

Department of Geology and Geological Engineering
 South Dakota Mines

Graduate Student Handbook: 2022-2023

Table of Contents

Geology and Geological Engineering Faculty and Staff	3
1 General Information.....	4
1.1 Acronyms	4
1.2 Purpose.....	4
1.3 Keys.....	5
1.4 Offices.....	5
1.5 Mail	5
1.6 Photocopying.....	5
1.7 General Expectations, Representation, and Responsibilities	5
1.7.1 Student and Professional Organizations	5
1.7.2 GGE Graduate Representatives.....	5
1.7.3 GGE Graduate Lunch and Learn Seminar	6
1.7.4 GGE Graduate Student Town Hall Meeting.....	6
1.7.5 GGE Seminars	6
2 Graduate Program Policies for all Programs, Specializations, and Emphases	6
2.1 Catalog, Policies, and Resources	6
2.2 Change of Specialization.....	7
2.3 Change in Degree Program	7
2.4 Conflict Resolution and Assistance.....	7
2.5 ADA Statement	7
2.6 Academic Misconduct.....	7
2.7 SD Mines Adheres to Title IX.....	7
3 Non-thesis MS (GGE) Guidelines	7
4 Thesis-based MS and PhD Programs Guidelines	8
4.1 Initial Assistantship and Fellowship Funding	8
4.2 GTA Awards and Responsibilities.....	8
4.3 GRA and Fellowship Awards	8
4.4 Advisor, Committee, and Plan of Study.....	9
4.5 Expectations for Enrolling in Research Credits	9
4.6 Proposals and Examinations	10
4.6.1 MS Proposals and Examinations	10
4.6.2 PhD Proposals and Examinations	10
4.6.3 Research Proposal.....	10
4.6.4 Qualifying examination	10
4.6.5 Comprehensive examination and admission to candidacy	11
4.7 Theses and Dissertation Defenses	12
4.7.1 Quality of Theses and Dissertations	12
4.7.2 Faculty Review of Theses and Dissertations	12
4.7.3 Defense Venue.....	12

4.8	Data Management	12
4.8.1	Materials of Concern	12
4.8.2	Materials that are Exempt	13
4.8.3	Procedures.....	13
4.8.4	Data Sharing	13
5	GGE Graduate Student Travel Funding Application.....	13
6	GGE Graduate Program Expectations, Outcomes, and Assessment Plan	15
	GGE Graduate Program Outcomes	15
6.1	Outcome Rubric 1: Faculty Perspective.....	15
	Rubric 1 - GGE Graduate Student Outcomes: Faculty Perspective	16
6.2	Outcome Rubric 2: Graduate Student Perspective	16
	Rubric 2 - GGE Graduate Student Outcomes: Graduate Student Perspective	16
6.3	Mapping outcomes to required graduate courses via the rubric criteria	17
6.4	Outcome sustainability and relevance.....	17

Geology and Geological Engineering Faculty and Staff**Department Administration**

Dr. Laurie Anderson	<i>Department Head and Museum Director</i>	MI 303 PRL 112
Ms. Cleo Heenan	<i>Senior Secretary</i>	MI 305
Dr. Liangping Li	<i>Graduate Programs Director</i>	MI 314
Dr. Timothy Masterlark	<i>Advisor for non-thesis MS students</i>	MI 308

Geology Faculty**(Professors)**

Dr. Laurie Anderson	<i>Paleobiology, Paleoecology, Taphonomy</i>	MI 303 PRL 112
Dr. Edward Duke	<i>Manager of Analytical Services, Petrology, Geochemistry, Remote Sensing</i>	MI 234
Dr. Timothy Masterlark	<i>Geophysics and Numerical Modeling</i>	MI 308
Dr. Maribeth Price	<i>Dean of Graduate Education</i>	C 2201
Dr. Nuri Uzunlar	<i>Director BHNSFS</i>	MI 306

(Associate Professors)

Dr. Darrin Pagnac	<i>Mammalian Paleontology, Paleoecology</i>	PRL 213
Dr. Gokce Ustunisik	<i>Igneous & Experimental Petrology, Planetary Petrology</i>	MI 302

(Assistant Professors)

Dr. Sarah Keenan	<i>Vertebrate Taphonomy, Low-temperature Geochemistry, Geomicrobiology</i>	PRL 111
Dr. Trevor Waldien	<i>Tectonics, Structural Geology, Geochronology</i>	MI 310
Dr. Kevin Ward	<i>Seismic Imaging, Geophysical Inverse Problems, Broadband and Nodal Geophone Deployments</i>	MI 304

(Instructor)

