

ISU Department of Geosciences Graduate Student Handbook



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More information is available at the Department of Geosciences Web Page: <http://geology.isu.edu>

Disclaimer

This handbook presents information for graduate students in the ISU Department of Geosciences. However, the ISU Graduate Catalog is the only official record of rules and regulations pertaining to graduate education at ISU: <http://coursecat.isu.edu/graduate/>

General Information for all Geoscience Graduate Students

Mission Statement: We study the landscape, architecture, evolution, and formative processes of Earth and other planets by conducting original investigations, developing new analytical techniques, improving modern geotechnologies, and publishing research papers. In concert with this research agenda, we teach students to become broadly trained earth scientists. Our goal is to develop the analytical and critical thinking skills of students in preparation for the diverse geoscience problems they will encounter beyond ISU. To facilitate this mission, we maintain a collegial atmosphere between students, faculty, and staff.

Departmental Culture: The social structure of the department is based upon friendship and respect. Graduate students are an important part of this culture for they bring intelligence, energy, and diversity to a group that places a high value on such traits. Faculty and staff are concerned with more than a student's grade; to better prepare students for professional careers, they encourage a more holistic growth of each student's skills and abilities. Similarly, students are encouraged to contribute to departmental goals in numerous ways beyond the classroom to provide a more productive, successful, and comfortable environment. The result is a dynamic yet informal atmosphere where faculty, staff, and students work closely together in the classroom, lab, office, and field.

Advising: The Department has an open door policy with regard to student advising, so that a student can meet with any faculty member to discuss their graduate program. Initially, most students should take the initiative to meet with the Department's Graduate Advisor to discuss classes and graduation requirements. Students should also meet with various faculty to discuss potential research projects. By the end of the second semester you should select the faculty on your thesis committee, and then meet regularly with them to discuss all aspects of their graduate program.

Enrollment (Go to the ISU Graduate School Webpage for details: <http://www.isu.edu/graduate/>)

Credits: A graduate student who takes 1-8 credits per regular semester (Fall and Spring) is considered a part-time student, while one who takes 9-12 credits is considered full-time. Enrolling in 13-16 credits per semester is possible, but requires written approval of the Graduate Dean if the student has a teaching assistantship (TA) or research assistantship (RA).

Continuity and Duration: A graduate student is required to be enrolled continuously each semester, excluding summer semesters, or the student must re-apply to Graduate School. A minimum of one credit (e.g. GEOL6648, GEOL6650 or GEOL6699) is required during the semester (including summer) that they plan to take a final oral examination or be processed for graduation. A student has 8 years, starting from graduate matriculation, to complete their graduate degree.

Grading and GPA Requirements: All Geoscience courses award letter grades except GEOL5591 (Seminar), GEOL5597 (Professional Development), GEOL6650 (Thesis), GEOL6684 (Teaching Practicum), and GEOL8850 (Dissertation), which award S/U grades. To graduate, a student must compile a cumulative GPA of 3.0 or higher on all graded courses listed on the Graduate Program of Study. Note that a B- grade is insufficient to maintain a 3.0 GPA, and a grade of C+ or lower is considered failing at the graduate level. Although such grades can be balanced by earning high grades in other courses, successful graduate students will maintain a GPA well above the required minimum.

Deficiencies: A student may be admitted into the Department with "deficiencies", which are one or more undergraduate courses that must be completed prior to completion of the graduate degree. Deficient courses are typically taken at the undergraduate level and do not count toward the graduate degree program. However, if one (and only one) deficient course is also offered at the graduate level, it may be taken at the graduate level and counted toward the graduate degree program.

Satisfactory progress/continuation standards: The Geosciences faculty meet each semester to evaluate the progress of each graduate student. Typically, most students meet the continuation standards of the department, but occasionally some are found to have low grades, inadequate TA or RA reviews, or are deemed to be making insufficient progress on thesis/dissertation research. In these situations, the faculty will suggest potential solutions to the problem and communicate these to the student in writing. In some cases, the student will be given a deadline to complete certain academic or work milestones. Lack of performance may induce the faculty to withdraw funding or dismiss the student from the graduate program. Additional details of the ISU Graduate School's dismissal policy can be found at <http://coursecat.isu.edu/graduate/generalinfoandpolicies/appealsanddismissals/>.

Departmental Guidelines:

The positive collegial atmosphere of our department requires all students and faculty to maintain a high degree of personal and professional responsibility. So please follow these guidelines: Show respect for others. Clean up after yourself. Do not plagiarize. Get trained before using technical equipment. Leave a written record when you borrow maps, theses, and equipment. Lock the computer and research labs when you leave. Get an ISU email account so we can always communicate with one another. Attend Colloquium every week. Willingly offer your help to other students, faculty, and staff. Obey traffic laws in university vehicles. Get regular sleep and exercise.

