Department of Geology and Geophysics

INFORMATION FOR GRADUATE STUDENTS HANDBOOK

The Survival Manual

School of Ocean and Earth Science and Technology
University of Hawaii

Ver 2018.1
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INTRODUCTION

PURPOSE
This booklet explains departmental procedures and requirements in the Department of Geology and Geophysics of the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawaii. General rules of the University's Office of Graduate Education (OGE) or formerly known as Graduate Division, are stated in the University of Hawaii Manoa catalog.

THE COMMUNITY AND UNIVERSITY
The University of Hawaii was founded in 1907 as a land-grant institution and is now also a sea-grant and space-grant institution. The principal campus is located in Manoa Valley, about 5 kilometers from downtown Honolulu (which has a population of about 500,000 in the urban core) and 3 kilometers from Waikiki Beach. The Manoa campus has about 20,000-plus students.

SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY
The School of Ocean and Earth Science and Technology was formed in 1988 and includes the departments of Geology and Geophysics, Oceanography, Atmospheric Sciences, and Ocean & Resources Engineering as well as several research institutes (Hawaii Institute of Geophysics and Planetology (HIGP), Hawaii Institute of Marine Biology (HIMB), the Hawaii Natural Energy Institute (HNEI), the Joint Institute for Marine and Atmospheric Research (JIMAR) and Pacific Biosciences Research Center (PBRC). SOEST also includes and research centers (Hawaii Undersea Research Laboratory (HURL), International Pacific Research Center (IPRC), and the Center for Microbial Oceanography: Research & Education (CMORE)) to pursue educational and research opportunities in these fields.

THE DEPARTMENT OF GEOLOGY AND GEOPHYSICS
The Department has a large faculty (currently 24) with diverse research interests, nearly all of whom teach regularly at the undergraduate and graduate level. Researchers in or associated with the department through its cooperating graduate faculty may also advise and employ graduate students, and teach GG graduate courses. The department offers programs of research and study leading to the MS and PhD degrees, as well as a professional MS (MGeo) degree. Currently, the Department offers graduate programs in 4 concentrations and has approximately 50 graduate students in residence.

EXPECTATIONS FOR CONDUCT IN THE DEPARTMENT
The Department, like the University and scientific community at large, expects and depends on a respectful, fair, and ethical behavior by its members, including students. In turn, each student should expect to be treated in such a manner. Every student is responsible for reading, understanding and abiding by the Student Conduct Code as well as other School and University policies, and to complete the sign the Code of Student Conduct Affirmation Form when joining the Department. University Policy concerning sexual harassment includes information on discerning appropriate from inappropriate behavior and the procedure for submitting a complaint. Each new student should take the UH online training program “Preventing Sexual Harassment” to be familiar with this serious issue.

CURRENT RESEARCH AREAS/CONCENTRATIONS
See the descriptions in the UHM General Catalogy in the final several pages of the material at http://www.catalog.hawaii.edu/schoolscolleges/soest/gg.htm.
See also information at: http://www.soest.hawaii.edu/GG/research/gg_research.html and links on that page

GEOPHYSICS AND TECTONICS
This program covers the disciplines of seismology, geodesy, and geodynamics, and other applications of physics to the study of the Earth. Students who study high pressure mineral physics are currently considered as being in this curricular concentration.
MARINE AND ENVIRONMENTAL GEOLOGY
The focus of this program is to provide students with a background that combines geology, geochemistry, and geophysics for technical and professional work in marine or environmental science at industrial, governmental, and academic institutions in topics, including sedimentology, stratigraphy, stable and radiogenic isotope geochemistry, organic geochemistry, chemical oceanography, coastal geology, littoral processes, sea-level change, geochemistry of marine sediments, and geology of Pacific islands and atolls.

PLANETARY GEOSCIENCES AND REMOTE SENSING
Instruction and research in this program are focused on the study of the surfaces and interiors of planetary bodies (including Earth) in order to understand their origin and evolution, such as geomorphology, geophysics, mineralogy, petrology, and geochemistry to the analysis of remotely acquired planetary data, meteorites, and laboratory and field analogues.

