

Graduate Student Handbook

**School of Earth Sciences and
Environmental Sustainability**

Program of Geology

2009-2010

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Table of Contents

	<u>Page No.</u>
Useful Contacts	2
Table of Contents	3
INTRODUCTION	5
ADMISSIONS TO THE GEOLOGY GRADUATE PROGRAM	6
FINANCIAL SUPPORT	6
Introduction	7
Teaching Assistantships	7
Fellowships	7
Research Assistantships	8
External Financial Support	8
PROCEDURES TO BE FOLLOWED ONCE YOU ARE ADMITTED	9
Introduction	9
Prior to the Beginning of Your First Semester	10
During the First Year	10
Requirements for Advancement to the Program	10
Procedure for Applying for Advancement to the Program	11
Selection of Thesis Topic, Advisor, and Committee	11
During all Semesters Prior to Your Final One	12
During Your Final Semester	13
PROGRAM OF STUDY	14
Field of Emphasis - NAU Geology Graduate Program	15
Schedule for Completion of M.S. in Geology in 2 yrs	16
ACADEMIC POLICIES & SATISFACTORY PROGRESS	16
Unsatisfactory Progress	17
Admissions Contingencies	17
Filing of Program of Study and Thesis Topic	17
Academic Standards	18
Progress on Thesis	18
Committee Meetings	19
THESIS PROPOSAL	19
Proposal Format	20
THESIS	22
THESIS DEFENSE	23
DEADLINES FOR THESIS DEFENSE	25
TIMETABLE FOR COMPLETION OF THESIS IN TWO YEARS	25
REQUIRED/EXPECTED PERFORMANCE OF GRADUATE STUDENTS	26
OFFICE SPACE	28
BUILDING POLICIES	28

	<u>Page No.</u>
FACILITIES & EQUIPMENT	28
Field Equipment	28
Analytical Equipment	29
Drafting/Office Equipment	29
Libraries	29
GEOLOGY OFFICE	29
Keys	30
Photocopying	30
Computer Lab	30
Supplies	30
Mail	30
Time Entry	31
Paychecks	31
Lab Grade Reports	31
Mid-Term and Final Grade Reports	31
Labs and Field Trips	32
Student Evaluations and Student Files	32
VAN-DRIVER TRAINING	32
MASTERS DEGREE PROGRAMS IN EARTH SCIENCE	33
Master of Science in Earth Science	34
Master of Arts in Teaching of Earth Science	33
Teaching Certification	34
FINANCIAL ASSISTANTSHIPS AVAILABLE	34
APPENDIX - REQUIRED FORMS	36
PETITION FOR TRANSFER CREDIT AND REGULATIONS	
PROGRAM OF STUDY TEMPLATE	
APPLICATION FOR GRADUATION	
THESIS PROPOSAL COVER SHEET	
ANNOUNCEMENT OF DEFENSE	
REPORT ON FINAL ORAL EXAMINATION FOR MASTERS DEGREE	
OFFICE HOURS & CLASS SCHEDULE	
RECORD OF GRADUATE STUDENT PROGRESS	
NAU BACHELOR IN EARTH SCIENCE REQUIREMENTS	
PROCEDURES FOR ESTABLISHING RESIDENCY	

Northern Arizona University does not discriminate on the basis of race, color, age, religion, gender, national origin, disability, or veteran status in our admissions, employment and education programs or activities.

GUIDELINES FOR GEOLOGY GRADUATE STUDENTS NORTHERN ARIZONA UNIVERSITY

This handbook is designed to guide you through the policies and procedures under which you will be functioning as a graduate student in the Program of Geology at NAU. We recognize that graduate study is much more than the meeting of mechanical deadlines, and your scholarly development is of paramount concern to the faculty. Your growth is cultivated individually throughout your graduate experience as you attain the foundation, independence, intellectual curiosity, and self-discipline necessary to be a productive scientist. The awarding of the Masters of Science Degree in Geology recognizes your achievement of these goals. We hope that these guidelines make the "system" less frustrating so that you may direct your efforts toward your education and completion of your degree in a timely manner.

Information on additional programs offered by the Program of Geology including the Master of Arts degree in Teaching of Earth Science (Coordinator: Dr. Jim Sample) and the Master of Science degree in Earth Science is included on pages 34-35. The Graduate Program Coordinator for the Masters of Science degree in Geology is Dr. Paul Umhoefer. **For most information on the MS degree, consult our Program and the Graduate College web pages.**

INTRODUCTION

The **Graduate College** sets forth its policies and deadlines in the Graduate Catalog and governs all graduate students at NAU. In addition, the **Program of Geology** has adopted the following additional guidelines to insure uniformly high standards throughout the Program. **You should be aware of both sets of policies and review them periodically.** The policies of both the Graduate College and the Program are somewhat flexible, and written petitions for exceptions may be submitted for special cases or in extenuating circumstances. If you have questions regarding any of the policies, please feel free to discuss them with your advisor, Geology Program Coordinator, or the Graduate Program Coordinator. Do not rely on hearsay information: see it in writing.

It is your responsibility to see that any changes, exceptions, or other dispensations made on your behalf with regard to any policies contained in this manual are documented **in writing**. Be certain that any such documents are filed in your permanent records in the Geology program office and, if applicable, the Graduate College. Be sure to keep a personal copy.

ADMISSIONS TO THE GEOLOGY GRADUATE PROGRAM

To be considered for admission to graduate study in Geology, an applicant must meet the following minimum undergraduate grade point averages: at least 2.75 for all course work; at least 3.00 for all geology courses; at least 2.50 for all supporting course work in math, physics, and chemistry. In addition, students must score a minimum of 50% on the General part of the Graduate Record Examination (GRE) and supply three confidential letters of recommendation from former professors, supervisors, or employers. Finally, all incoming students must have completed the equivalent of the Bachelor of Science Degree in Geology at NAU. The required courses are:

Physical Geology	Sedimentology/Stratigraphy
Historical Geology	Summer Field Camp
Mineralogy	1 year Calculus
Petrology	1 year Chemistry
Structural Geology	1 year Physics

Students who have not completed the above courses will be considered deficient and are required to remove these deficiencies before being formally admitted to the program. Deficiencies must be removed during the first year of residency (2 semesters and 1 summer). Exception to the above requirements can be made only by two-thirds majority vote of the Geology faculty.

Students may be admitted to graduate study in one of the following classifications: (1) Graduate Regular status (granted to a student who has met all of the above requirements), or (2) Graduate Provisional status (granted to a student who has met the grade point and GRE requirements but has not completed all the course requirements listed above). Graduate Regular status will be granted automatically when all deficient courses are completed. It is your responsibility to comply with the terms of your admissions. ***Admission to graduate study is not equivalent to admission to the program*** (see Requirements for Advancement to the Program, page 10-11).

FINANCIAL SUPPORT

Introduction

Financial support may be obtained from a variety of sources: (1) assistantships granted by the Graduate College upon the recommendation of the Program; (2) fellowships and scholarships awarded by the Graduate College and the Geology Program; (3) grants-in-aid of research awarded by off-campus organizations; or (4) research assistantships in conjunction with funded research of individual faculty members. We are also working on arrangements with the USGS that might provide funding for graduate students. If you are interested in financial support, it is your responsibility to seek information from the variety of sources and follow the guidelines required. The application deadline for most Graduate College scholarships and assistantships is February 1. You must have recent Graduate Record Exam scores to be considered for most financial support. It is highly recommended that you take the test during your first semester at NAU, if in the rare case, you have been admitted without GRE scores.

Teaching Assistantships

The Graduate College and University allocate state-funded graduate assistantships to the various departments. In the Geology Program, all of these positions are used for graduate student teaching of undergraduate laboratory sections. To obtain one of these positions, interested students must file a "Graduate Information Form" (Appendix) with the Program of Geology by the February 1 deadline. Following the February 1 deadline, the Program will recommend to the Graduate College which applicants should receive available positions. If you were guaranteed 2 years of Graduate Assistantship, as most of you were, then you will automatically be considered for a TA unless you have a Research Assistantship. The initial award of an assistantship does not assure the recipient of continuous support until a degree is attained. The program will support most masters students who are accepted into the program for two academic years provided that the student performs duties satisfactorily, maintains satisfactory academic progress, and the Program has positions and funds. Satisfactory performance of graduate assistants is described below.