Departmental Facilities:

Offices: Graduate students are assigned space in a furnished office as long as such space is available. They are given a key and can access their office at any time. Students are responsible for the safety and security of items left in their offices.

Classrooms: These rooms are primarily designed for formal lectures and laboratory sessions. At any other time, these rooms can be used for meetings and general study purposes. Each is equipped with a ceiling-mounted LCD projector and computer connections.

Research Laboratories: These rooms are primarily designed to house active research projects. Students should consult with the supervising faculty of each lab before using the room for any research purpose. Formal training is often required before using the room or its equipment.

Computers:

Addresses and Passwords: Each student receives an ISU email address that should be used for all professional communications. It is critical to use your ISU email address (typically formed with the first 4 letters of your last name followed by the first four letters of your first name) so that you receive all university, departmental, and course related announcements. Each student also receives a departmental username and password for accessing departmental servers.

Connectivity: The Geology building has 10 or 100 Mbps hard wire connection in each classroom, lab, and faculty office, and a wireless system called TigerNet.

Labs: The department has two computer labs, both accessed by key or keycode. One is the teaching lab which, when not in use as a classroom, should be used for all word processing, email, and Internet use. The other is the Digital Mapping Lab which is used for research and graphic production. DML protocols are listed in the lab and include such things as: 1) no food, drink, or dogs in the lab, 2) proper storage of personal files on the correct server/drive, and 3) minimal waste of paper when printing hard copies.

Personal Computers: Personal Computers can be used anywhere in the department. Wireless internet access for graduate students is provided through TigerNet. Off-campus access to on-campus (e.g., library resources) requires the graduate student's advisor submit a semesterly request to on-campus IT at help@isu.edu.

ISU beyond Geosciences:

Classes: ISU is a large university with seven colleges that offer classes in most academic disciplines. You are encouraged to take advantage of the university offerings by occasionally enrolling in classes beyond Geosciences. For many of you, this is your last opportunity to take classes before your student career ends.

Health Services: Full- and part-time students qualify for free or reduced-cost health care at ISU facilities including (on the Pocatello Campus):

- ISU Health Center - free office calls, reduced-cost prescription drugs, x-rays, lab work
- Student Pharmacy - a second source of reduced cost prescription drugs.
- Dental Hygiene Clinic - free cleaning by students-in-training
- Physical & Occupational Therapy - reduced-cost PT services
- ISU Wellness Center - free fitness center, classes, and evaluations
- Anderson Resource Center - free gender-based education and services

Counseling: A graduate program requires significant time and energy to complete. Because of this, many students find it difficult to remain stress-free throughout their graduate studies, particularly when personal, family, or work issues intervene. To help with psychological, emotional, and interpersonal stress, ISU offers a free counseling service for graduate students. Contact the ISU Counseling and Testing Center (282-2130) to make an appointment.

Entertainment: ISU offers a full range of entertainment options for all students. Clubs, concerts, movies, athletic events, dinners, and other activities are advertised throughout the university.

Recreation: ISU also offers a full range of recreation opportunities for all students. The Geosciences department often sponsors intramural teams (though lately we've suffered too many injuries to justify the effort). Reed Gym has a pool, climbing wall, several gyms, tennis courts, racquetball courts, and a number of other facilities. The Wilderness Rental Center provides equipment for outdoor activities that range from skiing to camping to kayaking. They also supervise a winter Yurt system in the mountains surrounding Pocatello. The Outdoor Adventure Center offers a full range of organized recreational trips for climbing, mountaineering, bicycling, skiing, camping, kayaking, rafting, and most other outdoor adventures. Overall, few schools in America can match ISU's support of outdoor recreation.

Financial Aid: Graduate Assistantships (TA and RA) are designed to support students during the 9 month school year. Other forms of aid can provide partial support during the school year or partial to complete support of research expenses. Summer support typically doesn't accompany a TA award but may accompany an RA. The latter is dependent upon available funding and summer research activities.

Teaching Assistantship: The department has several TAs to award each semester on a competitive basis. The work involves teaching laboratory sections of undergraduate classes, either alone (GEOL11xx classes) or with the assistance of a faculty member. A typical assignment is 3 labs per semester. In return, the TA receives full tuition, graduate student fees, health insurance, and a stipend sufficient to cover room, board, and living expenses. Note that individual course fees and books are not covered.