VOLCANOLOGY, GEOCHEMISTRY, AND PETROLOGY
Studies in this curricular group include research at active and inactive volcanoes on land and at sea using chemical, physical and geological methods, high temperature geochemistry, volcanic hazards, experimental petrology, isotope geochemistry, and geochronology. The University of Hawaii is well placed to study volcanoes. The Hawaiian Islands are volcanic and include Mauna Loa.

RESEARCH FACILITIES
Departmental faculty normally conduct research projects within the Department in conjunction with one or more of its 4 research areas. In addition, the research institutes within SOEST and also the Water Resources Research Center have goals aimed at applied research, and can be sources of funding and guidance for graduate students. The University's Space Grant and Sea Grant programs, and International Pacific Research Center (IPRC) are also part of SOEST. For more details see http://www.soest.hawaii.edu/GG/research/gg_facilities.html and https://www.soest.hawaii.edu/soestwp/tech/.

GRADUATE FACULTY MEMBERS
The graduate faculty of the university instruct graduate students and supervise their research. The degree committee of each graduate student is chosen from this body, and also includes an outside member. For a current listing of graduate faculty members, visit the UHM graduate faculty search tool.

SCHOLARSHIPS AND FELLOWSHIPS
The Department offers various scholarships and fellowships, described in detail at the GG scholarships webpage. Many awards can also be found through the STAR Giving Tree website.

GRADUATE ASSISTANTSHIP POSITIONS
A UHM graduate assistantship (GA) is a half-time temporary appointment as either a Teaching Assistant (TA) or a Research Assistant (RA). The TA position is usually a 4.5-month appointment (per semester); the RA position is an eleven-month appointment. Regardless of appointment period, GAs are paid over the course of twelve months. The Department of Geology and Geophysics sometimes makes appointments for less than a full year (i.e., a semester). Salary for TAs is paid from 1 Aug to 31 January for the Fall semester and from 1 Jan to 30 June for the Spring semester.

Availability of Positions
The Department of Geology and Geophysics offers a small number (~5) of TA positions each semester, depending on the availability of Department funds. The number of RA positions available each semester varies depending on the availability of funds by individual faculty members.

Duties
Teaching Assistants typically teach undergraduate laboratories under the direction of a faculty member in charge of the course. Research Assistants perform research duties that may or may not be related to their degree, working under the direction of a faculty member. Both TAs and RAs are expected to contribute an average of 20 hours per week to the assigned tasks, which do not necessarily overlap with the time required to conduct their own graduate research. Graduate Assistants with nine-month appointments (TAs) serve from one week prior to the start of fall semester through spring commencement and are entitled to three months off during the summer. Graduate Assistants with eleven-month appointments (RAs) are entitled to one month of duty-free time each year; this time should be scheduled at a time mutually agreeable to the student and faculty supervisor.

**GA Eligibility**
Students are required to maintain a 3.0 grade point average and must carry nine credit hours of degree-related coursework (excluding audit hours) each semester while holding the assistantship. However, students who wish to enroll for more than nine credit hours may sometimes do so with department approval (requiring a memo to the Graduate Fellowships Office from the Department Chair). According to University policy, non-native English speakers with any instructional responsibility must demonstrate proficiency in English; the desirable score required for the Test of English as a Foreign Language (TOEFL) is 90+ for incoming students, 100+ for incoming Teaching Assistant students, or 6.0 on IELTS.

**Salaries**
GAs are paid according to a stepped pay-scale set by the Board of Regents. All GAs must be appointed to this pay scale. SOEST applies a minimum step level that is higher than the UHM minimum. Adjustments must be approved by the SOEST Dean’s office and are requested through the graduate chair.

