



# GRADUTE STUDENT HANDBOOK

Revised August 2020

Please see online version for most up-to-date information

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UTAH STATE UNIVERSITY, DEPARTMENT OF GEOSCIENCES  
GRADUATE HANDBOOK AND POLICIES

INTRODUCTION

Welcome to the Graduate Program in Geosciences at Utah State University! This handbook is a source of information about policies and procedures within the Department. Items in this handbook do not replace University or School of Graduate Studies policies and requirements.

CONTACTS

Your advisor is your primary resource in the Geosciences program. Others that will be able to help you are:

**Graduate Program Director**

- Tammy Rittenour, [tammy.rittenour@usu.edu](mailto:tammy.rittenour@usu.edu)
  - in charge of new students, office assignments, policies, scholarships, and funding

**Graduate Program Coordinator (GPC)**

- Kelly Bradbury, [kelly.bradbury@usu.edu](mailto:kelly.bradbury@usu.edu), 435-797-0515
  - help with most paperwork & general questions

**Business Manager**

- Hollie Richards, [hollie.richards@usu.edu](mailto:hollie.richards@usu.edu), 435-797-0660
  - any money questions, employee paperwork, travel, and snarky remarks

**Office Staff**

- Ellen Imler, [ellen.imler@usu.edu](mailto:ellen.imler@usu.edu), 435-797-1273
  - travel for field trips (TA), equipment checkout, and ordering of paper, toner, supplies

**Department Head**

- Joel Pederson, [joel.pederson@usu.edu](mailto:joel.pederson@usu.edu), 435-797-7097
  - to bug if bugging one of the above people doesn't work ☺

*Students are responsible for informing themselves of current policies and requirements.*

Please refer to the [USU General Catalog](#). Much useful information will be found at the [School of Graduate Studies](#) website under the "Current Students" tab.

The School of Graduate Studies will have most of the [forms](#) you will need.

Useful source of information, including details of the [USU Student Code](#), is found at [Student Affairs](#).

The [Equity Office](#) covers discrimination & sexual harassment/misconduct, Contact them with any concerns.

ABBREVIATIONS

BNR	Biology & Natural Resources Building	CAPS	Counseling & Psychological Services
CoS	College of Science	ESLC	Eccles Science Learning Center (location of CoS Dean's office)
GPC	Graduate Program Coordinator	OHS	Office of Health & Safety
PoS	Plan of Study	RA	Research Assistant
SGS	School of Graduate Studies	TA	Teaching Assistant
TA	Travel Authorization Form (before travel)	TR	Travel Reimbursement Form (after travel)
TSC	Taggart Student Center	NR	College of Natural Resources

## EXPECATIONS & TIDBITS

- Much of the communications happen through email. [Set up](#) and use your USUaggiemail account. It is preferred for you to use firstname.lastname, but not required.
- You will receive a set of keys and a building prox card. Key are picked up at the [Key Office](#) on the east side of campus. Students pay a one-time key deposit of \$25 & prox deposit of \$5, which is refunded when the keys are returned. Work with your advisor and Hollie to request the right keys.
- Picture [ID cards](#) are gotten at the Taggart Student Center (TSC) room 212. Your ID card functions as your library, meal, activities, rec center, computer access, health center, and copy card.
- [Student parking passes](#) are available at the [Parking Office](#) on the north edge of campus.
- Lab Safety Training is done in two parts. The [first part](#) is online and must be completed before taking the second part in-person.
- **You are expected to attend the department's Speaker Series**, which is held on Mondays at 3:30pm. Speakers are drawn from academia, industry, and government agencies. Broad exposure to the ideas and research of other geoscientists is a critical aspect of graduate training.
- You are **strongly encouraged to attend other lectures and opportunities**. Some industry recruiters will present about their companies. In order to support the Department and your classmates with career aspirations with those companies, a good showing is very important. Please make an effort to participate in such opportunities.
- Please **support your fellow graduates and attend their defense**. This is a great way to see what is expected and to learn a lot.
- [Science Unwrapped](#) is once a month on a Friday evening.
- Consider your program as a full-time job and be prepared to engage fully.
- Labs—Lab safety training is offered by OHS. Specialized training offered by Geosciences is required before using labs, including the rock saws.
- Computers—Let Hollie or Joel know if there is software that you require that isn't currently on a department computer. They will arrange for IT to install it.
- Thesis formatting and content is important. A [publication guide](#) and word template is available on the SGS website.

## DEPARTMENTAL POLICIES

### Field and Lab Equipment & Safety

Most department equipment may be borrowed by students for their use in field work, research, or class activities. Different equipment is maintained by varying faculty & staff

- General Field Equipment
  - Field equipment items include basic Brunton Compasses, measuring tapes, shovels & picks, color charts, GPS units, and portable stereoscopes. There is also a significant store of camping equipment, field cooking equipment, water containers, etc.
- Survey Equipment
  - Total stations, survey-grade GPS units, high-precision RTK-GPS units are available. Some of these instruments are utilized by the entire department and for teaching. To request their use, please check with Joel Pederson.
- Microscopes
  - Binocular Microscopes and petrographic microscopes may be signed out for use in graduate student offices or research labs when not required for use in classes. Related equipment includes light sources, mechanical stages (with or without point-count gears), and a counter bank.  
Check with Don Penman about binocular scopes and John Shervais about petrographic scopes.
- Other minor equipment
  - Use of other equipment may be arranged by contacting the particular faculty or staff as listed below:

▪ Rock crushers & grinder	005A	Alexis Ault
▪ Rock prep area, thin sections	004	Carol Dehler
▪ Research scopes and mineral separation	117	Alexis Ault
▪ Seismic, resistivity, magnetometer	G006	Tony Lowry
▪ Field XRF, magnetic susceptibility meter, gamma spectrometer	G004A	Andrew Lonero
- Major Laboratory Instruments
  - Students wishing to use our XRD, XRF, the mass spectrometers, or other capabilities of the GEO 115 geochemistry lab will need to work through Andrew Lonero.
  - For the USU Luminescence Lab or the Malvern particle-size analyzer, contact Tammy Rittenour.
  - They will keep track of user time/number of analyses for billing purposes. The instrument fee schedule is different for courses versus unfunded or funded research and is subject to change. Double check with Tammy or Andrew for current costs.
- Laboratory Safety & OSHA Standards
  - The department must comply with OSHA standards in storage and use of all chemicals, including dark-room chemicals, epoxy, hydrochloric acid, alcohol, and acetone.
  - Access to some lab areas is restricted.
  - Safety training and acknowledged receipt of Materials Safety Data Sheets (MSDS) are required in labs using chemicals.
  - *Training is required for all users of our labs.* Work with Dennis to get trained.

### Travel Policies

- Travel Authorization/Travel Reimbursement (TA/TR)
  - If you are doing *any* travel related to University business, including attending conferences & doing fieldwork, you must complete the proper [travel form](#) at least two week in

advance. For procedures and help starting the paperwork, visit Hollie or Ellen in the front office as soon as you know your travel will occur. The process can take time, and the form must be completed prior to travel for insurance purposes.

- Driving Training Certification
  - Students are often asked to drive a department, university, or personal vehicle for teaching or research purposes. You *must* complete the state mandated on-line [driver training test](#) before driving for any University purpose. [This isn't the same as a State of Utah driver's license.]
  - Make sure to complete all four steps of the process.
  - Forward the certificate you receive to Ellen.
  - The training must be renewed every two years.
- Vehicles
  - The department owns three vehicles, a river raft, and a trailer. The vehicles and trailer are parked in a fenced lot east of the [Motor Pool building](#) on 1500 North near 900 East.
  - As a TA you will be responsible for picking up and returning the vehicles. Be prepared to plan ahead.
  - Our fleet of vehicles was started by generous donations from alumni, and we need to keep them in good shape as long as possible.
- Driving Process
  - You will be given a pouch with the vehicle keys, gas card, and insurance/registration information, as well as a pre/post-trip inspection sheet.
  - Make sure the inspections are fully completed before and after each trip.
  - The beginning and ending mileage are critical for each trip. This information *MUST* be filled in.
  - After each trip, make sure the tank has no less than  $\frac{3}{4}$  gas, and wash/vacuum as needed.
  - Once the vehicle(s) are returned to their parking spot, promptly return the key pouch and inspection sheet to the office.
  - Parking tickets are the responsibility of the driver, not the department
  - Poor driving may result in revocation of privileges.
- Other Notes
  - The department supports student travel to one professional meeting
    - You must present a poster or paper
    - You must also apply for additional [travel funding](#) from the School of Graduate Studies.
  - Do not work alone in the field. Notify contacts as to your whereabouts and timing (notify the department head if no one else is available).

### Keys and Building Security

- Students are typically issued two keys and a prox card. Work with Hollie and your advisor to order them.
- One key accesses the specific office/lab space consented by your major advisor; the other is a sub-master that allows access to the following rooms: 401, 202, 102, 101. The prox card gives you access to the building after hours and on weekends.
- All members of the department with keys share in the responsibility for department security. Please make sure *ALL* unattended research labs and offices are kept locked.

### Geosciences Office—Supplies and Facilities

- Office supplies are purchased with state funds and should not be taken for personal use.
- When a specific item is needed, but the office doesn't have it in stock, talk to Hollie or Ellen about the possibility of ordering it.
- Do not take staplers, scissors, tape dispensers, or other office equipment out of the office. These items are maintained for the convenience of all.
- Letterhead is used only for official departmental correspondence and should not be used for any other purpose. Students may use letterhead for research-related or profession-level correspondence. Letterhead is digital, but USU watermarked paper can be accessed from the office through your advisor.
- When making copies for classes that you TA, use the code for that class, which is the four-digit course number. There is no pin for copies ever. If making copies for your research, or if you need to print to the larger printer, use pin 159.

### Geosciences Book Library & Map Library

The department maintains a collection of geologic and topographic maps, with emphasis on the intermountain west. In addition, we have a collection of USU Geology Graduate theses, U.S. Geological Survey publications, various regional field guides & technical reports, and some scientific journals. These rooms function as a branch of the greater USU Library system. Some holdings are Federal Depository holdings and are not the property of the Geosciences Department. In order to maintain its usefulness as a reference for all, it is critical that maps and volumes be properly returned for reshelving.

- The Map Library is in GEOL G138.
- There is not a dedicated librarian, so access must be somewhat restricted and focused on research and teaching purposes.
- The Book Library is in GEOL 203A.
- Access is limited to regular office hours [M-F, 8a-5p].
- Hard copies of all Theses & Dissertations from the Geo department reside in this library.
- There is a catalog to help find what you need in the Map room and Library.
- Books & maps must be signed out.
- If you somehow compromise the last copy of a given map or document, please notify the office staff so that replacements can be obtained.
- [USU's library](#) has many electronic resources for when you are off campus, Articles, Digital Dissertations, GeoScienceWorld, GeoRef, & Scopus to name a few you should use.