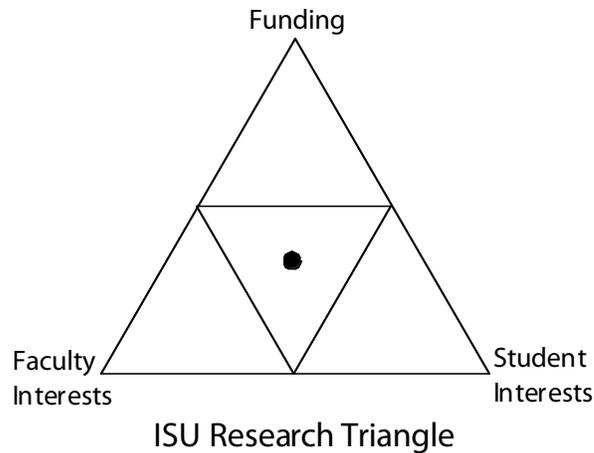
Research Assistantship: Individual faculty members receive funding for RAs by writing successful grant proposals to external funding agencies. The number of RAs varies from 5-15 each year depending upon funding. The work may involve assisting a faculty member on their research or it may be entirely directed toward completing the student's own research project. The RA is expected to devote 19 hours per week to the work. In return, the RA receives full tuition, student fees, health insurance, and a stipend sufficient to cover room, board, and living expenses. Note that individual course fees and books are not covered.

Research Funding: Certain grants may be obtained to fund specific research tasks. Typical budget categories are salary, fringe, travel, per diem, lab expenses, capital outlay, and indirect costs. Once budgeted into a certain category, the funds must generally be used for these purposes.

Work-Study: If a student qualifies for federally-subsidized work-study funds, the department will employ the student to complete tasks such as maintaining equipment, organizing labs, or cataloging reference materials. Students receive an hourly wage.

Seven Clues to a Smooth Graduate Experience

- 1) Hang loose at the start. You may need a semester or more to decide on your thesis topic and your advisor. Don't feel locked in if your interests change. This happens.
- 2) Smell the daisies during your time here. Take a broad selection of classes and try to get one from each professor. This may be your last chance to study something that interests you, but is not in your specialty area of Geoscience
- 3) Go to Colloquium regularly. It's where the Department communicates each week.
- 4) Once you decide on an advisor, meet with them on a regular basis... weekly or biweekly. This is especially true in the year that you are writing your thesis.
- 5) Meet with your Graduate Committee at least once each semester. This helps with communication on your prospectus and the scope of your thesis.
- 6) It will take a full semester to write your thesis, get the comments back and get your thesis revised. Those who think they can move faster than this are usually wrong, and frustrated. The key is to deliver written documents early and often. The other side of the coin is to demand prompt turnaround of your written documents from your advisor and your committee. If this does not happen, find out why and work together to get the situation fixed.
- 7) Earn A's and B's in your classes. A B- is insufficient, and a grade of C in a graduate course is a red flag that causes faculty concern and will stand in your way moving through the program. You must have a cumulative GPA of 3.0 to retain your funding and, ultimately, to graduate.



Ph.D. in Geosciences
(<http://geology.isu.edu/PhD.shtml>)

Overview: The Ph.D. program in geosciences is offered to those students who demonstrate a strong aptitude for research and scholarly activity. Research is conducted in any field of the geosciences in which ISU faculty have expertise. A variety of funded graduate projects are currently in progress that focus on earth processes, geologic histories, and novel methods of data analysis. Disciplines include Remote Sensing, Physical Volcanology, Polar Hydrology, Structural Geology, Fluvial, Hillslope and Glacial Geomorphology, Sedimentary Geology and Paleontology. Many projects are based in Idaho, others in the Northern Rockies, and still others in Nevada, Alaska, and Mexico. Interested students should contact our professors directly to discuss current research opportunities.

The student's course of study will be determined in consultation with his or her advisors. Continued enrollment in the program is contingent upon maintaining a 3.0 grade point average and making satisfactory progress toward the degree. In order to complete the research and prepare the dissertation, the program typically require at least four years of full-time study beyond the master's degree. In some cases, students without an appropriate M.S. degree but demonstrating an exceptional undergraduate academic record and aptitude for research may be directly admitted to the Ph.D. program.

General and Course Requirements: The Ph.D. degree requires completion of at least 84 graduate credits. Of these, at least 32 credits must be doctoral dissertation credits (GEOL 8850) and another 35 credits must come from coursework at the graduate level, 2 to 4 of which must be a graduate seminar. Once a student has registered for dissertation credits, they must maintain continuous enrollment at ISU (including summers) until graduation. Of the total 84 credits, at least 40 must be taken from the ISU Department of Geosciences. Students entering the program with a master's degree may receive credit for up to 30 credits toward the Ph.D., split between dissertation and coursework as appropriate, subject to the department chair's approval. Classes and seminars may be taken at, or in collaboration with, Boise State University and/or the University of Idaho.

Students having ongoing Teaching Assistantship positions should register for GEOL 6684 Graduate Teaching Practicum (1 cr.) Only one credit of GEOL 6684 can be counted toward 66xx-level graduation credit requirement. Students having tuition waivers via Research or Teaching Assistantships should maintain a 12 cr. semester load. This applies during the first two years in residence in the PhD program. The 12 credit load may include GEOL 6649, Prethesis (1-6 cr.), with the approval of the student's Doctoral Committee.

