

# Geological Sciences

In the College of Sciences

**OFFICE: Geology/Mathematics/Computer Science 237**

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## Faculty

Emeritus: Abbott, Berry, Bertine, Dorman, Gastil, Huntley, Jiracek, Kern, Krummenacher, Marshall, McEuen, Miller, Ptacek, Roberts, Threet, Walawender, Wallace

Chair: Girty

The Rollin and Caroline Eckis Chair in Seismology: Day

Professors: Day, Girty, Kimbrough, Peterson, Rockwell

Associate Professors: Frost, Leighton, Olsen, Thorbjarnarson

Assistant Professors: Morrow, Pietruszka, Schellenberg

Lecturers: Camp, DeYoung, Robinson, SacramentoGrilo

## Offered by the Department

Master of Science degree in geological sciences.

Major in geological sciences with the B.S. degree in applied arts and sciences.

Emphasis in general geology.

Emphasis in engineering geology.

Emphasis in geochemistry.

Emphasis in geophysics.

Emphasis in hydrogeology.

Emphasis in marine geology.

Emphasis in paleontology.

Minor in geological sciences.

Minor in oceanography.

## The Rollin and Caroline Eckis Chair in Seismology

A gift from Rollin and Caroline Eckis, combined with matching funds from the Atlantic Richfield Company and contributions from SDSU faculty and staff, established The Rollin and Caroline Eckis Chair in Seismology at SDSU. The late Rollin Eckis was former president of Richfield Oil Company and vice chairman of the board of Atlantic Richfield Company.

The first appointee to the chair, Dr. Steven M. Day, conducts research on the mechanics of earthquakes and earthquake hazards.

## The Major

Geology is the study of the earth, its composition, its history, and its constantly changing character.

Geologists study the origin and evolution of our planet; the chemical and physical properties of minerals, rocks, and fuels; the structure of our mobile crust – its newly forming ocean floors and its ancient, drifting continents; the history of life; and human adaptation to earthquakes, volcanic eruptions, landslides, and floods. The subject matter of geology ranges from dinosaurs to the prediction of earthquakes.

Students who are curious about the planet on which we live, challenged by problems which involve the earth, and intrigued by the potential of a subject which combines both the arts and sciences, should consider geological sciences as a major.

The employment outlook is favorable, particularly with engineering, hydrogeology, toxic waste disposal firms, energy companies, and as school teachers.

A geology graduate may be employed as one of the following professionals: hydrologist, geophysicist, geochemist, environmental scientist, oceanographer, teacher, research technician, geological surveyor, paleontologist, energy and resource explorer, and resource planner.

Geologists are primarily employed by private corporations, including petroleum, mining, construction, quarry, hydrology, and engineering geology companies and by government agencies, such as the U.S. Geological Survey, the U.S. Bureau of Reclamation, the California Department of Conservation, and regional planning offices. Students with graduate degrees are sought for teaching positions in secondary schools, community colleges, and universities.

## Major Academic Plans (MAPs)

Visit <http://www.sdsu.edu/mymap> for the recommended courses needed to fulfill your major requirements. The MAPs Web site was created to help students navigate the course requirements for their majors and to identify which General Education course will also fulfill a major preparation course requirement.

## Geological Sciences Major

**With the B.S. Degree in Applied Arts and Sciences (Major Code: 19141)**

All candidates for a degree in applied arts and sciences must complete the graduation requirements listed in the section of this catalog on "Graduation Requirements." All required upper division courses must be taken for letter grades only, not credit/no credit.

Courses to satisfy the requirement of 36 or more upper division units in the major may be selected from upper division geological sciences courses not explicitly excluded. Students may petition the department to include courses from other disciplines to complete the upper division major requirement.

A minor is not required with this major.

### Emphasis in General Geology

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 205, 221; Biology 100, 100L; Chemistry 200, 201; Mathematics 150, 151; Physics 195, 195L, 196, 196L. (45 units)

**Recommended:** Physics 197, 197L; Mathematics 252.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 38-40 upper division units in approved courses to include Geological Sciences 300, 306, 307, 324, 498A, 498B, 508, 530, 536, 537; plus six additional upper division units from geological sciences (upper division courses from outside department by approval).

