

GEOLOGY, MS

Welcome. Students pursuing the M.S. degree often go on to pursue further academic study or seek employment in government organizations and industry. Students are able to establish successful careers in environmental and geotechnical consulting, water and resource management, and energy exploration. Students are prepared for this wide range of careers through a flexible curriculum in which they work closely with their advisor to conduct theoretical, field, and/or laboratory research for a thesis in their chosen topic.

Admissions

Admission to the graduate program in the Department Geological Sciences (DGS) is highly competitive.

Students should evaluate the research specialties of individual DGS faculty members and contact who they would like to work with prior to submitting an application to the UA Graduate School. They should share the following with the faculty member of interest and describe what types of research projects (or which particular research project advertised by the faculty) that they would like to pursue as part of their graduate studies. The more detailed they can be, the better.

- Previous research experience: type of experience, relevance to faculty member's research, depth of expertise
- Professional scientific publications as first author or co-author
- Published conference abstracts and scientific conference presentations
- Awards or other types of recognition

Based on the above, the faculty member will decide whether or not to meet with the student and/or to have a one-on-one conversation via telephone or online. Based on this interaction, as well as any previous information provided by the student, the faculty member then decides if they are interested in advising the student and if they want to advocate for the student to the entire DGS faculty. If they are interested, the faculty member will inform the student that they should submit an application. If the graduate application fee is a financial hardship, the student should share this information with the potential faculty mentor prior to the application deadline. The DGS may be able to cover this fee.

The application process is completed online through the UA Graduate School's Electronic Application Center.

The Graduate School requires the following materials:

- An online application form
- Application fee payment
- Statement of purpose
- Unofficial transcripts
- Three letters of recommendation
- A Grade Point Average (GPA) greater than 3.0 on a 4.0 scale (international grades are converted by the Graduate School to a 4.0 system)
- If your native language is not English, you will also need to take an English language exam. The minimum TOEFL score for unconditional admission is 79 for the internet-based test. The minimum IELTS score for unconditional admission is 6.5. The minimum PTE score for unconditional admission is 59.

In addition to the minimum Graduate School admission requirements, to be considered for regular admission to the DGS, an application must include:

- CV/Resume
- A bachelor's degree in Geology or a related discipline (e.g., Chemistry, Mathematics, Physics, or Engineering).
- Transcripts that show the following classes or their equivalents: Physics I, Chemistry I, Calculus I, and at least one of the following: Physics II, Chemistry II, or Calculus II.

The entire DGS faculty will then review the student's application, carefully examining the following documents:

- Statement of Purpose (SOP). The SOP is meant to inform faculty of your research, teaching, and service plans while a graduate student in the DGS. It is NOT meant to tell us about all aspects of your life but is meant to tell us about the specific qualities you possess that would make you an ideal student, committed scientist, and valuable member of the DGS and UA community. Examples from your recent past that indicate your perseverance, motivation, teamwork, and teaching aptitude would be appropriate to share. As you have previously communicated with a faculty member willing to serve as your Advisor, you should describe the research project or projects you plan to conduct with that individual. You can comment on the broader scientific impact of the project, aspects of the research that you find particularly interesting, previous experiences that make you well-suited for such a project, and how the proposed research will prepare you for a future career in academia, industry, government, or the private sector. You should be able to succinctly state why the DGS at UA is the ideal place for you to pursue your scientific interests. It should be a maximum of two pages in length, single-spaced, with Times New Roman (or similar) 12-point font and 1-inch page margins. Please title the document "Statement of Purpose."
- Recommendation letters from previous instructors, advisors, or supervisors.
- Transcripts from previous institutions with courses completed and grades (particularly those classes relevant to the proposed research topic).
- CV/Resume, which includes other noteworthy accomplishments such as academic honors, awards, professional and community service.

For fall admission, priority for new graduate students is generally given to applications received by January 15. To have the best chance for acceptance, applications should be submitted by January 15. Applications will be considered after this date but will be given lower priority. Self-funded, scholarship/fellowship, and international applications must be completed by March 15. Applicants will receive notification of their acceptance to the DGS program via email and must acknowledge their acceptance on or before April 15.

For spring admission, priority for new graduate students is generally given to applications received by July 15. Applicants will receive notification of their acceptance to the DGS program via email and must acknowledge their acceptance on or before October 1.

Note that beginning in Fall 2020, the GRE requirement has been permanently removed from our admission requirements.