Fellowships

Periodically, external donors or foundations provide short-term fellowships to NAU Geology students. These fellowships may be based upon scholarship, or in some cases, financial need and

may not be available every year. Some of these scholarships and fellowships are tied to a specific discipline. Some of these awards and approximate deadlines (they may change yearly) include:

Courtright Scholarship (October)(ores, structure, tectonics)

USGS Jack Kleinman Fellowship (March 1)(volcanology)

Explorers Club Research Grants (mid-March)

Thomas and Rose Bedwell Award (mid-April)

McCullough Award (mid-April)(Colorado Plateau and Colorado River basin)

Basin-Structure Research Award in Geology (mid-April)

Oil & Gas company scholarships – change yearly

Research Assistantships

Typically these positions are funded by extra-university agencies such as the National Science Foundation, but are administered through the Graduate College. The duties of the student are controlled directly by the grantee, who is usually a faculty member in the Program. Students are selected for these positions by the grantee who will review all graduate applicant files in the field of interest and will review the work of first year students. These positions carry the same rules and regulations as for teaching assistantships, but the type of work required depends on the research project. The student is directly responsible to the grantee. With research assistantships, students may or may not work directly on their thesis project. Because of the uncertainties of extra-university funding, research assistantships are generally granted on a year-by-year basis. A student can not have an RA for <10 hours per week.

External Financial Support

Funds are available from a variety of sources to supplement student income and to defray some of the costs of thesis research and preparation. Several scientific societies provide modest funding for graduate students research on a competitive basis. These societies include the American Association of Petroleum Geologists (AAPG), Geological Society of America, Four Corners Geological Society, Colorado Scientific Society, Rocky Mountain section of SEPM, and Sigma Xi. Most of these organizations require letters of reference and a short abstract regarding your thesis project. Thus it behooves you to decide on a thesis topic your first semester. As a professional courtesy, you should ask your referees for letters **at least two weeks before** the deadline. Deadlines

(for 2007-08 - they change yearly): January 31 for AAPG, February 1 for the Geological Society of America, March 15 for Four Corners Geological Society, March 31 for the Colorado Scientific Society, April 1 for Rocky Mountain section of SEPM, and March 15 and October 15 for Sigma Xi. Information on these grants is kept in the Program office. BE SURE you know when the deadline is for the proposal you are writing! Talk with your advisor or the graduate coordinator regarding these applications. Information on scientific societies and awards is in a folder in the Main Office.

An additional source of support is the NAU Geology Program alumni association called "The Friday Lunch Clubbe". This organization solicits proposals for fieldwork funding, and provides support ranging from \$50 to as much as \$1000. Humor, as well as good science, is encouraged and rewarded in the writing of these proposals.

The Financial Aid Departmental office has a scholarship directory on the web (www.nau.edu/~finaid/scholars/index.html) that you might find helpful. The library website also maintains an exhaustive list of scholarships (<http://www.nau.edu/library/reference/grants.html>).

PROCEDURES TO BE FOLLOWED ONCE YOU ARE ADMITTED

Introduction (see Appendix for Record of Progress - copy kept by grad coordinator)

As a full-time graduate student (nine credit hours per semester), particularly if you are funded through the Program, ***your goal should be to complete your degree within two to two-and-a-half years.*** The program is designed to be completed in approximately two years and we encourage you to finish in that time. Completing the program in two years, however, requires careful planning and an early start on thesis research. Most students finish in their third year. If your goal is to complete the MS degree in 2 years, it is essential that you and your adviser develop a well-defined and clearly focused thesis research project by the end of the first semester so that you can complete the data collection within the first 3 semesters, leaving the 4th semester for thesis writing. Many students receive GA support from the Program in their 3rd year, but it is not guaranteed. Funding for third-year students is based on availability of funds, your progress in the program, and your academic performance. **You are encouraged to apply for outside scholarships to help cover the cost of your research and your 5th semester if it is necessary.** In any event, you should complete the majority of your course work in your first year.

If you enter the program with deficiencies or are working full-time, it is likely you will need at least an extra semester to complete the requirements. In addition, many professors have projects

in hot-weather climates or internationally, and in some cases fieldwork cannot be done until the second winter of a student's graduate career. Be sure to discuss this with your advisor.

Your progress in the program is reviewed yearly and you will be provided with a written evaluation of your progress. The terms of the evaluation are discussed in a subsequent section of these guidelines. You must complete your degree within six years and be continuously enrolled in accordance with Graduate College guidelines.

A two-year M.S. geology program is provided in the section entitled "Program of Study".

Prior to the Beginning of Your First Semester

Prior to enrolling for your first semester, you must meet with the graduate coordinator or your potential thesis advisor if one has been selected. During this meeting, it will be decided which courses you should take the first semester. These will include GLG 505 (Topics in Geology I) and any deficiencies listed on your admission form. If you have obtained graduate credit for courses at another institution, you must obtain approval from the graduate program coordinator for application of these credits to your NAU program. In addition, you must submit a Petition for Acceptance of Transfer Credit (Appendix) to the Graduate College. A maximum of 8 credit hours of graduate geology courses with a grade of "B" may be transferred from another college or university. Criteria for acceptance of transfer credit are given on the Graduate College website at: <http://www.nau.edu/gradcol/publications.htm>, click on "Transfer credit, petition for".

During the First Year

Your goal during the first year of graduate study is to advance to the Program for the Master of Science degree in Geology. A student is recommended for advancement to the program when, in the judgment of the faculty of the Program of Geology, the student has attained the academic and professional standards necessary to undertake research for the thesis. Students are requested to **establish residency** in Arizona (see section on residency below) during the first year so that out-of-state tuition waivers can be granted to incoming students.

Requirements for Advancement to the Program

1. Successful completion of all undergraduate course deficiencies determined by the Geology Graduate Committee.
2. Graduate Regular standing in the Graduate College.

3. Completion of two semesters of full-time graduate study in residency in the Program of Geology at NAU (minimum of 9 credit hours) with a grade point average of at least 3.0. Students must complete GLG 505 and 506, Topics in Geology I, II, prior to advancement.
4. Acceptance by an advisor who will supervise the thesis and serve as chair of the student's thesis committee. This requirement must be met by the beginning of the second semester.
5. Selection of a thesis topic in consultation with the thesis advisor. This should be completed by the beginning of the second semester.
6. Selection of a thesis committee composed of members of the Graduate Faculty (including adjunct professors and approved professionals such as U.S. Geological Survey geologists). It is the responsibility of the student to determine if the proposed committee members will agree to serve. This must be completed by the second week of the second semester.
7. Submit an approved thesis proposal to the Program. The thesis proposal must follow the format outlined below in the section on "Thesis Proposal". After approval of the thesis proposal by the thesis committee, the student may register for GLG 699 (thesis research). The proposal must be completed by the end of the second semester of residency. One copy must be filed with the Geology Graduate Program Coordinator and one copy is given to the thesis advisor.

Procedure for Applying for Advancement to the Program

1. Advancement to the Program will be made no later than mid semester of the third semester of residency at NAU.
2. In consultation with the thesis advisor, the student will complete a Program of Study Form (Appendix) provided by the Geology Graduate Program Coordinator. The Program of Study Form must be submitted to the thesis committee for approval. After approval by the committee, this form is submitted to the Geology Graduate Program Coordinator, the Geology Program Coordinator, and the Graduate Dean for approval. The Program of Study form includes all courses to be completed for the degree, the names of the thesis advisor and committee members, and the thesis title. The Program of Study constitutes a contract between you and the Graduate College; the College will compare this Program with your actual accomplishments prior to awarding the M.S. degree.
3. The thesis proposal must have been previously approved or submitted concurrently with the Program of Study. Turn in signed, approved thesis proposal to the graduate advisor. This

copy will be placed in your student file. **In no case will the Program of Study form be sent to the Graduate Dean before the thesis committee has approved the thesis proposal.**

Selection of Thesis Topic, Advisor, and Committee

At the time of admission, you will meet with the Graduate Program Coordinator or your thesis advisor, to determine a first-semester course schedule and to discuss your research interests with the goal of selecting a thesis topic and advisor prior to the end of the first semester. **These are YOUR decisions and not the decisions of a professor or the Graduate Program Coordinator.** To select a thesis topic and an advisor you should initiate early discussions with faculty members with expertise and active research in your field of interest. You should talk to several faculty members during your first semester to determine the most suitable person to supervise your research. Remember, you will have a two- to three-year working relationship with this person. It may help to speak with present graduate students working with a particular professor to assess whether your interest, personality, and work habits are compatible with the professor. You may wish to examine previous theses directed by a particular professor to get a feeling for his/her expectations. If you can identify a thesis topic during the first semester, you should then apply for external funding (e.g., Sigma Xi, Geological Society of America) during the winter.