Program of Study: Before the completion of a student's first semester, they will work with an initial Doctoral Committee to design and approve a program of study suitable to their background and research interests. This initial Doctoral Committee is composed of an odd number of at least three graduate faculty, primarily from the Department of Geosciences and inclusive of the major professor. The committee has the responsibility of ensuring that the student has adequate knowledge to support research in his or her area of study.

During the full-time student's third semester, the student will complete a Written Qualifying Exam, described in detail below. Exceptions to this schedule may be made when a student has academic deficits to make up, in which case the student may be granted an additional year. The student will be admitted to candidacy upon passing the Written Qualifying Exam.

Following passing the Written Qualifying Exam, the student and the major professor will assemble the final Doctoral Committee which is composed of an odd number of members inclusive of the candidate's major professor (committee chair), 3 or more graduate faculty and a Graduate Faculty Representative (GFR). The final Doctoral Committee may include individuals from other departments, affiliate graduate faculty, or graduate faculty from collaborating universities, such as Boise State University or the University of Idaho, but the majority must come from the ISU Department of Geosciences.

Within six months of passing the Written Qualifying Exam, the doctoral candidate will write and orally defend their research prospectus. The evaluation of the Prospectus and the Oral Prospectus Defense is similar to the

Written Qualifying Exam as there are three potential outcomes: pass, conditional pass and fail. Details are presented below.

The research and dissertation preparation must be done under the close supervision of the Doctoral Committee and must include at least one full year of work performed under the supervision of Idaho State University graduate faculty. The dissertation must demonstrate the student's ability in independent investigation and must be a contribution to scientific knowledge. It must display mastery of the literature of the subject field and must demonstrate an organized, coherent development of ideas, with a clear exposition of results and a creative discussion of the conclusions. The dissertation must meet the guidelines provided by the ISU's Graduate School.

The Oral Dissertation Defense requires a public presentation of the dissertation and a satisfactory oral defense to the final Doctoral Committee. Doctoral oral examinations are open to all regular members of the graduate faculty as observers. Further, oral presentations are open to the public until questioning by the final Doctoral Committee begins. The committee provides an evaluation of oral defense of the dissertation, evaluating the student on a pass/fail basis. After passing of the oral defense, the student incorporates the committee's suggestions into the written dissertation. When this document is deemed sufficient by each committee member, the coversheet is signed and the dissertation is provided to the Graduate School.

Written Qualifying Exam

- The Written Qualifying Exam is intended to test a Ph.D. student's breadth and depth of knowledge in at least three fields within Geosciences.
- The exam should be taken no later than the student's 3rd semester as an ISU graduate student.
- The format is decided by the initial Doctoral Committee and explained to the student at least 6 weeks prior to the exam. The exam is authored and evaluated by this committee.
- Each member of the initial Doctoral Committee prepares a question (or a suite of nested questions).
- The student is advised to meet individually or as a group with the committee ~6 weeks before the exam to discuss expectations. Members may ask the student for a transcript at that time. Members will make suggestions of textbooks or research literature that the student should be familiar with prior to taking the exam.
- The total exam time should be 8-12 hours and be completed within one week.
- The exam is primarily open book, though portions may be closed as deemed appropriate by the committee.
- Grading: Each committee member will evaluate the written questions within two weeks of the exam date. Within three weeks of the exam, the committee will jointly decide on one of three options and communicate their decision with the student: fail, conditional pass, and pass.
 - *Fail*: The student may make one additional attempt at passing the exam within 6 months. Two failures will result in dismissal from the program.
 - *Conditional Pass*: The committee will agree on steps that the student should take to achieve a full pass. These *may* include additional coursework, written revisions to all or a portion of the exam, oral review of all or a portion of the exam, or other steps that the committee deems appropriate. All revisions must be completed within 6 months of the exam date.
 - *Pass*: No additional steps are required by the student. Congratulations!

Oral Prospectus Defense

- The Oral Prospectus Defense is intended to confirm that the Ph.D. student can successfully present his or her dissertation research plan in both written and oral formats.
- The oral proposal defense should be scheduled for the semester following the successful completion of the Written Qualifying Exam, usually the 4th semester of a student's graduate studies at ISU.
- The student should submit a 10 page written proposal to the final Doctoral Committee at least 7 days before the scheduled date. Appendices are permitted if requested by the committee. Each committee member will provide the student with written feedback on the written proposal during the oral proposal defense.
- During the Oral Prospectus Defense, the student will present the proposal in a ~20-30 minute public presentation. This is followed by ~1-1.5 hours of questions from the committee. The questions will focus

on the proposed work, and may include questions about experimental design, background literature, preliminary or expected results and interpretation, motivation, or other relevant topics.