M.S. students are admitted to the DGS with a Thesis Advisor already established. M.S. students may choose to have two faculty members as

Co-Advisors. In this case, credit and responsibility for the student will be shared equally between the two Advisors.

See UA Graduate School Admission Criteria.

Curricular Requirements

New M.S. students may be required by the Graduate Program Committee to complete one or more of the core courses in Geology (e.g., Mineralogy, Igneous-Metamorphic Petrology, Structural Geology, Stratigraphy and Sedimentology, and/or Field Geology or comparable field experience) if these classes are lacking in their background. These requirements must be taken for a letter grade. In addition, DGS Graduate Teaching Assistants (GTAs) must have a background in the course they are teaching. Deficiencies are determined by the Graduate Program Committee. To be a 100-level TA, the minimum classes needed are The Dynamic Earth (GEO 101) or The Earth Through Time (GEO 102), Sedimentology/Stratigraphy (GEO 367), Mineralogy (GEO 210) and one more of the following 7 classes: Geochemistry, Geophysics, Structural Geology, Volcanology, Hydrology, Igneous and Metamorphic Petrology, or Paleontology. These classes must be taken either for a letter grade or *Pass/Fail* but cannot be audited.

All students must meet with their Faculty Advisor or the Department Chair at least one week prior to registration each semester to discuss current coursework and courses to be taken the following semester. Students must enroll in the courses agreed upon with their Advisor. Most students in their first year register for nine credits per semester.

All incoming M.S. students are required to enroll in Communicating Geology (GEO 502) for three credits in the fall. This class must be passed with at least a grade of "C". If the class is not passed, it may be taken again once the next fall. Failure to pass this class for the second time will result in dismissal from the Graduate program. This class will focus on development of projects for research, proposal writing, and presentation of research results.

In summary, M.S. students must enroll in the following credits to earn the minimum of 30 required total hours.

- A minimum of twenty-four hours of 400- to 600-level courses, including Communicating Geology (GEO 502), one hour of Graduate Seminar (GEO 535) and one hour of Graduate Seminar (GEO 536). M.S. students must take seminar two times during their **third and fourth semesters** in the Graduate Program. M.S. students may substitute a conference oral presentation made at a national or international meeting for one of the two required seminar credits. If the paper is not accepted for an oral presentation, a poster presentation may be substituted. The faculty member in charge of the seminar and the student's Advisor will determine if the conference is acceptable and will coordinate the logistics. Students must still enroll in seminar and attend if they are substituting a conference presentation. If an exception is needed, a formal request to take the seminar in a different semester and a plan to fulfill the one year of seminar needed must be submitted to the Graduate Program Committee. All students must attend seminar, even if not enrolled in the course.
- Six hours of Thesis Research (GEO 599), graded *Pass/Fail* by the Thesis Advisor. Students are expected to present demonstrable evidence that they have performed thesis research to receive a passing grade.
- No more than six hours of 400-level courses may be counted toward degree requirements, and these require prior approval by the Graduate School. Courses cross-listed at both the 400# and 500# level must be taken at the 500# level.

- A maximum of three hours of Non-Thesis Research (GEO 598) may count toward the twenty-four-hour coursework total.
- At least eighteen hours of the twenty-four-hour total must be completed in the DGS. These may include Transferred Credits (p.). The six hours of remaining coursework may be taken in a related field with approval by the student's Thesis Advisory Committee.

An overall GPA ≥ 3.0 is required for graduate courses. Classes with a grade below a "C" do not count towards the degree. See the UA Graduate School Scholastic Requirements.

20% of the student's required course credit may be taken on a Pass/Fail basis; 80% must be graded by letter. Taking a class *Pass/Fail* must be approved by the Thesis Advisor and the instructor of the course.

Undergraduate courses taken to meet deficiency requirements or as prerequisites for graduate courses do not count toward graduate degree requirements.

See the UA Graduate School Degree Requirements.

Code and Title		Hours
Introduction Course		
GEO 502	Communicating Geology	3
Graduate Seminars		2
GEO 535	Graduate Seminar	
GEO 536	Graduate Seminar	
Geology Course Options		
GEO 501 through GEO 696		19
Thesis Research		
GEO 599	Thesis Research	6
Total Hours		30

Transfer Credit

A maximum of twelve hours of graduate courses may be transferred from other universities and applied toward the twenty-four hour total. These courses must be approved by the student's Thesis Advisor.

The student must have earned an overall GPA of 3.0 at the institute where the credit was earned. Only classes with a grade of "B" or higher can be transferred.

See the UA Graduate School Degree Requirements.