According to University policy, initial placement on the pay scale will reflect the student’s experience, ability, and assigned responsibility; advancement from step to step, after at least one year of satisfactory service, may be recommended by the Department Chair or principal investigator of a student’s research project, with the approval of the pertinent academic dean (from the Board of Regents policies web site). TAs within the Department receive a GA – 9 month scale salary at Step 12. Incoming GAs with a BS degree receive a GA-11 month scale at Step 11, while those with a MS degree receive a GA-11 month scale at Step 12, reaching a maximum of Step 13 or 14, with increases following dates of significant progress toward degree completion (passing of departmental exams, etc.).

**Tuition Assistance Scholarships (Tuition Waivers)**
Currently both types of graduate assistantships (research and teaching) receive tuition assistance scholarships (or waivers) that are not exempt from University fees. University fees include the Board of Publications fee, the Student Health Fee, the Graduate Student Organization fee, etc. University fees are paid at the time the student registers for classes.

**Non-resident Tuition waiver**
The office of Graduate Education offers a small number of competitively-based tuition waivers of non-resident students attending UHM full time and who are self-supporting their education. Inquire with the GG Graduate Chair.

**Benefits**
Graduate Assistants who are appointed at half-time for at least three months may enroll in the State Health Fund Plan and are eligible to join the University of Hawai‘i Federal Credit Union. More information about health benefits is available from floor and department secretaries, or from the SOEST Personnel Office. Graduate Assistants are not eligible to accumulate vacation or sick leave.

**Pay Dates**
Graduate Assistants receive their paychecks on the 5th and 20th of each month. When an RA or TA is initially hired, there is a lag in receiving their pay, which can be up to a month after starting. A good way to avoid
unnecessary hardship is to check that your paperwork is in order with your unit secretary or the SOEST Personnel Office as early as possible.

**Continuation of Funding**

Both types of assistantships may be renewed based on satisfactory performance, availability, and number of GA slots available at the time. Although every attempt is made to provide funding, assistantships are not guaranteed for the duration of a student’s studies in the Department. The Department currently has a policy of giving incoming first-year graduate students priority for TA appointments. Ultimately, it is the responsibility of the graduate student to make sure funding continues. Sometimes, graduate students who are supported by an RA appointment take a TA position to gain valuable teaching experience and/or to extend their RA funds.

**Summer Overload Appointments**

These are additional half-time positions that are sometimes available to graduate students. They carry a stipend in addition to a concurrent RA or TA stipend. Normally, overload activity is permitted only during non-instructional periods (during the summer or between semesters). Stipends for summer overload appointments for RAs follow the same 20-step pay scale as that used for the stipends for the RA itself. Often, graduate students are placed at the same step for their summer overload appointment as they are for their regular RA appointment; however, this is subject to the availability of funds.

**Paycheck Deductions for the PTS Deferred Compensation Plan**

The State of Hawai‘i uses the PTS Deferred Compensation Retirement Plan for part-time, temporary, and seasonal or casual employees, because these employees are not eligible to participate in the State Employees’ Retirement System. Graduate Assistants are exempt from this plan while they are full-time students, but are not exempt during non-instructional periods (over the summer). The employee’s contribution to the PTS Deferred Compensation Plan replaces his or her contribution to Social Security, although a Medicare contribution is still required. International students are exempt from this plan.

Graduate Assistants will be automatically enrolled in the PTS Deferred Compensation Plan for periods when they are not exempt. Each GA will be asked by the Department to fill out an Enrollment Form. You will receive a copy of the booklet “PTS Deferred Compensation Retirement Plan Employee Information Booklet” from the department when you first enroll, which has answers to common questions you might have, and contact information.

**Tax Benefits Often Available to Graduate Students**

Graduate students in Hawai‘i are often eligible for tax credits. See the instructions published by the U. S. Internal Revenue Service and the State of Hawai‘i Department of Taxation.

