# Department of Geology Graduate Procedures and Policies
# Master of Science in Natural and Applied Sciences with Geology Concentration

## ADMISSION REQUIREMENTS

Admission to the Master of Science in Natural and Applied Sciences (MSNAS) with a concentration in geology at Stephen F. Austin State University is competitive and dependent on availability of Department of Geology resources at the time of student application. In order for a prospective student to receive clear admission to the MSNAS with geology concentration in Department of Geology graduate program, they must meet the following requirements:

1. Minimum undergraduate grade point average of a 2.8 on a 4.0 scale.
2. Successful completion of the following classes:
    a. Physical Geology (GEOL 1303)
    b. Historical Geology (GEOL 1304)
    c. Mineralogy (GEOL 2341)
3. Successful completion of any four (4) of the courses listed below:
    a. Igneous and Metamorphic Petrology (GEOL 2342)
    b. Sedimentary Petrology (GEOL 2343)
    c. Stratigraphy (GEOL 4308)
    d. Structural Geology (GEOL 3338)
    e. Geochemistry (GEOL 4320)
    f. Geophysics (GEOL 4335)
    g. Hydrogeology (GEOL 4349)
4. Successful completion of the following additional courses:
    a. General Chemistry II (CHEM 1312)
    b. Calculus I (MATH 2413)
    c. Introduction to Probability and Statistics (MATH 1342)

If the applicant does not meet all of the above requirements, the applicant may be given probationary, provisional, or post-baccalaureate admission (see SFASU Graduate Bulletin for details) and may be required to take courses needed to fulfil requirements for admission into the Department of Geology graduate program. An applicant may be denied admission to the program because of weaknesses in their geologic background or availability of department resources.

## GRADUATE ASSISTANTSHIPS

Graduate teaching and research assistantships will be awarded each semester as available on a competitive basis. Graduate students admitted in good standing (i.e. students not on probation or provisional status) may apply for teaching and research assistantships. The following criteria will be considered for assistantships:

1. Graduate School Application
2. Undergraduate grade point average
3. Graduate grade point average
4. Three letters of recommendation
5. Personal letter of application
6. Effective oral and written communication skills

Fulfillment of graduate teaching and research assistantships require 20 hours/week of work. Teaching assistantship (TA) duties may include, but are not limited to, teaching undergraduate labs, assisting departmental field trips, maintaining regular office hours, and assisting in general departmental duties. Research assistantship (RA) duties will be assigned in accordance with objectives of the associated research project by the relevant graduate advisor—it is expected

that a student will spend more time on research than the hours of your RA contract because your research contributes to both your academic progress and your job responsibilities. Teaching and research assistantships are subject to performance evaluation. Unsatisfactory performance by teaching and research assistants can result in employment termination at any time. Continuation of an assistantship will be assessed at the end of each long semester of employment. Graduate assistantships, once offered, are limited to four long semesters if acceptable employee performance is maintained.

**Operation of University Vehicles**

Teaching and research assistants with a Driver License issued within the United States are required to obtain a valid Texas Driver License within 90 days of employment at SFASU and subsequent University Driving Certification. Graduate students that do not obtain a valid Texas Driver License within the first semester of employment are not eligible to have their assistantships renewed for a second semester. University Driving Certification will be scheduled through the departmental administrative assistant after a Texas Driver License has been obtained.

Graduate students cannot operate any university vehicles for any reason without a valid Texas Driver License and University Driving Certification as per regulation of State of Texas regarding state property. Any individual riding in a university vehicle must be a student or university employee of SFASU.

**GENERAL GRADUATE STUDENT REQUIREMENTS**

**Graduate Geology Exams**

Incoming graduate students are required to complete a Graduate Geology Entrance Exam during the first month enrolled within the Geology graduate program. This exam will test the breadth of their knowledge across a spectrum of geoscience topics and help determine any areas of weakness in order to properly advise students.

Graduate students are required to complete a Graduate Geology Exit Exam in the fourth long semester of their graduate studies. This exam will assess graduate learning and development of geoscience skills as a graduate student and should show improvement from the Graduate Geology Entrance Exam completed in their first semester. The Graduate Geology Entrance and Exit exams are written by Department of Geology faculty and may be rewritten or modified by the faculty at any time.