## FINANCIAL SUPPORT & RESIDENCY

*Note: The Geosciences Department cannot pay for student body & course fees. Graduate students are responsible for paying these fees. Graduate students also need to contribute 20% of the subsidized student insurance costs if they choose this coverage. Students that do not need university health insurance must opt-out of this coverage and show proof of alternate insurance each semester.*

### **Graduate Assistantships**

- Graduate research and teaching assistantships, and their accompanying tuition waivers, are available to students in our MS & PhD programs. Students in the AEG-MS program do not qualify for departmental assistantships but are encouraged to apply for other funding sources.
- Graduate research assistantships (RAs) are awarded to students according to the funding sources secured by individual faculty members. RA assignments are research-related and needs of projects may or may not directly relate to a student's thesis.
- Graduate teaching assistantships (TAs) are limited in number. They are distributed at the discretion of the department. As a general rule, they are *not* automatically renewed for successive years. Sufficient progress toward degree completion is needed for additional years of TA funding [typically limited to two years for MS students].
- Grad students with TAs and RA appointments must be registered as full-time grad students.
  - Minimum of 6 credit hours until the required number of coursework and Thesis-research credits are completed as outlined in the student's Program of Study [30 credits for MS, 42 credits for PhD]
  - If student remains in the program past that point, the minimum number of credits drops to 1-3 credits of GEO 6990/7990 Continuing Grad Advisement
- TA/RA appointments are typically for 50% time [20 hours per week]
  - You are a full-time student and a part-time university employee.
  - With a 50% appointment time, you may not accept additional university employment without permission of the School of Graduate Studies.
  - With an assistantship and being a full-time student, concurrent off-campus employment is very strongly discouraged.
- In order to gain continuing support beyond the second [MS] and third [PhD] semesters of study, you must have an approved Program of Study form on file in the School of Graduate Studies.

### **Advancement to Candidacy [PhD]**

As an incentive for PhD students, the value of the base TA-RA assistantship is increased once you have officially advanced to candidacy: after your comprehensive exams and Dissertation proposal are complete.

### **Tuition Support**

If you are receiving a graduate teaching or research assistantship, a graduate fellowship, or most scholarships, the University provides a non-resident tuition waiver your first year. Fellowships and scholarships may cover in-state tuition portion. The Geosciences Department helps accomplish this through research funds and donations from generous alumni.

### **Utah Residency**

USU can only cover the relatively expensive nonresident tuition for the first 12 months of your program. If you are a U.S. citizen and not a formal resident of Utah, you must take the steps to gain formal residency in your first year here. This includes, but is not limited to, things like gaining a Utah driver license, registering



as a voter in Utah, and providing financial and tax information. Information about the steps toward residency and the required [application form](#) are on the Admissions website.

### **Government Financial Aid**

As a graduate student, you may [apply for financial aid](#), including work study, even if you have a TA or RA. If you qualify and receive work study or other forms of financial aid, then it may be used in conjunction with an assistantship and has advantages for both the department and student.

### **Student Health Insurance**

Full-time graduate students receiving graduate assistantship support are required to have health insurance. All enrolled graduate students, including those less than full-time or not receiving assistantship support, are eligible for this insurance at subsidized rates.

If you receive an RA or TA, we will enroll you in a [subsidized student health insurance plan](#) and you are assessed a relatively affordable fee during registration [20% of the cost]. If you prefer to be covered by other insurance, you must actively document that coverage and each semester waive the USU insurance plan at the beginning of each semester.

### **Department Funding Sources**

The Geosciences Department has several named scholarships that can be awarded to graduate students in support of research. To qualify, your Program of Study form must be on file in the School of Graduate Studies. An application form is provided for submittal in the spring semester and selections are made late in the spring semester. Awards are usually on the order of \$1000 but vary due to many factors. For more information, please refer to Appendix B.

### **Other Sources of Funding**

- The School of Graduate Studies provides some [travel support](#) for meetings or conferences when you present. These funds are matched by the Department of Geosciences or your advisor.
- The School of Graduate Studies, College of Science, Ecology Center, and other offices on campus offer grants and scholarships. These include:
  - Graduate Research and Creative Opportunity (GRCO) Grants from the School of Graduate Studies
  - Graduate Enhancement Awards from the Office of Student Involvement and Leadership
  - The Center for Intersectional Gender Studies and Research offers several grants and scholarships
  - The College of Science offers a couple scholarships, including the Claude E. ZoBell scholarship
  - The Ecology Center has funding for students enrolled and affiliated with the center
- Professional organizations, such as GSA, AAPG, SEPM, & Sigma Xi, and regional societies such as the Four Corners Geologic Society, Tobacco Root Geologic Society, and Colorado Scientific Society make competitive awards for thesis research. Grad students are encouraged to work with their advisors in seeking such support for their research. For more information, see Appendix B.
- The [National Science Foundation](#) (NSF) provides Graduate Research Fellowships that can provide significant and prestigious financial support for research. These are very competitive and must be applied for immediately, in the first semester of a program. NSF also has various Dissertation Research Enhancement grant opportunities for somewhat later in a PhD student's program.

## GUIDELINES FOR GRADUATE TEACHING ASSISTANTS

### **TA Assignments**

Teaching assignments will not be the same for all; some may end up teaching more lab sections than others. Assignments are made with deference to class schedule. Every attempt is made to keep assignments equitable.

Typically, each full TA is assigned 3 two-hour labs for the same course, for a total of six contact hours per semester. In cases where the labs are three hours long, two lab sections would be assigned. In some instances, it may be necessary to make a mixed assignment between lab courses.

Most of your twenty hours per week as a TA consists of lab preparation time, office hours to meet with students, and grading lab assignments. On occasion, other tasks may be assigned, such as proctoring and/or grading exams, and/or providing other services to the department. Faculty course instructors should inform their assigned TA(s), as well as their lecture sections, of the teaching assistant's responsibilities.

You will be provided with a list of students registered for your lab section. Only those students on this list should be allowed in your lab and given lab materials. Any student not on a lab list must register for a lab section. Lab assignments or permission to add a lab section can be made only by the faculty instructor. You may allow an occasional student to attend your lab for make-up purposes, but it is important that you do not exceed the room capacity under any circumstances. If the make-up is for a student that is not from one of your labs, communicate fully with the student's regular TA.

### **Performance**

As a teaching assistant, you are a representative of this department. Act responsibly and dress appropriately for the classroom. You have a contractual responsibility to arrive prepared and on time for all labs.

Under no circumstances can the TA make the decision to cancel a scheduled lab. This is solely the responsibility of the supervision faculty instructor. If you must miss a lab, including for the purpose of a professional meeting, contact the faculty instructor well in advance to let them know about the situation. It is up to you to find a suitable replacement to teach your lab. Failure to meet an assigned lab without contacting the supervising faculty member could result in the loss of your Teaching Assistantship.

Upon completion of you lab, erase the whiteboard, close any open windows, turn off the lights and projector, return any borrowed chairs to their proper place, and return all lab materials to their proper storage place. If the projection screen and shades were lowered, raise them. If you have the last lab for the day, please lock the door when finished.

### **Sexual Harassment**

As a teaching assistant, you are required to complete a workshop on prevention of sexual harassment. Teaching assistants are persons of authority in the classroom environment, and you are responsible for reporting incidents of sexual harassment to the faculty instructor and the Department Head immediately. Teaching assistants should not tolerate sexual harassment in their classrooms, including harassment between students.

Teaching assistants should not date or extensively socialize with students during the period in which they have grading or supervisory responsibilities over them. More information is available on the University's [page](#) for the sexual harassment policy.

### **Teaching Evaluations**

It is recommended that each teaching assistant be evaluated early in the semester (after teaching three to four labs). An evaluation this early is meant to be a constructive exercise permitting you to modify your teaching techniques if needed. See Appendix A for a link to the form.

The evaluation will be carried out in the lecture section by the faculty instructor, and the results discussed only between the instructor and the TA.

### **Lab Materials**

Most GEO 1115 (Physical Geology Lab) materials are stored in room GEOL 202. Materials borrowed from this room must be returned immediately after your lab so that other TAs will have access to them. In fact, you may be sharing lab materials with one or two other lab sections of other classes meeting at the same hour. In general, each rock and mineral set should be shared between two students. For example, taking 12 sets will cover a class of 22 students with one set for the TA.

The Geosciences Department has many impressive, large teaching specimens, stored in various places. You are encouraged to enrich your teaching by using these materials. Please inquire with the faculty instructor for the course about accessing these, and please return all specimens promptly.

All TAs are responsible for maintaining the integrity of the rock and mineral sets and map materials. If specimens have become sufficiently hand worn and dirty so that they are no longer representative or functional, they should be replaced. Check with the faculty instructor about finding appropriate replacement material before throwing anything away.

### **Safety in the Lab**

You are expected to communicate to your students the reasonable precautions that must be taken in using lab facilities and materials.

For example. The glass pallet used to test for hardness should be placed firmly on the table and not held in the hand. Also, at the start of each semester, acid bottles should be rinsed, re-labeled if needed, and refilled from the large bottle stored in the fume hood in room GEOL 115. Use only those hydrochloric acid bottles that are labeled clearly to show the contents to be diluted hydrochloric acid. Caution students that acid should not be placed indiscriminately on every specimen; when it is used, it should be blotted off or rinsed off.

If there is any possibility that a student has gotten acid in the eyes, immediately take the student to the eye wash station. Having a wet floor is that last concern—slam the handle and turn the eye wash on full. The student should be taken to Student Health Services (Medical Building, north of the stadium) immediately after a thorough washing.

## YOU NEED TO KNOW

### **Notice of Non-discrimination**

In its programs and activities, including in admissions and employment, Utah State University does not discriminate or tolerate discrimination, including harassment, based on race, color, religion, sex, national origin, age, genetic information, sexual orientation, gender identity or expression, disability, status as a protected veteran, or any other status protected by University policy, Title IX, or any other federal, state, or local law. The following individuals have been designated to handle inquiries regarding the application of Title IX and its implementing regulations and/or USU's non-discrimination policies:

#### **Executive Director of the Office of Equity**

Alison Adams-Perlac  
[alison.adams-perlac@usu.edu](mailto:alison.adams-perlac@usu.edu)  
Old Main Rm. 161  
435-797-1266

#### **Title IX Coordinator**

Hilary Renshaw  
[hilary.renshaw@usu.edu](mailto:hilary.renshaw@usu.edu)  
Old Main Rm. 161  
435-797-1266

For further information regarding non-discrimination, please visit <https://equity.usu.edu/>, or contact:

U.S. Department of Education  
Office of Assistant Secretary for Civil Rights  
800-421-3481  
[OCR@ed.gov](mailto:OCR@ed.gov)

U.S. Department of Education  
Denver Regional Office  
303-844-5695  
[OCR.Denver@ed.gov](mailto:OCR.Denver@ed.gov)

### **Rights to Data**

The School of Graduate Studies requires the completion of "Authorship and Copyright" [paperwork](#) at the time of the Thesis defense. This form comes with the packet of materials for the defense, and it designates authorship, copyright restrictions, and ownership of the research results. Authorship of manuscripts for publication resulting from thesis research should be determined by mutual agreement between the student, the thesis advisor, and the student's graduate committee. We ask students to discuss authorship and ownership during their first year in residence in order to avoid confusion.

Graduate students may not automatically be considered first author of all publications resulting from their thesis research. Research is commonly a component of a larger project funded by their advisor and involving additional students and/or other professional colleagues.

Students may initiate a manuscript for publication, however circumstances may dictate that the student is unable to prepare a manuscript for publication in a timely fashion. Typically, submission of a manuscript to the advisor should occur no later than six months following completion of the degree program. If a manuscript is not forthcoming, the advisor may initiate the manuscript and/or may assume senior authorship.

Ownership of thesis-related research materials generally resides with the Department of Geosciences and/or the advisor. Representative rock samples and/or thin sections cited in a thesis should be left with the advisor or stored in the department thesis-specimen depository. Any thesis-related materials derived from externally-funded research projects must be retained by the advisor as the advisor is ultimately responsible to the funding agency.

If leaving residency before completion of all degree requirements, the student is required to deposit copies of pertinent thesis research documents (field notes, field maps, cross sections, thesis drafts, etc.) with the advisor.

