduate course designed to introduce students in the earth sciences to the geology of earthquakes, including tectonic geomorphology, paleoseismology and the analysis and interpretation of geodetic measurements of active deformation. While the focus will be primarily on seismically active faults, we will also discuss deformation associated with landslides, regional isostatic rebound, and volcanoes, as well as measurements of global plate motions. We will address methods and applications in paleoseismology, tectonic geomorphology, and geodesy. The course will address measurement techniques (e.g,. GPS, leveling, etc.), data analysis and inversion, and subsequent modeling and interpretation of the data. The integration of geodetic measurements with geologic and seismologic data allows an improved understanding of active processes.
Rules & Requirements

Prerequisites: 116 or equivalent, PHYSICS 7A or equivalent, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geology 207

EPS 217 Fluvial Geomorphology 4 Units
Application of fluid mechanics to sediment transport and development of river morphology. Form and process in river meanders, the pool-riffle sequence, aggradation, grade, and baselevel.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geology 217

EPS 220 Advanced Concepts in Mineral Physics 3 Units
A combined seminar and lecture course covering advanced topics related to mineral physics. The interface between geophysics with the other physical sciences is emphasized. Topics vary each semester.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics 220

EPS 224 Isotopic Geochemistry 4 Units
An overview of the use of natural isotopic variations to study earth, planetary, and environmental problems. Topics include geochronology, cosmogenic isotope studies of surficial processes, radiocarbon and the carbon cycle, water isotopes in the water cycle, and radiogenic and stable isotope studies of planetary evolution, mantle dynamics, volcanoes, groundwater, and geothermal systems. The course begins with a short introduction to nuclear processes and includes simple mathematical models used in isotope geochemistry.
Rules & Requirements

Prerequisites: Chemistry 1A-1B, Mathematics 1A-1B

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: DePaolo

EPS 225 Topics in High-Pressure Research 2 Units
Analysis of current developments and techniques in experimental and theoretical high-pressure research, with applications in the physical sciences. Topics vary each semester.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophyics 225

EPS 229 Introduction to Climate Modeling 3 Units
This course emphasizes the fundamentals of the climate system via a hierarchy of climate models. Topics will include energy balance, numerical techniques, climate observations, atmospheric and oceanic circulation and heat transports, and parameterizations of eddy processes. The model hierarchy will also explore nonlinear and stochastic processes, and biogeochemistry. Students will build computational models to investigate climate feedbacks, climate sensitivity, and response times.
Rules & Requirements

Repeat rules: Course may be repeated for credit with consent of instructor. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Fung

Formerly known as: Earth and Planetary Science C229/Integrative Biology C229

EPS 230 Radiation and Its Interactions with Climate 3 Units
Introduction to role of radiative processes in structure and evolution of the climate system. Electromagnetism; solar and terrestrial radiation; interactions of radiation with Earth's atmosphere, ocean, and land surface; greenhouse and runaway greenhouse effects; radiative balance of the climate system; energy-balance climate models; effects of clouds and aerosols; interactions of radiation with atmospheric and oceanic dynamics; radiative processes and paleoclimate; radiative processes and anthropogenic global warming.
Rules & Requirements

Prerequisites: PHYSICS 105, 110A, 110B

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Collins

EPS 236 Geological Fluid Mechanics 4 Units
An advanced course in the application of fluid mechanics in the earth sciences, with emphasis on the design and scaling of laboratory and numerical models. Principals of inviscid and viscous fluid flow; dynamic similarity; boundary layers; convection; instabilities; gravity currents; mixing and chaos; porous flow. Applications to mantle convection, magma dynamics, atmosphere and ocean dynamics, sediment/debris flows, and hydrogeology. Topics may vary from year to year.
Rules & Requirements

Prerequisites: Continuum/fluid mechanics at the level of 108 or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics 238