Ms. Victoria Karnes	<i>Geospatial Technology</i>	MI 301
---------------------	------------------------------	--------

Geological Engineering Faculty**(Professor)**

Dr. Larry Stetler	<i>Geological Engineering, Sedimentology, Surface and Groundwater, Environmental Geology, Petroleum</i>	MI 315
-------------------	---	--------

(Associate Professors)

Dr. Kurt Katzenstein	<i>Geomechanics, Geological Engineering, InSAR</i>	MI 318
Dr. Liangping Li	<i>Groundwater, Geostatistics, Data Assimilation, Reservoir Modeling</i>	MI 314

Support Faculty and Staff

Ms. Kayleigh Johnson	<i>Preparator and Lab Manager</i>	PRL 214
Dr. Nathaniel Fox	<i>Associate Director, Museum of Geology</i>	PRL 114
Dr. Roger Nielsen	<i>Research Scientist IV, Geology</i>	MI 334B
Dr. Christopher Pellowski	<i>Coordinator and Instructor, GGE/BHNSFS</i>	MI 300

Emeritus Faculty

Dr. Arden Davis	<i>Geological Engineering: Groundwater, Environmental Contamination, Digital Modeling</i>
Dr. James E. Fox	<i>Geology: Curator of Invertebrate Paleontology, Sedimentology, Petroleum Geology, Invertebrate Paleontology</i>
Dr. James E. Martin	<i>Geology: Emeritus Curator Museum of Geology, Vertebrate Paleontology, Biostratigraphy</i>
Dr. Colin J. Paterson	<i>Geology: Economic Geology, Mineral Resources, Petrology</i>
Dr. Perry H. Rahn	<i>Geological Engineering: Hydrogeology, Environmental Geology</i>
Dr. William Roggenthen	<i>Geological Engineering, Geophysics</i>
Dr. Foster Sawyer	<i>Sedimentology, Groundwater, Petroleum Geology</i>

Adjunct Faculty

Mr. Mark Anderson	<i>Instructor, SD Mines Civil and Environmental Engineering Dept.</i>
Dr. Rachel Benton	<i>Retired Paleontologist, National Park Service</i>
Dr. Joshua Valder	<i>Hydrologist, Dakota Water Science Center, U.S. Geological Survey</i>

1 General Information

1.1 Acronyms

ACA	Affordable Care Act
FERPA	Family Educational Rights and Privacy Act
GDR	Graduate Division Representative
GGE	Department of Geology and Geological Engineering
GGEME	Geology, Geological Engineering, and Mining Engineering PhD program
GPA	Grade Point Average
GRA	Graduate Research Assistant
GTA	Graduate Teaching Assistant
GPD	Graduate Program Director
MI	Mineral Industries Building
PDF	Portable Document Format
POS	Plan of Study
PRL	Paleontology Research Laboratory
SDBOR	South Dakota Board of Regents
SDSMT	South Dakota School of Mines and Technology

1.2 Purpose

The purpose of this document is to provide additional departmental and graduate program information not available in the University's Academic Catalog or Departmental website. It is meant to supplement, not replace, information in the Academic Catalog. If any discrepancies

between this handbook and the Academic Catalog occur, the Academic Catalog takes precedence.

1.3 Keys

Student keycards provide access to the MI building. Laboratory keys and office keys for the MI building are available, with approval from the Department Head, Laurie Anderson. The Department Secretary, Cleo Heenan, prepares the request form. For access to the PRL and offices and labs within the PRL, submit a request to Preparator and Lab Manager, Kayleigh Johnson. Keys are dispensed by Facilities Services and must be returned prior to graduation.

1.4 Offices

Graduate student may be assigned office space with priority to:

1. GRAs, GTAs, and students having an external fellowship.
2. Students working with proprietary data or who require a physical SDSMT network connection.
3. Unsupported PhD students.
4. Unsupported MS students (thesis).

1.5 Mail

Graduate students are assigned mail slots in room MI 311.

1.6 Photocopying

Student use of the department copier code is limited to GTA responsibilities. The code is available from the Department Secretary. The copier has scanning capabilities, which can deliver scanned documents to your email as a PDF. A special code is available for students wishing to scan and obtain electronic documents that are outside of GTA responsibilities. Scan-to-email instructions are posted above the copy machine. Students will abide by applicable copyright laws when scanning and photocopying.

1.7 General Expectations, Representation, and Responsibilities

1.7.1 Student and Professional Organizations

Graduate students are expected to participate in student organizations and professional societies. GGE hosts several organizations and clubs including an honor society and several discipline-specific professional organization chapters.