- Following the questions, the final Doctoral Committee privately discusses the student's oral defense, and make one of the following recommendations based on a majority vote:
 - *Fail*: The student may make one additional attempt at the Oral Prospectus Defense within 6 months. Two failures will result in dismissal from the program.
 - *Conditional Pass*: The committee will agree on steps that the student should take to achieve a full pass. These may include additional coursework, written revisions to the proposal, or other steps that the committee deems appropriate. All required steps and revisions to the proposal must be completed within 6 months of the defense.
 - *Pass*: After getting the appropriate signatures on the advancement form, you should submit the form to the main office. Your advisor will also send a memo to the chair that states that you have officially advanced to candidacy, a copy of which will be sent to the Graduate School. You are officially done with everything except your dissertation, or ABD – “all but dissertation!”

Ph.D. in Engineering and Applied Sciences

(Note - Official Guidelines for this degree are maintained by the College of Science and Engineering)

(Go to <http://enr.isu.edu/gp/phd-eas/> for details)

Overview: This degree offers Geosciences students an opportunity to obtain a Ph.D. in an interdisciplinary program with a focus area specific to the individual student. Geosciences students can focus on a variety of research topics in this degree program including environmental sciences, water resources and hydrology, remote sensing, geotechnologies, geomorphology, etc.

M.S. Geology
(<http://geology.isu.edu/MS.shtml>)

Overview: The M.S. degree is offered to those students who have degrees in geology who have demonstrated the potential for research and a professional career. “Classified” (degree-seeking, fully accepted) admission to the program is recommended by the graduate faculty of the Geosciences Department.

The student's course of study will be determined by consultation and possibly an entrance examination. Students will normally be required to complete deficiencies at the undergraduate level any courses required for the B.S. in geology at Idaho State University that they have not already taken. Continued enrollment in the program is contingent upon maintaining a 3.0 grade point average and making satisfactory progress toward the degree.

“Classified with Performance Requirements” [Classified (w/PR)] status is used for students with large numbers of deficiencies or with low undergraduate GPAs. Classified (w/PR) students may apply for classified status when their performance warrants.

Required Credits: 30 graduate level credits. At least 17 of the 30 credits must be GEOL66xx-level courses. No more than 6 of the GEOL66xx credits may be GEOL6650 (Thesis)* and only one credit can be GEOL 6684. GEOL6649 (Pre-Thesis) credits cannot be applied to the 30 required credits. The remaining 13 credits may be 55xx or 66xx-level classes, and may include up to 8 graduate credits from other departments; to substitute an out-of-department undergraduate course here would require a petition. In addition to the 30 required credits, each student must complete two approved (undergraduate or graduate) courses from outside the Geosciences Department. At least one of these out-of-department courses should relate to the student's field of research.

Required Courses: GEOL5591 (Seminar), GEOL6601 (Advanced Physical Geology), GEOL6603 (Geologic Writing Seminar). A student may not enroll in GEOL6650 (Thesis) until a thesis prospectus is completed and signed by their advisors. Students having ongoing Teaching Assistantship positions should register for GEOL6684 Graduate Teaching Practicum (1 cr.). Students having tuition waivers via Research or Teaching Assistantships should maintain a 12 cr. semester load. This applies to all students during their first year in residence, and also the second year for students in the PhD program. The 12 credit load may include GEOL6649 Prethesis (1-6 cr.) with the approval of the student's guidance committee.

Required Presentation: Each student is required to present the results of their research at a department colloquium before graduation.

Thesis: Each student is required to complete an original research project, submit the results in writing, and successfully defend it in an oral examination.

Committee: After discussing research opportunities with various faculty members, each student should select a research problem and form a thesis committee of faculty advisors. Two research advisors and a Graduate Faculty Representative (GFR) are normally chosen though others may be selected. At least two advisors should be Graduate Faculty in the Department of Geosciences. The Graduate Faculty Representative (GFR) is an ISU faculty member (with Graduate Faculty status) beyond the Department of Geosciences; this person may join at the beginning or end of the research project. Each student should meet regularly with their research advisors; we suggest weekly to biweekly with the main advisor and monthly to bimonthly with the thesis committee.

Prospectus: Each student will write a 10-page summary of the proposed research that describes the problem, its significance, previous work, methodology, logistics, and anticipated outcomes. This prospectus is normally completed in semester 2 as part of GEOL6603 (Geologic Writing Seminar). The prospectus should be approved by the research advisors before the actual research commences and thesis credits are taken.

Research: Each student will devote considerable time to the actual research project. Each project usually involves varying proportions of data collection, analysis, and interpretation. With guidance from the

faculty advisor(s), the student should progress through these stages to develop a result that makes a significant, original contribution to the general knowledge in that scientific discipline.