Graduate Geology Entrance and Exit exams will cover the following topic areas:

1. Economic Geology
2. Geophysics
3. Geochemistry
4. Hydrogeology
5. Mineralogy and Petrology
6. Physical Geology
7. Stratigraphy and Sedimentology
8. Structural Geology

Students will be informed electronically of their performance on exams.

**Geoscience Research Seminar**

All graduate students are required to attend Geoscience Research Seminar, a series of faculty-led discussion forums, in their first long semester as a graduate student in the Department of Geology. All graduate students will also be enrolled in the accompanying non-credit

Brightspace (D2L) course. Geoscience Research Seminar discussion forums may be presented either entirely online (Brightspace) or in face-to-face formats.
Geoscience Research Seminar is designed to prepare students for success throughout their graduate studies. Students that do not attend at least 80% of the seminars will not be eligible to receive Department of Geology funds for graduate research expenses nor Department of Geology issued scholarships. If a graduate student does not attend at least 80% of the seminars in their first semester, they are required to repeat Geoscience Research Seminar the following long semester.

Specific topics included in Geoscience Research Seminar include:

1. Overview of Department of Geology Graduate Policies and Procedures;
2. Time and resource management;
3. Components of a thesis proposal / non-thesis scope of study;
4. Defining the objectives and scope of graduate research;
5. Online and library resources;
6. Sources of funding and research budgets;
7. Geoscience research ethics;
8. Graphics and data presentation in geoscience;
9. Abstracts, conferences and dissemination of research; and
10. Panel discussion on graduate research

Supplemental information will be posted by Department of Geology Faculty to the Brightspace Geoscience Research Seminar site, including, but not limited to:

1. Online materials relevant to Geoscience Research Seminar content;
2. Examples of Thesis Proposals, Non-Thesis Scopes of Study, Theses, and Non-thesis Technical Reports;
3. Graduate guidelines and scheduling deadlines; and
4. Grant funding opportunities.

**Geology Colloquium Presentation**

All graduate students in the Department of Geology are required to present their research as part of the Department of Geology Colloquium to the faculty and students of SFASU. The graduate seminar presentation will include an oral presentation with associated visual content that details the graduate research of the student. At a minimum, the seminar presentation will include an overview of the graduate research topic and a current status of research findings.

Presentations will be conducted in either the 4$^{th}$ long semester the student is enrolled. Presentation content and scheduling are the responsibility of the student in consultation with their graduate research advisor. Presentations will be announced through digital media and posted within the Department of Geology at least two weeks in advance of the scheduled graduate seminar presentation.

**Graduate Geology Activities**

Graduate students in the Department of Geology are expected to be actively involved in departmental activities. All graduate students are specifically required to:

1. Attend Department of Geology graduate thesis defenses;
2. Attend Department of Geology colloquia and professional presentations;
3. Participate in special programs offered by the Department of Geology as requested by faculty of the Department of Geology (e.g., Earth Science Week); and
4. Participate in Department of Geology outreach and recruitment programs (e.g., STEM Day, Showcase Saturday)

**MSNAS WITH CONCENTRATION IN GEOLOGY PROGRAM**

Students wishing to pursue a Master of Science in Natural and Applied Sciences (MSNAS) with a concentration in geology are required to complete 36 semester hours of graduate coursework with 18 hours in geology and a minimum of 9 hours in a single complimentary field of study. Complimentary fields of study include Biology, Chemistry, Environmental Science, Mathematics, Physics, and Spatial Science. Other complimentary fields of study may be considered with a maximum of 6 semester credits external to the College of Science and Mathematics. The degree is tailored to meet academic and career goals of individual students.

Graduate research opportunities are offered in geoscience disciplines within which graduate faculty within the Department of Geology conduct research. If students wish to pursue a graduate minor or minors, they may select courses from other departments following the guidelines established elsewhere in the SFASU Graduate Bulletin. Graduate students are required to establish a graduate research advisor from the Department of Geology who has geoscience research interests that overlap those of the student and is available for graduate student. The research advisor will mentor each graduate student through their graduate studies. In consultation with the graduate research advisor, students will form a graduate committee to provide recommendations and guidance during the student's graduate studies and research.

Graduate students who pursue a MSNAS with concentration in geology are required to have a non-thesis project committee composed of a graduate project advisor and at least two additional committee members from the Department of Geology. The student will complete a project and associated coursework based on recommendations of the project advisor and committee. The student is required to successfully complete an oral examination in their final semester of scheduled coursework to demonstrate mastery of geologic concepts.