1.7.2 GGE Graduate Representatives

GGE graduate students will elect one MS and one PhD student to serve as graduate student representatives. The election process will be organized annually by the incumbent representatives or by the GPD, if necessary. Except when personnel issues, admissions decisions, or other confidential matters are discussed, both graduate representatives will be invited to attend GGE Graduate Program meetings to ensure that graduate student perspectives are represented. Graduate representatives will organize an annual GGE Graduate Student Town Hall Meeting (see 1.7.4).

1.7.3 GGE Graduate Lunch and Learn Seminar

Graduate students are encouraged to participate in the GGE Graduate Lunch and Learn seminar. This seminar is a weekly event that is organized by the GGE graduate representatives and the GPD.

1.7.4 GGE Graduate Student Town Hall Meeting

Graduate representatives will organize and set the agenda for an annual GGE Graduate Student Town Hall Meeting that is typically scheduled at start of spring semester. All graduate students are expected to attend. The GPD will also attend to provide faculty perspectives.

1.7.5 GGE Seminars

GGE hosts weekly seminars that are typically scheduled for Fridays, 4-5PM. Graduate students are expected to attend. The schedule is posted on the GGE webpage.

2 Graduate Program Policies for all Programs, Specializations, and Emphases

It is each student's responsibility to understand the policies of both the Office of Graduate Education and GGE as outlined in the Academic Catalog (links below). Students are assigned to a catalog year corresponding to their initial enrollment in a graduate degree program, although a student may decide to update to a later catalog year once enrolled.

Questions about graduate policies may be directed to the Major Professor, GPD, the Department Head, or the Graduate Education office staff.

2.1 Catalog, Policies, and Resources

South Dakota School of Mines, Graduate Education, and Departmental policies and information, including this document, available online include:

Academic Catalog

- [Graduate Education Policies](#)
- [Degree requirements Geology and Geological Engineering, MS](#)
- [Degree requirements Paleontology, MS](#)
- [Degree requirements, Geology, Geological Engineering, and Mining Engineering, PhD; Geological Engineering Specialization](#)
- [Degree requirements, Geology, Geological Engineering, and Mining Engineering, PhD; Geology Specialization](#)
- [Geospatial Technology Certificate](#)
- [Petroleum Systems Certificate](#)
- [Accelerated MS](#)

Other websites

- [South Dakota Board of Regents \(SDBOR\)](#)
- [South Dakota School of Mines and Technology:](#)
- [Graduate Education:](#)
- [GGE:](#)

- [GGE \(graduate forms and checklists\)](#): Includes this handbook, academic planning sheets, course rotation schedule, student trip agreement form, and Laboratory and Field Safety Policy for GGE.

2.2 Change of Specialization

Students may change specializations (e.g., GEOE to GEOL or vice versa) with a given degree program, although they need to follow Graduate Education policy in changing (if appropriate) their committee membership, including the Major Professor, as outlined in the Academic Catalog. Students who wish to explore a change in specialization should consult the Graduate Program Director (GPD) or non-thesis MS Academic Advisor to discuss options and implications.

2.3 Change in Degree Program

See Graduate Education Guidelines outlined in Policy IV.3, IV.4, and/or VI. 1, as appropriate, of the academic catalog

2.4 Conflict Resolution and Assistance

Formal [grievance processes](#) are available to students from South Dakota Mines. However, students are encouraged to attempt to resolve conflicts in consultation with the Major Professor or non-thesis Academic Advisor, GPD, or Department Head, as appropriate.

2.5 ADA Statement

SD Mines strives to ensure that physical resources, as well as information and communication technologies, are accessible to users in order to provide equal access to all. If you encounter any accessibility issues, you are encouraged to immediately contact the instructor of the course and the Title IX and Disability Coordinator, Ms. Amanda Lopez at Amanda.Lopez@sdsmt.edu or 394-2533. Students with special needs or requiring special accommodations should also contact the instructor and the Title IX and Disability Coordinator. More information can be found at [Disability Services](#).

2.6 Academic Misconduct

Students are expected to uphold excellent standards of academic conduct and professionalism. SDBOR Policy 2:33 defines “Academic Misconduct”. Students are expected to understand SDBOR Policy 2:33. Instructors and TAs are obligated to report instances of academic misconduct, as appropriate (see Student Code of Conduct, SDBOR Policy Manual 3:4). Please consult the [Academic Integrity](#) website.

2.7 SD Mines Adheres to Title IX

Students are expected to understand and uphold all policies and standards regarding [Title IX](#). More information can be found at <https://www.sdsmt.edu/TitleIX/>.