Writing: The written thesis is a detailed description of the research project. It includes several chapters that describe the research objectives, previous work, research methods, results, interpretation of results, and references. Alternatively, the thesis may include 1 or more published papers combined with ancillary materials. The format of the thesis should be discussed with your advisor – note that the ISU Graduate School has some specific requirements regarding the format of the final, bound version. Preliminary drafts of the thesis should be submitted to the advisor(s) for critical review and then returned to the student for corrections. A nearly final version of the thesis must be delivered to each member of the thesis committee at least 2 weeks prior to the oral examination. Final corrections to the thesis will be made after the oral exam. Detailed guidelines are available in the “Instructions for Preparing Theses, Dissertations ...” from the Graduate School (<https://www.isu.edu/graduate/current-students/graduation-information/>). They are also summarized in this Graduate Handbook in “Steps to Graduation.”

Students are strongly encouraged to present their research at professional meetings and to submit their work for publication in professional journals.

Oral Examination: An oral examination must be successfully completed by each student. The exam begins with a 15-30 minute formal presentation of the research project, followed by questions from the assembled faculty. The exam will normally focus on the research contained in the thesis, but examiners may ask questions on any related subject. Any Graduate Faculty member may attend the exam and ask questions. Whether the student passes the exam is determined by members of the thesis committee, including the GFR, who vote at the conclusion of the exam.

Archive: Electronic (PDF) copies of the thesis are submitted to the Graduate School and to the Geosciences Department (see the handbook section “Steps to Graduation”).

Publication: Each student is strongly encouraged to disseminate the results of their research by (1) presenting the results in oral or poster format at regional or national conferences, or (2) submitting a paper for publication in a peer-reviewed national or international journal. Such presentations and publications allow a large community of scholars to become familiar with the research, leading to improvements in the research itself as well as additional professional opportunities after graduation. Publication is normally done in collaboration with other members of the research group, including advisors who can facilitate the process.

Suggested Timeline for M.S. Geology Degree:

Semester 1 (Fall):

Classes: GEOL5599, GEOL6601, deficiencies, other 55xx and 66xx-level classes

Research: Discuss research opportunities with faculty members

Paperwork: Submit a Preliminary Program of Study

Semester 2 (Spring):

Classes: GEOL6603, deficiencies, other 55xx and 66xx-level classes

Research: Select thesis research topic. Write thesis prospectus. Identify funding options

Summer

Classes: GEOLxxx (at least 1 credit)

Research: Data collection and analysis in field or laboratory

Semester 3 (Fall):

Classes: 55xx and 66xx-level classes, possibly including GEOL6650*

Research: Final field/laboratory data collection. Data analysis. Conference presentations.

Semester 4 (Spring):

Classes: GEOL6650 and minimal 55xx or 66xx-level classes.

Presentation: Present research results at department colloquium.

Research: Final data analysis. Write thesis. Oral Defense of thesis.

Paperwork: File for Graduation. Complete Final Program of Study.

M.S. in Geographic Information Sciences (<http://gisci.isu.edu/ms/>)

About

The M.S. in GISci degree is offered to students who wish to become competent geospatial researchers and as Geographic Information Systems (GIS) analysts and developers. The program focuses on advancing knowledge to acquire, store and manage, visualize, model, and analyze information about spatial features and phenomena, with strong emphasis on real-world geospatial applications. The M.S. in GISci is designed as an interdisciplinary study of the nature, function, and development of spatial information systems and the application of these systems in research. Students will be involved in the technical study of the design and evaluation of scientific inquiry methods, tools, and techniques that will involve formulating hypotheses, collecting spatial information, and developing techniques for spatial analysis.

Applicants must hold a degree of Bachelor of Science or Bachelor of Arts in any discipline that allows research focus on geotechnologies including, but not limited to: Geosciences, Anthropology, Biology, Business, Information Technology, Computer Science, and Engineering. Students can focus on either the development of new GIS tools and analytical procedures or the application of established and new tools and procedures to scientific problems. Each student in this program will have a member of the current geotechnology faculty as his/her major advisor. Applicants will be requested to state an advisor preference at the time of application; otherwise a preliminary advisor will be assigned upon acceptance to the program.

NOTE: Due to the interdisciplinary nature of this program, applicants should initially contact a faculty member or the Geotechnologies Program Director in the Department of Geosciences in order to match their interests with those of potential faculty advisors.

Process for admission and completion: Applicants must apply to and meet all criteria for admission to the Graduate School as well as additional criteria for admission to the Department of Geosciences.

General Requirements: In their application, students must state a preference for the Thesis Option or Non-thesis Option for the M.S. in GISci. The geotechnologies graduate faculty will determine for which track the student is accepted.

