



## Master of Science Degree in Geology at Cal Poly Pomona

**\*\*We invite applications for admission to Spring semester 2020, or Fall semester 2020. Application deadlines are November 1, 2019, and June 1, 2020, respectively. Early application is encouraged for priority consideration.\*\***

### **How to Apply**

- Apply online through [www.CalState.edu/Apply](http://www.CalState.edu/Apply) You may indicate in the appropriate boxes that the statement of interest and letters of reference are being mailed directly to the Geology Graduate Coordinator
- **For prompt feedback, also send** electronic files (or hard copies) of your application and supporting materials to:  
Jonathan Nourse, Graduate Coordinator; [janourse@cpp.edu](mailto:janourse@cpp.edu)  
Department of Geological Sciences  
3801 W. Temple Avenue  
California State Polytechnic University  
Pomona, CA 91768

### **The Program**

Our Master's program in Geology prepares graduates for employment in all fields of Geological Science, placement into prestigious PhD programs, and teaching at secondary and community college levels. We emphasize applied skills demanded by potential employers and academic institutions. Fundamental to the program is a thorough understanding of basic geologic principles rooted in field and laboratory experiences. The geologic framework provided by the MS degree enables graduates to meet the intellectual challenges of their professional or academic careers and assume leadership roles in their profession. Our program enables students to apply Geoscience principles to the solution of hydrologic, geophysical, environmental, geo-engineering, or resource extraction problems facing society. As a polytechnic university we are dedicated to a "Learn by Doing" philosophy and emphasize practical interactions between students, faculty and industry/government professionals.

The Geology Department is a member of IRIS (Incorporated Research Institutions for Seismology <http://www.iris.edu/hq/>), and is involved in the California State University Water Resources and Policy Initiative <http://www.calstate.edu/water/>. Faculty research endeavors are supported by grants from such agencies as National Science Foundation, USGS National

Earthquake Hazards Reduction Program, Southern California Earthquake Center, Department of Education, and JPL/ Caltech. The Department maintains a robust alumni network, including many individuals working in local geosciences industries and government agencies.

## **Admissions Requirements**

- ***Unconditional Admission*** into the Geology Master's program is contingent upon the following:
  - (1) A Bachelor's degree in Geology or a closely related discipline (e.g., Geotechnical Engineering, Hydrology, Geophysics, Earth Science, Environmental Science) from an accredited institution, with a minimum grade-point average of 3.0 in Geoscience courses, and a 2.5 grade-point-average in related science and mathematics courses;
  - (2) Satisfactory performance on the Graduate Record Examination Aptitude Test with an expected score in the 50th percentile or better on the verbal and quantitative components;
  - (3) Two letters of recommendation;
  - (4) A one-page personal statement of interest, including research and career aspirations;
  - (5) A minimum of 36 quarter units or 24 semester units of undergraduate coursework in Geoscience-related disciplines (see Item #1 above).
  - (6) Availability of faculty and resources in the student's stated area of interest.
- ***Conditional Admission***—Every applicant will be carefully considered.

Applicants not meeting the above requirements may be conditionally admitted following review of the student's academic background by the Graduate Program Committee. Such students must meet deficiency requirements stipulated in the statement of conditional admission within a specified time limit. Each such applicant, with an advisory committee, will design a program in the selected area of specialization based upon interests and preparation. The program will include required courses, elective units and a thesis.

## **Degree Requirements**

The Master's degree program must include a minimum of 30 semester units; at least 21 units must be in 5000-6000 level courses (see curriculum outlined below).

- No more than 9 semester units of graduate credit may be transferred from another institution or petitioned by a Cal Poly Pomona undergraduate student.
- A grade point average of 3.0 (B) or better must be maintained in all upper division undergraduate and graduate classes.
- The Graduation Writing Test (GWT) must be passed.
- An acceptable thesis must be completed and submitted in accordance with Department and University regulations.
- An oral thesis defense must be successfully completed.

## **The Curriculum:**

To earn a Master's degree in Geology, students must complete 30 semester units as specified below. Click the following links for additional details on course offerings:

[Graduate Course Descriptions and Learning Outcomes](#)

[Graduate Course Offerings \(2012-2022\)](#)

To accommodate working professionals, we schedule several courses in early morning, afternoon, and evening, with many laboratories and field trips offered on weekends.

- *Required Graduate Core Courses (6 units):*

GSC 4100 Presentation, Writing, and Research Skills in the Geosciences (2)

GSC 5010 Advanced Topics in Geosciences (2)

GSC 5030L Field Investigations (1)

GSC 6930 Master's Thesis Proposal (1)

- *Required Thesis Courses (Culminating Experience--5 units):*

GSC 6940 Master's Thesis Research (3)

GSC 6960 Masters Degree Thesis (2)

- *Technical Elective Courses (19 units; at least 12 units must be 5000 level):*

GSC 4010/L GIS Applications for Earth and Environmental Scientists (1/2)

GSC 4150/L Engineering Geology II (2/1)

GSC 4230/L Sedimentary Geology (2/1)

GSC 4240/L Igneous and Metamorphic Petrology (2/1)

GSC 4320/L Soil Physics (2/1)

GSC 4340/L Shallow Subsurface Geophysics (2/1)

GSC 4400/L Exploration and Mining Geology (2/1)