In order for a graduate student to complete the degree within two years, the student is expected to successfully complete the following:

1. 1st Long Semester
    a. 9 hours of graduate coursework;
    b. Department of Geology Graduate Entrance Exam;
    c. Establish a graduate project advisor; and
    d. Identify a graduate project.
2. 2nd Long Semester
    a. 9 hours of graduate coursework;
    b. Form graduate project committee;
    c. Conduct a scope of study meeting with committee members; and
    d. Submit a committee-approved project scope of study.
3. Summer Session between long semesters
    a. 3 hours of graduate coursework.
4. 3rd Long Semester
    a. 9 hours of graduate coursework; and
    b. Collect and process data for research project.
5. 4th Long Semester
    a. 6 hours of graduate coursework;
    b. Department of Geology Graduate Exit Exam;
    c. Present research findings in the Department of Geology Colloquium;
    d. Conduct a technical report review meeting with committee members;

e. Complete and submit a committee-approved, technical report to the Department of Geology; and
f. Pass an oral examination based on coursework completed during graduate studies.

Under limited, extenuating circumstances (e.g. death, extended hospitalization, retirement, etc.), a graduate student may change their research advisor or any committee member after the project scope of study has been submitted to the Department of Geology (see Project Scope of Study section below).

**Project Scope of Study**

Graduate students are required to write a project scope of study that is approved by the graduate project advisor and committee. At a minimum, a project scope of study should include the following components:

1. Identification of objective, goal and/or hypothesis for the proposed project;
2. Description of project area, location, and/or boundaries (physical or theoretical) of proposed project;
3. Appropriate methodology for achieving proposed project;
4. Budget analysis of expected cost to complete proposed project; and
5. Timeline leading to successful completion of project.

Graduate students are expected to select a project advisor and associated project topic by the end of their first long semester that the student is at SFASU. Students are expected to complete a project scope of study and form a project committee by the end of their second long semester at SFASU. Students will present their project scope of study to their committee for review prior to committee approval in order to ensure that proposed project can be economically completed in a timely manner.

The committee-approved scope of study will be submitted to the Department of Geology, which officially forms the project committee. The scope of study must be approved by the project committee prior to beginning project research.

If a student changes their project topic after they have filed a scope of study with the Department of Geology, the graduate student must dissolve their original project committee, form a new project committee and submit a new scope of study that reflects the new research.

**Technical Report**

The student will complete a professional technical report of their project findings. A geoscience technical report is a document that provides data and limited analyses of geoscience phenomena under investigation generally as part of preliminary or limited research. Technical reports may include general conclusions of research findings but more often provide recommendations for future studies. Unlike a thesis manuscript, technical reports do not provide a detailed synthesis of data, nor do they provide substantive conclusions to explain the occurrence of geologic phenomena.

Technical reports vary significantly in format and content based on research discipline as well as the professional audience for which a report is intended. At a minimum, technical reports identify the goal or objective of the study, provide data collected in the study, and discuss the data accuracy limits with regard to sources and methodologies employed. Technical reports are internal documents primarily constructed for sponsors of research projects, not manuscripts prepared for public dissemination. As a graduate student, your technical report will be prepared for your research sponsor, the Department of Geology.

The technical report will be supervised by the project advisor and reviewed by the project committee. The project committee will provide guidance and recommendations for

improvement of the technical report to ensure that the manuscript is professionally prepared and accurate.

In the long semester during which the student plans to graduate, the student must:

1. Submit an advisor-approved draft of the technical report to all project committee members no later than the 6th academic week of a long semester;
2. Present a public seminar of research project as part of the Department of Geology Colloquium no later than the 8th academic week of a long semester;
3. Conduct a project committee meeting to assess the technical report no later than the 8th academic week of a long semester; and
4. Submit a committee-approved technical report to the Department of Geology no later than the 10th academic week of a long semester.

Students will be required to revise their technical report based on committee recommendations; revised manuscripts will be submitted for additional committee review. The technical report will be considered acceptable when a majority of the project committee approves the manuscript as a professionally prepared document that demonstrates mastery of written communication in geoscience. A final, committee-approved technical report will be submitted to the Department of Geology prior to scheduling a non-thesis oral examination.