Following selection of an advisor and thesis topic, you and your advisor need to identify two additional committee members that will bring additional expertise to your research effort. Committee members may be selected from the regular faculty at NAU, adjunct professors in residence at NAU, professionals from the U.S. Geological Survey office in Flagstaff or elsewhere, and professionals from the Museum of Northern Arizona. Two of the three committee members must be regular NAU Geology faculty. ***If during your graduate study you wish to make any change in your degree program, thesis committee, or thesis topic, you must submit an amendment to your Program of Study.*** Your thesis advisor, the Graduate Program Coordinator, and the Graduate Dean must approve this amendment before changes are effected.

During your graduate study, you or your advisor may choose to discontinue the relationship. You can make this difficult decision on your own and should not feel pressure to stay with your original advisor if the relationship is not working for you. But make sure that you take any change seriously. The Graduate Program Coordinator is there for you if you need consultation on these matters. Depending on the timing or cause for this change, the student may have to also change

thesis topics and resubmit a thesis proposal. Such changes are unusual, but do occur due to illness, sabbatical leave, or other problems. A change of advisor or any member of the committee must be approved by the Program as discussed earlier and submitted to the Graduate College for approval.

During all Semesters Prior to Your Final One

After admission to graduate study, you must complete your degree within six years. Students who are working on a thesis must register for at least one credit hour of GLG 699 (Thesis Research) each semester following formal admission to the program until the thesis has been completed and has been given final approval. If you are away from NAU but are in contact with your advisor as you work on your thesis, you should register for at least 1 credit hour. During the semester that you defend your thesis, you should register for at least 3 credit hours to reflect the amount of faculty time and facility use. Students who are not registered for academic work for more than one semester will need to apply for readmission to the Graduate College should they wish to continue. A one-time, 1-year extension may be granted only if there are compelling extenuating circumstances.

In rare cases, you may agree with your advisor that you will defend and finish your thesis during the summer. In this case, **you MUST register for 1-3 credit hours, to be determined by the thesis advisor**, in the 10-week session, and your thesis must be submitted by early August (contact Tom Carpenter in the Graduate College for specific dates) for a summer graduation date. If you expect to finish your thesis in the fall, it is better to defend in the fall as well, although you may defend in the summer and submit your thesis any time before the end of fall semester (for fall semester graduation date).

Before enrolling for thesis credit hours, the student's advisor must be consulted to determine the amount and type of work expected to be completed for a specified number of credits during a given semester. This should be viewed as a contract, and each semester the advisor will judge whether or not the stated work was completed. Such work will be a criterion used in the evaluation of satisfactory or unsatisfactory progress of a graduate student.

During Your Final Semester

You must complete the following. (1) Submit an application for graduation (Appendix) and pay the \$10 fee prior to the deadline listed in the class schedule for each term. Note that this deadline is early in the semester, usually about four weeks after the start of classes. (2) Meet with

your committee **at least** three months before your defense target date to obtain the committee's approval that you will be ready to defend and to set a formal thesis defense date. Examples of items that will be discussed and that you should be prepared to provide include (a) evidence that you have acquired all the field and lab data necessary to complete the thesis and completed analysis of the data, (b) a detailed outline of your thesis (to the sub-subheading level), (c) documentation that off-campus lab work (dates, geochemistry, etc.) is or will be completed well before defense target date, (d) proof of completion or near completion of computer analysis or modeling, (e) compilation of most references, and (f) presentation of the main conclusions of your thesis to the committee. This meeting will serve to protect you from surprises during your defense. (3) Schedule your formal thesis defense date **after all members of the committee have deemed your written thesis defensible**. Give your thesis to your committee for review at least 4 weeks before your thesis defense. (4) Submit thesis to the Graduate College's format editor for initial format check at least two weeks prior to your defense. Failure to do this could result in delay of graduation. (5) **Pass your thesis defense no later than two weeks before the end of classes**. (6) Submit thesis to the Graduate College's format editor for final format check within two weeks of the end of the semester at the latest. (7) Pay the appropriate binding fee at the Business Office. (8) Submit four signed unbound copies of your thesis to the Graduate College by the last day of the semester. (9) Give the Graduate Advisor a "PDF" file of your entire thesis so that the Program has an electronic version of the thesis.

Determine these deadline dates for the semester you plan to graduate and mark them on your calendar. You will see that you must be highly organized during your final semester. The most difficult deadlines for most graduate students to meet are the completion of a defensible thesis and the completion of the thesis for submission to the Graduate College. Remember, you are not working on this alone, and you are relying on the efforts of three other very busy people; your thesis committee. You must discuss your plans with your committee early. Read the guidance given below under "Thesis".

Summer Thesis Defenses

NAU faculty are not under contract during the summer; a summer defense is a favor to you. If you wish to defend in the summer, you must discuss your expected schedule of events with your committee, and they must approve it. Again, **the university does not employ faculty during the**

summer and many are away at meetings or doing fieldwork on research grants. You may not change the members of your committee just to achieve an August graduation.

Many graduate students do not meet the deadlines for spring graduation. If you anticipate that you will not make spring graduation, then file for August initially. It is best if you complete your defense for August graduation prior to the end of spring semester and have a final draft ready for your committee to sign shortly thereafter. If you have applied for spring and miss the deadlines, your graduation date will be moved to August or December and you must pay additional fees. If you defend prior to the first day of summer session, then you are not required to enroll for thesis hours. If the defense occurs on or after the first day of summer session, then enrollment in thesis hours is required for the session. How many hours are required is left to the Program, but the Graduate College recommends 3 hours because of the increased use of faculty time and university resources associated with the defense.

PROGRAM OF STUDY

The Program of Study (Appendix) form outlines the courses the student will complete for the M.S. Degree. You are strongly encouraged to submit your Program of Study to the Graduate School by the end of your second semester; mid semester of the third semester is the absolute deadline. The Program requires that the Graduate Program Coordinator or your advisor, approve a student's first semester classes before enrollment and that your chosen thesis advisor approve your second semester courses.

Students take at least 26 credit hours of course work (GLG505-506 are two of these hours) and at least 6 hours of thesis research (GLG 699). All students must complete GLG 505, GLG 506; of the remaining 24 hours, 18 must be in Geology. The remaining hours can be combinations of any NAU Geology graduate courses (including the courses below), transfer credit, and 400-level or above courses in other NAU departments. To fully prepare for thesis work and a professional career, some students may find it necessary to complete more than 26 hours of course work. Note that 1- and 2-hour methods classes are not included in the “Fields of Emphasis” blocks (see below) nor are courses not recently or regularly offered.

Your Program of Study form will not include deficiencies listed at the time of admission, although you must take those classes. A maximum of 8 credit hours of graduate geology courses completed with a grade of "B" or better may be transferred from other colleges. To receive credits

for graduate courses completed at other universities, you must submit a "Petition for Transfer of Credit form" (Appendix) to the Graduate College.

To encourage breadth in your graduate curriculum, you are required to complete at least one course in three of the four fields of emphasis (blocks) identified below. Some GLG 698 seminars and GLG 599 classes may or may not satisfy certain categories, but do count toward the 26 credit hours in any event. GLG 697 (Independent Study) is only counted toward the 26 hours in very unusual situations. The Graduate Program Coordinator and Committee decide these on a case-by-case basis. An example of a two-year Program of Study for the M.S. in Geology is included at the end of this section. You may take up to two courses from outside the Program of Geology with your committee's approval. Any additional courses taken outside of Geology require approval of the Graduate Committee. A memo explaining the rationale of the request should be submitted. That approval should be obtained BEFORE taking a third course outside of Geology.