Thesis Option: Students desiring to enter careers in research or to pursue a Ph.D. are encouraged to request the Thesis Option M.S. in GISci. Students supported on Research Assistantships or Teaching Assistantships will typically be required to enroll in the Thesis Option. A minimum of 30 credit hours is required for completion of the Thesis Option M.S. in GISci, with a minimum of 15 credit hours (including six thesis credits) completed in 6600-level courses. The student's graduate advisory committee (major advisor and co-advisor) will establish specific research goals, thesis topic, and the course electives in the program of study.

Non-Thesis Option: The Non-Thesis Option M.S. in GISci is ideal for students interested in acquiring a high-quality education that emphasizes applied GISci and learning cutting edge technical skills that do not fit within the traditional thesis option. The Non-Thesis Option M.S. in GISci is suitable for working professionals who are interested in earning additional education without interrupting their careers. Typically students are not awarded Research Assistantships or Teaching Assistantships in the Non-Thesis Option. A minimum of 30 credit hours is required for completion of the Non-Thesis Option M.S. in GISci, with a minimum of 15 credit hours completed in 6600-level courses. The student must prepare and submit to the Geotechnologies Program Director a program of study in his or her first semester indicating the courses to be taken to meet these requirements. In their final semester, all Non-Thesis Option students will complete a written and oral cap-stone exam administered by geotechnologies graduate faculty.

All M.S. in GISci students are required to take a 1 credit hour graduate seminar (in any related discipline) and eleven credit hours of core courses. Generally these will be taken during the first year of study. Prerequisites for core courses are designed to permit students entering the M.S. program from all disciplines. Students entering with some or all of the core courses taken at the undergraduate level may, with permission from the student's advisory committee, substitute other graduate-level courses in the program of study (form).

Continuing Enrollment: ISU requires graduate students to be continually enrolled once they have begun taking thesis credits. This means that every semester until you graduate, you need to take at least one credit of thesis research (including summer semesters). This rule does not apply to non-thesis students.

M.S. in Geology with Emphasis in Environmental Geoscience
(<http://geology.isu.edu/MSEnv.shtml>)

A Geology M.S. degree may be awarded with the annotation “Emphasis in Environmental Geoscience” added, if the student completes the requirements for an M.S. Geology degree plus at least 9 credits in approved graduate level courses in the general area of Environmental Geoscience. Students who wish their M.S. degree to contain the added designation ‘With Emphasis in Environmental Geoscience,’ need to file an amended program of study form with the Graduate School. The curriculum may be developed in, but is not limited to, the following areas: surface and groundwater hydrology; environmental geochemistry; surficial geological processes; geomorphology; volcanic, earthquake and other geologic hazards; environmental geophysics; assessment and remediation of hazardous waste sites; Neogene and Quaternary geology. Courses in related sciences and engineering disciplines may also be included.

The curriculum must be approved by the student’s graduate committee, and may include components taken at Boise State University and/or the University of Idaho. Inter-university graduate committees are encouraged.

Post-Baccalaureate Certificate in GIS

(<http://gisci.isu.edu/pb/>)

Goals

1. Graduates will have the knowledge and skills necessary to apply geotechnology in their chosen careers or fields of interest.
2. Graduates will have the background to compete successfully for industrial and academic positions.

Objectives

- 1 Learn and perform techniques in Geographic Information Systems, Global Positioning System, Remote Sensing, and related skills.
- 2 Increase knowledge of how geotechnical applications are incorporated into research, education, and industry.
- 3 Increase knowledge of geotechnical workforce needs and the future directions of geotechnological applications.

The Graduate Certificate in Geotechnology is offered to students who wish to become proficient in the collection, management, and analysis of spatial data. Courses in three disciplines - Geographic Information Systems (GIS), Global Positioning Systems (GPS), and Remote Sensing—are used to teach the theory and application of Geotechnology. Students may pursue the Certificate independently or in conjunction with another Idaho State University degree.

Process for admission and completion

Admission for graduate certificate in Geotechnologies program

Certificate students may waive the GRE if they meet the other minimum requirements set by the graduate school. (High TOEFL can be substituted for poor verbal GRE for international students.)

Concurrently, begin your Graduate School application process. The "Major code" for the Graduate Certificate in Geotechnologies is **1922**.

Research Assistantships (RA) in Geographic Information Science are quite competitive. Prepare for an interview (in person or via telephone) if you are interested in one. If you have been selected for an RA, you will be sent an RA award letter. Read it carefully, and if you would like to accept the offer, sign and return it on or before the due date. Alternatively, you may wish to apply for an RA with a faculty member in another department. You can then pursue the Certificate in conjunction with your thesis research. The Geotechnologies will then become your emphasis area or research tool.

During your first semester

Enroll in "Principles of GIS" (GEOL5503)

Meet with an advisor to fill out your Program of Study form.

During the following semesters

Continue taking classes, following your planned program of study

During the final semester

Continue taking classes.

File your Program of Study form.

Commencement!

