

# Earth, Planetary, and Space Sciences

College of Letters and Science

## Graduate Degrees

The Department of Earth and Space Sciences offers the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Geochemistry; the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Geology; and the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Geophysics and Space Physics.

## Geochemistry

### Admission

#### Program Name

Geochemistry

#### Address

3683A Geology  
Box 951567  
Los Angeles, CA 90095-1567

#### Phone

(888) 377-8252

#### Email

[holbrook@ess.ucla.edu](mailto:holbrook@ess.ucla.edu)

#### Leading to the degree of

M.S., Ph.D.

#### Admission Limited to

Fall, Winter, Spring

#### Deadline to apply

January 1

#### GRE (General and/or Subject)

GRE: General test is required.

#### Letters of Recommendation

### **Other Requirements**

In addition to the University's minimum requirements and those listed above, all applicants are expected to submit a statement of purpose.

A bachelor's degree in chemistry, geology, physics, astronomy, or a related field is required.

Applicants must have outstanding records in the relevant basic sciences and mathematics. Qualified students may proceed directly toward the Ph.D. degree, although most obtain the M.S. degree in the process.

## **Master's Degree**

### **Advising**

Incoming students are assigned a faculty adviser by the graduate adviser. During the first year of study, the faculty adviser in consultation with the student selects two additional faculty members with appointments in the student's department to complete the student's advising committee. At the beginning of every quarter, the student's program must be reviewed and approved by the faculty adviser.

Departmental Reviews. The Graduate Student Affairs Committee annually reviews student progress (generally in late May and early June). These reviews become part of students' departmental records and are transmitted to the students and their faculty advisers in writing. If students' scholarship or progress is insufficient, they are subject to dismissal.

### **Areas of Study**

The program in geochemistry offers study in biogeochemistry, environmental geochemistry, experimental petrology, geobiology, isotopic studies of stable and radioactive elements, marine geochemistry, meteorite research, mineral physics, paleoclimate, and planetary science. Other comparable areas of study are also possible.

### **Foreign Language Requirement**

None.

### **Course Requirements**

Full-time students must enroll in a minimum of 12 units per quarter. The twelve units required per quarter may include, among others, courses in the 500 series (individual study or research).

Each course of study is individually created by the advising committee in consultation with the student. It may include appropriate courses offered by other departments.

The minimum program of study consists of at least nine graduate and upper division courses (36 units) completed while in graduate status. At least six of those courses (24 units) must be 200-series.

Generally students in this program are expected to attain, either through previous training or through prescribed coursework, a common mastery of the subject matter in EPSS C206 Physical Geochemistry, EPSS C207 Geochemistry, EPSS C209 Isotope Geochemistry, CHEM 110A Physical Chemistry: Chemical

Thermodynamics, CHEM 110B Physical Chemistry: Introduction to Statistical Mechanics and Kinetics, as well as more advanced courses.

In addition to the above requirements, all students are required to enroll each quarter in a Geochemistry seminar (EPSS 235A,B,C Current Research in Geochemistry) or Geology seminar (EPSS 245 A,B,C Current Research in Tectonics) and present at least one lecture in that seminar during each academic year.

### **Teaching Experience**

Not required.

### **Field Experience**

Not required.

### **Comprehensive Examination Plan**

This examination is scheduled by the faculty adviser in consultation with the student and other members of the examining committee. The examining committee consists of the faculty adviser and at least two additional EPSS faculty members. In extraordinary circumstances, a delay or change in committee membership may be granted by petition to the graduate adviser or department chair.

The student prepares two written research proposals on two dissimilar projects approved by the faculty adviser. The proposals must be concise, with a guideline of 4 pages and a maximum of 5 pages, and must be submitted to the examining committee at least 10 days before the examination. The proposals are presented briefly to the examining committee orally, and the committee examines their originality and scientific merit, as well as the student's fundamental knowledge in the program area.

### **Thesis Plan**

*Every master's degree thesis plan requires the completion of an approved thesis that demonstrates the student's ability to perform original, independent research.*

The thesis must be approved by the student's thesis advisor, as well as by the other members of the student's advising committee. If students choose the thesis plan, no examination is required.

### **Time-to-Degree**

From graduate admission to conferral of degree, normal progress is six quarters.

## **Doctoral Degree**

### **Advising**

Incoming students are assigned a faculty adviser by the graduate adviser. Prior to the departmental and university qualifying examinations, the faculty adviser in consultation with the student selects two additional faculty members with appointments in the student's department to complete the student's advising committee.

Departmental Reviews. The Graduate Student Affairs Committee annually reviews students' progress (generally in late May and early June). These reviews become part of students' departmental record and are

transmitted to the students and their faculty advisers in writing. Students whose scholarship or progress is insufficient are subject to dismissal.

### **Major Fields or Subdisciplines**

The program in geochemistry offers study in biogeochemistry, environmental geochemistry, experimental petrology, geobiology, isotopic studies of stable and radioactive elements, marine geochemistry, meteorite research, mineral physics, paleoclimate, and planetary science. Other comparable areas of study are also possible.

### **Foreign Language Requirement**

None.

### **Course Requirements**

Full-time students must enroll in a minimum of 12 units per quarter. The twelve units required per quarter may include, among others, courses in the 500 series (individual study or research).