### **Intellectual Property**

Students who switch to a different advisor should expect to work on a different project after changing advisors. Research projects are rarely the intellectual property of a student.

### **Conflict Resolution**

The Department of Geosciences has a well-deserved reputation for being a cordial environment. Unfortunately, disagreements between student and their advisors sometimes occur. The following is an attempt to clarify the procedure that should be followed in these circumstances. Please note that all parties involved in a conflict have an obligation to communicate about problems or potential problems early on and to actively work toward their resolution.

1. Issues of concern must be discussed by the student and the student's advisor and then, if necessary, with the student's thesis committee. Advisors and the thesis committees are likely to be in the best position to evaluate the technical aspects of the research project.
2. If problems still exist *after* discussions with their advisor and committee, the student should speak with the Faculty Graduate Committee. In this capacity, the Faculty Graduate Committee will try to be fair and listen (separately) to both sides of the disagreement and will then try to mediate an agreement between both parties.
3. If the Faculty Graduate Committee is unsuccessful in mediating the situation, the issues go to the Department Head, who will make a recommendation to both student and advisor/committee.
4. As a last resort, a student can go to the Dean of the School of Graduate Studies and request his/her intervention, as outlined in the "Code of Policies and Procedures for Students at Utah State University". Hopefully, any situation that develops within our department can be resolved before this step is called for.

### **Leave of Absence**

The School of Graduate Studies requires that students submit a Leave of Absence/Continuous Registration form if there will be an extended absence. Extended leaves result in a fee upon registration.

UTAH STATE UNIVERSITY, DEPARTMENT OF GEOSCIENCES  
GRADUATE HANDBOOK AND POLICIES

MASTER OF SCIENCE [GEOLOGY] PROGRAM

**MS Program Description**

The Geology MS involves advanced study and has a focus on original research. There are six specializations with the Geology plan-A graduate programs: 1) Geomorphology and Earth Surface Processes; 2) Geophysics; 3) Hydrogeology; 4) Petrology and Geochemistry; 5) Sedimentology and Paleoecology; and 6) Structure and Tectonics.

Only the Plan A thesis option is allowed for the MS degree in Geology. Program Prerequisite: Completion of a BS or BA in geology, biology, physics, chemistry, engineering, or related field is required for matriculated status.

Although advanced courses should be selected primarily from Geology offerings, additional courses may be selected from other departments on campus relating to the Geosciences, such as Biology, Civil and Environmental Engineering, Mathematics and Statistics, Plants, Soils, and Climate, and Watershed Sciences.

**Requirements**

30 credits of graduate work are required for the MS degree, with at least 15 credits of coursework. The recommended distribution is about 20 credits of coursework and 10 credits of thesis. At least 9 to 15 credits of 6000-level geoscience courses are recommended for the degree program.

A 3.0 grade point average must be obtained in required coursework as listed on the [Program of Study](#). Only two grades of less than B (C to B-) will be accepted as part of the required degree program as listed on the [Program of Study](#). Thesis credits will be graded Pass/Fail only (i.e., no letter grade will be given). Graduate students using Department or University facilities and/or under Geosciences faculty supervision must register for a minimum of 3 credits every semester, up to and including the semester in which the thesis is cleared by the School of Graduate Studies. Registration is not required during the summer.

The Graduate Catalog currently states that a student must be registered for at least 3 credits the semester of a thesis/dissertation defense:

The semester a student defends (or redefends) a thesis, AEG paper, or dissertation, or takes final oral examinations, the student must be registered for at least 3 credits.

If a student has not completed all degree requirements by the end of the grace semester, the student must pay a \$100 Late Completion Fee for each semester following the grace semester. If working with faculty involves more than routine submission of the thesis or dissertation to the assistant dean, registration for 3 or more credits is required.

The School of Graduate Studies changed this requirement, under certain circumstances. If a student has completed all coursework on an approved [Program of Study](#), and if working with faculty involves no more than routine submission of the thesis or dissertation, the student will have to register for only one credit the semester of a thesis/dissertation defense. Keep in mind that if a student is registered for only one credit, the student will NOT be considered full time; the student will not be eligible to continue deferring repayment of some student loans, and an international student may not be in compliance with visa requirements.

Wording in the Catalog should reflect this change before the start of the fall semester.

Be aware that by selecting to defend while registered for only one credit does not allow deferment of payments on student debt and may impact student's visa if an international student. Consider this carefully and explore the option with advisor, if necessary.

The university requires students to be registered, if they use the library and buildings.

### **Coursework Prerequisites**

Individual students may need to complete specific undergraduate coursework to prepare for their graduate program. In particular, these seven courses:

- 1) Introductory or Physical Geology with laboratory
- 2) Minerals and Rocks (Earth Materials)
- 3) Historical Geology
- 4) Sedimentation and Stratigraphy
- 5) Geomorphology
- 6) Structural Geology
- 7) Field Methods or experience

Decisions about any exceptions to these core prerequisites in a student's graduate program are made by a student's Advisory Committee in their first meeting. These undergraduate Geology courses cannot appear on the graduate [Program of Study](#), nor can they be officially audited. Thus, completion of these prerequisites generally will be accomplished through lecture attendance and the passing of the regular exams in the courses.

### **MS Time Line**

MS students should plan on finishing their degree program in two years. Logistics associated with field work may extend the time line somewhat. Maintaining matriculated status after three years is at the discretion of the primary advisor and Faculty Graduate Committee, based upon satisfactory progress.

*The School of Graduate Studies will only cover costs of nonresident tuition for the first academic year of your graduate program. Utah residency must be completed prior to the second academic year. If residency isn't established by the start of the second academic year, student will be responsible for nonresident portion of tuition.*

The School of Graduate Studies has a 6-year limit for MS degree completion. Beyond this time, a student would need to re-apply to the program. Furthermore, after 8 years, coursework is retired and cannot be used towards a degree program without being recertified.

Graduate student research is commonly funded by agencies that require timely acquisition, analysis, and reporting of results. Students who fail to fulfill their funded research obligations in a timely, professional and satisfactory manner may be removed from the overall research project at the discretion of their academic advisor.

The following is a semester-by-semester timeline to be used as a guide for completing the Geology MS degree program in two years. Delaying off this schedule makes it very difficult to finish in two years:

### Fall Semester, Year One

- \_\_\_ Meet early and often with advisor to define a research project.
- \_\_\_ Discuss expectations of the Geosciences Department for graduate students with advisor after reviewing it. Sign the [Geosciences Department Expectations Form](#) upon completion.
- \_\_\_ Submit signed [Expectations Form](#) to Grad Program Coordinator for department records.
- \_\_\_ Establish thesis committee, submit [Supervisory Committee Approval](#) form to Grad Program Coordinator, who will forward it to the School of Graduate Studies.
- \_\_\_ Have first thesis committee meeting, focused on your [Program of Study](#) and any prerequisites.
- \_\_\_ Complete [Program of Study](#) for Master's Degree form with committee and submit to Grad Program Coordinator, who will forward it to the School of Graduate Studies.
- \_\_\_ Apply for funding for student grants [see Appendix B]. Be sure to verify deadlines well ahead of time.

### Spring Semester, Year One

- \_\_\_ Apply for research grant opportunities, if appropriate.
- \_\_\_ Write Thesis Proposal draft with advisor mentoring; submit refined draft to committee.
- \_\_\_ Revise and complete [Thesis Project Approval](#) form; submit to Grad Program Coordinator.
- \_\_\_ Complete Thesis Proposal. Get committee signatures of approval on the form.
- \_\_\_ Discuss authorship and copyright questions with advisor before beginning research.
- \_\_\_ Complete and sign authorship form [see Appendix A].
- \_\_\_ Examine copyright form and discuss with advisor [see Appendix A]. Do not sign until defense.
- \_\_\_ Complete the College of Science annual [IDP self-evaluation](#) process.
- \_\_\_ Complete the Geosciences department's annual [Progress/Self-Evaluation Form](#) with advisor & committee.
- \_\_\_ Sign and submit a digital copy of [Progress/Self-Evaluation Form](#) with Grad Program Coordinator upon completion.

### Summer Semester, Year One

- \_\_\_ Communicate regularly and meet with your Advisor, when possible.
- \_\_\_ Conduct thesis research. Apply for residency in the State of Utah, if not a resident.
- \_\_\_ Register for minimum coursework required at the time [this varies].

### Fall Semester, Year Two

- \_\_\_ Continue research and begin writing thesis.
- \_\_\_ Make 15-minute presentation during Speaker Series or at a professional meeting [poster presentations do not count for this].
- \_\_\_ Hold committee meeting to appraise progress and discuss timeline for degree completion.

### Spring Semester, Year Two

- \_\_\_ Complete writing of thesis. Submit refined draft to committee and allow 2 weeks' time for review. When approved by committee members, this becomes the "defense copy" of the thesis.
- \_\_\_ With committee approval and signatures regarding timing, submit [Appointment for Examination](#) form to School of Graduate Studies. Forms must be submitted 2 weeks prior to the defense date requested.
- \_\_\_ Defend thesis. Graduate student must be registered for at least 3 credits during the defense semester.
- \_\_\_ Register for one credit once coursework outlines on the plan of study is completed.
- \_\_\_ Make defense corrections to thesis.
- \_\_\_ Submit committee-approved [signed] thesis to School of Graduate Studies for copy and format editing, along with the [Authorship and Copyright](#) form.
- \_\_\_ Complete the Geosciences department's annual [Progress Form](#) with advisor/committee [if the



committee has a draft of the thesis; this form is not required).

\_\_\_ Sign and submit a digital copy of Progress Form with Grad Program Coordinator upon completion.

#### Summer Semester, Year Two

\_\_\_ Make School of Graduate Studies edits.

\_\_\_ Submit "Application for Graduation" and other forms to School of Graduate Studies.

\_\_\_ Make final copies of thesis to be bound and deliver these along with binding fees and forms to the Merrill-Cazier library. [https://library.usu.edu/services/theses\\_dissertations/index](https://library.usu.edu/services/theses_dissertations/index)

#### If Thesis Not Complete in Second Year

\_\_\_ If all degree requirements are not completed by the end of the semester following the defense, then student must register for at least one credit the semester the final thesis is submitted. If not completed within one year of defense, thesis must be re-defended.

\_\_\_ Continue to make presentations to department or at a professional meeting once per academic year.

\_\_\_ Matriculated status may be changed to "non-matriculated" after three years, at discretion of academic advisor and Faculty Graduate Committee and based upon satisfactory progress.

### **MS THESIS COMMITTEE**

Students are encouraged to establish their committees as soon as possible during their first semester, but the thesis committee must be established no later than the middle of the student's second semester on campus.

In consultation with advisor, select 2 or perhaps 3 other committee members, with one being from "outside" the topical specialty of your thesis. Two of the overall committee members must be from Geosciences (including Emeritus faculty) or other USU departments. One member can be from another institution, such as those with an adjunct appointment in Geosciences Department.

Faculty should be consulted about serving on the committee and their consent obtained. Complete the [Supervisory Committee Approval](#) form with all required signatures and submit it to the Grad Program Coordinator who will forward the form to the School of Graduate Studies. Advisor will need to ok this beforehand.

The thesis committee provides input in the process of course selection and thesis proposal construction. Once thesis research has been initiated, it is recommended that graduate students meet with their committee at least once a semester to discuss progress, problems, or deviations from the original thesis proposal.

At least one thesis committee meeting must be held within the regular nine-month academic year. At this meeting, the committee will evaluate progress toward completion of degree requirements. Failure of the graduate student to convene at least one thesis committee meeting within the regular nine-month academic year will be interpreted as a sign of unsatisfactory progress.

