Masters of Science in Geosciences

The Master of Science in Geosciences is an advanced, postgraduate degree that trains students to conduct research in Earth sciences and prepares students for careers in private industry, government agencies, non-governmental organizations (NGOs), teaching in high schools or community colleges, or for continuing postgraduate studies leading to a doctoral degree at another university. Although there are no formal concentrations within the program, students choose an area of research from within the geoscience disciplines and then select a faculty advisor and a course of study.

The Department of Earth & Climate Sciences faculty includes people with expertise in geology, hydrology, meteorology, and oceanography—fields that are critical to understanding fundamental Earth processes and many environmental problems, such as air and water contamination, coastal erosion, and climate change. In addition to standard courses in the three subdisciplines, recent advanced-level courses have included Tectonic Geomorphology, Global Tectonics, Rock Mechanics in Geomorphology, Paleoceanography, Vadose Zone Hydrogeology, Oceanographic Processes in the California Current System, and Electron Microscopy.

All students take courses in their respective areas of emphasis plus a common core of three courses: ERTH 700, a multidisciplinary seminar that exposes students to current geoscientific research and literature, and ERTH 701 and ERTH 702, which prepare students for thesis research, quantitative analyses and scientific writing. Thesis projects are expected to have a rigorous base in a geoscience discipline. Depending on the particular field and focus of study, these projects can involve laboratory research, field work, theory development, numerical simulations or model development.

Recent graduate research projects have focused on topics such as active faults in Death Valley, effects of climate change on regional aquifers, geomorphic controls on Bay Area streams, deformation associated with the San Andreas fault system, Pliocene–Pleistocene climate change, large-scale tectonic processes in the Himalayan Mountains, carbon cycling in the ocean, wave erosion at Ocean Beach, and characteristics of severe storms in California. We encourage students to work on interdisciplinary projects and develop interactions and collaborations with other departments in the University, other institutions and agencies, and private industry.

We strongly recommend that students plan a course of study before beginning the M.S. program, in consultation with a faculty advisor and the graduate coordinator.

Admission to the Program

To be considered for admission to the master's program as a classified graduate student, applicants must:

- Satisfy the University admission requirements.
- Have a bachelor's degree in one of the geosciences (geology, meteorology, or oceanography) or a related discipline.
- Have a 3.0 GPA in their earned undergraduate degree or last 60 semester (90 quarter) units completed.
- Satisfactorily complete the Graduate Record Examination general test.
- Provide letters of recommendation from at least two people familiar with the applicant's previous academic work and/or professional accomplishments.
- Submit a statement of purpose.

Letters of recommendation and statement of purpose should be submitted directly to the department's graduate coordinator (Dr. Petra Dekens, dekens@sfsu.edu). Other materials should be submitted to the Graduate Studies Division of the University. Materials should be submitted by February 15 for admission the following fall semester and by November 1 for the following spring semester.

Applicants lacking the appropriate background may be admitted as conditionally classified graduate students. These students must complete additional coursework that will not be counted toward the graduate requirements. Conditionally admitted students may take courses but cannot file an Advancement to Candidacy (ATC) form until all deficiencies have been satisfied.

Written English Proficiency Requirement

Each graduate student is required to demonstrate an acceptable level of written English proficiency on two levels:

Level One
Satisfied by obtaining a score of 4.0 or better on the analytical writing component of the GRE. If the score is 3.5 or less students will be required to take SCI 614 during their first semester of graduate studies.

Level Two
Satisfied by completion of a written thesis (ERTH 898).

Advancement to Candidacy

To be advanced to candidacy, each student must:

- Satisfy level one of the written English proficiency requirement.
- Satisfy all course deficiencies stipulated upon entrance into the master's program.
- Choose a faculty advisor and complete a research proposal that has been approved by the student's thesis committee.
- File an Advancement to Candidacy (ATC) form.

Geosciences (M.S.) – Minimum 30 units

Required Courses (17 units)

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>ERTH 700</td>
<td>Graduate Seminar in Geosciences</td>
<td>2</td>
</tr>
<tr>
<td>ERTH 701</td>
<td>Research Methods in Geosciences</td>
<td>3</td>
</tr>
<tr>
<td>ERTH 702</td>
<td>Quantitative Methods in Geosciences</td>
<td>3</td>
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<tr>
<td>ERTH 897</td>
<td>Research Project</td>
<td>6</td>
</tr>
<tr>
<td>ERTH 898</td>
<td>Master's Thesis</td>
<td>3</td>
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Elective Courses (13 units)

Upper division or graduate elective courses on advisement.

All students must present an oral thesis defense to the Earth & Climate Sciences faculty and students.

Elective units are chosen from courses offered by the Department or other University departments, and must be selected by students in consultation with their faculty advisors. At least 6 units must be courses numbered 700 or higher, and 6 units must be courses offered in the Earth & Climate Sciences Department.
To help prepare for their careers, graduate students are strongly encouraged to serve as a Graduate Teaching Assistant (GTA) for at least one semester. GTAs typically teach lab sections attached to lectures in introductory, general education courses in geology (ERTH 112, ERTH 210, ERTH 230), meteorology (ERTH 162), and oceanography (ERTH 172). To support their professional development in teaching, GTAs are strongly encouraged to enroll in a professional development course such as SCI 750 (2 units) before or during their service as a GTA, to learn about research-based best practices in teaching and learning. (These courses count toward the 13-unit graduate elective unit requirement.)

Students can receive their graduate degree when they complete all course requirements and their thesis committee approves the written thesis and oral thesis defense.