### Emphasis in Engineering Geology

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 205, 221; Biology 100; Chemistry 200, 201; Engineering Mechanics 200; Mathematics 150, 151, 252; Physics 195, 196, 197; Statistics 250. (55 units)

**Recommended:** Civil Engineering 218; Physics 195L, 196L, 197L.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 38 upper division units in approved courses to include Geological Sciences 300, 306, 307, 324, 498B, 508, 536, 551; Civil Engineering 301, 462, 463; one of the following: Geological Sciences 505, 514, 530, 560, or Civil Engineering 465.

**Emphasis in Geochemistry**

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 221; Biology 100 or 101; Chemistry 200, 201, 231, 251; Mathematics 150, 151, 252; Physics 195, 195L, 196, 196L, 197, 197L; Statistics 250. (60 units)

**Recommended:** Geological Sciences 205, 307; Chemistry 431.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 36 upper division units in approved courses to include Geological Sciences 300, 306, 324, 498B, 501, 530, 536, 551; Chemistry 410A-410B, 571.

**Emphasis in Geophysics**

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 221; Biology 100 or 101; Chemistry 200, 201; Mathematics 150, 151, and 252; Physics 195, 195L, 196, 196L, 197. Engineering 280 must be taken if students select Engineering 510 in the major. (47 units)

**Recommended:** Geological Sciences 205, Physics 197L, Statistics 250.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 40-43 upper division units in approved courses to include Geological Sciences 300, 306, 307, 324, 498B, 533, and 560; Mathematics 342A and 342B, or Engineering 510; Physics 311, 350; Physics 400A or Electrical Engineering 340; plus three upper division units of approved courses in geological sciences at the 500 level.

**Emphasis in Hydrogeology**

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 205, 221; Biology 100; Chemistry 200, 201; Mathematics 150, 151; Physics 195, 196, 197; Mathematics 252 or Chemistry 231; Statistics 250. (52 units)

**Recommended:** Physics 195L, 196L, 197L.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 36 upper division units in approved courses to include Geological Sciences 300, 306, 324, 498B, 514, 530, 536, 551; Mathematics 342A-342B, or Chemistry 571; plus four to seven upper division units of departmentally approved courses.

**Emphasis in Marine Geology**

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 205, 221; Biology 100 or 101; Chemistry 200, 201; Mathematics 150, 151, 252; Physics 195, 195L, 196, 196L, 197, 197L. (52 units)

**Recommended:** Geological Sciences 537. A foreign language.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 40 upper division units in approved courses to include Geological Sciences 300, 306, 307, 324, 498B, 530, 536, 540, 545, and two of the following courses: Geological Sciences 501, 508, 537, Biology 517; plus four upper division units of departmentally approved courses. Recommended: Chemistry 410A-410B for students anticipating postgraduate studies.

**Emphasis in Paleontology**

**Preparation for the Major.** Oceanography 100, or Geological Sciences 100 and 101, or Geological Sciences 104 and 101; Geological Sciences 200, 205, 221; Biology 201A, 201B, 215; Chemistry 200, 201; Mathematics 150 or 121 and 122 (alternative of 121 and 122 should not be selected by students planning academic work beyond the B.S. degree); Physics 180A-180B and 182A-182B. (48-50 units)

**Recommended:** Geological Sciences 307.

**Graduation Writing Assessment Requirement.** Passing the Writing Proficiency Assessment with a score of 10 or above or completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better. See "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 38 upper division units in approved courses to include Geological Sciences 300, 306, 324, 498A, 498B, 501, 508, 536, 537; Biology 352, 354; plus four upper division units of departmentally approved courses.

**Geological Sciences Minor**

The minor in geological sciences consists of a minimum of 20 units in geological sciences, 12 of which must be in upper division courses. Courses include Oceanography 100 or Geological Sciences 100 and 101, 205; and 12 units selected from Geological Sciences 301, 302, 303, 304, 305, 306, 307, 324, 502, 505, 514, 536, 537; Oceanography 320. In addition, Geological Sciences 200 and 221 are appropriate for geology minors.

Courses in the minor may not be counted toward the major, but may be used to satisfy preparation for the major and general education requirements, if applicable. A minimum of six upper division units must be completed in residence at San Diego State University.

**Oceanography Minor**

For a listing of requirements refer to the section of this catalog on Oceanography.

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