Fields of Emphasis: Distribution Blocks for MS Program in Geology

Hard-Rock Geology

GLG 610 Volcanology
GLG 612 Igneous Petrology
GLG 615 Metamorphic Petrology
GLG 616 Petrologic Phase Equilibria
GLG 617 Isotope Geology

Soft-Rock Geology

GLG 530 Vertebrate Paleontology
GLG 625 Siliciclastic & Carbonate Petrology
GLG 627 Depositional Systems
GLG 629 Evolution of Sedimentary Basins
GLG 632 Advanced Paleontology

Geophysics, Structure, and Tectonics

GLG 542 Advanced Structural Geology
GLG 560 Introduction to Applied Geophysics
GLG 561 Regional Tectonics
GLG 565 Introduction to Solid Earth Geophysics

Hydrogeology and Quaternary Geology

GLG 537 Quaternary Geology
GLG 575 Geochemistry of Natural Waters
GLG 596 Quaternary Climate Change
GLG 637 Geochronology of Quaternary Depositional Systems
GLG 670 Advanced Hydrogeology

Schedule for Completion of M.S. in Geology in Two Years

Semester I

Nine hours course work (plus GLG 505)

Discussion of thesis topics

Selection of thesis supervisor

Semester II

Nine hours course work (plus GLG 506)

Selection of thesis committee

Submission of thesis proposal to committee

Submission of Program of Study (concurrently with thesis proposal)

Summer field work

or field work during first year

Semester III

Six hours of course work

Thesis research (GLG 699 - 3 credit hours)

Admission to Program

Semester IV

Thesis research (GLG 699 - 3 credit hours)

Completion and defense of thesis

This idealized schedule does not accommodate students whose projects do not permit field work in the first summer or during the academic year near Flagstaff. If completion within 2 years is of utmost importance to you, discuss this issue with your advisor before deciding on a thesis topic.

ACADEMIC POLICIES AND SATISFACTORY PROGRESS

The Program of Geology adheres to the academic policies outlined in the Graduate College Catalog, and you should be thoroughly familiar with them. In addition, every semester your progress as a graduate student will be evaluated. Our policy on evaluation of your progress and the resulting actions are as follows.

Unsatisfactory Progress

1. The Graduate Committee of the Program of Geology will periodically review each graduate student. Students will be notified individually regarding any unsatisfactory progress in his/her graduate program.
2. The following areas will be evaluated: completion of course deficiencies, filing of course program and thesis topic with the Graduate College, course grades, thesis work, committee meetings, and, if funded, performance as a Graduate Assistant and/or Research Assistant.
3. If a student is making unsatisfactory progress, he/she may be placed on probation. The student will be notified of specific problems that must be corrected during the first semester of probation. If these problems are not resolved or if there is further unsatisfactory progress

during any subsequent semester, he/she will be placed on a second semester of probation during which time the student is not eligible for an assistantship or scholarship from the Program or university. If, at the end of that second semester of probation, progress is still unsatisfactory, the student will be dismissed from the program.

4. If a student regards the faculty's decision or treatment as unjust, they may request their advisor, the Geology Program Coordinator, or the Graduate Program Coordinator to call a meeting of the faculty. The student will present the case in writing to the faculty one week prior to the meeting and may choose to be present at the beginning of the meeting for discussion of the situation. The faculty will deliberate the case without the student being present and, within one week, render their decision in writing. If a student does not accept the faculty's findings, a grievance may be pursued through university channels.

Admissions Contingencies

These vary with each student, and many students have none. Progress toward completion of courses listed as deficiencies at the time of matriculation should start in the first semester and be continuous.

Filing of Program of Study and Thesis Topic

Prior to the beginning of the first semester, a student must meet with the Graduate Program Coordinator or your advisor, to establish an approved outline of first semester courses. Prior to the beginning of the second semester, a student must have second semester courses approved by the thesis advisor. Before the second semester, a student should select a thesis advisor, thesis committee, and thesis topic. A thesis proposal must be written and approved by the thesis committee during the second semester. The Program of Study (see Appendix) is completed the second semester and discussed above.

Academic Standards

You must maintain a 3.0 grade point average for all courses taken as a graduate student. A grade of D or F does not earn graduate credit. Receiving a grade of C or lower in one course will place a student on probation. Only 3 hours of graduate course work with a grade of C can be accepted for the master's degree program in Geology. Receiving a grade of C or lower in two courses during the period of graduate study will result in the loss of any graduate assistantship and is grounds for dismissing the student from the program.

Any grade of Incomplete received by a graduate student must be completed within one semester, or the student will be put on probation. If there are extenuating circumstances, an extension may be received in writing from the Graduate Program Coordinator, or the Geology Program Coordinator, with approval of the Graduate College.

Progress on Thesis

Students should aim to complete the masters program within two to two-and-a-half years of admission to graduate study. Our two-year limit on office space and graduate student funding is a reflection of this two-year program. If working on a thesis, a graduate student should enroll in thesis credit hours that reflect the amount of time the student is working on the thesis project, the use of university facilities, and advisor's time.

Before enrolling for Thesis Research (GLG 699), the student's advisor must be consulted to determine the amount and type of work expected to be completed for a specified number of credits during any given semester. This should be viewed as a contract, and the advisor will judge each semester whether or not the stated work was completed. If the work was either not completed or was of an unsatisfactory quality, then the student may be placed on probation.

Committee Meetings

A key element in achieving the goal of graduation within two to two-and-a-half years is for the graduate student to meet regularly with his/her faculty advisor and thesis committee. The current GLG 506 course requires a thesis committee meeting late in the second semester.

The Program of Geology requires the following:

- 1) Each graduate student must hold a thesis committee meeting during the third and fourth semester that he/she is in residence at NAU.
- 2) A report on each meeting will be completed by the student's advisor and submitted to the Graduate Program Coordinator.
- 3) The next planned meeting of the thesis committee will be indicated on each report. At the meeting in the fourth semester, the committee and student will plan either a defense date or the next committee meeting for the fifth semester.
- 4) If a graduate student fails to hold a committee meeting at these times, the Graduate Program Coordinator will send the student and his/her advisor an official letter of reprimand on this point, and schedule a meeting with the advisor and student to be held as soon as possible.
- 5) Committee meetings should be held regularly (once per semester) after the second year until completion of the MS degree.

- 6) If the student has moved out of Flagstaff, but is still actively pursuing his/her degree, evidence of an "email" meeting once a semester must be filed with the Graduate Program Coordinator.
- 7) All reports from the committee meetings and letters from the Graduate Program Coordinator will be placed in the student's file.

A student must be enrolled continuously in the Program while pursuing a Master's degree. If circumstances require a student to break their time in residence, an application should be made to the Graduate College. There is a six-year limit for completion of requirements for the M.S. degree.

THESIS PROPOSAL

The purpose of the thesis proposal is to help you focus your research ideas, understand the scientific problems that are part of your research program, and think about what methods will help solve the problem you are researching. The thesis proposal is not a contract, it is a proposal. Your ideas about the research problems and the methods necessary to solve the problem may change as you do the work. You must write the proposal, however, before you begin the work, as an indication to your advisor and committee that you are academically ready to undertake independent research.

The selection of the research problem is the responsibility of the individual student in collaboration with a faculty member with whom the student desires to work. Bear in mind that a faculty member may decline to direct any individual's project. A graduate candidate who has identified a research problem through discussion with an advisor should prepare a research proposal. Students are helped through the initial phases of this project by working closely with an advisor. The proposal will be written as part of GLG 506 in the spring semester of the first year and the completed and signed proposal is due to the GLG 506 instructor and the Graduate Advisor at the end of that semester, and before GLG 699 (thesis credit) hours can be earned. When approved by the committee, the thesis proposal constitutes permission to begin the proposed research.

Proposal Format

A thesis proposal should be a **concise** statement of your research problem and how you intend to solve it. It includes a 250-word abstract, approximately 8 - 10 pages of double-spaced text, and supporting maps, graphs, tables, and references. In some cases, with the advisor's discretion, a longer proposal may be necessary. The proposal should be sufficiently well documented with citations from pertinent literature to demonstrate that you are aware of the work of other

investigators in the proposed and related fields. Your thesis committee will assist you in writing a concise proposal and will consider the proposal carefully before endorsing it.