**NORMAL UNDERGRADUATE PREPARATION**

Students are accepted from undergraduate majors in the natural sciences, mathematics, and engineering who have normally completed at least one year each of college calculus, geology, physics, and chemistry. Adequacy of each applicant's additional preparation will depend on the particular branch of geology and geophysics being pursued. At the time of application, the student should state the area in which he or she intends to study. The areas listed in the following sections are active areas of research in the Department. A brief description and the normal undergraduate preparation for each are listed below. Students with backgrounds in other fields may be accepted in an area, but advancement to candidacy may be delayed and students will likely be required to take one or more courses in the Earth Sciences to fill in their background. A complete statement of courses and other work necessary for the MS or to prepare for the PhD comprehensive examination is in a subsequent part of this handbook.
MASTER’S PROGRAM
For a complete listing of the requirements, PLEASE view the Office of Graduate Education (OGE) website. The Geology and Geophysics Department’s additions and modifications to the OGE policies and procedures are explained below.

Master’s Plan A (Thesis)

Residency Requirement The minimum residence requirement by the Office of Graduate Education (OGE) is two semesters of full-time work or four six-week summer sessions or the equivalent in credit hours applicable to the student’s degree program.

Course Requirements (Plan A)
Students must take at least 30 credits overall from coursework and research. A maximum of 12 credits can come from research (GG 699 and GG 700); of these, six credits must be for GG 700. Credits for GG 700 can only accrue after a thesis proposal is approved.

At least 18 credits must come from courses taken for a letter grade (A, B, C, etc.) at the 300-level or above (excluding GG 699 and 700). At least 12 of the credits from courses must be from graduate courses (GG 600 and above, excluding GG 699 and GG 700). All students must take GG 610, Graduate Seminar, once each year for two years or until graduation.

Specific departmental course requirements vary depending on the area of concentration (see Area Requirements). Requirements for students entering from fields other than geological sciences will be determined on an individual basis by the Graduate Studies Committee and the thesis committee. Directed Research (GG 699) may only be taken on a credit/no credit basis. If a student is receiving a research assistantship, teaching assistantship, or tuition waiver, then he or she must be registered for nine program-related credit hours during the semester in which he or she has the assistantship or waiver. Graduate Assistants registering for more than nine credits will require a memo of concurrence from the Department Chair.

Preliminary Conference (Plan A)
The purposes of the preliminary conference are to determine in which field the student will pursue a degree, to consider undergraduate deficiencies, to advise the student of a suitable selection of courses for the first semester, and to appoint an interim advisor in his or her field. Entering students will be advised by email as to the time and place of the preliminary conference, which is normally conducted prior to registration for the first term. The Department Chair and the student's interim advisor will be present; a representative(s) from the Graduate Admissions Committee (GAC) and/or Graduate Studies Committee (GSC) may also be present.

Undergraduate deficiencies will be assigned as follows. For all applicants, any of these courses not already completed will constitute a deficiency: one year each of college calculus, physics with labs, chemistry with labs, and geology-geophysics with labs. For applicants from majors that are equivalent to a BS (or BS in engineering) at the University of Hawaii at Manoa (UHM) any deficiency in a course required for the same BS (or BS in engineering) at UHM will be an undergraduate deficiency (e.g., a geologist entering without petrology, a physicist entering without electricity and magnetism). Normally, applicants from a field other than science, engineering, or mathematics would not be admitted. If circumstances suggest that such a student be admitted, all courses needed for a bachelor's degree at UHM in the field he or she intends to enter will be listed as undergraduate deficiencies. Students shifting to a different field will not have the upper division courses (300-400) listed as undergraduate deficiencies (e.g., a geologist shifting to geophysics who has not had theoretical mechanics; a physicist shifting to geophysics who has not had structural geology).

Appointment of Committee (Plan A)
The student and his or her advisor will mutually agree on a thesis committee consisting of at least three members. The chair and a majority of the committee members must be of the graduate faculty of the Geology and
Geophysics Department. If a committee chairperson wishes to nominate someone not in the graduate faculty he or she may nominate that person as a fourth member, the chair must first obtain approval from the Department Chair and then from OGE. For a current listing of graduate faculty members, visit the UHM graduate faculty online search tool or the online version of the UHM General Catalog.