Accelerated Master's Program

Please see the UA Graduate School Accelerated Master's Program Information.

Thesis Advisory Committee

Plan I M.S. students are admitted with a Thesis Advisor. The Thesis Advisor, who also serves as Chair of the Thesis Advisory Committee, must be a full member of the DGS Graduate Faculty.

Students choose the remaining members of their Thesis Advisory Committee in consultation with their Thesis Advisor during the first semester in residence. Students are responsible for asking the other members to serve on the Committee and completing the necessary forms. A DGS Thesis Advisory Committee consists of four members: the Thesis Advisor, two full-time or adjunct faculty members of the DGS, and an external member, approved by the Thesis Advisor, who provides additional supervisory expertise. An external member can be from (a) another UA department, (b) another university, (c) the Geological

Survey of Alabama, or (d) a geological corporation (e.g., an oil, mining, or environmental company). All members of the Thesis Advisory Committee must be Graduate Faculty members.

If the external member does not have a Ph.D., evidence must be provided of their qualifications to serve on the Committee. If an individual is not a member of the DGS Graduate Faculty, they must submit their CV to the DGS Administrative Assistant responsible for the Graduate Program to begin the approval process, which typically takes two or more weeks to complete.

Students are required to meet **each semester** with their Thesis Advisory Committee, at which time progress toward degree requirements will be evaluated. A student who is not making satisfactory progress will receive a letter from the Thesis Advisory Committee advising the student how to remedy the matter.

See the UA Graduate School Degree Requirements.

Thesis Proposal and Proposal Defense

When a research plan is defined, the student prepares a Thesis Proposal. This document includes a title page, a one-page summary of the thesis project, followed by associated objectives, methods, and an estimated timeline for work completion. The M.S. proposal is limited to a maximum of ten double-spaced pages with 12-point font, including figures and references.

The Thesis Proposal Defense must occur in the second semester of the student's graduate program.

The student must distribute the Thesis Proposal to the Thesis Advisory Committee at least two weeks before the planned date of the Thesis Proposal Defense. All members of the Thesis Advisory Committee must certify that the proposal is ready for defense one week before the Defense can take place, either by signature on the appropriate form, or by email directly to the DGS Administrative Assistant responsible for the graduate program. The email from the Committee member must state that the member has read the proposal and approves the proposal for defense.

The Thesis Proposal Defense is scheduled by the student, in consultation with the Thesis Advisor, on a weekday that accommodates the schedules of all four Committee members. One member can be present via teleconferencing. If two members need to participate via teleconference, permission must be obtained by the Advisor from the Graduate Program Director by completing the associated form. The student must schedule a three-hour block of time. The purpose of the Thesis Proposal Defense is to evaluate the thesis research project and to solicit guidance from the Thesis Advisory Committee regarding the research plan, objectives, and relevance of planned coursework. The defense will begin with a short (~25 minute) oral presentation of the Thesis Proposal that is open to the public. Following a short public question and discussion period, the audience is limited to the Thesis Advisory Committee and any other faculty members.

The outcome of the Proposal Defense is decided by majority vote of the Thesis Advisory Committee and attending faculty. Several outcomes are possible. (a) A *Full Pass* entitles the student to proceed with the proposed research with no substantial modification of the research goals, objectives, or planned coursework. However, the Committee may request edits to the proposal. (b) A *Conditional Pass* entitles the student to proceed with the proposed research under conditions stipulated by the Committee. These may include, but are not limited to, specification of coursework, modification of the research plan, or modification of the research objectives. All changes to the research plan and objectives must be included in a revised Thesis Proposal. (c) A *Fail* requires the student

to repeat the Proposal Defense after substantial modifications to the research plan and/or objectives. The defense can only be repeated once. If failed again, the student is dismissed from the DGS Graduate Program.

The Thesis Proposal is not approved until the completion of a successful Thesis Proposal Defense. After the Thesis Proposal Defense, the student must provide an electronic copy of the approved proposal to each member of the Thesis Advisory Committee. In addition, a PDF-formatted electronic copy must be provided to the DGS Administrative Assistant responsible for the Graduate Program.

See the UA Graduate School Degree Requirements.

Comprehensive Exam

The Graduate School requires M.S. students to take a Comprehensive Exam on course material studied while a graduate student. The DGS includes this exam in the Thesis Defense. Questions cover a wider area of the Earth Sciences than the thesis but are generally relevant to the thesis subject.

See the UA Graduate School Degree Requirements.