3 Non-thesis MS (GGE) Guidelines

For non-thesis MS students, Dr. Masterlark serves as the Academic Advisor who advises on course selection and degree completion. To declare the non-thesis option, See Graduate Education Policy VI.1.

Non-thesis MS students are not eligible for fellowship, travel, or GA funding.

4 Thesis-based MS and PhD Programs Guidelines

4.1 Initial Assistantship and Fellowship Funding

Graduate students admitted to thesis or dissertation based programs but who are missing more than one of these courses – Mineralogy, Petrology, Stratigraphy or Sedimentary Geology, and Structural Geology -- at the time of admission to the program are ineligible for GTA appointments, in the first semester, but may be considered for later TA support if their graduate course work or courses taken to address deficiencies satisfy the missing course content. RA support is not subject this rule, with funding at the discretion of the faculty member/advisor with grant support.

4.2 GTA Awards and Responsibilities

It is department policy to fund as many Graduate Teaching Assistantships (GTAs) as possible for a student's initial year. During the first year, each student will consult with his or her Major Professor to devise a strategy for obtaining Graduate Research Assistantship (GRA) support for the second and subsequent years.

Most GTAs will lead a laboratory sections for one or more courses. This will require working with the faculty member who is the instructor of record for the course to ensure proper dissemination of content and consistent evaluation methods. General guidelines and expectations for GTAs include, but are not limited to:

1. A full-time GTA is equal to 20 hours per week and is equivalent to an assignment to two laboratory sections. As part of the load, the faculty in charge of the course may ask you to assist with logistics in the lecture class.
2. GTAs must maintain two hours of regularly scheduled office hours each week. This schedule must be posted outside the respective GTA's office and supplied to the department secretary each semester.
3. GTAs are expected to embody professionalism during the execution of GTA duties.
4. Labs may include field trips. GTAs may be required to execute the logistical arrangements, as well as serve as drivers during a field trip. Logistical arrangements should be made as soon as possible and may include, but are not limited to:
 - a. Arrange for vehicles through the department secretary as early as possible. If the trip is cancelled, notify the secretary as soon as possible.
 - b. Arrange for drivers (other GTA's) if necessary.
 - c. Provide the department secretary a list of the students who will attend the field trip. Students are not allowed to drive personal vehicles for class field trips.
5. Grade coursework promptly. Grading should be constructive and consistent within a section, as well as among lab sections of the same course. GTAs must abide by FERPA regulations regarding the protection of student privacy. A summary of FERPA guidelines and resources are available via the Registrar's Office ([FERPA for School Officials](#)).
6. Keep the laboratories and classrooms clean and orderly. Do not revise storage strategies for laboratory materials, unless directed by the instructor of record.

4.3 GRA and Fellowship Awards

During the first year, each student will consult with his or her Major Professor to devise a strategy for obtaining GRA or fellowship support for the second and subsequent years of the student's graduate program. It is the responsibility of both the Major Professor and the graduate

student to pursue this support. Support includes stipend, tuition remission, fees, travel for professional conferences and workshops, publication fees, and any other research costs. Students who successfully secure external grants, fellowships, scholarships, or other funding for support costs will not be exempt from department funding, as appropriate. This policy is an effort to reward self-motivated students, rather than deter enterprising students from seeking external support. GRAs must log ACA hours on a monthly basis. Consult the Major Professor for details.

4.4 Advisor, Committee, and Plan of Study

For thesis-based MS and PhD admissions, a Major Professor will claim responsibility for a graduate student and meet with the student for initial advising prior to or at the beginning of the first semester of a student's graduate program to assist in course selection and define the focus and nature of the student's program. Although a Major Professor may be identified prior to enrollment, students are not bound to a specific Major Professor until the Program of Study is completed.

During the first semester of enrollment, the student and Major Professor will assemble a full advisory committee so that the Program of Study (POS) can be completed in accordance with the timeline outlined in graduate education policy.

Graduate Education policy outlines the processes to change Major Professor, committee membership, or coursework listed on the POS. Students who wish to explore a change in Major Professor are encouraged consult the GPD or Department Head to discuss options, implications, and potential resolution strategies.

Individual Major Professor expectations (beyond those given by Graduate Education and GGE Program-wide descriptions) for graduate students vary among GGE faculty. Each graduate student must consult with their Major Professor to establish specific expectations. Such expectations include, but are not limited to, frequency of meetings; timing, content, and submission of draft thesis or dissertation components; preparation, submission, and publishing expectations; reading assignments and library usage; and plans for student support.