No changes in committee membership are permitted within six weeks of the thesis defense - this is requirement of the School of Graduate Studies.

### **THE MS PROGRAM OF STUDY AND COURSES**

Once a thesis committee has been approved by the School of Graduate Studies, the graduate student should then meet with the advisor and committee members to determine and fill out a [Program of Study](#)

for **Master's Degree** form, laying out a course of study appropriate for the intended thesis research. (<https://gradschool.usu.edu/program-study>) Once filled in, graduate student must notify by email the Grad Program Coordinator who checks them and forwards them on to be digitally signed and completed through the School of Graduate Studies.

MS students will not be allowed to receive Teaching Assistant support or in-state tuition waivers in their second academic year until the **Program of Study** is signed and filed at the School of Graduate Studies.

After the description at the top of the form in DegreeWorks, you should type in your research specialization. Remember, the Geology MS degrees have six specializations: 1) Geomorphology and Earth Surface Processes; 2) Geophysics; 3) Hydrogeology; 4) Petrology and Geochemistry; 5) Sedimentology and Paleoecology; and 6) Structure and Tectonics.

The **Program of Study** represents a contract. If changes must be made later during the course of study, the form must be updated for the School of Graduate Studies or graduate student will not be able to graduate. This requires that advisor to approve the changes and have the Grad Program Coordinator send a memo to the School of Graduate Studies.

### **Distribution of Credits**

- The recommended balance for the required 30 credits is about 20 credits of coursework and 10 credits of Thesis research. After the 30 credits are complete, any remaining credits until graduation must be Continuing Grad Advisement (GEO 6990).
- A typical summer industry internship at the MS level equates to 3 credits of Internship/Co-op Experience (GEO 6900)
- It is recommended that MS students take at least three, and preferably five, 6000-level courses to broaden their understanding of the various disciplines within geology and to ensure exposure to areas other than those directly related to their thesis research.
- No more than 12 credits of 5000-5999 level coursework may be used for a graduate degree.
- No more than 3 credits of 3000-4999 level courses may be applied toward the degree. These 3000-4999 level credits must be from outside your major area.
- You may not include the credit received for the TA training course (INST 7920) toward your MS degree.
- Following USU Grad Studies residency requirements, no more than 12 credits can be transferred from another institution. They must not have been used towards another degree.
- After the required credits for your Program of Study are complete, any remaining credits until graduation (3 credits are required the semester you defend) must be Continuing Grad Advisement (GEO 6990). These are not included in the Program of Study.
- In the summer, after a grace period of 21 days, graduate student will lose access to the library, some IT, and sports facilities. [https://usu.service-now.com/usu/knowledge.do?sysparm\\_document\\_key=kb\\_knowledge,97572cce3dc16100496ec64aa561119c](https://usu.service-now.com/usu/knowledge.do?sysparm_document_key=kb_knowledge,97572cce3dc16100496ec64aa561119c)
  - If you need this access, please register for courses the following fall to keep your status active. If you have completed all your coursework, sign up for 1 credit of GEO 6990/7990 "Continuing Grad Advisement".
  - If this approach does not work, then certain fees must be paid up front for the summer. Graduate student will need to request that the specific fees that are required for the work be added. The Department will pay these fees. Please let the Graduate Committee, advisor, Grad Program Coordinator, and Department Head.

## **REGISTRATION REQUIREMENTS**

Graduate students using university facilities and/or under faculty supervision must register for a minimum of 3 credits per semester up to and including the semester in which the thesis is successfully defended. This applies only to the regular academic year, not summer. If a student is not using facilities or faculty time, the Grad Program Coordinator may write a request to School of Graduate Studies verifying this and waiving the 3-credit requirement, but the student will be subject to a \$100 fee per semester. Following the thesis defense, registration policies of the School of Graduate Studies apply.

Appointment as a Teaching Assistant/Research Assistant requires 6 credits per semester until the ~20 credits of coursework on the "Program of Study" are completed. After that point, there is a 3-credit minimum enrollment.

## **Grades and GPA**

Only two grades of less than "B" (e.g. "B-" to "C") will be accepted as part of the required degree program as listed on the Program of Study. The School of Graduate Studies will not accept "D" grades. An overall 3.0 GPA must be obtained on required course work as listed on the Program of Study.

If graduate student falls below a 3.0 GPA, the School of Graduate Studies will place student on probation, and they cannot receive financial aid or TA funding. Student will have one semester to raise GPA and retain matriculated status.

Thesis research credits will be graded Pass/Fail only and are listed as Incomplete each semester they are taken. When degree program is complete, they are changed to Pass.

Only the pertinent member of the Faculty Graduate Committee can change these thesis-credit incompletes, as their "instructor of record". Before changing the incompletes to Pass, the Faculty Graduate Committee must see and sign the "Exit Form for Graduate Students", ensuring that any departmental equipment is checked back in, USU keys are returned, and etc.

## **MONITORING AND EVALUATION OF MS STUDENT PROGRESS**

It is in the best interest of the student, advisor, and department to see that Master's degrees are completed in a timely manner. Continuing TA support, tuition waivers, and other forms of financial support for students are contingent upon satisfactory progress towards the degree.

Review will be an ongoing process, and evidence of satisfactory progress includes:

- a) annual committee meetings (minimum)
- b) completion of the Program of Study
- c) thesis proposal
- d) annual presentations
- e) success in obtaining grant funding
- f) performance in graduate coursework

Unsatisfactory progress may be indicated through:

- a) failure to follow the graduate student time line presented above
- b) unsatisfactory GPA and academic probation
- c) your rate of progress in coursework
- d) lack of thesis committee meetings
- e) failure to make satisfactory progress on thesis research

If unsatisfactory performance is perceived by the thesis research advisor or Faculty Graduate Committee, the Faculty Graduate Committee will speak with the student and, if necessary, thesis committee. The Faculty Graduate Committee will then write a memo of notification regarding unsatisfactory progress for the student's file and provide the student and advisor with copies.

If, over the semester following the above notification, the student continues to make unsatisfactory progress toward the degree (as determined by the advisor, thesis committee and Geology Faculty Graduate Committee), the student will be placed in non-matriculated status and the School of Graduate Studies will be notified. This ends the student's participation in the Geology Graduate Program.

### THE MS THESIS PROPOSAL

After deciding upon a particular research topic, the next step is to write a Thesis proposal. This should be completed as soon as possible. Creation of the Thesis proposal will help to focus and organize the research project, and the Thesis committee will be able to provide input during the writing and review stages of the proposal.

If the student and committee are in agreement, then the originally outlined project may be modified.

When the proposal is complete and the committee is ready to approve it, then the student must complete the [Master's Proposal Approval Form](#), which is sent around for signatures:

<https://gradschool.usu.edu/masters-thesis-project-approval/>

Please provide the Geosciences Grad Program Coordinator with a digital copy for your department file.

### Format

- The body of the MS thesis proposal should consist of pages of double-spaced text.
- In addition, there will be references, possibly tables or figures, and a schedule of tasks.
- The body of text should consist of the following parts at the minimum:
  - 1) INTRODUCTION
    - a) Project goals/hypotheses
    - b) Significance
  - 2) BACKGROUND
    - a) Setting
    - b) Previous work—topical and regional literature review
  - 3) METHODS
    - a) Field, laboratory, computational
    - b) Data analysis and synthesis
  - 4) RESULTS (so far or anticipated)
  - 5) SCHEDULE--semester-by-semester plan for completion
  - 6) SUMMARY-- comments about important and feasibility of the project
  - 7) REFERENCES--Include only those papers cited in the body of your proposal.
- Use the School of Graduate School format and style guide:  
<https://gradschool.usu.edu/dissertation-thesis-format-style/>
- In consultation with advisor, choose a geoscience journal whose format that can be followed with respect to citations. Geological Society of America publications are our default standard for style, and a style guide is available from them:  
[https://www.geosociety.org/GSA/Publications/Info\\_Services/Author\\_Info/](https://www.geosociety.org/GSA/Publications/Info_Services/Author_Info/)

- When questions arise regarding style and format, discuss them with the editorial staff at the School of Graduate Studies.

### **Thesis Info**

- Remember, the Thesis proposal is just that, a proposal. Do not attempt to write your entire Thesis at this time.
  - Communication between student, advisor, and thesis committee will help things to go more smoothly.
  - A key goal is to show that student has proficiency in the topic and techniques, knows why the work is important, and is prepared to do the work.
- In addition to a regular scientific abstract for your Thesis, USU now requires a “public abstract” as well. This is a non-technical summary of the work that can be read and understood by non-specialists. This is a skill that is increasingly important in the sciences.
- Tables and figures may need to be reduced but captions must remain full size and have the same size/style of print as the text.
- All section headings, figure and table captions, and plate titles must agree verbatim with the lists of same in the front of the thesis.
- Only references cited in the text should appear in the list of references. If a reference is important enough to list, it should be cited somewhere in the text.

### **ROLE OF THE ADVISOR AND THESIS COMMITTEE**

Frequent communication with advisor is critical in structuring the thesis document.

Their role is to evaluate the methods, logic, synthesis of data, and conclusions.

Preliminary drafts should be reviewed by the thesis advisor, not by the entire committee.

Once the thesis draft is in reasonable form, and with the advisor's consent, the draft should then be reviewed by all committee members. This draft is not the defense copy.

Upon approving a thesis draft for defense, Thesis committee members, including the advisor, should be allowed at least two weeks for review of the draft. Committee members may refuse to review theses when other departmental or professional obligations conflict with a timely review.

Once approved by the committee, this becomes the defense copy. This version will not be returned to the candidate nor will any further changes be made in the thesis document by the candidate until after the defense. The committee must have the defense copy of the thesis at least two weeks prior to the defense. If there are photos, large plates, or appendices not quite ready for expensive duplication, at least one copy should be made available to the committee for the two-week period prior to the defense.

### **DEFENSE PREPARATION AND SCHEDULING**

The thesis defense is often viewed as the last major hurdle on the path to receiving the MS degree. The length of student's public presentation of the research should be about 30-40 minutes. This leaves time for set up and questions afterwards, while still fitting within the 50-minute classroom timeslot that many attendees will have available.

- Student is responsible for scheduling their thesis defense with the School of Graduate Studies after approval of their advisor and consultation with their committee.
- Remember that all committee members must have read the thesis before agreeing to schedule the defense.

- Scheduling requires paper work and signatures.

Multiple copies of theses, either defense copies or final versions, should not be run off on Department of Geosciences printers and photocopiers.

### **COMPLETION OF THE DEGREE AND BINDING**

After the Thesis signature page is signed by the committee, the process is turned over to the School of Graduate Studies. Consult their webpage and materials to determine current practices are for scheduling and reviewing theses, gaining the Dean of Graduate Studies signature, and graduating.

The Department of Geosciences still requests one bound copy of the thesis, many advisors request one, and student may want a hardcopy. The library still provides a binding service as needed [[https://library.usu.edu/services/theses\\_dissertations/index](https://library.usu.edu/services/theses_dissertations/index)]. The plates and figures to be placed in back pockets and fold-out figures embedded in text must also be duplicated and fan-folded to a size appropriate for binding.