Suggested format of thesis proposal

1. Cover sheet required (see Appendix)
2. Abstract - 250 words
3. Proposal
 - a. Introduction, which should include
 - Statement of problem
 - Significance of problem
 - Pertinent previous work
 - Geologic setting
 - b. Methods to be employed (specific research plans for field, laboratory and Data/statistical analyses.
 - c. Items that you will produce
4. Logistics (equipment, Program resources, budget, other facilities needed)
5. References: use *Geological Society of America Bulletin* style
6. Estimated schedule

Proposal Schedule [SUBJECT TO CHANGE]

The schedule for completing the proposal in GLG 506 in the spring semester is as follows.

Week	Student	Advisor/committee	506 Instructor
1	Develop proposal: confer with thesis advisor	Confer with advisee	Discuss components to thesis proposals
3	List of committee members and provisional thesis title due		
5	First draft of proposal, including three required elements due		
6		Review and return first draft	Review and return first draft
9	Second draft of proposal due; Program of study due		
11	Begin work on oral presentation for committee	Review and return second draft	If sufficient progress not being made, student and committee are notified
13	Third draft of proposal due		Student presentations begin week 13
14		Review third draft	
15	Thesis committee meeting for discussion of proposal; copy of thesis proposal		

	completion form forwarded to instructor for grading student		
Finals week		Copy of approved thesis proposal to Graduate Coordinator for student's file	Assignment of grade

If a student fails to meet the deadlines in GLG506 and has not made arrangements with both the 506 instructor and his/her thesis advisor, then he/she will receive a failing grade. A grade of an incomplete will only be given in unusual circumstances. The student, advisor, and instructor will then decide on a new schedule for finishing the proposal during the following semester. If the student fails to meet this new deadline, then an official letter is sent to the student and advisor from the Graduate Coordinator stating that the student is not making satisfactory progress, and asking for a written response indicating causes for the lack of progress. The letter will say that if the proposal is not filed by the end of the fall semester (the student's third semester), he/she will not receive Program funding in the fourth semester.

THESIS

Students are urged to contact the Graduate College when the thesis is about to be written in order to obtain the most current edition of the Graduate College's Format Manual. You must follow these guidelines to the letter or your thesis will not be accepted by the Graduate College.

You should have extensive discussions with your advisor and possibly your committee before you begin writing your thesis. Every advisor follows a different procedure depending on the project undertaken and capabilities of the student. You should write in a style equivalent to one in a professional journal. The recent theses can be guides, but remember that they are of variable quality. The advisor should have *at least* two weeks to read and comment on your work for each draft. The committee chair may or may not solicit the counsel of other members of the committee before returning the first draft of the thesis. Remember that faculty have other teaching and research commitments and other graduate students. You must be prepared to make numerous revisions quickly and return the revised drafts to your advisor until you have achieved a draft that your advisor deems acceptable to be distributed to your committee members. Note that a poorly written first draft may be returned to the student for rewriting without your advisor reading the entire thesis.

If after submission of a revised draft it is deemed that the written thesis is satisfactory, it will be distributed to other members of the committee for their review. The committee must be given your thesis at least 4 weeks before your defense. Once your committee has read your thesis that includes nearly final figures, maps, and text, members may suggest major revisions and wish to see several revised drafts before they agree to approve it as a defensible thesis. Discuss any suggested revisions with the committee members and with your advisor. At this time it is advisable to apprise committee members of your progress so they can be aware that they may soon receive a draft of your thesis. They may wish to outline their time constraints to you (i.e., meetings, field trips, etc.). If the review is unfavorable, the draft will be returned to the student with the committee's written recommendations for further rewriting.

In the event that professional and/or subject-matter disagreement develops within the thesis committee, the thesis committee chair will have the final decision. If the committee objects to the action of the thesis committee chair, the member(s) may ask for a review by members of the Program Graduate Committee who will attempt to resolve the problem, although the final decision is still the responsibility of the thesis committee chair. If the member(s) or thesis committee chair is/are still unsatisfied, he/she may request to be removed from the committee without prejudice and a replacement will be made. The purpose of this policy is to prevent the student from being placed in a difficult situation through no fault of his or her own.

At least two weeks prior to the thesis defense, you must submit your thesis to Graduate College for format check. This copy should be nearly a final version. The text should be free of grammatical and typographical errors, and figures and maps should be drafted and in their final form.

TIMELINE FOR FINAL SEMESTER

The following timeline for the final semester **must be adhered** to by all students planning to graduate in a particular semester.

At least three months prior to the defense

The committee must unanimously approve the formal defense date at least three months prior to the proposed defense date. Committee approval (permission for student to defend) will be contingent on completion of the following. A form listing progress to date of these six items will be submitted to the graduate committee. The graduate committee considers item #5 to be essential

before setting a defense date.

1. Field work completed or very near completion
2. Lab work completed or very near completion
3. Off-campus lab work (dates, chemistry, etc.) completed or assurance that materials will be received well before defense date
4. Computer analysis or modeling should be completed or very near completion
5. List of general thesis conclusions presented to committee
6. Most references compiled

At least one month prior to the defense

Student will present a completed defense copy of the thesis (including all figures, maps, and references) to the thesis committee for approval to defend on the scheduled defense date. It is expected that each committee member will have read the thesis prior to the committee meeting held no less than two weeks before the planned defense date.

At least two weeks prior to the defense date

The committee must formally vote whether or not to proceed with the defense. Unanimous committee approval is necessary for the thesis defense to proceed.

THESIS DEFENSE

The thesis defense must occur **no later than one week before the end of classes** in the semester you wish to graduate. It should not be scheduled during school holidays, weekends, final examination periods, or the summer unless all committee members agree **in advance**. The examination shall be scheduled during normal working hours and days, and public announcement of the examination shall be the responsibility of the graduate student (see Appendix for format). The committee personnel shall not be changed to facilitate scheduling during these periods. **It is to your advantage to attend thesis defenses of your colleagues before defending your thesis so that you know what to expect.**

In detail, the thesis defense consists of two parts: a Formal Oral Presentation and the Final Oral Examination. In the Oral Presentation, the candidate presents, in a professional manner, a summary of the thesis emphasizing the major conclusions of the research. This presentation,

typically 30-40 minutes long, is open to a public audience. Following the presentation, the public audience may ask questions related to the thesis. During this time, members of the thesis committee normally refrain from questioning the candidate. At the end of this brief discussion period, the public audience will be excused. At this time the Final Oral Examination begins. The candidate will then be fully examined by the thesis committee. It is during this questioning period that the student must be able to defend the findings and methodology of the thesis and to demonstrate a comprehensive understanding of the geological principles upon which the thesis research was based.

Following the Final Oral Examination, the student will be dismissed, and the examination committee will evaluate the student's performance. Successful completion of the Final Oral Examination shall be by majority vote of the examining committee. Should a student fail the Final Oral Examination, the committee chair may reschedule the examination at a later date but no sooner than 30 days. A second failure of the Final Oral Examination will terminate the student's graduate program. The committee will complete and sign the "Report on Final Oral Examination for Masters Degree" (see Appendix).

To prepare for this examination, a student is advised to review all graduate course work, all details of the thesis, and all current literature related to the thesis. The committee will be examining to ascertain whether the student has developed a sufficient foundation with both depth in the thesis field and breadth in geology. The student may be called upon to extend his or her knowledge beyond "what one knows" thus testing the use of sound scientific reasoning. You should be in your most alert and educationally honed state to pass your thesis defense.

Successful defense of the thesis research in the Final Oral Examination may be contingent upon completion of additional final changes to your thesis. After these changes have been made, present the final copy with additional cover sheets to all committee members for their final approval and for their signature (**ALL SIGNATURES MUST BE IN BLUE INK**). At least two weeks prior to the end of the semester, you must submit your thesis to Graduate College for the final format check.