4.5 Expectations for Enrolling in Research Credits

Graduate students registered for thesis or dissertation research credits are required to perform research activities outlined by the Major Advisor. Students enrolled in research credits are required to meet with their Major Advisor at the beginning of the semester to discuss specific research activities that will meet the requirement. Examples include but are not limited to the following:

- Receive a GRA appointment and meet research expectations specified by the Major Advisor
- Present research at a professional conference
- Complete an MS proposal defense or PhD Qualifying and Comprehensive exam
- Submit a proposal to an external funding agency
- Submit a manuscript or publish in a scholarly journal
- Defend a thesis or dissertation
- Present at a department-sponsored seminar such as a GGE lunch-and-learn or seminar, or other seminar series approved by the Major Advisor

Additionally, all graduate students are expected to attend scheduled GEOL/GEOE/PALE [seminar series](#) presentations and graduate lunch-and-learn presentations

4.6 Proposals and Examinations

4.6.1 MS Proposals and Examinations

Required examinations for thesis-based MS student are outlined in the Academic Catalog within Graduate Education Policies and relevant Program Pages (GGE, PALE) and include a written proposal and oral proposal defense.

4.6.2 PhD Proposals and Examinations

Candidates for PhD degrees must fulfill all degree requirements of the Graduate Office and GGE program as outlined in their Academic Catalog year. Information on qualifying and comprehensive examinations are outlined in the Graduate Education Policies GEP VIII. PhD Degree Requirements and the GGEME PhD program page in the catalog. Additional information is provided below.

In the GGEME program **qualifying** examination and a **comprehensive** examination are combined. The department requires that a student request to his/her committee to take the Qualifying and Comprehensive examinations no later than two months prior to the examination. The department also requires that the qualifying examination take place within one working week. In addition, the comprehensive examination must be held no sooner than five working days and no later than 10 working days after the completion of the qualifying exam.

If the student has not completed all requirements for the PhD degree by the fifth year following successful completion of the comprehensive examination, his/her active candidacy status will be automatically terminated, and the comprehensive examination must be repeated.

4.6.3 Research Proposal

The written research proposal must be given to the student's committee at least one month before the qualifying examination takes place, so that the candidate's committee may review the proposal to evaluate whether it is defensible. If not defensible, the student will have an opportunity to resubmit the proposal, although the final dates of the qualifying and comprehensive examinations may need to be rescheduled. After the written proposal has been pre-approved by the committee, the graduate student's Advisor coordinates the qualifying and comprehensive examinations.

4.6.4 Qualifying examination

The qualifying examination will consist of a written examination covering the student's field of study and related subjects. It will be prepared by the student's advisory committee, with potential suggestions from any faculty member from whom the student has taken a graduate course. The examination may be scheduled for spring and fall semesters only and may not take place during the last week of classes or the week of final examinations.

The results of the qualifying examination must be determined prior to the comprehensive examination and should be reported to the student as soon as possible following the completion of the exam. Deadlines and requirements for submitting the Results of this Qualifying Exam to

the Office of Graduate Education are listed in the Graduate Education Policies within the Academic Catalog.

The qualifying examination will consist of three parts (General, Specific Topic 1, and Specific Topic 2) all of which have equivalent weight and must be completed within one working week. For students in the **Geology Specialization**, the General part of the qualifying exam will include **General Geology**. Specific topics will be chosen by the student with approval by the student's committee; examples are listed below. A student may propose hybrid fields with other disciplines if approved by his or her graduate committee.

- Structural Geology
- Sedimentation/Stratigraphy
- Paleontology
- Igneous/Metamorphic Petrology
- Economic Geology/Mineral Exploration
- Geophysics/Geodynamics
- Geospatial Analysis/Geocomputation
- Petroleum Geology
- Groundwater/Hydrology

For students in the **Geological Engineering Specialization**, the General part of the qualifying exam will include **Geological Engineering, Geology, and Fundamentals of Engineering**. Specific topics will be chosen by the student with approval by the student's committee; examples are listed below. A student may propose hybrid fields with other disciplines if approved by his or her graduate committee. A student may substitute successful completion of the Fundamentals of Engineering (FE) examination for one of the three parts.

- Groundwater
- Engineering Geology
- Petroleum Engineering
- Mineral Exploration/Production
- Hydrology and Hydraulic Engineering
- Geophysics
- Geochemistry
- Rock Mechanics
- Geotechnical Engineering

For students in the **Mining Engineering Specialization**, please refer to the MEM PhD Program Handbook for more information.