UTAH STATE UNIVERSITY, DEPARTMENT OF GEOLOGY  
GRADUATE HANDBOOK AND POLICIES

APPLIED ENVIRONMENTAL GEOSCIENCE [MS-AEG] PROGRAM

**MS-AEG PROGRAM DESCRIPTION AND REQUIREMENTS**

The Applied Environmental Geoscience MS degree is a professional/terminal degree program, requiring a combination of advanced courses selected from the Department of Geosciences, as well as additional courses relating broadly to the Geosciences. The MS-AEG degree is offered both through USU's Regional Campuses and Distance Education program: <https://regionalcampuses.usu.edu/degrees/?id=35>  
<https://online.usu.edu/>

This non-Thesis MS degree is coursework based and requires a short research project and report. The MS-AEG report is usually based on a short guided research project or review and analysis of published data. The summary and conclusions developed should enhance knowledge in the discipline. The scope of MS-AEG research should be limited to 1-2 semesters of directed research. MS-AEG reports should follow the same format outlines as MS theses and are expected to reflect similar scholarship standards, even though their research scope may be narrower and they do not require original research as does a Plan A thesis. MS-AEG reports are defended, but are not reviewed by the School of Graduate Studies assistant dean or signed by the graduate dean.

MS-AEG students are rarely eligible for Departmental graduate assistantships or nonresident and instate tuition waivers. However students from an interior-western state, may be eligible for a waiver of your non-resident tuition through the Western Regional Graduate Program (<http://rgs.usu.edu/graduateschool/wrgp>). MS-AEG students are eligible to apply for alumni-funded named scholarships and fellowships from the Department of Geosciences. Students are encouraged to apply for grants and other funding from USU, the Graduate school and other non-USU funding agencies and programs.

**Program Prerequisite**

Bachelor's degree in Geosciences, Geology, or related science discipline.

**Coursework Prerequisites**

Students from non-geology backgrounds may need to take additional Geoscience courses to prepare them for their graduate program. Although not a strict admission requirement, MS-AEG students are expected to have 4 of these 7 core classes:

- Introductory or Physical Geology with laboratory
- Minerals and Rocks (Earth Materials)
- Historical Geology
- Sedimentation and Stratigraphy
- Geomorphology
- Structural Geology
- Field Methods or experience

Decisions about any exceptions to these core prerequisites are made by the student's Advisory Committee during their first meeting. These undergraduate Geology courses cannot appear on the graduate Program

of Study, nor can they be officially audited. Thus, completion of these prerequisites generally will be accomplished through lecture attendance and passing the regular exams in the courses.

### **Requirements**

32 credits of graduate-level courses are required for the MS-AEG, distributed within 29-30 credits of coursework and 2-3 credits of graduate research (GEO 6970). Up to 12 non-USU transfer credits may be applied, if not utilized for a different degree. Specific coursework making up the Program of Study will be decided by the student's Advising Committee and customized based on the student's interest, career goals and deficiencies. Specific coursework requirements should include a mix of courses outside of the Geoscience Department and at least 3-5 courses within the Department. For utilitarian purposes of completing the required credits, Logan-campus students can register for the department's weekly Distinguished Lecturer Series (GEO 6820) for 1-credit once during their graduate program.

No more than 12 credits at the 5000-5999 level or 3 credits at the 3000-4999 level can be used for a graduate degree. Graduate students using Department or University facilities and/or under geology faculty supervision must register for a minimum of 1-3 credits every semester, up to and including the semester in which their report is defended and turned into the Department and School of Graduate Studies. Registration may not be required during the summer.

The registration requirements and GPA criteria for the AEG MS degree are the same as those for the Geology MS degree program. Only two grades of less than B (C to B-) will be accepted as part of the required degree program. A 3.0 grade point average must be obtained in the required coursework listed on the Program of Study. Thesis (MS-AEG report) credits will be graded P-F only (i.e., no letter grade will be given).

For students accepted into the Distance Education AEG-MS program, a more prescribed list of suggested courses that are available from the RCDE program: [http://distance.usu.edu/degree\\_programs/?\\_d=124](http://distance.usu.edu/degree_programs/?_d=124)

### **AEG-MS PROGRAM OF STUDY AND COURSES**

Once a Graduate Advising Committee has been approved by the School of Graduate Studies, the graduate student should then meet with the advisor and committee members to determine a course of study appropriate for the intended thesis research, and fill out the "Program of Study for Master's Degree." This form must be delivered to the Graduate Program Coordinator who will forward it to the School of Graduate Studies. This document and the associated signature page are completed in DegreeWorks within USU's Banner system—follow the instructions on the Grad School's website! Once filled in, you must notify by email the Graduate Program Coordinator who checks them and forwards them on to be digitally signed and completed through the School of Graduate Studies.

The Program of Study represents an agreement—stick with it. If you must make changes later during the course of study, the form must be updated for Office of Research and Graduate studies or you will not be able to graduate. This requires that your advisor and the Geology Grad Program Coordinator approve the changes and send a memo to the School of Graduate Studies.

#### **AEG TIME LINE (for completion in 1-2 years)**

The AEG MS program in Geology is designed to be completed in two to four semesters (no more than two academic years). Maintaining matriculated status (i.e. within the degree program) after three years is at the discretion of the primary advisor and Faculty Graduate Committee, based upon satisfactory progress (see section below).



The School of Graduate Studies has a 6-year limit for MS degree completion. Beyond this time, one would need to re-apply to the program. Furthermore, after 8 years, coursework is retired and cannot be used towards a degree program without being recertified.

#### Fall Semester, Year One

- \_\_\_ Meet early and often with your advisor to define a focus for coursework and Report.
- \_\_\_ Discuss expectations of the Geosciences Department for graduate students with your advisor. Submit the signed [Expectations Form](#) to Grad Program Coordinator upon completion.
- \_\_\_ Establish a Graduate Advising Committee, submit Grad School's [Supervisory Committee Approval](#) form to Grad Program Coordinator.
- \_\_\_ Have first graduate advising committee meeting to discuss your [Program of Study](#) and any prereqs.
- \_\_\_ Complete [Program of Study for Master's Degree](#) form with committee and submit to Grad Program Coordinator.
- \_\_\_ Discuss with your Advisor and Committee if your project will require a ~5 page Research Prospectus where you outline your proposed research project goals and review background literature
- \_\_\_ Discuss authorship and copyright questions with your advisor before beginning your research and sign [Authorship & Copyright](#) form <https://gradschool.usu.edu/authorship/>
- \_\_\_ Apply for funding from student grants if appropriate for your report and work. This application process starts in the late fall and concludes in the early spring.

#### Spring Semester, Year One

- \_\_\_ Focus on completing coursework
- \_\_\_ Submit your Research Prospectus (pending on Advisor/committee recommendations) to your Advising Committee for edits, complete edits, and get approval of your prospectus
- \_\_\_ Complete the Geology department's annual [Progress Form](#) with your advisor & committee and submit a digital copy to the Grad Program Coordinator upon completion.
- \_\_\_ Start work on your research project.
- \_\_\_ Begin writing the introduction and methods for your report.
- \_\_\_ Have committee meeting to appraise progress and discuss timeline for degree completion.

#### Summer Semester, Year One

- \_\_\_ Apply for residency in the state of Utah (if applicable).
- \_\_\_ Complete research project.
- \_\_\_ Complete writing of Report. Submit refined draft to committee and allow 2 week's time for review. When approved by committee members, this becomes the "defense copy" of your report.
- \_\_\_ With committee approval and signatures regarding timing, submit [Appointment for Examination \[Nonthesis/Plan B\]](#) form to School of Graduate Studies 2 weeks prior to the defense date requested.
- \_\_\_ Defend Report. You must be registered for 1-3 credits the semester that you defend.
- \_\_\_ Complete defense corrections to Report and gain committee and Department Head signatures.
- \_\_\_ Make final copies of your report to be bound for your own personal copy(s), and deliver these along with binding fees and forms to the Merrill-Cazier library.  
[https://library.usu.edu/services/theses\\_dissertations/index](https://library.usu.edu/services/theses_dissertations/index)

#### Fall Semester, Year Two

- \_\_\_ Complete any unfinished items listed above.

#### Spring Semester, Year Two

\_\_\_\_ Complete any unfinished items listed above.

### **MS-AEG Prospectus and Report**

The MS-AEG degree is a coursework based professional Masters degree and is different from the MS-Geology degree. The MS-AEG report is usually based on a short guided research project or a literature review and analysis of published data. While shorter in duration and written length, the MS-AEG report should reflect the same level of scholarship as the MS-Geology thesis.

Note that the School of Graduate Studies **Master's Project Approval** form is NOT required by Geoscience or conducted for the AEG-MS.

### **Prospectus**

[requirement dependent on Advisor and Committee discretion]

Your prospectus should be completed in the first year of your graduate program. The prospectus is expected to be about 5-pages in length and briefly describes the problem, background, methods, and analysis you will employ. The audience it is written for is your thesis advisory committee.

### **Report**

The School of Graduate Studies states that the Plan B Master's report, "... is usually a review of literature with conclusions drawn after conceptualizing an area of inquiry, planning a systematic search, and analyzing and critiquing the acquired information. The summary and conclusions developed should enhance knowledge in the discipline."

From the Department of Geoscience's perspective, in addition to:

- a) a literature review; and
- b) the identification of a scientific problem;

AEG Reports should:

- c) report scientific data; and
- d) provide some analysis of those data.

The data may be newly gathered by the student, or compiled from previous work into a coherent dataset. The analysis may, for example, be a first-order investigation of the trends or statistics of the dataset, especially utilizing computational tools.

Although not strictly required for the AEG-MS, go to the School of Graduate Studies forms webpage, and follow the current version of their Thesis Format and Style Guide.

### **COMPLETION OF THE DEGREE AND BINDING**

After your Report is approved by your advisory committee, complete your degree following the information provided by the School of Graduate Studies: <https://online.usu.edu/degrees/>

Note that the School of Graduate Studies does not edit, sign, or require a copy of your Report.

Regarding binding your Report, the USU library's policies are shifting away from requiring hardcopies. The Department of Geosciences still requests one bound copy, many advisors request one, and you may want a hardcopy yourself. The library still provides a binding service as needed [https://library.usu.edu/services/theses\\_dissertations/index](https://library.usu.edu/services/theses_dissertations/index).

**Utah State University, Department of Geosciences  
Graduate Handbook and Policies**

**DOCTORATE OF PHILOSOPHY [GEOLOGY PHD] PROGRAM**

**PHD PROGRAM DESCRIPTION AND REQUIREMENTS**

The Doctorate of Philosophy in Geology requires original research in a specific area of geosciences. The successful candidate must demonstrate a breadth of understanding in geosciences, as well as a depth of understanding in his or her chosen area(s) of emphasis. Dissertation research should be carried out over a significant period of time (i.e., at least one year or three semesters in residence). This significant and original research must be presented in a written dissertation and defended in an oral examination. This work should be of such scope and quality that more than one journal or conference articles can be derived from it.

There are two program tracks for the PhD in Geology: academic and professional. The academic track is designed to prepare graduates for a career in academia or other teaching-related settings; it includes classroom teaching experience under the supervision of a faculty teaching mentor. The professional track is designed to prepare graduates for work in professional careers within extractive or environmental industries. It may include computational coursework relating to information systems or spatial analysis, and completion of an industry internship is encouraged.

Besides these two tracks, the PhD in Geology also shares the six specializations of the Geosciences MS graduate programs: 1) Geomorphology and Earth Surface Processes; 2) Geophysics; 3) Hydro-Geosciences; 4) Petrology and Geochemistry; 5) Sedimentology and Paleoecology; and 6) Structure and Tectonics.