Course Requirements

Admission Requirements

Classified admission is necessary to complete the Certificate and is recommended by the graduate faculty of the Geosciences Department in accordance with standards set by the Graduate School. Applicants must have a bachelor's degree from an accredited school and meet the Graduate School admission requirements. All applicants must submit an application to the Graduate School. In addition, applicants who wish to apply for a Graduate Assistantship (GA) should submit to the Geosciences Department a GA request form, 3 letters of recommendation, and a statement of goals for graduate study.

General Requirements

Students will complete 14 credits of required course work and 5 credits of elective course work to obtain the Certificate (list <http://gisci.isu.edu/pb/>).

Steps to Graduation

One semester prior to Graduation

- 1) Refer to the Graduate School webpage for key dates and deadlines (<https://www.isu.edu/graduate/current-students/dates-and-deadlines/>).
- 2) Submit final Program of Study to Graduate School. The program of study lists the classes you have taken (and will take in your final semester), and is the official count of graduate credits toward graduation. This document is approved by the advisor, chair, and graduate dean. It is important to file the program of study before the final semester begins so you know exactly what you need to take, and so that you don't have any surprises when it's too late. It also lists your committee, including your GFR, who should be chosen in consultation with your department committee.
- 3) Write a chapter or two of your thesis or dissertation. Your first two chapters can typically be derived in part from your prospectus, and having them done this semester makes your final semester far easier.
- 4) You should be done with your data collection and analysis by the end of this semester. If you aren't, chances are you won't finish next semester. There's just too much else to do.
- 5) Download and carefully review the current version of "Instructions for Preparing Theses, Dissertations ..." from the Graduate School (located on the Graduation Information page: <https://www.isu.edu/graduate/current-students/graduation-information/>). This document includes necessary deadlines, fees and Thesis and Dissertation Clearance procedures.

Semester of Graduation - Refer to the Graduate School webpage for key dates and deadlines (see above link)

- 6) Within the first week of the semester, complete the online Application to Graduate and submit to the Graduate School. For summer graduation, this deadline is generally in late March.
- 7) Pay Application Fee for Graduation/Diploma.
- 8) During the semester -Write early and often. Don't delay your writing because it will take longer than you think. Start passing chapter drafts through your advisor, and when they are in good shape pass them through the rest of your committee. It is far better to get your entire committee's input early in the process rather than waiting for the defense draft. If you don't get input until your defense, it can lead to pitfalls at the end.
- 9) During the semester -Work toward a defensible draft of your thesis/dissertation. In some cases, three or four drafts precede the defense draft. Don't count on your first or second draft being your defense draft. *Your entire committee should be involved in deciding that the thesis is ready for defense, not just your advisor.* Your defense draft should look like your final thesis, with all the required lead-in pages. See the Graduate School Thesis-Dissertation instructions on the Graduate School's Graduation Information page (<https://www.isu.edu/graduate/current-students/graduation-information/>).
- 10) Once you have a defense draft approved by your committee, schedule your defense. Your defense must be scheduled prior to or on the "Last Day for Thesis or Dissertation defense," as noted on the Grad School's webpage for key dates and deadlines. Once you've found an time, ask your primary advisor to submit the defense notification on the Grad School's webpage, under "Forms:" "Request to Schedule Oral Defense."
- 11) No later than 2 weeks prior to thesis/dissertation examination - Submit defensible draft of thesis or dissertation to the guidance committee. Your entire committee should have seen at least one previous draft by this time, so they should know what's coming and you should know what they're thinking.
- 12) Oral defense: Oral examination of thesis or dissertation research. The student begins the examination with a 20-minute public presentation of research, followed by a 1-2 hour closed discussion with committee members and any ISU Graduate Faculty. Wow your committee with all your knowledge and the quality of your work. Questioning typically revolves around the thesis project and related topics, but keep in mind that this is a final oral exam for your degree and that your committee can ask you anything!
- 13) Within 2 weeks after the oral examination - Complete final revisions of thesis or dissertation. Relax for 22 hours after your defense, but then get to work! Address the comments and recommendations from your committee and submit a final draft for their review. When they all approve, have each member sign a copy of the signature sheet.
- 14) Thesis Submission – Create an electronic (PDF) copy and submit it to Graduate School (Graduation Clerk) for formatting review. The Graduation Clerk will review the thesis format to ensure it conforms with Graduate school format rules. Make changes if required. Add signed copies of the Use Authorization Page and Committee Approval pages, and the make an electronic version of the entire thesis or dissertation (including scans of maps if pertinent) and submit the PDF files to the Graduate School and your advisor. Print copies of the Thesis or Dissertation are optional. Copies of original signature pages (Use Authorization

and Committee Approval pages) need to be submitted to both the Geosciences Department and to the Graduate School.

15) Relax after a job well done. Get a job...travel the world ...use your degree in creative ways.