Internship Requirements

Some graduate students choose to complete an internship during their graduate studies. The student must receive credit for the internship during the semester in which the internship was undertaken. For example, if you are completing a summer internship, you must pay summer tuition to get credit for that internship. M.S. students may count a maximum of three internship credits toward their degree.

Plan I - Thesis Process Requirements

Each M.S. candidate must write a thesis representing original work. No length or scope for the thesis is specified. However, the research problem should be designed to be completed in approximately one year. The exact timing of the progress and completion of a thesis is primarily the responsibility of the student. Satisfactory completion of a thesis is evidence that the student has employed research techniques consistent with those utilized by modern professional Earth scientists in their field of specialization. The thesis may be written as a manuscript and formatted using the Graduate School's guidelines.

Plan II - Non-Thesis Process Requirements

The non-thesis option is only available to doctoral students earning the M.S. en route to the Ph.D.

Thesis Preparation and Review

The student will submit drafts of the thesis to their Advisor. The student and the Advisor will work together and go through several revisions. When it is approved by the Thesis Advisor, it is submitted to the other members of the Thesis Advisory Committee. Review by the Thesis Advisory Committee, and revisions by the student based on their suggestions, may take several weeks. The Committee may require several rounds of revisions before a Thesis Defense can be scheduled. If a Committee member takes longer than three weeks for a review, a formal complaint should be filed with the Department Chair or the Graduate Program Director.

See the UA Graduate School Degree Requirements.

Thesis Defense

When the Thesis Advisory Committee is satisfied with the thesis, a Thesis Defense is scheduled. All members of the Advisory Committee must sign the relevant form or email their consent directly to the DGS Administrative Assistant responsible for the Graduate Program. The email from the Committee member must state that the member has read the thesis and approves of the defense. The thesis must be formatted in the Graduate School thesis format and displayed in the DGS front office one week prior to the defense to allow reading and revision by the remainder of the faculty. Faculty members have the right and responsibility to comment and provide feedback if the thesis is deficient.

The student should schedule a three-hour block of time. The exam will be administered by the student's Thesis Committee, and the exam is open to the public. A 30-40 minute presentation, emphasizing results and conclusions, is given by the student. The exam is then opened for questions from the audience, after which additional questions from the Thesis Committee, Department Faculty, and Ph.D.-level Research Staff are given in closed session. All DGS faculty members that attend the exam and subsequent questioning session have the right to vote whether the student passes or fails. This vote is decided by majority and is recorded on a form (available from the Graduate School) that states the student has *Passed/Failed* the thesis defense. In the event of a tie, the Department Chair (or designated representative) casts the deciding vote. If not passed during the first attempt, the Thesis Defense may not be retaken.

See the UA Graduate School Degree Requirements.

Final Disposition of Thesis and Thesis Collections

The Thesis Advisory Committee and the student must complete the Committee Acceptance Form. By signing this form, the Committee confirms that they have read the final PDF-formatted document, and approved all changes, ensuring that the standards of the DGS are upheld.

The final PDF must be submitted following Graduate School procedures. Students are required to provide the PDF thesis file to the DGS Administrative Assistant to the Graduate Program and to the Advisory Committee.

Samples, data, computer programs, etc. used in thesis research are the property of the UA unless other arrangements are approved by the Thesis Advisor. As such, these materials must be left with the DGS, and students should check with their Thesis Advisor before taking proprietary data out of the DGS upon graduation. It is the responsibility of the student to determine whether the Alabama Museum of Natural History needs a collection of thesis samples. The Thesis Advisory Committee and the Museum will establish which materials (e.g., rocks, fossils, thin sections, polished sections, rock powders, etc.) must be cataloged.

See the UA Graduate School Degree Requirements.

Timeline for Degree Completion

A suggested timeline for degree completion is provided on the DGS Graduate Program Website.

After not enrolling in classes for three years, if a student wants to complete their degree, they must reapply to the DGS Graduate Program.

All requirements for the M.S. degree must be completed during the six years (eighteen fall, spring, and summer semesters) immediately preceding the date on which the degree is to be awarded. Previously

approved transferred coursework that falls within six years of *admission* to the M.S. degree program can be counted toward the minimum hours requirement. There is no provision for an extension of the time limit beyond six years for M.S. students.

See the UA Graduate School Degree Requirements.

Academic Progress Policies

Upon appointment of an Advisory Committee, students must have a meeting **each semester** with their Committee. Students not in residence must submit a written progress report each semester. Current and future research efforts will be reviewed to determine if satisfactory progress has been made toward completion of degree requirements. If the student has not followed the required timeline, the student's research project will be terminated and the Advisory Committee will be disbanded. In the event of project termination, the student must propose an acceptable new research project.