4.6.5 Comprehensive examination and admission to candidacy

The comprehensive examination consists of oral presentation and defense of the student's dissertation research proposal. The comprehensive exam will last approximately three hours. The student will prepare a 20-30-minute oral presentation of the dissertation proposal to begin the examination. This presentation is open to the public. After the presentation, the student's committee may examine the candidate orally on the proposal itself, on science or engineering topics related to the work to be completed, or on topics from the qualifying examination. The

oral examination section must include the student's full committee, and may also be attended by any department faculty, but is closed to the public. To pass the examination, the student must demonstrate that the research proposal is workable and worthy of a dissertation, and that he or she possesses the requisite scientific and technical knowledge needed to successfully complete the research. Requirements for passing the qualifying examination and for submitting the Admission to Candidacy Form to the Office of Graduate Education are listed in the Graduate Education Policies within the Academic Catalog.

4.7 Theses and Dissertation Defenses

4.7.1 Quality of Theses and Dissertations

Student theses and dissertations are expected to be of high quality and suitable for publication in peer-reviewed journals. The specific number of publications expected from a given thesis or dissertation will depend on the specific research or journal selections and expectations of the Major Professor.

4.7.2 Faculty Review of Theses and Dissertations

GGE requires that all theses and dissertations must be made available for examination by all department faculty at least two weeks prior to the defense, unless the thesis/dissertation is embargoed. After committee approval of the defense copy by the Major Advisor, students should prepare the document in PDF format and submit it to their Major Advisor for posting on the department administrative drive, followed by an announcement to the department faculty.

4.7.3 Defense Venue

All graduate defense activities will comply with graduate education policies outlined in the Academic Catalog. GGE requires that students schedule the defense in a specific room that has Audio/Visual equipment, as necessary, and either a chalk board or white board.

4.8 Data Management

Field collections of geological material, as well as laboratory preparations of those collections, anchor many research projects in GGE. Preserving such materials and their associated data for posterity and future research is the role of the Museum of Geology. These guidelines have been prepared for graduate students in the department, as well as their advisors, to ensure that the collections generated by active research are secured for the future. The necessary forms are available online (see section 2.1)

4.8.1 Materials of Concern

Graduate students and their advisors should plan for the documentation of specimens cited in research. In general, any physical specimens collected, prepared, and cited in a thesis or dissertation should be deposited in the Museum of Geology as part of the student's work. These may include, but are not limited to:

- Hand samples
- Larger specimens
- Cores and cuttings
- Fossils
- Thin sections and/or other mounted material (e.g., SEM stubs)
- Powders and other preparations
- Images, 3D scans, video and audio recordings

- Field notes (with locality and georeferencing information)
- Lab notes with procedural information for all preparations
- Rock descriptions
- Raw data sheets
- Processed data sheets
- Maps and cross sections
- Memoranda of Understanding and other agreements; permits or letters of permission, and other relevant correspondence
- Other documentary materials generated as part of the research.

4.8.2 Materials that are Exempt

- Collections which are not used or cited in the final thesis/dissertation will not be deposited at the Museum.
- Collections which are cited in a thesis/dissertation, but that are the property of another entity (Federal and other agencies, private land, corporate sponsor, etc.), will revert to the owner of record at the conclusion of the research, unless other agreements have been made and approved in advance.

4.8.3 Procedures

A graduate student whose research will involve collecting and or preparing geological samples should work out a plan with their research advisor and a Museum representative. A form for this available online (GGE Graduate Forms and Resources) and should be submitted to the Museum Associate Director at the same time as the Program of Study documents are submitted to Graduate Education. The student should document all ongoing research according to accepted standards and best practices. This includes items listed in the section entitled “Materials of Concern”. As soon as it is reasonably possible, the student will work with the Museum to be trained for data entry and to secure unique catalog numbers for each specimen and documentary record. The student will enter object data into the appropriate databases and add numbers physically to each item, as appropriate. SDSM numbers will be cited in the final thesis/dissertation. Specimens which belong to other entities, but that will be deposited at the Museum, will only be cataloged with the express permission of the owner. Specialized storage needs should be worked out with the Museum as soon as those needs are known. This may include anything from microscopic samples to oversized specimens. It may also include specialized media storage systems. Arrangements for specialized storage costs may need to be made with the GGE department and/or the project supporters.

4.8.4 Data Sharing

Data generated by SD Mines research are generally shared via publication of the thesis/dissertation. The Museum also makes collections data available as appropriate to the public. Embargos and other restrictions on data sharing from Museum databases should be made known by the advisor as soon as possible.