Following acceptance of the final version of the thesis, four copies of the thesis, unbound and signed by all members of the examination committee, must be deposited in the Graduate College office in final form on or before the last day of the term in which the student will graduate. Two bound copies of the thesis go to the NAU library, one copy remains in the Program of Geology, and the fourth copy is for the advisor. If a student wants a personal copy, a fifth copy of the thesis

should be submitted. Current binding fees are \$20.00 per copy. For summer defenses, the final thesis must be turned in to the Graduate College (Tom Carpenter) approximately 3 weeks before the fall semester begins – check with Tom Carpenter for the exact date. A PDF copy of your final thesis will be posted on the Program of Geology web site. This will allow your thesis to be cited on GeoRef and will serve the geologic community. When your thesis is completed, turn in a CD with your thesis in PDF format to the Graduate Coordinator.

DEADLINES FOR THESIS DEFENSE

The Graduate College requires that the final copy of the thesis be submitted by these deadlines: Last day to turn in thesis and have degree posted for that given semester: LAST FRIDAY OF GIVEN SEMESTER. Last day to turn in thesis and avoid fees for following semester: FRIDAY BEFORE CLASSES BEGIN FOR GIVEN SEMESTER. If the student has already defended, or will defend prior to the first day of summer session, then the student is not required to enroll for thesis hours. If the defense will occur on or after the first day of summer session, then enrollment in thesis hours is required for the session. If the final thesis copy is not submitted within one year of successful completion of the defense, the student will be required to update and re-defend the thesis (Program of Geology requirement).

TIMETABLE FOR COMPLETION OF THESIS IN TWO YEARS

End of second semester in residence

Submit and obtain approval of thesis proposal
File Program of Study Form

Summer between first and second year

Complete field and/or laboratory research

Third Semester

Organize first draft of thesis

Fourth Semester

Submit first draft of thesis by February 1

Two weeks prior to thesis defense: Submit thesis to Graduate College for initial format check

Schedule thesis defense no later than two weeks prior to end of semester

Two weeks before end of semester: Submit thesis to Graduate College for final format check

End of semester: Four or five copies of the thesis to the Graduate College

Submit a PDF of your thesis to the Graduate Program Coordinator

Discuss a likely field schedule with your advisor if you are attempting to graduate in two years.

REQUIRED AND EXPECTED PERFORMANCE OF GRADUATE ASSISTANTS

Details regarding graduate assistantships are outlined in the Graduate Catalog, and graduate assistants should read them carefully. The University expects graduate assistants to be available for work from one week prior to the start of the fall semester through fall finals and from one week prior to the start of the spring semester through spring final examinations. These are contractual obligations.

Program-funded graduate assistantships are primarily in the form of teaching assistantships. Teaching is an integral part of your professional development and should be treated as such. Program expectations vary by course and it is your responsibility to know these expectations for each course in which you are assigned. You should schedule a time before the semester starts, if possible, to meet with the professor of the course you are TA'ing. During this meeting you should discuss, at minimum:

- Lab content: is it your or the professor's responsibility to define the content of the lab and to insure that the lab and lecture are successfully intermixed. In either case, the professor should approve the content before the lab starts.
- Syllabus: Will you or the professor create the syllabus for the lab? If it is your responsibility, be sure to review the syllabus and get his/her approval for it.
- Lab exercises: is it your or the professor's responsibility to create lab exercises? If it is yours, will the professor review the exercises before you present them? We are in the process of creating a library of exercises for each lab class; we hope this will aid you in constructing lab exercises if this is your responsibility.
- Participation: how much does the professor expect to be present in the lab and/or direct the lab activities.

You should consider putting together a list of goals and responsibilities for the lab. In the event of a major disagreement between you and professor regarding performance of duties, this list could provide documentation of the expectations you and he/she agreed upon at the beginning of the course.

Graduate assistants should expect to spend no more than 20 hours per week (including office hours) at their duties. **Weekly meetings with the faculty coordinator are required for all introductory lab TAs (i.e., GLG 100-level courses).** You should inform the person(s) in charge of

your teaching assignment(s) and the Grad Advisor if you are consistently spending more time than this in your GA duties or if there are other serious problems with the professor of the course. You should schedule a **minimum of 3 office hours per week**. Before each semester, you should complete an Employment Application form (Appendix) as soon as your schedule is finalized so that we can assign your teaching and other duties around your class schedule.

If you are a teaching assistant, please keep in contact with the professor in charge of the class to which you are assigned and with the Geology Program Coordinator, who may assign additional tasks within the scope of your position. Please note that the College of Engineering, Forestry, and Natural Sciences recognizes the importance of appropriate record keeping. Therefore, the teacher must maintain all course materials responsible for the course or the laboratory **for no less than one full year** following the semester of study. Information that should be included, but not limited to is: required textbooks or other course books, the course syllabus, all handouts, tests, papers that the instructor does not return to the student, and grade report spreadsheets.

Teaching is an incredibly demanding chore. An introduction to the aspects of teaching is beyond the scope of this manual; however, you should pay attention, at minimum, to the following:

- The university considers the syllabus a legal contract. Be sure to prepare it carefully and adhere to it as closely as possible.
- Make clear to students:
 - The rules and regulations of the classroom, and any other expectations you have of them -- especially on field trips
 - How you will deal with cheating and plagiarism
- Your own ethical behavior in the classroom should be a model to your students

Work with the supervisor(s) of your classes to obtain help with any of the above. The Geology program coordinator and/or graduate coordinator can also be consulted if a problem develops.

Research assistants must contact the faculty member who is in charge of funding the assistantship. Research assistants are governed by the same rules and regulations as teaching assistants, and consequently they may be asked to perform departmental duties as well as research, although this is unusual. Furthermore, the research tasks they perform may or may not be related to their thesis topic.

In the event of a conflict between a course field trip and a TA assignment the priorities are:

top priority is the student's own class field trip; second priority is the student's chief TA assignment; third priority is any secondary TA assignments (grader). **In all cases the student is responsible for finding a substitute for classes or responsibilities missed.**

OFFICE SPACE

The Program of Geology makes every effort to provide graduate assistants with adequate office space in which to carry out the terms of their contracts. Office space for students not under contract is a privilege, not a right, and will be allocated as available. The Graduate Program Coordinator, approximately according to the following priority schedule, assigns office space at the beginning of each academic year.

1. First and second year teaching assistants (second-year TAs have priority for offices with windows)
2. First and second year research assistants
3. Third year teaching assistants (uncommon)
4. Unfunded first and second year graduate students
5. Third year graduate students (many will have offices in their advisor's lab)

BUILDING POLICIES

All graduate students that are assigned office space will be issued a building key and a key to their office. The Geology office staff can issue keys. Please have a \$10 cash deposit with you in order to receive your keys. Both geology buildings must be **locked** at night and on weekends. Numerous thefts have occurred because this policy has not been followed.

The proper place for bicycles and sports such as hacky sack is outside of the building. Glass display cases have been broken as a consequence of not following these policies. Penalties for misuse of building facilities are loss of building keys and possible loss of office space. Students will be required to pay for any damage to the building resulting from their inappropriate actions.

FACILITIES & EQUIPMENT

The following facilities and resources are available for graduate student use in the Program of Geology.

Field Equipment

Brunton compasses may be checked out.

Four-wheel drive vehicles from motor pool (prices are steep and change frequently, contact

Transportation Services –3-2469).

Rock lab equipped with rock saws and thin-section machine.

Camping equipment (coolers, stoves, water containers, etc.). These items may be checked out. Priority is given to class field trips.

GPS units

Rugged tablet computers with GIS software and GPS capable

Analytical Equipment and Labs

Electron Microprobe in Bilby Research Center. Dr. Jim Wittke is the Geological Materials Analyst.

Computer Laboratories - equipped with IBM-type computers.

Graduate microscope/petrology lab.

Rock crushing and mineral separation facilities.

Cathodoluminescence lab.

Fluid inclusion stage.

Aqueous geochemistry lab, Isotope clean lab, Paleomagnetism lab, Amino acid chronology lab.

Scanning Electron Microscope

Inductively-coupled plasma mass spectrometer (in Chemistry)

Libraries

Cline Library is located two buildings south of the Geology building and has modest collections in geology. Additional support is available through interlibrary loan programs and GeoRef; many journals are on-line. The U.S.G.S., Museum of Northern Arizona, and Lowell Observatory also have libraries although checkout privileges are restricted to associates of these organizations.