Each course of study is individually created by the advising committee in consultation with the student. It may include appropriate courses offered by other departments.

The minimum program of study consists of at least nine graduate and upper division courses (36 units) completed while in graduate status. At least six of those courses (24 units) must be 200-series.

Generally students in this program are expected to attain, either through previous training or through prescribed coursework, a common mastery of the subject matter in EPSS C206 Physical Geochemistry, EPSS C207 Geochemistry, EPSS C209 Isotope Geochemistry, CHEM 110A Physical Chemistry: Chemical Thermodynamics, CHEM 110B Physical Chemistry: Introduction to Statistical Mechanics and Kinetics, as well as more advanced courses.

In addition to the above requirements, all students are required to enroll each quarter in a Geochemistry seminar (EPSS 235A,B,C Current Research in Geochemistry) or Geology seminar (EPSS 245 A,B,C Current Research in Tectonics) and present at least one lecture in that seminar during each academic year.

### **Teaching Experience**

Not required.

### **Written and Oral Qualifying Examinations**

*Academic Senate regulations require all doctoral students to complete and pass University written and oral qualifying examinations prior to doctoral advancement to candidacy. Also, under Senate regulations the University oral qualifying examination is open only to the student and appointed members of the doctoral committee. In addition to University requirements, some graduate programs have other pre-candidacy examination requirements. What follows in this section is how students are required to fulfill all of these requirements for this doctoral program.*

*Departmental Written and Oral Qualifying Examination.* This examination must be taken no later than the Spring Quarter of the second year. It is scheduled by the faculty adviser in consultation with the student and other members of the examining committee. The examining committee consists of the faculty adviser

and at least two additional EPSS faculty members. In extraordinary circumstances, a delay or change in committee membership may be granted by petition to the graduate adviser or department chair.

The student prepares two written research proposals on two dissimilar projects approved by the faculty adviser. The proposals must be concise, with a guideline of 4 pages and a maximum of 5 pages, and must be submitted to the examining committee at least 10 days before the examination. One of the proposals should cover a possible dissertation topic. The proposals are presented briefly to the examining committee orally, and the committee examines their originality and scientific merit, as well as the student's fundamental knowledge in the program area.

The possible outcomes of this examination are:

- 1) Pass -- with immediate eligibility to proceed to the University Oral Qualifying Examination.
- 2) No-pass -- with the possibility of reassessment by an agreed upon date on the basis of a specific written list of requirements supplied by the graduate evaluation committee. This option is meant for students with identifiable and presumably correctable weaknesses, but who are otherwise above the passing threshold. The no-pass option can only be used once for any particular student.
- 3) Terminal master's pass -- allowing the student only to finish any outstanding course requirements for the master's degree.
- 4) Fail -- resulting in a recommendation for termination of the student's affiliation with the department.

*University Written and Oral Qualifying Examination.* After passing the departmental qualifying examination, students must consult their faculty adviser and the graduate adviser regarding nomination of the doctoral committee. The doctoral committee consists of a minimum of four faculty members from UCLA, three of whom must hold appointments in the student's department, and one of whom must not hold an appointment in the student's department. In consultation with the doctoral committee, students arrange a time for the oral qualifying examination. At least 10 days before this examination, students must provide each member of the doctoral committee with a written prospectus of their proposed dissertation research, including a summary of research objectives, methodologies, and a timeline for completion. In addition to the proposed research, the committee may examine the student's fundamental knowledge in the discipline. Repetition of a failed examination is at the option of the doctoral committee.

### **Advancement to Candidacy**

Students are advanced to candidacy upon successful completion of the university written and oral qualifying examinations. The Candidate in Philosophy (C.Phil.) degree is awarded for the quarter in which students are advanced to candidacy.

### **Doctoral Dissertation**

Every doctoral degree program requires the completion of an approved dissertation that demonstrates the student's ability to perform original, independent research and constitutes a distinct contribution to knowledge in the principal field of study.

### **Final Oral Examination (Defense of the Dissertation)**

Required for all students in the program, except in exceptional circumstances.

### **Time-to-Degree**

- A. The departmental qualifying examination is normally taken in the second year of residence.
- B. The university qualifying examination is normally taken in the third year and no later than the fourth year of residence.
- C. The dissertation and final oral examination is normally taken no later than the sixth year of residence.

### **Termination of Graduate Study and Appeal of Termination**

#### ***University Policy***

A student who fails to meet the above requirements may be recommended for termination of graduate study. A graduate student may be disqualified from continuing in the graduate program for a variety of reasons. The most common is failure to maintain the minimum cumulative grade point average (3.00) required by the Academic Senate to remain in good standing (some programs require a higher grade point average). Other examples include failure of examinations, lack of timely progress toward the degree and poor performance in core courses. Probationary students (those with cumulative grade point averages below 3.00) are subject to immediate dismissal upon the recommendation of their department. University guidelines governing termination of graduate students, including the appeal procedure, are outlined in *Standards and Procedures for Graduate Study at UCLA*.

#### ***Special Departmental or Program Policy***

In addition to the standard reasons outlined above, a student may be recommended for termination who fails to meet requirements regarding course scheduling and deadlines for completion of examinations or the degree as agreed upon between the student and the Graduate Affairs Committee or the student's advising committee. A student may appeal a recommendation for termination through a letter to the graduate adviser or the departmental chair.