**Thesis Proposal: Approval of Thesis Topic (Plan A)**
A thesis proposal that concisely describes the objectives and approach of the planned research is required. The first purpose of the master's thesis is to demonstrate that the student can master a research effort of moderate scope, and write and defend the results of his or her work in a logical and clear manner. The student is encouraged to discuss potential thesis topics with the faculty as early as possible. The thesis proposal should clearly and concisely describe the anticipated thesis research, contain at least three pages of text, and should include the topics listed below. An acceptable thesis proposal should be submitted to the thesis committee near the end of the student’s second semester. Approval of the thesis topic (and hence, proposal) is official when OGE Form II is filed.

**Outline of Thesis Proposal:**
1. TITLE
2. INTRODUCTION (Problem statement, rationale)
3. OBJECTIVES/HYPOTHESIS (Concisely written list)
4. APPROACH (Brief overview with references to established methods)
5. TIMELINE
6. REFERENCES

The student may not register for GG 700 (Thesis Research) until after OGE accepts the Department Chair's recommendation of the thesis topic. Registration in GG 700 must total 6 credit hours, including at least 1 credit hour in the semester or summer session in which the degree is awarded. Copies of the completed thesis must be submitted to committee members at least two weeks prior to the date of the final examination.

The Department encourages theses to be organized so that they are ready for submittal (or have been submitted) for publication. Details that require material extraneous for publication but deemed necessary for the thesis, such as extensive reports of previous work and lengthy tables of data, should be set in chapters or appendices clearly independent of the principal work, discussion, and conclusions. The student should be aware of current OGE rules on co-authorship of publications. The current instructions for the preparation of the thesis are available in the OGE office.

The second purpose of the thesis is to allow a student to develop an original scientific project under the tutelage of a faculty mentor, so as to add to the knowledge of the discipline and to establish the student as a qualified scientist in his or her own right. The research program typically involves the following: a study of the literature to establish a broad base of knowledge; making new measurements, or finding an intriguing and previously undiscovered method of understanding existing data; explaining the results; defending the thesis; and publishing.

It is especially important for students to gain direct, first-hand experience in creating their own database when this is practical and feasible. In any case, scientific integrity mandates that the student fully acknowledge in the thesis all collaboration; e.g., samples, sample preparation, measurements, analyses, data, or computer algorithms produced by others involved in the crafting of the thesis research.

**Application for Graduation (Plan A)**
Students who plan to graduate must file a Graduate Application of Degree with the Office of Graduate Education Student Services, by the deadline specified in the UH Manoa Academic Calendar (typically within the first month of each semester, including summer).
Schedule Thesis Defense (Plan A)
OGE rules stipulate that copies of the completed thesis must be submitted to committee members at least two weeks prior to the date of the final examination. Keep in mind, however, that this should be considered a minimum: outside members, or members who are away from the campus must be sent the thesis long enough in advance to accommodate mailing transit times. The policy of the Department of Geology and Geophysics is that a student should not be permitted to defend until his or her committee has agreed that the written thesis is defendable; i.e., that the thesis is likely to require only modest revisions in consequence of the oral defense.

Thesis Defense Announcement
Announcements should be posted at least one week prior to the date of the scheduled defense. The announcement must specify title, date, time, and place of defense. It also needs to include the student’s abstract. Students should provide the above information to the unit secretaries for electronic and paper posting as soon as possible.

Thesis Defense (Final examination for Plan A)
The Geology and Geophysics Department normally prefers a final oral exam in which results are presented at a departmental seminar. At the option of the thesis chair, however, the final oral examination may be open only to members of the graduate faculty. In either case, reasonable notice must be given, and all members of the thesis committee must be present. If a committee member cannot be present at the defense, the student should consider re-scheduling the defense date; however, the student has the options of allowing a proxy member, or changing the committee entirely. At the defense, the candidate will present his or her work and principal results within a period of time (usually 30 to 40 minutes) agreed upon in advance by the thesis committee chair. Next, questioning by members of the audience is allowed. Then, the room may be cleared of persons not in the graduate faculty for additional questioning by the thesis committee, if members so wish.