Similar information is in the university catalog at this link:

[https://catalog.usu.edu/preview\\_program.php?catoid=12&poid=9509&returnto=3829](https://catalog.usu.edu/preview_program.php?catoid=12&poid=9509&returnto=3829)

**Requirements**

Graduate students completing a PhD in Geology must fulfill the following requirements:

Complete:

- at least 42 credits beyond your M.S. (including at least 15 credits of GEO 7970 dissertation/research)
- if entering with only a B.S., complete 72 credits of graduate coursework (including at least 21 credits of GEO 7970 dissertation/research).
- Each course must be completed with a minimum grade of B, and you must maintain a minimum cumulative GPA of 3.3.

Academic Track:

- Successfully teach one Geosciences course under the supervision of a faculty mentor, typically receiving 6 teaching internship (GEO 6900) credits.
- Coursework in pedagogy may be pursued, as approved by graduate student's dissertation committee.

Professional Track:

- Completion of professional internship program is encouraged, typically receiving 6 co-op/internship (GEO 6900) credits.

- Coursework developing computational skills may be pursued, as approved by graduate student's dissertation committee.
- Pass a written comprehensive examination showing depth and breadth of knowledge in Geosciences and the graduate student's area(s) of emphasis. The graduate student may be required to take additional classes to satisfy any conditions for passing the exam.
- Successfully complete a written dissertation research proposal and defend it during an oral comprehensive examination.
- The oral comprehensive exam will include questions of a deep and probing nature, and may range beyond the specialization of the dissertation proposal.
- Successfully complete and defend a written dissertation. The dissertation document may consist of several papers submitted or to be submitted for publication.
- The defense will be oral, including a public presentation of the work and successful closed-door defense to the faculty committee.
- If the candidate has not demonstrated adequate knowledge of a topic through the examination, the committee may require that specific conditions be met before completion of the examination, such as coursework or the retaking of the examination at a later time. If two or more committee members vote not pass, the committee may in its summary evaluation vote not pass, and the graduate student's program will be terminated.

### **Coursework Prerequisites**

Individual graduate students may need to complete specific undergraduate coursework to prepare them for their graduate program. In particular, these seven courses:

- 1) Introductory or Physical Geology with laboratory
- 2) Minerals and Rocks (Earth Materials)
- 3) Historical Geology
- 4) Sedimentation and Stratigraphy
- 5) Geomorphology
- 6) Structural Geology
- 7) Field Methods or experience

Decisions about any exceptions to these core prerequisites in a graduate student's program are made by a graduate student's Advisory Committee in their first meeting. Furthermore, the Exam 1 Written comprehensive examination (see below) exists partly to help identify background coursework needs. These undergraduate Geosciences courses cannot appear on the graduate Program of Study, nor can they be officially audited. Thus, completion of these prerequisites generally will be accomplished through lecture attendance and the passing of the regular exams in the courses.

### **PHD TIME LINE**

Graduate students who have already completed a MS degree should plan on finishing their PhD program in 3 to 4 years. Maintaining matriculated status after five years beyond the Master's degree is at the discretion of the primary advisor and Faculty Graduate Committee, based upon satisfactory progress.

The School of Graduate Studies has an 8-year limit for PhD degree completion. Beyond this time, one would need to re-apply to the program. Also, after 8 years, coursework is retired, and cannot be utilized towards a degree program unless the courses are recertified.

Graduate student research is commonly funded by agencies that require timely acquisition, analysis, and reporting of results. Graduate students who fail to fulfill their funded research obligations in a timely, professional, and satisfactory manner may be removed from the overall research project at the discretion of their academic advisor.

The following is a semester-to-yearly timeline that can be used as a guide for completing the Geology PhD degree program in four years:

#### Fall Semester, Year One

- \_\_\_ Meet with advisor often to define a research project.
- \_\_\_ Discuss expectations of the Geosciences Department for graduate students with advisor after reviewing it. Sign the Geosciences Department **Expectations Form** upon completion.
- \_\_\_ Submit signed **Expectations Form** to Grad Program Coordinator for department records.
- \_\_\_ Establish dissertation committee, submit School of Graduate Studies' **Supervisory Committee Approval form** to Grad Program Coordinator.
- \_\_\_ Apply for funding from graduate student grants. This application process starts in the late fall and concludes in the early spring. Be sure to verify deadlines well ahead of time.

#### Spring Semester, Year One

- \_\_\_ Have first dissertation committee meeting at start of semester, focused upon the **Program of Study** and any prerequisites.
- \_\_\_ Apply for research grant opportunities, if appropriate.
- \_\_\_ Begin writing dissertation proposal draft with advisor mentoring.
- \_\_\_ Schedule a meeting with the Faculty Graduate Committee and advisor.
- \_\_\_ Discuss authorship and copyright questions with advisor before beginning your research.
- \_\_\_ Complete and sign **Authorship Form**. <https://gradschool.usu.edu/forms/>
- \_\_\_ Examine **Copyright Form** but do not sign until defense. <https://gradschool.usu.edu/forms/>
- \_\_\_ Complete the first part of the Comprehensive Examinations for the Ph.D. [Part 1 of 3] this semester.
- \_\_\_ Complete the Geosciences department's annual **Progress Form** with advisor/or committee.
- \_\_\_ Sign and submit a digital copy of **Progress Form** with Grad Program Coordinator upon completion.

#### Summer Semester, Year One

- \_\_\_ After success in the written [Part 1-Exam 1 written] comps, complete with committee the **Program of Study for Doctoral Degree** form and submit to Grad Program Coordinator. Be sure to list your specialization.
- \_\_\_ Conduct initial research while working towards the completion of the dissertation proposal.
- \_\_\_ Apply for residency in the state of Utah, if necessary.

#### Fall Semester, Year Two

- \_\_\_ Have a committee meeting regarding the draft dissertation proposal and to schedule the **Written Comprehensive Examination [Part 2 of 3, Written Exam part 2]** early in the semester. If exam 1 indicated that some additional coursework or training is required, parts 2 and 3 of the Comprehensive Examination may be postponed.
- \_\_\_ With the mentoring of the advisor, apply for research funding opportunities, if necessary and appropriate.

### Spring Semester, Year Two

- \_\_\_ After Written Comps are done, complete the **Dissertation Proposal**.
- \_\_\_ Defend in the **Oral Comprehensive Examination** portion. This is part 3 of 3 in the Comprehensive Examination for PhD graduate students.
- \_\_\_ Revise and get Dissertation Proposal signed, provide copy to Grad Program Coordinator. At this time, the School of Graduate Studies **Application for Candidacy** form is submitted.
- \_\_\_ Continue dissertation research in earnest.
- \_\_\_ Make a 15-minute oral presentation during the departmental Speaker Series or at a professional meeting on the dissertation project. Poster presentations do not count for this requirement.
- \_\_\_ Complete the Geosciences department's annual **Progress Form** with advisor & committee.
- \_\_\_ Sign and submit a digital copy of **Progress Form** with Grad Program Coordinator upon completion.

### Year Three

- \_\_\_ Conduct dissertation research, and write dissertation or scientific manuscripts.
- \_\_\_ Hold a dissertation committee meeting to appraise progress and gain mentoring.
- \_\_\_ If in academic specialization, a graduate student may instruct an undergraduate course. If in professional specialization, an internship may be sought and conducted.
- \_\_\_ Complete the Geosciences department's annual **Progress Form** with advisor/or committee.
- \_\_\_ Sign and submit a digital copy of **Progress Form** with Grad Program Coordinator upon completion.

### Year Four

- \_\_\_ Complete dissertation research early in this academic year.
- \_\_\_ Complete writing of dissertation. Submit refined draft to committee and allow at least 2-4 weeks for review. When approved, this becomes the defense copy of your dissertation.
- \_\_\_ With committee signatures, submit **Appointment for Examination** form directly to the School of Graduate Studies. Forms must be submitted 2 weeks prior to the defense date requested.
- \_\_\_ Defend dissertation. Graduate student must be registered for at least 3 credits the defense semester.
- \_\_\_ Make defense corrections to thesis. Submit committee approved [signed] thesis to the School of Graduate Studies for copy and format editing, along with the **Authorship & Copyright** form.
- \_\_\_ Make School of Graduate Studies edits. Submit graduation forms to the School of Graduate Studies.
- \_\_\_ Complete the Geosciences department's annual **Progress Form** with advisor/or committee. Once a draft dissertation is in hand, the progress form need not be completed.
- \_\_\_ Sign and submit a digital copy of **Progress Form** with Grad Program Coordinator upon completion.
- \_\_\_ Make final copies of thesis to be bound, and deliver these along with binding fees and forms to the Merrill-Cazier library. [https://library.usu.edu/services/theses\\_dissertations/index](https://library.usu.edu/services/theses_dissertations/index)

### If Thesis not Complete in Fourth Year

- \_\_\_ If the dissertation is not submitted to School of Graduate Studies and all degree requirements are not completed by the end of the semester following the defense, then the graduate student must register for at least one credit the semester that the final dissertation is submitted. If it is not completed within one year of the defense, it must be re-defended.
- \_\_\_ Continue to make presentations to department or at a professional meeting once per academic year.
- \_\_\_ Continue to discuss progress with advisor and committee. Complete annual progress form.
- \_\_\_ Matriculated status may be changed to non-matriculated after five years, at the discretion of the major advisor and Faculty Graduate Committee, and based upon satisfactory progress.

## PHD DISSERTATION COMMITTEE

Graduate students are strongly encouraged to establish their committees during their first semester, but the dissertation committee must be established no later than the graduate student's second semester on campus. The dissertation committee provides input in the process of course selection, design of the research and the Dissertation proposal, and conducts most of the comprehensive examination process.

In consultation with advisor, select at least 4 other committee members. Three members total are required to be from within the Geosciences Department, including emeritus professors. At least one member of the committee is required to be outside the Geosciences Department. These outside committee members may be from other USU departments or from other institutions, such as those with an adjunct appointment in our Department.

Faculty must be consulted about serving on the committee and their consent obtained. Complete the [Supervisory Committee Approval](#) form with all required signatures and submit it to the Grad Program Coordinator who will forward the form to the School of Graduate Studies. As with all forms, verify with advisor that the form is ready to be initiated.

No changes in committee membership are permitted within six weeks of the dissertation defense - this is a School of Graduate Studies requirement.

Once dissertation research has been initiated, it is recommended that graduate students meet with their committee once a semester to discuss progress, problems or deviations from the original proposal.

At least one dissertation committee meeting must be held within the regular nine-month academic year. At this meeting, the committee will evaluate progress toward completion of degree requirements. Failure of the graduate student to convene at least one thesis committee meeting within the regular nine-month academic year will be interpreted as a sign of unsatisfactory progress.

## PHD PROGRAM OF STUDY AND COURSES

Once a dissertation committee has been approved by the School of Graduate Studies, the graduate student should then meet with the advisor and committee members to determine an initial course of study appropriate for the intended thesis research. After the second semester, when the Written Comprehensive Exam is complete, the graduate student and committee will formally fill out the [Program of Study for Doctoral Degree](#). This document and the associated signature page are completed in DegreeWorks within USU's Banner system—follow the instructions on the Grad School's website <https://gradschool.usu.edu/>! Once filled in, graduate student must notify by email the Grad Program Coordinator who checks them and forwards them on to be completed through the School of Graduate Studies.

After the description at the top of the form in DegreeWorks, graduate student should type in their research specialization. The Geosciences MS degrees have six specializations: 1) Geomorphology and Earth Surface Processes; 2) Geophysics; 3) Hydro-Geosciences; 4) Petrology and Geochemistry; 5) Sedimentology and Paleoecology; and 6) Structure and Tectonics.

PhD graduate students will not be allowed to receive Teaching Assistant support or instate tuition waivers after their third semester unless the Program of Study is signed and filed at the School of Graduate Studies. Exceptions must be appealed at the discretion of the Geosciences Faculty Graduate Committee.