EPS C241 Stable Isotope Ecology 5 Units
Course focuses on principles and applications of stable isotope chemistry as applied to the broad science of ecology. Lecture topics include principles of isotope behavior and chemistry, and isotope measurements in the context of terrestrial, aquatic, and marine ecological processes and problems. Students participate in a set of laboratory exercises involving preparation of samples of choice for isotopic analyses, the use of the mass spectrometer and optical analysis systems, and the anlaysis of data.
Rules & Requirements

Prerequisites: Graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructors: Amundson, Dawson, Mambelli

Also listed as: ESPM C220/INTEGBI C227

EPS C242 Glaciology 4 Units
A review of the mechanics of glacial systems, including formation of ice masses, glacial flow mechanisms, subglacial hydrology, temperature and heat transport, global flow, and response of ice sheets and glaciers. We will use this knowledge to examine glaciers as geomorphologic agents and as participants in climate change.
Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Cuffey

Formerly known as: 241

Also listed as: GEOG C241

EPS C249 Solar System Astrophysics 3 Units
The physical foundations of planetary sciences. Topics include planetary interiors and surfaces, planetary atmospheres and magnetospheres, and smaller bodies in our solar system. The physical processes at work are developed in some detail, and an evolutionary picture for our solar system, and each class of objects, is developed. Some discussion of other (potential) planetary systems is also included.
Rules & Requirements

Prerequisites: 149, 169, C160A or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructors: Chiang, de Pater

Also listed as: ASTRON C249

EPS 250 Advanced Topics in Earth and Environmental Sciences 3 Units
Review of recent literature and discussion of ongoing research at the interface between earth science and environmental science.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geology 250

EPS 251 Carbon Cycle Dynamics 3 Units
In this course, we will focus on the (unsolved) puzzle of the contemporary carbon cycle. Why is the concentration of atmospheric CO2 changing at the rate observed? What are the terrestrial and oceanic processes that add and remove carbon from the atmosphere? What are the processes responsible for long-term storage of carbon on land and in the sea? Emphasis will be placed on the observations and modeling needed to evaluate hypotheses about carbon sources and sinks. Past records will be examined for clues about sensitivity of carbon processes to climate variations.
Hours & Format

Fall and/or spring: 15 weeks - 6 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geology 219

EPS 254 Advanced Topics in Seismology and Geophysics 1 Unit
Lectures on various topics representing current advances in seismology and geophysics, including local crustal and earthquake studies, regional tectonics, structure of the earth's mantle, and core and global dynamics.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics 250

EPS 255 Advanced Topics in Earth and Planetary Science 1 Unit
Lectures on various topics representing current advances in all aspects of earth and planetary science.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

EPS 256 Earthquake of the Week 2 Units
Each week, the seismicity of the previous week, in California and worldwide, is reviewed. Tectonics of the region as well as source parameters and waveforms of interest are discussed and placed in the context of ongoing research in seismology.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of discussion per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geophysics 255

EPS 260 Research in Earth Science 2 Units
Weekly presentations to introduce new graduate students and senior undergraduates to current research conducted in the Department of Earth and Planetary Science.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Formerly known as: Geology 260

EPS 271 Field Geology and Digital Mapping 4 Units
Geological mapping, field observation, and problem solving in the Berkeley hills and environs leading to original interpretation of geological processes and history from stratigraphic, structural, and lithological investigations. Integration of the Berkeley hills geology into the tectonic and paleo-climatic record of the Coast Ranges and California as a whole through systematic field mapping in key localities and reading of original literature. Training in digital field mapping, use of digital base maps, and use of global positioning systems.
Rules & Requirements

Prerequisites: 50 or equivalent introductory course for majors

Credit Restrictions: Students will receive no credit for 271 after taking 101.