Please be aware that you are responsible for maintaining and returning any borrowed University/Program equipment. If equipment/books are not returned you could receive a grade of incomplete or have a hold placed on your academic records.

PROGRAM OFFICE

The Geology Program office staff are willing to assist the incoming student as much as possible, or by directing him or her to the appropriate individual or office on campus. They cannot serve as individual advisors. These curricular matters can be addressed with the Graduate Program Coordinator, or faculty advisor.

Following is a list of policies and procedures now in effect for the Geology Program. These guidelines are an effort to make the Program run smoothly for all concerned. Your help in adhering to these policies is greatly appreciated.

Keys

Keys to the Geology building, Geology Annex, and geology lab room in the Physical Sciences building are available to all graduate assistants from the Program office. There is a one-time \$10 cash deposit (no checks, please) required before they will be issued. This covers any number of keys you have checked out. Your deposit will be returned when all of the keys have been turned in.

Photocopying

All copying of materials is to be done by the office staff. This happens by using the Work Request forms located on the front counter of the geology office. Graduate assistants may request the services of the office staff *only for work-related to courses that they are teaching* (generally photocopying) by submitting a standard Work Request form and placing pertinent items in the "IN" basket (next to Work Request forms on counter). *Please allow a minimum of one, full working day to complete the task. Please ask the office staff if you have an immediate need to copy.* However, the more time you can allow for your request to be processed, the better. We understand that there are emergencies. However, your emergency may not be the only one, so please plan ahead.

Personal photocopying is not to be done in the Program office.

Computer Lab

The lab hours will be posted on the door. The student workers are responsible for keeping a supply of paper available for the printers and for answering the students' questions. A code to enter the computer lab can be obtained from one of the office staff.

Supplies

Supplies (notebooks, pens, tape, paper clips, etc.) are to be used for instructional use only as needed to teach labs. Supplies are not for personal use. You will need to come to the Program office to be let into the supply room in order to obtain teaching supplies.

Mail

All geology faculty and graduate students have a mail box in the mailroom, which is located across the hall from the geology office in room 106. Absolutely no personal mail is to be sent out from, or received by, the Program using the Program address and the staffs' delivery service (this includes credit card bills, phone bills, magazines, etc.). Likewise, no personal faxes are to be sent to, or received by, the Program fax machine.

Time Entry

If you have a Graduate or Research Assistant position, time entry is not necessary because

you are on contract. However, you will need to go to Payroll in order to submit a New Hire packet so that you can begin receiving pay. This packet is available on the Payroll web site, or in the geology office.

If you are hired as an hourly worker, you will need to enter time in the LOUIE system every other week in order to get paid. Instructions are available in the office. Once you log in to the LOUIE system, click on the icon “Employee Time Sheet Entry.” If you need and do not have this icon, please contact payroll. Please observe time entry due dates and paycheck distribution dates, as per the Payroll Schedule made available at the geology office. Be aware of early time entry due dates due to holidays. It is your responsibility to enter your time by the posted deadline. Time that is not entered on time may not be processed that pay period; this situation is difficult to rectify. You are responsible for all information on your time slip and must keep track of it yourself.

Paychecks

It is highly recommended that you sign up for direct deposit. This assures that you receive your pay in a timely manner. Direct deposit forms are available on the Payroll web site, or in the geology office, and should be completed and turned in to the payroll office. You can view your pay statement in the LOUIE system. If you do not sign up for direct deposit, pay checks will be mailed to the mailing address on record in the LOUIE system, making it imperative that you make sure this address is current.

Lab Grade Reports

You should keep your grades in spreadsheet format; this is the preferred and recommended method. You may also keep grades in a handwritten format, if you so chose. Keep these files, as you will be required to turn in a print out/photocopy at the end of the semester.

Mid-Term and Final Grade Reports

Mid-term reports are filed over the computer; you will receive information about mid-term grades during the semester. Final grade reports are also entered over the computer and will be available at the end of the semester. Please print a copy of your final grades to be submitted to the geology office, along with a copy of your semester grading for the lab(s).

Labs & Field Trips

For GLG100, follow the instructions of the Lab coordinator. See the Coordinator for clarification or other assistance regarding your teaching assignments for GLG 100 and GLG 103

courses. Let students know the schedule for make-up lab sessions.

Be sure the students are clear about where and when they are to meet for field trips. Post the field trip information on the lab room door and in the lobby of the main geology building. Please inform the office staff of important field trip information, even if it was announced in class. Students frequently call the office for this kind of information.

If field trips are cancelled or postponed, post this information and also tell the office staff.

Student Evaluations

Near the end of each semester the students will evaluate all classes. This includes the labs that you teach. **Instructions and forms will be included in the evaluation packets that will be placed in your mailbox.** The Graduate College handbook has information on ABOR policy on teaching evaluations.

YOU will of course also evaluate the instructors of the classes you take. These are serious evaluations that are one of the main items in evaluating the faculty performance. Be responsible and constructive in your evaluations. Please do not be vindictive or let your evaluation be influenced by personal matters best handled by consulting with the Graduate Program Coordinator.

Student Files

Your application to NAU as well as information such as class evaluations and records of grant spending are kept in a file in the main office. In most cases files contain material written under conditions of confidentiality (e.g., letters of recommendation). From time to time you may need access to undergraduate transcripts or other material that may be in your file. The office staff will assist you with obtaining this information; **under no circumstances** are you permitted to access these files yourself.

VAN - DRIVER TRAINING

All state employees, **including all geology teaching assistants**, who drive 11-passenger vans are required to take the van driver training course. You must complete this course before driving a state van. The Graduate Coordinator will make arrangements for training before the semester begins.

RESIDENCY

The Graduate College controls the process for obtaining Arizona residency for graduate students. If you intend to apply for residency in Arizona, you must contact the Graduate Program Coordinator in the spring semester of your first year; you will work directly with Karen Cornelius of the Graduate College on the application. You typically apply in June and July of your first summer for the second year. If you intend to apply for residency, you should be aware that physical presence in Arizona for one full year and financial independence are the primary consideration of the residency evaluation group. You must show evidence of having been present in Arizona, generally by presenting a Arizona driver's license, being able to show rental agreements and utilities bills, registering your automobile with the state of Arizona, and registering to vote. For the most part, In-State Tuition Waivers (see Financial Assistance below) are reserved for students who are formally Arizona residents in the spring of their first year or who will likely obtain residency by early July. See Appendix for additional information.

MASTER'S DEGREE PROGRAMS IN EARTH SCIENCE

Two Masters in Earth Science degree programs are offered: Master of Science in Earth Science (MSES) and Master of Arts in Teaching of Earth Science (MATES).

Earth Science

To be admitted to either the M.S. or M.A.T. in Earth Science programs, you must:

- Submit scores from the general portion (verbal and math) of the Graduate Record Examination (30 percentile minimum score)
- Demonstrate a minimum grade point average of 2.75 in all undergraduate coursework
- Satisfy the "Earth Science" core and "other Sciences and Math course" science requirements of the Bachelor of Science in Earth Science degree program (see attached program outline)

M.S. in Earth Science

We offer the M.S. in Earth Science with two options: an extended coursework plan and a thesis plan. For the **extended coursework plan**, you may include a practicum of up to 4 credit hours as part of the 36-credit hour minimum required. For the **thesis plan**, you must complete a 6-

hour thesis as part of a minimum 34 credit hours. Please note that only 6 hours of thesis credit count toward your degree. However, you may end up taking more hours -- because you must register for GLG 699 each semester while you are working on your thesis.

Under each option, you must complete 24 hours of coursework in Geology and related fields. Most Geology courses that are designed specifically for the Earth Science program are offered during summer sessions. A comprehensive oral examination by the student's faculty advisory committee is required after the completion of 26 credit hours.

M.A.T. in Earth Science

This degree is offered under the extended coursework plan only. Most Geology courses that are designed for this program are offered during summer sessions.

The required 36 credit hours, include 24 hours of coursework in Geology and related fields and an approved 12-hour minor in education (below).

A comprehensive oral examination by the student's faculty advisory committee is required after the completion of 26 credit hours.