The Program of Study represents a contract. If changes need to be done during the course of study, the form must be updated for the School of Graduate Studies or graduate student will not be able to graduate. This requires that the advisor and the Geosciences Grad Program Coordinator approve the changes and inform the School of Graduate Studies.

### **Distribution of Credits**

The balance of coursework and dissertation research credits in a graduate student's program of study is tailored to each student's needs. This is ultimately the decision of the graduate student's advisory committee, and is recorded in the Program of Study for the School of Graduate Studies.

As a general guideline, of the 42 credits required (if an M.S. has been completed), there will be about an equal balance of coursework and dissertation research credits, with a minimum of 15 credits of dissertation research. Most coursework should be at the 6000-level and above (excluding GEO 6900, 7970, and 7990), with 9 or more at the 7000-level. Avoid having more than 12 credits of coursework numbered below the 6000 level.

If starting from a B.S., of the 72 credits required, at least 21 should be dissertation research, 21 coursework at the 6000-level and above (excluding Geo 6900, 7970, and 7990), and 12 or more at the 7000-level. Avoid having more than 21 credits below the 6000 level.

No more than 3 credits of 3000-4999 level courses may be applied toward the degree. These 3000-4999 level credits must be from outside your major area.

Following USU School of Graduate Studies residency requirements, no more than 12 credits can be transferred from another institution. They must not have been used towards another degree, nor be more than 8 years old.

For utilitarian purposes of filling out a semester's credits only, the department's weekly Distinguished Lecturer Series (GEO 6820) can be taken for 1 credit.

Depending upon whether you are undertaking the Academic versus Professional track, you will include GEO 6900 credits for either teaching a course or conducting an industry internship. A typical summer industry internship or a semester's teaching experience at the PhD level equates to 6 credits of Internship/Co-op Experience (GEO 6900). The School of Teacher Education and Leadership (TEAL) and Department of Instructional Technology and Learning Sciences (ITLS) here at USU offer several courses useful for pedagogy and technological training.

After the required credits on the Program of Study are complete, any remaining credits until graduation must be Continuing Grad Advisement (GEO 7990). These are not included in the Program of Study.

### **Registration Requirements**

Graduate students using university facilities and/or under faculty supervision must register for a minimum of 3 credits per semester up to and including the semester in which the dissertation is successfully defended. This applies only to the regular academic year, not summer. If a graduate student is not using facilities or faculty time during the academic year, the Grad Program Coordinator may write a request to the School of Graduate Studies asking to waive the 3-credit requirement, but the graduate student will be subject to a \$100 fee per semester. Following the thesis defense, registration policies of the School of Graduate Studies apply.



Appointment as a Teaching Assistant/Research Assistant requires 6 credits per semester until the Program of Study is completed. After that point, the 3-credit minimum enrollment may be satisfied by registering for GEOL 7990, Continuing Graduate Advisement.

### **Grades and GPA**

Only two grades of less than a B (e.g. B- to C-) will be accepted as part of the required degree program as listed on the Program of Study. The School of Graduate Studies will not accept D grades. A 3.0 GPA must be obtained on required course work as listed on the Program of Study. If a graduate student's GPA falls below a 3.0, the School of Graduate Studies will place the graduate student on probation, which disqualifies them to receive financial aid or TA funding. A graduate student has one semester to raise their GPA and retain matriculated status.

Dissertation research credits will be graded Pass/Fail only, and are listed as Incomplete each semester they are taken. When the degree program is complete, the grades are changed to Pass.

Only the pertinent member of the Faculty Graduate Committee can change these thesis credit incompletes, as the instructor of record. Before changing the incompletes to Pass, the Faculty Graduate Committee must see and sign the Exit Form for Graduate students, ensuring that any departmental equipment is checked back in, USU keys are returned, and etc.

### **MONITORING AND EVALUATION OF PHD GRADUATE STUDENT PROGRESS**

Review of progress will be an ongoing process, and evidence of satisfactory progress includes: a) at least annual committee meetings and associated memo from your advisor; b) the completion of the Program of Study; c) dissertation proposal; d) annual presentations; e) success in obtaining grant funding; and f) performance in graduate coursework.

Unsatisfactory progress may be indicated through: a) failure to follow the graduate student time line presented above; b) unsatisfactory GPA and academic probation; c) your rate of progress in coursework; d) lack of thesis committee meetings; d) failure to make satisfactory progress on thesis research.

If unsatisfactory performance is perceived by the thesis research advisor or Faculty Graduate Committee, the Geosciences Faculty Graduate Committee will speak with the graduate student and, if necessary, the committee. The Faculty Graduate Committee will then write a memo of notification regarding unsatisfactory progress for the graduate student's file and provide the graduate student plus advisor with copies.

If, over the semester following the above notification, the graduate student continues to make unsatisfactory progress toward the degree (as determined by the advisor, thesis committee and Geosciences Faculty Graduate Committee), the graduate student will be placed in non-matriculated status and the School of Graduate Studies will be notified. This ends the graduate student's participation in the Geosciences Graduate Program.

### **PH.D. COMPREHENSIVE EXAMINATIONS**

The Geosciences Department graduate program requires all Ph.D. graduate students to pass both written and oral comprehensive examinations in order to advance to candidacy for the degree. The purpose of these 3 examinations is to ensure that a graduate student is academically prepared to conduct Doctoral-level research.

The comprehensive examination has two written parts and one culminating oral examination that are taken at different times. These are called exam 1, 2, and 3, for simplicity.

### **Exam 1: Written survey of knowledge in the geosciences**

The first written examination is called exam 1 and should be administered in a graduate student's second semester at Utah State University so that any deficiencies identified can be addressed in a timely manner by coursework, independent study, or the retaking of all or part of the examination. A key objective of exam 1 is to identify any deficiencies and areas that need strengthening with coursework or research experience as the graduate student embarks on their research and plan of study. A poor performance on exam one could lead to unsatisfactory status.

The Exam 1 written comps are specifically useful for identifying coursework that is needed, and any graduate coursework or out-of-the-discipline coursework identified as a condition should be included on the subsequent [Program of Study form](#), which is completed as soon as possible after the exam. Undergraduate Geoscience deficiencies cannot be included in the Program of Study.

### **Exam 2 and 3: Written detailed questions from the committee**

Exams 2 and 3 should be completed in a graduate student's second year, in concert with the research proposal.

The oral comprehensive examination should occur no later than the semester following the completion of the written comprehensive exam (typically in the second year). The oral exam hinges upon a presentation and defense of the research proposal. Thus, the research proposal must be completed and approved by the committee concurrently. Upon successful completion of the oral comprehensive examination, the graduate student officially advances to candidacy for the Ph.D.

## **WRITTEN COMPREHENSIVE EXAMINATION**

The two parts of the written comprehensive exam are distinct in timing and purpose. The written exam 1 examines the candidate's breadth of knowledge in the overall Geosciences and is administered largely by the Faculty Graduate Committee. The written exam 2 examines the candidate's depth of knowledge in his or her specialties and is conducted by the graduate student's advisor and committee.

### **Exam 1 written exam**

The format is an ~8 hour closed-book exam, usually split into more than one day and comprising of 5-10 questions. It is the responsibility of the Faculty Graduate Committee to organize the comprehensive examination and solicit questions from the faculty in general, such that a reasonable mix of questions are assembled. These questions would be ones that a strong graduate student could answer after completing Physical and Historical courses.

To evaluate the exam 1 part of the Written Exam, a member of the Faculty Graduate Committee, the primary advisor, and one other member of the graduate student's dissertation advisory committee form an examination panel. This panel utilizes the [Results of Ph.D. Comprehensive Examination: Written Exam 1 form](#).

### **Exam 2 written exam**

The format may vary depending upon advisor preference, but is typically an open-media, take-home examination, comprising 4-7 major questions or educational tasks, with a time limit of approximately one week at the discretion of the examination committee. The written questions will be solicited from the

candidate's committee members by the Dissertation Committee Chair (primary advisor). These questions are to be used to aid in the writing of the Dissertation proposal, evaluate the depth of the candidate's knowledge within their area of research, and identify any conditions that need to be met to complete the examination.

The graduate student's dissertation committee members evaluate the written exam, then record the results using the [Results of Ph.D. Comprehensive Examination: Written Exam 2 form](#). Based upon performance, the committee or committee members may choose to vote conditional pass, and then identify those conditions to be met. If two or more committee members vote not pass, the committee may in its summary evaluation vote not pass, and the graduate student's program will be terminated.

### **ORAL EXAMINATION AND DISSERTATION PROPOSAL PRESENTATION**

The Ph.D. graduate student will prepare a professional presentation based upon their dissertation research proposal, to be given to their examination committee only. This should focus upon their research design, and it may be 30-60 minutes in length. Following upon this presentation, the examination committee will ask questions about its content, as well as deep and probing questions about the research topic under consideration.

The specific purpose of the oral comprehensive examination is to ensure the candidate's knowledge of their research area and the soundness of their research proposal and research design. It has the additional purpose of providing an important exercise in professional verbal communication in the sciences, which should be well organized, concise, and rigorous.

The examination committee records its evaluation on the [Results of Ph.D. Comprehensive Examination: Exam 3 form](#). If two or more committee members vote not pass, the committee may in its summary evaluation, vote not pass, and the graduate student's program will be terminated.

Based upon performance in the oral comprehensive exam, the committee or committee members may choose to vote conditional pass, and then identify those conditions to be met.

### **ADVANCING TO CANDIDACY**

Once both the written and oral comprehensive exams have been successfully passed (excluding any coursework conditions listed on the graduate students Program of Study) and the dissertation proposal is complete and signed by the committee, then The School of Graduate Studies' [Application for Candidacy form](#) can be filled out. This must be signed by the primary advisor and the Geosciences Department Head.

### **PHD DISSERTATION PROPOSAL**

The Dissertation Proposal should be a major focus of the first three academic semesters. Creation of the research proposal will help the graduate student to focus and organize their project, and their dissertation committee will be able to provide input during the writing and review stages of the proposal.

The proposal is an agreement between the graduate student and their advisory committee that the research is of an appropriate nature and the methods described are adequate. This provides a safeguard against excessive additions or changes during the research project. Research projects commonly evolve and change. If the graduate student and committee are in agreement, then the project may be modified.

As with most aspects of working on their PhD, communication between their advisor, and their advisory committee will help things to go smoothly.

## Format

The body of the Dissertation Proposal should be similar in scale, style and rigor to an NSF proposal. The identification of an important problem and a research design to address it is fundamental to Doctoral-level work. The proposal may have on the order of 15-30 pages of text, including initial research or analytical findings. In addition, there will be references, tables and figures.

NSF-style proposals are a pertinent and available model, that will be needed in future proposals during a professional research career. Here are some themes good NSF proposals illustrate:

- 1) Write information at a synthesis level for other colleagues who are authorities. When writing a background review, assume the reader has basic knowledge, distill the essence of it, and get to the important nuances for the particular problem.
- 2) Write with great concision, edit and shorten. For example, cite only the salient references, not a comprehensive history of them.
- 3) Readers will look to see if the research goals are clearly linked to the components of the research design. The research design should explicitly and convincingly address the questions and broader problem.
- 4) The broader problem and the importance of the work are as important as the nuts-and-bolts. Convincing a reader that the work has a critical place in a grander context of knowledge may increase the possibility of funding. This will help to exhibit mastery of a field.