After questioning is completed, the committee decides in private session whether or not the final examination was passed. Students failing the examination may repeat it only once. The committee also records its opinion as to whether or not the thesis is satisfactory. Modest rewriting may be needed, in which case signatures on the approval page of the thesis may be delayed.

If the student wants to continue his or her graduate work in this department, a final duty of the thesis committee is to recommend to the Graduate Studies Committee whether or not the student may be admitted to the PhD program.

Submit Written Thesis (Plan A)
The approved thesis and necessary copies are to be submitted to the Graduate Records Office, Spalding Hall Room 352. Specific instructions are included with the application for graduation. All students in the Geology and Geophysics Department are required to submit a pdf file and a printed copy of the thesis to the Geology and Geophysics Department office prior to graduation. OGE’s Student Progress Form IV will be submitted by the department when the thesis documents are in hand. Approval by the department chair is required before a degree can be conferred.

Exit Interviews
All graduate students in Geology and Geophysics are required to participate in an exit interview prior to graduation. Student Progress Form V will be signed by the Department’s Graduate Chair only upon completion of the exit interview. Interviews will not be conducted by faculty members. These required interviews are conducted as part of the University of Hawaii’s accreditation with the Western Association of Schools and Colleges (WASC).

Data Integrity
The advisor affirms by signature on Form V that the data and other materials used in the thesis are available in the public domain and archived in accordance with university and funding agency policies regarding data access.
Graduate Chair Approval (Plan A)
The graduate chair submits the Certification of Degree Award, attesting that all degree requirements have been met.

Conferral of Degree (Plan A)
Degrees are conferred three times annually: December, May, and August.

Semester Evaluations/Graduate Student Committee Report
Department policy requires that a graduate student meet with the thesis/dissertation committee every semester to review progress and seek guidance. It is the student’s responsibility to organize this meeting and to complete the required Committee Report Form. In the rare case when a meeting of all committee members is not possible, a gathering of those who are available will occur, and the missing faculty member will be provided with a copy of the form.

Annual Evaluations
The academic record of all students and the length of time taken to earn that record will be evaluated annually in mid-spring. This evaluation of progress will include a written statement of progress and problems from the student, and an interview of the student by members of the Graduate Studies Committee. The student's advisor or committee chair, or his or her employer (if any), will not be present at the oral evaluation, although they will complete written evaluations. Members of the Graduate Studies Committee will review and evaluate the student's plan of study and progress. All evaluators will report their opinions to the Graduate Studies Committee of how deserving of financial aid and office space each student is for the following year. Suggestions from students for departmental improvements are strongly encouraged during the interview. The results of the spring evaluation become part of the student's file.

Time Allowed
All work toward a master's degree must be completed within seven years preceding the date upon which the degree is conferred. Credits earned prior to the seven-year period are not valid for the application toward the degree. Candidates who fail to complete all requirements in the specified time are automatically dropped from the program. Reinstatement for a limited period of time is only possible upon favorable recommendation of the field of study and concurrence of the Dean of the Office of Graduate Education.

Funding
The initial offer letter details the Department’s commitment to funding. Not all graduate students enter the GG program with guaranteed support but may seek support on a semester-by-semester basis if they meet eligibility requirements. No funding is guaranteed beyond the initial offer. If additional funding is needed to complete the degree, this must be negotiated with the advisor and the Department Chair. Criteria for additional funding include the student’s progress toward completion of the degree, availability of support, and the nature of the problem that prevented the student from completing the degree as planned. Priority for awarding Teaching Assistantships is given to students within their first two years in the Department.

Summary of Procedures (Plan A)
1. Preliminary conference; appointment of interim advisor (Complete Student Progress Form I).
2. Appointment of thesis committee (Complete Student Progress Form II).
3. Approval of thesis topic (Student Progress Form II).
4. Application for graduation, and payment of graduation fees. Deadlines are within the first month of each semester.
5. Schedule thesis defense.
6. Defend thesis (Student Progress Form III).
7. Submit written thesis to the Graduate Records Office (Student Progress Form IV).
8. Submit pdf file and a hard copy of written thesis to the Geology and Geophysics Department Office (Student Progress Form V).
9. Exit interview.
10. Graduate chair certifies that all degree requirements have been met.
11. Conferral of degree.