Hours & Format

Fall and/or spring: 15 weeks - 7 hours of fieldwork and 2 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Brimhall

EPS C276 Seismic Hazard Analysis and Design Ground Motions 3 Units
Deterministic and probabilistic approaches for seismic hazard analysis. Separation of uncertainty into aleatory variability and epistemic uncertainty. Discussion of seismic source and ground motion characterization and hazard computation. Development of time histories for dynamic analyses of structures and seismic risk computation, including selection of ground motion parameters for estimating structural response, development of fragility curves, and methods for risk calculations.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructor: Abrahamson

Also listed as: CIV ENG C276

EPS 280 Research 2 - 12 Units
Individual conferences to be arranged. Provides supervision in the preparation of an original research paper or dissertation.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2-12 hours of independent study per week

Summer:
6 weeks - 5-30 hours of independent study per week
8 weeks - 4-23 hours of independent study per week
10 weeks - 3-18 hours of independent study per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

EPS 290 Seminar 2 - 6 Units
Topics will be announced each semester.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2-6 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Formerly known as: Geology 290

EPS C292 Planetary Science Seminar 1 Unit
The departments of Astronomy and Earth and Planetary Science offer a joint research seminar in advanced topics in planetary science, featuring speakers drawn from graduate students, postdoctoral researchers, faculty, and visiting scholars. Topics will span planetary interiors; surface morphology; atmospheres; dynamics; planet formation; and astrobiology. Speakers will vary from semester to semester. Meetings will be held once a week for 1 hour each, and the schedule of speakers will be determined on the first day of class. To pass the class, participants will be required to give a 30-minute presentation, either on their own research or on recent results from the literature.
Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-1 hours of seminar per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Also listed as: ASTRON C292

EPS C295Z Energy Solutions: Carbon Capture and Sequestration 3 Units
After a brief overview of the chemistry of carbon dioxide in the land, ocean, and atmosphere, the course will survey the capture and sequestration of CO2 from anthropogenic sources. Emphasis will be placed on the integration of materials synthesis and unit operation design, including the chemistry and engineering aspects of sequestration. The course primarily addresses scientific and engineering challenges and aims to engage students in state-of-the-art research in global energy challenges.
Rules & Requirements

Prerequisites: Chemistry 4B or 1B, Mathematics 1B, and PHYSICS 7B, or equivalents

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: Letter grade.

Instructors: Bourg, DePaolo, Long, Reimer, Smit

Also listed as: CHEM C236/CHM ENG C295Z

EPS 298 Directed Group Study for Graduates 1 - 9 Units
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Graduate

Grading: The grading option will be decided by the instructor when the class is offered.

Formerly known as: Geology 298

EPS C301 Communicating Ocean Science 4 Units
For graduate students interested in improving their ability to communicate their scientific knowledge by teaching ocean science in elementary schools or science centers/aquariums. The course will combine instruction in inquiry-based teaching methods and learning pedagogy with six weeks of supervised teaching experience in a local school classroom or the Lawrence Hall of Science with a partner. Thus, students will practice communicating scientific knowledge and receive mentoring on how to improve their presentations.
Rules & Requirements

Prerequisites: One course in introductory biology, geology, chemistry, physics, or marine science required and interest in ocean science,junior, senior, or graduate standing; consent of instructor required for sophomores

Hours & Format

Fall and/or spring: 15 weeks - 2.5 hours of lecture, 1 hour of discussion, and 2 hours of fieldwork per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Professional course for teachers or prospective teachers

Grading: Letter grade.

Instructor: Ingram

Also listed as: GEOG C301/INTEGBI C215

EPS 375 Professional Preparation: Supervised Teaching of Geology and Geophysics 1 - 6 Units
Discussion, curriculum, class observation, and practice teaching in geology, geophysics, and earth science.
Rules & Requirements

Prerequisites: Graduate standing and appointment as graduate student instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of discussion per week

Additional Details

Subject/Course Level: Earth and Planetary Science/Professional course for teachers or prospective teachers

Grading: Offered for satisfactory/unsatisfactory grade only.

Formerly known as: Earth and Planetary Science 300