GSC 4440/L Geotectonics (2/1)

GSC 4500/L Introduction to Seismology, Earthquakes and Earth Structure (2/1)

GSC 4700/L Volcanology (2/1)

GSC 4910 L Field Module (1 or 2)

GSC 4950 Planetary Geology (3)

GSC 4990/L/A Special Topics for Upper Division Students (1-3)

GSC 5330/L Advanced Topics in Structural Geology / Tectonics (2/1)

GSC 5340/L Quaternary Geology (2/1)

GSC 5450/L Advanced Hydrogeology (2/1)

GSC 5510/L Petroleum Geology (2/1)

GSC 5640/L Advanced Shallow Subsurface Geophysics(2/1)

GSC 5680/L Topics in Advanced Seismology (2/1)

GSC 5850/L Isotope Geochemistry (2/1)

GSC 5950/L Advanced Topics in Sedimentology / Stratigraphy (2/1)

GSC 5990/L/A Special Topics for Graduate Students (1-4)

## **The Master's Thesis**

*A formal written Master's Thesis, with an Oral Defense to the Graduate Thesis Committee, is the Culminating Experience required of all graduates:*

- Each Master's candidate works closely with a faculty adviser to develop a *Master's Thesis Proposal* (GSC 6930—1 unit) that is presented to student peers and graduate faculty during the second term of residence. A wide variety of research endeavors may be appropriate, ranging from classical research to scientific extensions of industry-related work efforts. An ideal thesis plan will be custom-tailored to the student's professional interests.
- Each student conducts independent *Master's Thesis Research* (GSC 6940—3 units) custom-tailored to the objectives outlined in the Thesis Proposal.
- The *Master's Thesis* (GSC 6960—2 units) is a formal written document describing completed research. It identifies the problem, states the major assumptions, explains the significance of the undertaking, sets forth the sources for and methods of gathering information, presents and analyzes the data, and offers a conclusion or recommendation. The finished product evidences originality, critical and independent thinking, appropriate organization and format, and thorough documentation. An oral defense of the thesis is required.

## **Our Target Audience / Career Opportunities**

A Master's degree in Geology greatly enhances the job opportunities and career advancement for Earth scientists with BS degrees. We target both working professionals and traditional graduate students (i.e., those finishing BS degrees and perhaps seeking preparation for a PhD program). Through hands-on learning methods, faculty-mentored research, and exposure to current technology, our students acquire skills applicable to careers in the Geosciences and related disciplines. The Department's programs provide a global perspective for problem solving, decision making and leadership roles in a changing world. Our graduates commonly land jobs in the geotechnical, hydrogeology, and resource development industries; Others enter career paths in natural hazards investigation and mitigation.

Please refer to our Careers web page for some examples of Geoscience jobs:

<http://www.cpp.edu/~sci/geological-sciences/students/careers.shtml>

## **Our Faculty**

- **Jonathan Nourse**, Professor, Chair, and Graduate Coordinator

PhD, Caltech, 1989

Specialties: Structural Geology, Tectonics, Mineral Exploration, Engineering Geology, GIS Applications, Hydrogeology

Home Page: <http://geology.cpp.edu/janourse/default.htm>

- **Jeffrey Marshall**, Professor  
PhD, Penn State University, 2000  
Specialties: Geomorphology, Neotectonics , Geologic Hazards, Watershed Restoration, Coastal Geology  
Home Page: <http://www.cpp.edu/~marshall/index.htm>
- **Jascha Polet**, Professor  
PhD, Caltech, 1999  
Specialties: Seismology, Geophysics, Hazards Assessment, Tsunami  
Home Page: [http://geology.cpp.edu/jpolet/Jascha Polet at Cal Poly Pomona/Home.html](http://geology.cpp.edu/jpolet/Jascha_Polet_at_Cal_Poly_Pomona/Home.html)
- **Stephen Osborn**, Professor  
PhD, University of Arizona, 2010  
Specialties: Hydrogeology, Aqueous Geochemistry, Groundwater Remediation, Energy and Environment  
Home Page: <https://www.watermudgeek.com/>
- **Nicholas Van Buer**, Assistant Professor  
PhD, Stanford University, 2012  
Specialties: Igneous and Metamorphic Petrology, Geochronology, GIS Applications, Tectonics, Field Geology  
Home Page: <http://www.cpp.edu/~njvanbuer>
- **Bryan Murray**, Assistant Professor  
PhD, UC Santa Barbara, 2013  
Specialties: Sedimentary Geology, Volcanology, Extensional Basin Analysis, Earth History; Field Geology  
Home Page: <http://geologistbryan.weebly.com/>

## **Our Location**

We are situated in a unique geologic and urban environment that provides a dramatic natural laboratory in which to conduct geoscience research. Frequent occurrence of earthquakes, landslides, storms, floods, wildfires, and human-induced environmental mishaps in the densely populated region surrounding Cal Poly Pomona present significant challenges that require rapid response and evaluation. All Geological Sciences faculty play an important role in community issues like natural hazards mitigation, site investigation, resource management, and public outreach or education. Many of our graduates are placed locally as scientists in geotechnical firms or as teachers in primary or secondary schools. Hence, the Geological Sciences Department and its programs have great value and relevance to the University and the community.