The minor in education consists of courses from the following list:

One of the following:

EDR 610 Introduction to Research

PSY 525 Introductory Statistics

One of the following:

ECI 666 Problems in Secondary School Curriculum

ECI 675 Principles of Curriculum Construction

ECI 696 Professional Problems of Teachers

One of the following:

*EDF 670 Philosophy of Education

*EDF 671 History of American Education

*EDF 672 Comparative Education

*EDF 599 Sociology of Education

One of the following:

*EPS591 Personality Adjustment

*EPS605 Applied Educational Psychology

*EPS 611 Adolescent Psychology

*Apply to certification requirements

Teaching Certification

Neither of the Masters in Earth Science programs automatically qualifies the candidate for Teaching Certification. Certification may be achieved by completing the Education course requirements of either the:

1) Bachelor of Science in Earth Science - Extended Major with Secondary Certification;

2) Post Degree Certification - Secondary Education.

Some flexibility exists with the Preparation Course requirements as outlined on the orange form for those candidates with teaching experience. The substitutions are subject to approval by the appropriate Center for Excellence advisor.

ECI 308 (1 hr) - may be waived

ECI 350 (3 hr) - may be satisfied with ECI 671

FINANCIAL ASSISTANTSHIPS AVAILABLE

The Program of Geology at Northern Arizona University has a number of scholarships and assistantships available each year to qualified applicants. The number varies each year, ranging from six to possibly ten or more. Additional information on support follows:

GRADUATE TEACHING ASSISTANTSHIPS: Recipients are expected to help the faculty in teaching the laboratory portions of courses offered within the Program of Geology. Examples include: teaching labs in physical geology, historical geology, petrology, etc. Graduate T.A.s are expected to work 15 to 20 hours per week, as these assistantships are considered half-time positions.

IN-STATE TUITION WAIVERS (Qualified Teaching and Research Assistants): A few waivers for in-state tuition are awarded each year to graduate students in geology. Students must be Arizona residents. The award process is based wholly on outstanding academic performance at the graduate level. Teaching and research assistantships automatically carry a waiver for out-of-state tuition.

GRADUATE RESEARCH ASSISTANTSHIPS: Currently the Program has several such positions. Recipients are expected to aid faculty in their particular research projects. Occasionally, but not always, the work performed by the student can lead to a thesis topic. These positions carry an out-of-state tuition waiver. The existence of these positions is dependent on faculty members obtaining external corporate or research agency funding (USGS, NSF, NASA, grants, etc.).

STUDENT WORK STUDY OR STUDENT WAGE POSITIONS: The University makes funds available to departments to pay qualified students who perform work on an hourly basis.

APPENDIX REQUIRED FORMS

“Petition for Transfer Credit (Master’s program)” form is available through the Graduate College: <http://www.nau.edu/gradcol/publications.htm>, click on “Transfer credit, petition for”.

PROGRAM OF STUDY TEMPLATE

Memorandum

Date: _____
To: Dr. Evie Garcia, Associate Dean
Through: Dr. _____, Program Coordinator, Program of Geology
Dr. _____, Graduate Program Coordinator, Program of Geology
From: Dr. _____, Title/Rank, Program of Geology
Subject: Proposed Program of Study for the Master of Science degree in Geology for
_____ (student's name)

Mr./Ms. _____ (student's name) holds a BS degree in _____ (subject) from _____ (university or college). He/she is presently enrolled as a graduate student in geology at Northern Arizona University.

I. Graduate Courses (Completed)

At _____ (former school - for transfer credits only)

Course number	Course name	Semester/year	Credit hours
---------------	-------------	---------------	--------------

At Northern Arizona University

Course number	Course name	Semester/year	Credit hours
---------------	-------------	---------------	--------------

In progress

Course number	Course name	Semester/year	Credit hours
---------------	-------------	---------------	--------------

To be completed

Course number	Course name	Semester/year	Credit hours
			TOTAL _____

II. Dr. _____ has agreed to serve as thesis supervisor. Drs. _____ and _____ have agreed to serve as committee members.

III. Thesis topic:

Dr. _____ Dr. _____ Dr. _____

Dr. _____ Dr. _____
Program Coordinator Graduate Program Coordinator

THESIS PROPOSAL COVER SHEET

Thesis Proposal

Date

TITLE

Your Name

Dr. _____, Thesis advisor

Dr. _____

Dr. _____

ANNOUNCEMENT OF DEFENSE

PROGRAM OF GEOLOGY

MASTERS DEFENSE

(TITLE)

BY

(STUDENT'S NAME)

DAY, DATE, TIME

PLACE

THESIS COMMITTEE:

DR. _____, CHAIR

DR. _____

DR. _____

Program of Geology

Report on M.S. Thesis Committee Meeting

PLEASE print and sign.

Graduate Student: _____

Student ID number: _____

Faculty Advisor: _____

Committee Member: _____

Committee Member: _____

Committee Member: _____

Date of committee meeting: _____

Date of last committee meeting: _____

Tentative month of next meeting _____

BRIEFLY SUMMARIZE the progress the graduate student made since the past committee meeting. The original of this report must be given to the Graduate Program Coordinator. Focus summary on these questions:

Have courses in Program of Study been completed? (If not, explain reasons for non-completion, and detail the steps anticipated to complete the courses.)

Is performance in coursework satisfactory?

Has performance and progress on the thesis research been satisfactory? (If not, explain reasons for lack of progress, and detail a plan to address the issues.)

NORTHERN ARIZONA UNIVERSITY

REPORT ON FINAL ORAL EXAMINATION FOR MASTERS DEGREE

Candidate's Name _____

Degree Title _____ Master of Science _____

Major in _____ Geology _____

Vote of Committee: Passed _____ **votes**

Failed _____ **votes**

(Two out of three votes to pass are required)

Members of Committee:

_____, **Chair**

_____, **Program Coordinator**

Date _____

OFFICE HOUR and CLASS SCHEDULE SPRING/FALL Semester, 200

NAME _____

Bldg #: _____ Office #: _____ Phone #: 3-_____

(12=Glgy; 13=Glgy Anx)

TIME	MONDAY	WEDNESDAY	FRIDAY	TIME	TUESDAY	THURSDAY
8:00 to 8:50				8:00 to 9:15		
9:10 to 10:00				9:35 to 10:50		
10:20 to 11:10				11:10 to 12:25		
11:30 to 12:20				12:45 to 2:00		
1:00 to 2:00				2:00 to 3:00		
2:00 to 3:00				3:00 to 4:00		
3:00 to 4:00				4:00 to 5:00		
4:00 to 5:00				Other		
Other						

SPECIAL DATES TO BE NOTED (Meetings, Field outings, etc):

GRADUATE STUDENT PROGRESS REPORT

PROGRAM OF GEOLOGY

NORTHERN ARIZONA UNIVERISTY

Date _____

Record of Graduate Student Progress

Name _____ SS# ____ - ____ - ____ 1st Sem in Residence _____

Undergraduate School _____ Six-year limit expires _____

Initial Semester of TA/RA _____ 2nd Sem _____ 3rd Sem _____ 4th Sem _____

Deficiencies _____

Transfer Courses (six-hr limit; must petition grad college) _____

Residency Established _____

THESIS/COURSE WORK

Acceptance of Advisor (2nd semester) _____

Selection of Thesis Topic (2nd semester) _____

Thesis Committee (2nd semester)

_____ (optional member)

Thesis Proposal Approved (by end 2nd sem of residency) _____

Course Work (required: 26 course hrs _____; 6 hrs thesis _____; 4 blocks _____)

Credits taken: 1st Sem: _____ 2nd Sem _____ 3rd Sem _____ 4th Sem _____

ADVANCEMENT TO PROGRAM (Program of Study form)

Remove Deficiencies Above _____ Grad Regular Standing _____

1 Semester of Residency, 9hrs w/ 3.0 or better _____ GLG 505 _____ 506

Program of Study form completed (after approved thesis proposal) _____

GRADUATION

Application for Graduation _____

Schedule Thesis Defense (post announcement) _____

Passed Thesis Defense _____

Submit final copy to Graduate College Editor _____

Pay Fees _____

Deposit 4 copies of thesis in Graduate College _____

Submit PDF of thesis to the Graduate Program Coordinator

MODIFICATION TO NORMAL PROGRAM

Petition(s) to modify normal program above (brief explanation; attach complete documentation) _____