5 GGE Graduate Student Travel Funding Application

GGE provides resources to support or offset costs associated with graduate student participation in professional conferences and workshops. Applications for these resources are solicited near the beginning of each semester of the academic year. The application form is posted on the GGE Graduate Checklists and Resources webpage

(www.sdsmt.edu/Academics/Departments/Geology-and-Geological-Engineering/Graduate-Education/Graduate-Forms-and-Resources/) and presented here:

GGE Graduate Student Travel Funding Application

Graduate students may apply to the department to receive funding to offset expenses incurred while attending professional conferences and workshops. While all such funding requests will be considered, those that are backed by equivalent (1:1 match) funding from either the applicant or the applicant's major professor will be given greater consideration. Possible sources of matching funding include registration fees that are waived due to volunteering at the meeting being attended, pending or awarded travel grants from professional societies, etc., travel funds from grant funding (either from the student or their major professor), overhead funds, travel funds from student clubs, or out of pocket funds provided by the student. The total amount of funding received will be based on the total cost of the trip and merit (i.e., whether the student is presenting at the conference and the perceived effort expended to secure matching funds). Applications must be received no later than the end of the second full week of classes of both the Spring and Fall semesters (travel in the summer will be considered in the Spring). Applications must include the following information and supporting documentation:

- Graduate Student Name
- Major professor
- Name of conference, workshop, etc.
- Reason for attendance (i.e. relevance to research, etc.)
- Itemized cost and supporting documentation of the proposed trip
- Amount of requested support for the travel
- Pending and/or secured support for the travel provided by:
 - Graduate student
 - Major Advisor
- A brief letter of endorsement from the Major Advisor that includes an explanation and affirmation of the funding mentioned above as well as the importance of the trip to the development of the applicant.

Students selected for funding will be reimbursed following the trip and the appropriate state travel forms and documentation must be submitted both prior and after travel in accordance with GGE, SDSMT, and SDBOR policies.

Graduate students must also complete the Student Travel Agreement & Checklist posted on the GGE Graduate Forms and Checklists webpage prior to travel.

6 GGE Graduate Program Expectations, Outcomes, and Assessment Plan

The purpose of this assessment is to collect data to be used by the faculty to continually assess the quality of the GGE graduate degree programs. These assessments are not intended for evaluating the success of individual graduate students (Rubric 1) or specific faculty advisors (Rubric 2). GGE Graduate Program-wide expectations are designed to target the following program outcomes in the context of the GGE Strategic Plan and greater professional community:

GGE Graduate Program Outcomes	
A	Students will have technical expertise.
B	Students will be effective communicators.
C	Students will engage in meaningful professional service.
D	Students will impact the profession.

6.1 Outcome Rubric 1: Faculty Perspective

GGE administers two rubrics, which specify expectations that demonstrate achievement of the program outcomes from both the faculty and graduate student perspectives. From the faculty perspective, the successful GGE graduate student is expected to achieve criteria I-V listed in the following rubric:

Rubric 1 - GGE Graduate Student Outcomes: Faculty Perspective

The following rubric will be applied at (1) The proposal defense and (2) The thesis or dissertation defense. The goal is for 25% of students to achieve a score of at least 2 at the first assessment and 75% to achieve a score of 3 in all categories at the second assessment. Note: MS includes both GGE and Paleontology degree programs.

	4 (Achieved outcome)	3	2	1	0 (did not achieve outcome)
I. Professional Conference (Outcomes A, B, D)					
PhD	Student delivered an invited oral presentation at a national or international conference	Student delivered an oral presentation at a national or international conference	Student presented a poster at a national or international conference	Student presented at a state or regional conference	Student did not present results at a professional venue.
MS	Student delivered an oral presentation at a national or international conference	Student presented a poster as a national or international conference	Student presented at a state or regional conference	Student presented at a department or university conference	Student did not present results at a professional venue.
II. Publication (Outcomes A, B, D)					
PhD	Student is first author on an article published or accepted for publication in a high-impact journal (IF≥1)	Student is co-author on an article published or accepted for publication in a high-impact journal (IF≥1)	Student is an author or co-author on a manuscript submitted to a high-impact journal (IF≥1)	Student is an author or co-author for article having IF<1	Student did not author/co-author a publication
MS	Student is author or co-author on an article published or accepted for publication in a high-impact journal (IF≥1)	Student is an author or co-author on a manuscript submitted to a high-impact journal (IF≥1)	Student is an author or co-author for article having IF<1	Student is author or co-author on non-reviewed report (published/submitted)	Student did not author/co-author a submitted manuscript
III. Seek External (outside of South Dakota School of Mines) Funding/Support (Outcomes A, B, D)					
	Student was awarded a fellowship with full support (at least stipend and full tuition for at least one full calendar year) from an external agency.	Student submitted a proposal for a fellowship with full support (at least stipend and full tuition for at least one full calendar year) from an external agency.	Student was awarded a scholarship application to an external agency.	Student submitted a scholarship application to an external agency.	Student did not submit any scholarship or fellowship applications to an external agency.
IV. Participation in professional organizations (Outcomes B, C, D)					
	Student is a member of a national or international professional society	Student is a member of a regional or state professional society	Student is an officer for at least one GGE or University club	Student is a member of at least one GGE or University club	Student is not a member of any professional society or club
V. Service (Outcomes A, B, C, D)					
PhD	Student led national or international level professional service activities	Student participated in national or international level professional service activities	Student led GGE or local service activities	Student participated in GGE or local service activities	Student did not participate in any service activities
MS	Student participated in national or international level service activities	Student led local service activities	Student led GGE service activities	Student participated in GGE or local service activities	Student did not participate in any service activities
Comments:					