Upon completion of your Dissertation Proposal and comprehensive exams, graduate student will complete the [Doctoral Application for Candidacy](#), which is forwarded by the Grad Program Coordinator and sent around for signatures

NOTE: Although the School of Graduate Studies does not require approval, or a copy, of the proposal, please provide the Grad Program Coordinator with a digital copy of the proposal for the department file.

## PHD DISSERTATION

### Format

Use the School of Graduate School format and style guide: <https://gradschool.usu.edu/dissertation-thesis-format-style/>

In consultation with advisor, choose a geoscience journal whose format that can be followed with respect to citations. Geological Society of America publications are our default standard for style, and a style guide is available from them: [https://www.geosociety.org/GSA/Publications/Info\\_Services/Author\\_Info/](https://www.geosociety.org/GSA/Publications/Info_Services/Author_Info/)

In addition to a regular scientific abstract for the dissertation, USU now requires a public abstract as well. This is a non-technical summary of the work that can be read and understood by non-specialists. This is a skill that is increasingly important.

## ROLE OF THE ADVISOR AND DISSERTATION COMMITTEE

Frequent communication with an advisor is critical in successfully completing a PhD.

Their role is to evaluate the methods, the logic, synthesis of data, and conclusions

Preliminary drafts should be reviewed by the dissertation advisor rather than by the entire committee.

Graduate students should be aware that the form, content of a dissertation, and the level of expectation by an advisor vary for any number of reasons. Different kinds of research problems and methodologies that may be applied, changes in faculty, different abilities of graduate students, access to data, funding, etc.

Once the dissertation draft has been reviewed and corrected initially, then with the advisor's consent, the draft can then be reviewed by all committee members. This draft is not the defense copy.

Upon approving a dissertation draft for defense, committee members, including the advisor, should be allowed at least 2 to 4 weeks for review of the draft. Committee members may refuse to review theses when other departmental or professional obligations conflict with a timely review.

Once approved by the committee, this version of the dissertation becomes the defense copy. This version will not be returned to the candidate nor will any further changes be made in the document by the candidate until after the defense. The committee must have the defense copy at least two weeks prior to the defense. If there are photos, large plates or appendices not quite ready for expensive duplication, at least one copy should be made available to the committee for the two-week period prior to the defense.

### **DEFENSE PREPARATION**

The dissertation defense is viewed as the last major hurdle on the path to receiving your degree. The length of the public presentation of the research should be about 30-40 minutes. This leaves time for set up and questions afterwards, while still fitting within the 50-minute classroom timeslot that many attendees will have available. There are things that can be done now to help avoid conflict and tension during the last few weeks of writing, revising, and defense preparation.

The graduate student is responsible for scheduling the defense with the School of Graduate Studies after approval of their advisor and consultation with their committee. Remember that all committee members must have read the dissertation before agreeing to schedule the defense.

Multiple copies of the Dissertation, either defense copies or final versions, should not be run off on Department of Geosciences printers and photocopiers.

### **COMPLETION OF THE DEGREE AND BINDING**

After the Dissertation signature page is signed by the committee, the process is turned over to The School of Graduate Studies. Consult their webpage and materials to determine current practices are for scheduling and reviewing dissertations, gaining the Dean of Graduate Studies signature, and graduating.

Regarding binding a Dissertation, the USU library's policies have shifting away from requiring hardcopies, and instead the Grad Program Coordinator uploads an adobe pdf version along with a signed submission form. The Department of Geosciences still requests one bound copy, many advisors request one, and you may want a hardcopy yourself. The library still provides a binding service as needed--check with them for the latest guidelines. The plates and figures to be placed in back pockets and fold-out figures embedded in text must also be duplicated and fan-folded to a size appropriate for binding.

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APPENDIX A

Department and University Forms

Geosciences Department Forms	School of Graduate Studies Forms
<ul style="list-style-type: none"><li>• <a href="#">Annual Student Evaluation</a></li><li>• <a href="#">Coursework Checklist</a></li><li>• <a href="#">Grad Expectations Form</a></li><li>• <a href="#">GEO 6900 [Graduate Internship/Co-op]</a></li><li>• <a href="#">Field Research Safety Plan</a></li></ul>	<ul style="list-style-type: none"><li>• <a href="#">Leave of Absence/Continuous Registration</a></li><li>• <a href="#">Student &amp; Advisory Expectations</a></li><li>• <a href="#">Utah Residency</a></li><li>• <a href="#">Appointment for Examination</a></li><li>• <a href="#">Record of Examination</a></li><li>• <a href="#">Plan B Report/Creative Project Submission</a></li><li>• <a href="#">Thesis/Dissertation Format &amp; Style and Electronic Publication Approval</a></li><li>• <a href="#">Authorship &amp; Copyright</a></li><li>• <a href="#">Program of Study</a></li><li>• <a href="#">Supervisory Committee Approval</a></li><li>• <a href="#">Master's Thesis/Project Approval</a></li><li>• <a href="#">Application for Candidacy (PhD)</a></li><li>• <a href="#">Appointment for Examination</a></li><li>• <a href="#">Record of Examination</a></li></ul>

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APPENDIX B

Scholarship, Grant, & Fellowship Opportunities

(links updated June 2020)

No Deadline

**National Speleological Society:** Research grant

--<https://caves.org/committee/rac/researchgrants.shtml>

**Environmental Protection Agency (EPA)**

-- <https://www.epa.gov/careers/fellowships-scholarships-and-post-doctoral-opportunities>

Fall Deadlines

**Association of Women Geoscientist**

--<http://awg.org/awards>

**Sigma Xi:** Grants-in-Aid

-- <https://www.sigmaxi.org/programs/grants-in-aid/apply>

**National Science Federation:** Graduate Fellowships

-- <http://nsfgrfp.org/>

**American Association of Petroleum Geologists (AAPG):** Grants-in-Aid

-- <https://foundation.aapg.org/list-of-grants-in-aid-grants>

**Society of Exploration Geophysicists:** Scholarships

-- <https://seg.org/Scholarships>

**Evolving Earth Foundation:** Research Grants

--<https://www.evolvingearth.org/grants/>

Spring Deadlines

**Society for Sedimentary Geology (SEPM):** Student Assistance Grants

-- <https://www.sepm.org/Apply-for-a-Student-Assistance-Grant>

**American Geosciences Institute:** Wallace Woman's Scholarship

-- <https://www.americangeosciences.org/workforce/harriet-evelyn-wallace-scholarship>

**Geologic Society of America (GSA):** Research Grants

[https://www.geosociety.org/GSA/Education\\_Careers/Grants\\_Scholarships/Research\\_Grants/GSA/grants/gradgrants.aspx](https://www.geosociety.org/GSA/Education_Careers/Grants_Scholarships/Research_Grants/GSA/grants/gradgrants.aspx)

**The Tobacco Root Geological Society:** Field Scholarship

-- <https://www.trgs.org/apply-for-scholarships>

**Rocky Mountain Association of Geologists:** Norman H. Foster Scholarship

-- <https://rmagfoundation.org/scholarships/norman-h-foster-memorial-scholarship/>

**Desert Research Institution:** The Jonathan O. Davis Scholarship

-- <https://www.dri.edu/about/awards-and-scholarships/davis-scholarship/>

**Association for Women Geoscientists**

-- <http://awg.org/awards>

**Rocky Mountain Association of Geologists:** Scholarships

--<https://rmagfoundation.org/scholarships/>

**Wyoming Geological Association:** Scholarships and Fellowships

-- <https://wyogeo.org/scholarships/>

**Sigma Xi:** Grants-in-Aid

-- <https://www.sigmaxi.org/programs/grants-in-aid/apply>

**National Speleological Society:** Ralph Stone Student Grant

-- <http://caves.org/committee/rac/ralphstone.shtml>

**Colorado Scientific Society:** Research Grants

-- <http://coloscisoc.org/grants/>

**SEPM Rocky Mountain Section:** Research Grants

-- <https://www.rmssepm.org/scholarships>

**College of Science & School of Graduate Studies:** Seely-Hinckley Grad Scholarship

-- [https://qcnr.usu.edu/intranet/awards/grad\\_seely\\_hinckley](https://qcnr.usu.edu/intranet/awards/grad_seely_hinckley)

**Society of Petrophysicists & Well Log Analysts (SPWLA):** Scholarships & Grants

[https://www.spwla.org/SPWLA/Foundation/Grant\\_and\\_Scholarship\\_Applications/SPWLA/Foundation/Grant\\_and\\_Scholarship\\_Applications.aspx?hkey=8ca674ce-92bc-410a-a90f-5ea70abbc00a](https://www.spwla.org/SPWLA/Foundation/Grant_and_Scholarship_Applications/SPWLA/Foundation/Grant_and_Scholarship_Applications.aspx?hkey=8ca674ce-92bc-410a-a90f-5ea70abbc00a)

**Four Corners Geological Society:** Graduate Grants

-- <https://fourcornersgeologicalsociety.org/scholarships/>

#### Summer Deadlines

**USU GRCO:** Research Grant

-- <https://gradschool.usu.edu/grco/>



## DEPARTMENT OF GEOSCIENCES SCHOLARSHIPS

### Summary of Criteria

#### Peter R. McKillop Memorial Scholarship

Developed in honor of Peter by his advisor Jim Evans, Susanne Janecke, and friends of Peter. The award will go to a graduate student who, like Peter, has a strong academic record and is not already well funded. Need and demonstrated interest or aptitude in other fields, such as the arts, humanities, community service, or music may be used as a secondary selection criterion.

#### Robert Q. Oaks, Jr. Scholarship

Developed to recognize Bob's dedication and excellence in teaching and challenging all his students. The scholarship will assist undergraduate and graduate students who are nearing the completion of their degrees. In order to be considered, graduate students must have completed their thesis or dissertation proposals and be in the final stages of writing their thesis or dissertation. Undergraduate student applicants must be Geology majors in good standing, within 20 credits of graduation and have a minimum 2.2 GPA. All students must demonstrate financial need and have completed a majority of their course work as determined by their advisor. Recipients must agree to remain enrolled in their respective degree program and remain in residence, defined as actively pursuing completion of their degree on one of USU's campuses.

#### Kim R. Robeson Memorial Travel Award

Developed in honor of Kim by his adviser Jim Evans and by Susanne Janecke. The award provides support of non-class-related trips for graduate students, including trips organized by student groups, particularly to help with expenses for groups of students involved in laboratory or field research.

#### Beryl O. & Tura H. Springer Memorial Scholarship

Established by Jerry R. Springer in 2006 to honor the strong heritage of mining in the Springer family and the Springer family legacy which spans five generations at Utah State University. This award supports graduate and undergraduate geology majors. Undergraduates must have at least Junior-level standing. Recipients must demonstrate excellence in academic achievement.

#### J. Stewart Williams Graduate Fellowship

Developed to honor the memory of this former faculty member, department head, and graduate dean. The endowment provides support for summer research expenses incurred by graduate students. In order to be eligible for this award, graduate students must be in good standing with a minimum 3.0 GPA, have completed & submitted a fully-signed thesis committee form, have completed & submitted a fully signed-program of study form, and have completed & submitted a fully-signed thesis proposal by May 15.

#### Summit Fund

Started by Susanne Janecke & Jim Evans, Angela Isaacs, Caleb Pollock, and other alumni. The fund supports two efforts—The Craig Forster Lecturer and scholarships for graduate students. To be eligible for the Summit Scholarship, graduate students must be in good standing with a minimum 3.0 GPA, have completed & submitted a fully-signed thesis committee form, have completed & submitted a fully-signed program of study form, have completed & submitted a fully-signed thesis proposal, and made satisfactory progress toward their research and coursework.