It is not the responsibility of the Advisor, the Graduate Program Director, the Graduate Program Committee, or the Department Chair to ensure that the student has filled out the proper paperwork and submitted the paperwork to meet their deadlines. If the paperwork is filled out incorrectly or a deadline/milestone is missed, the result is a delay in the graduation of the student. To request an extension on any deadline/milestone, a memo must be submitted to the Graduate Program Committee. Format for the extensions request memo is available from the Graduate Program Director. The memo must contain a proposed timeline acceptable to all parties.

Student Activity Report

On April 30, all graduate students are required to submit a report to the DGS detailing their activities throughout the previous year. Activities include abstracts submitted, internships, papers published, conferences/workshops attended, field work, volunteer activities, etc. A form is provided each year for this report. If not completed, the student will be unable to schedule graduate milestones (e.g., thesis defense).

Academic Misconduct Information

The Graduate Program Committee will address any problems or improper conduct with graduate students brought up by the Department Chair, GTA Supervisor, Faculty Advisor, or other graduate students. Faculty members are mandated reporters so if there is a Title IX violation, the report will be passed to the Title IX Administrator. Otherwise, a meeting with the Advisor, Department Chair, Graduate Program Committee, and the student will be called to determine if a solution to the problem can be found.

See the UA Graduate School Academic Misconduct Information.

Withdrawal and Leave of Absence Information

Leave of Absence

The DGS has no formal policy for a medical leave of absence. We try to accommodate a semester leave of absence if the need is documented by a medical professional. The Graduate Program Director will require that the student inform the DGS by a certain date in the semester to determine if the student is going to return to the department in the next semester. If a leave of absence is needed for professional development, the matter needs to be brought to the Graduate Program Committee for a vote.

See the UA Graduate School Withdrawals and Leave of Absence Information.

Academic Grievances Information

Procedure for Changing Advisors

Graduate students must schedule a meeting with the Graduate Program Director or the Department Chair if they want to change Advisors.

A new Advisor must be identified. The Graduate Program Director/ Department Chair will discuss procedures and inform the old Advisor. If the switch happens after the proposal is successfully defended, a new proposal defense with a new Committee must occur. The timeline will be determined by the Advisor and the Graduate Program Director.

If the Advisor wants to end an Advisor/Advisee relationship with a graduate student, a Committee consisting of the Graduate Program Committee and the student's Committee will be formed to evaluate the situation.

See the UA Graduate School Degree Requirements.

Grades and Academic Standing

See the UA Graduate School Grades and Academic Standing.

Graduate School Deadlines Information

See the UA Graduate School Deadlines.

Application for Graduation Information

See the UA Graduate School Degree Requirements.

Funding

The DGS faculty will vote to admit a limited number of students suitable to the availability of positions within the department. Faculty members with awarded, external research funding may be able to support a graduate research assistant (GRA) for one or more semesters. Alternatively, the DGS has a limited number of graduate teaching assistantships (GTA) available each semester that may be used to financially support incoming students. We note, however, that current students are given priority for these positions. Accepted M.S. students are guaranteed four semesters of funding if requirements are met. The source of financial support may vary from semester to semester.

All students receiving an assistantship or fellowship must be registered as full-time students. For students on a 0.25 or 0.5 FTE assistantship this equates to at least six hours of coursework during each of the fall and spring semesters. Students on a fellowship must be enrolled in at least nine hours of coursework during each of the fall and spring semesters. Reasons for revocation of funding include:

- Failure to pass the required course, Communicating Geology (GEO 502), for a second time with a grade of "C" (see Curricular Requirements (p.)).
- The student displays poor academic performance.
- The student does not adhere to the UA academic honor code.
- The student does not fulfill job duties as a GTA/GRA as specified in the Memorandum of Appointment (MoA).
- The student makes inappropriate remarks or actions toward staff, faculty, other graduate students, or undergraduates.
- The student becomes a danger to others.
- If graduate deadlines/milestones are not met, and the student has not formally requested an extension from the Graduate Program Committee.
- Failure to defend the thesis proposal by the second semester in residence. Students not receiving support in the first two semesters,

but seeking aid for subsequent semesters, will not be considered for support until a thesis is successfully proposed.

- If the student is funded as a GRA, changing Advisors will result in the loss of funding. If the student is funded through a GTA and decides to switch Advisors, the GTA position will continue provided that a new research project has been chosen.