**Deadlines for submission of degree applications, final examination and thesis deposit vary between the fall, spring, and summer semesters. Deadlines are located on the UHM Academic Calendar website at http://manoa.hawaii.edu/records/calendar/index.html.**

***NOTE: The Geology and Geophysics Department does not require a general examination.***

**MS PLAN A TIMETABLE AND SEQUENCE OF PROGRESS REPORT FORMS (SEE HTTP://WWW.SOEST.HAWAII.EDU/GG/RESOURCES/GG_FORMS.HTML FOR THE ACTUAL FORMS)**

<table>
<thead>
<tr>
<th>FORM/TASK</th>
<th>EXPECTED PROGRESS</th>
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<td>I. Preliminary Conference</td>
<td>1st semester (typically, before registration)</td>
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<tr>
<td>I. Admission to Candidacy</td>
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<td>II. Thesis Committee Selection</td>
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<td>II. Approval of Thesis Proposal</td>
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<td>III. Final Exam (Thesis Defense)</td>
<td>Within two years</td>
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<tr>
<td>IV. Thesis Approval</td>
<td>Within two years</td>
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Master’s Plan B (Coursework+Research Experience - Non-Thesis)

Normally, students in Geology and Geophysics are admitted to Plan A in the MS program. If a demonstration of research ability is deemed unnecessary for the student’s intended career, the student may be admitted to Plan B. The Department’s requirements for the Plan B master’s degree are as follows.

**Residency Requirement**  The minimum residence requirement by the Office of Graduate Education (OGE) is two semesters of full-time work or four six-week summer sessions or the equivalent in credit hours applicable to the student’s degree program.

**Course Requirements (Plan B)**

At least 30 credit hours must be completed. A minimum of 18 credits must be earned for a letter grade in courses numbered 600-798 (excluding GG 700, which is not for Plan B students). Some of these 18 credits may be adjusted if the course is offered only as CR/NC. A minimum of 18 credits must be taken at the graduate level (600 and higher). A maximum of 6 research credits (GG 699) may be applied to the overall credit requirement. All students must take GG 610, Graduate Seminar, once each year until graduation.

Departmental course requirements vary depending on the area of concentration (see Area Requirements). Requirements for students entering from fields other than geological sciences will be determined on an individual basis by the Graduate Studies Committee and the thesis committee. Directed Research (GG 699) may only be taken on a credit/no credit basis. If a student is receiving a research assistantship, teaching assistantship, or tuition waiver, then he or she must be registered for nine program-related credit hours during the semester in which he or she has the assistantship or waiver. Graduate Assistants registering for more than nine credits will require a memo of concurrence from the department chair.

**Preliminary Conference (Plan B)**

The purposes of the preliminary conference are to determine in which field the student will pursue a degree, to consider undergraduate deficiencies, to advise the student of a suitable selection of courses for the first semester, and to appoint an interim advisor in his or her field. Entering students will be advised by mail as to the time and place of the preliminary conference, which is normally conducted prior to registration for the first term. The department chair and the student's interim advisor will be present; a representative(s) from the Graduate Admissions Committee (GAC) and/or Graduate Studies Committee (GSC) may also be present.

Undergraduate deficiencies will be assigned as follows. For all applicants, any of these courses not already completed will constitute a deficiency: one year each of college calculus, physics with labs, chemistry with labs, and geology-geophysics with labs. For applicants from majors that are equivalent to a BS (or BS in engineering) at the University of Hawaii at Manoa (UHM), any deficiency in a course required for the same BS (or BS in engineering) at UHM will be an undergraduate deficiency (e.g., a geologist entering without petrology, a physicist entering without electricity and magnetism). Normally, applicants from a field other than science, engineering, or mathematics would not be admitted. If circumstances suggest that such a student be admitted, all courses needed for a bachelor's degree at UHM in the field he or she intends to enter will be listed as undergraduate deficiencies. Students shifting to a different field will not have the upper division courses (300-400) listed as undergraduate deficiencies (e.g., a geologist shifting to geophysics who has not had theoretical mechanics; a physicist shifting to geophysics who has not had structural geology).