6.2 Outcome Rubric 2: Graduate Student Perspective

From the graduate student perspective, the successful GGE program is expected to achieve criteria I-III listed in the following rubric:

Rubric 2 - GGE Graduate Student Outcomes: Graduate Student Perspective

The following rubric will be applied at (1) The proposal defense and (2) The thesis or dissertation defense. The goal is for 75% of program items to achieve a score of at least 3 in all categories for both assessment applications.

4 (Achieved outcome)	3	2	1	0 (did not achieve outcome)
I. Program web-based advertisement (Outcomes A, C, D).				
Faculty expertise is accurately described.	Faculty expertise descriptions are mostly accurate.	Faculty expertise descriptions are moderately accurate.	Faculty expertise descriptions are mostly inaccurate.	Faculty expertise descriptions are entirely inaccurate.
Research facilities are accurately described.	Descriptions of available research facilities are mostly accurate.	Descriptions of available research facilities are moderately accurate.	Descriptions of available research facilities are mostly inaccurate.	Descriptions of available research facilities are entirely inaccurate.
II. Major Professor (MP) and Committees (Outcomes A, B, C, D)				
MP is readily available and always provides timely guidance.	MP is mostly available and usually provides timely guidance.	MP is sometimes available and sometimes provides timely guidance.	MP is mostly unavailable and generally does not provide timely guidance.	MP is systematically unavailable and does not provide timely guidance.

All committee members* provide timely and relevant guidance.	Most committee members* provide timely and relevant guidance.	Some committee members* provide timely and relevant guidance.	Few committee members* contribute timely or relevant guidance.	The committee* contributed negligible guidance.
MP placed a high priority on facilitating integrations with external specialists in the MP's field of expertise.	MP placed a moderate priority on facilitating integrations with external specialists in the MP's field of expertise.	MP placed a low priority on facilitating integrations with external specialists in the MP's field of expertise.	MP made little attempt to facilitate integrations with external specialists in the MP's field of expertise.	MP did not attempt to facilitate integrations with external specialists in the MP's field of expertise.
MP or student provided full external support**, other than one year of TA support.	Both MP and student submitted proposals for full external support**, other than one year of TA support.	Either MP or student submitted proposals for full external support**, other than one year of TA support.	Either MP or student submitted proposals for partial external support**, other than one year of TA support.	Neither MP nor student attempted to acquire full support**.
III. GGE Graduate Degree Perception (A, B, C, D)				
Degree program exceeded my expectations.	Degree program met my expectations.	Degree program met most of my expectations.	Degree program met few of my expectations.	Degree program failed to meet my expectations.
Comments:				

*Excludes MP.

**Full support includes competitive stipend, maximum allowable tuition and fees, and all necessary travel and research costs.

Completed rubrics should be submitted to the Graduate Program Representative and stored electronically at F:\admin\Geol\GraduateAssessmentRubrics\CompletedAssessmentForms.

6.3 Mapping outcomes to required graduate courses via the rubric criteria

	Outcomes and Rubric 1 Criteria				
	I (Outcomes A, B, D)	II (Outcomes A, B, D)	III (Outcomes A, B, D)	IV (Outcomes B, C, D)	V (Outcomes A, B, C, D)
GEOL700	x	x	x	x	x
GEOL808	x	x	x	x	x
GEOL798	x	x	x		
GEOL898	x	x	x		

6.4 Outcome sustainability and relevance

GGE will evaluate the outcomes and ensure that they remain relevant and aligned with student, workplace, and societal needs. Outcome sustainability and relevance will be addressed annually via Rubric 1 (I-V) and Rubric 2 (III), in consultation with the GGE Advisory board. Note that Rubric 1 is directly mapped to evaluation by the greater professional community.