**Oral Examination**

During the final semester of scheduled coursework, the student will be administered an oral exam. The oral exam cannot be scheduled prior to submission of a committee-approved technical report to the Department of Geology. The oral exam must be scheduled no later than the 13th academic week of a long semester.

An oral exam committee will consist of the project advisor and three additional geology faculty assigned by Department of Geology based on coursework completed by the student. The oral examination will evaluate higher-level critical thinking skills and in-depth knowledge of geoscience principles in order to demonstrate mastery of geologic concepts. Oral examination topics from individual committee members will focus on specific graduate coursework the student successfully completed throughout their graduate studies. Oral examination questions will be prepared by oral exam committee members prior to the exam—oral questions will not be modified or added to by exam committee members during the oral examination.

If the oral examination is voted acceptable by a majority of the committee members, the student will have demonstrated mastery of geologic concepts.

If the oral examination is voted not acceptable by a majority of the committee members, the student will be allowed to prepare for a second and final oral examination the following long semester. If the student does not meet acceptable standards by demonstrating mastery of geologic concepts in their second attempt, they will not be allowed to continue in the Department of Geology graduate program.

**Completion of Degree Requirements**

Graduate students pursuing a MSNAS with concentration in geology will have fulfilled the requirements of the College of Sciences and Mathematics, the Department of Geology and the SFASU Graduate School when the following tasks have been successfully completed:

1. 36 hours of graduate coursework including at least 18 hours of graduate geology courses;
2. Public presentation of research project in a Department of Geology Colloquium;
3. Technical report that has been approved by the project committee and submitted to the Department of Geology; and

4. Oral examination with approval from a majority of the oral exam committee.

## GRADUATE FACULTY RESPONSIBILITIES

Graduate faculty within the Department of Geology are dedicated to the success of graduate students within the program. As graduate advisors and committee members, faculty have specific responsibilities to students, including advising and research guidance. Students should schedule regular meetings with research advisors and committee members to ensure timely progress towards a graduate degree. Effective communication between the research advisor and committee members is crucial for successful completion of graduate studies.

**Academic Advising**: the research advisor (see below) is responsible for assisting with development of the student's academic program of study and provides primary guidance on coursework applicable to customized degree plans. The graduate research committee should provide additional recommendations of coursework that will facilitate the research project, but ultimately the graduate degree plan is developed through consultation with the graduate research advisor. At a minimum, the student should meet with the research advisor at least once a semester to discuss academic progress. If a student does not have a research advisor prior to the first semester of enrollment within the Department of Geology graduate program, the departmental graduate advisor is responsible for providing academic guidance until the student has established a research advisor.

**Research Advisor**: the research advisor supervises graduate student work and chairs the associated graduate research (thesis or project) committee—the research advisor is the primary mentor throughout graduate studies. The research advisor will assist in developing a research topic, defining the limits and applicable methods for achieving and investigating the research goals, and guiding the research project to completion. The research advisor will provide guidance for presentations, both oral and poster, and is responsible for helping the graduate student develop critical thinking skills as well as professional communication skills, both written and oral. The research advisor is expected to provide reviews of graduate student work within a timely manner during long academic semesters. A normal response time for review of written documents is less than two weeks; however, longer delays may occur during breaks between long semesters, including summer, when the research advisor may have other commitments away from campus, including personal research.

Different research advisors have different approaches to research and associated expectations; therefore, it is imperative that students maintain communication with research advisors throughout graduate studies. Students should maintain an open dialogue with research advisors and clearly understand the expectations a research advisor has for student research responsibilities and progress goals. The student should respond to questions and correspondence from the research advisor in a prompt manner, as faculty are expected to do the same for students. Clear communication with the research advisor and achievement of research and academic expectations are critical for graduate student success.

**Committee Members**: the committee members are responsible for providing guidance and support throughout graduate research and serve as a professional review committee of student communication skills, both written and oral. Committee members are expected to review advisor-approved written materials associated with graduate research and provide suggestions for improvement. It is expected that committee members will provide constructive feedback on research projects in a timely manner (i.e. within two weeks of receipt of written materials within a long semester) in accordance with professional research expectations. Ultimately, it is the responsibility of the research advisor to ensure that recommendations from committee members be incorporated into graduate research products; committee members serve as an advisory group for student research.