**Degree Committee (Plan B)**

A committee must be formed, composed of an advisor and two other Geology and Geophysics graduate faculty. For a current listing of graduate faculty members, visit the UHM graduate faculty online search tool.

**Coursework and Research Proposal (Plan B)**

In order to enter the Plan B program, a student must submit an acceptable proposal to his or her committee explaining the academic focus of the MS, outlining what courses he or she plans to take, and specifying the type
of research activity he or she will participate. If the student is switching from Plan A to Plan B, the Graduate Studies Committee must approve the Plan B proposal.

**Application for Graduation (Plan B)**
Students who plan to graduate must file a Graduate Application of Degree with the Office of Graduate Education Student Services, by the deadline specified in the UH Manoa Academic Calendar (typically within the first month of each semester, including summer).

**Research Defense (Final examination for Plan B)**
A written research report is required. The topic must be approved by the student's entire committee. The finished report must be delivered to the committee at least one week prior to the oral exam. An oral exam in the form of a presentation and Q&A covering the student's research report and general geological knowledge is required. The student's entire committee must attend. Other faculty may attend, but only the student's committee votes. The oral exam can be repeated only once.

**Submit Written Report (Plan B)**
All students in the Geology and Geophysics Department are required to submit a pdf file and a printed copy of the research report to the Geology and Geophysics Department office prior to graduation. OGE’s Student Progress Form IV will be submitted by the department when the thesis documents are in hand. Approval by the department chair is required before a degree can be conferred.

**Exit Interviews**
All graduate students in Geology and Geophysics are required to participate in an exit interview prior to graduation. The Student Progress Form V will be signed by the GG Office only upon completion of the exit interview. Interviews will not be conducted by faculty members. These required interviews are conducted as part of the University of Hawaii's accreditation with the Western Association of Schools and Colleges (WASC).

Data Integrity
The advisor affirms by signature on Form V that the data and other materials used in the thesis are available in the public domain and archived in accordance with university and funding agency policies regarding data access.

**Graduate Chair Approval (Plan B)**
The graduate chair submits the Certification of Degree Award, attesting that all degree requirements have been met.

**Conferral of Degree (Plan B)**
Degrees are conferred three times annually: December, May, and August.

**Semester Evaluations/Graduate Student Committee Report**
Department policy requires that a graduate student meet with the thesis/dissertation committee (once formed) every semester to review progress and seek guidance. It is the student’s responsibility to organize this meeting and to complete the required Committee Report Form. In the rare case when a meeting of all committee members is not possible, a gathering of those who are available will occur, and the missing faculty member will be provided with a copy of the form.

**Annual Evaluations**
The academic record of all students and the length of time taken to earn that record will be evaluated annually in mid-spring. This evaluation will include a written statement of progress and problems from the student and an interview of the student by members of the Graduate Studies Committee. The student's advisor or committee chair, or his or her employer (if any) will not be present at the oral evaluation, although they will complete written evaluations. Members of the Graduate Studies Committee will review and evaluate the student's plan of study
and progress. All evaluators will report their opinions to the GSC of how deserving of financial aid and office space each student is for the following year. Suggestions from students for departmental improvements are strongly encouraged during the interview. The results of the spring evaluation become part of the student's file.

**Time Allowed**

All work toward a master's degree must be completed within seven years preceding the date upon which the degree is conferred. Credits earned prior to the seven-year period are not valid for the application toward the degree. Candidates who fail to complete all requirements in the specified time are automatically dropped from the program. Reinstatement for a limited period of time is only possible upon favorable recommendation of the field of study and concurrence of the Dean of the Office of Graduate Education.

**Funding**

The initial offer letter details the department's commitment to funding. No funding is guaranteed beyond the initial offer. If additional funding is needed to complete the degree, this must be negotiated with the advisor and the department chair. Criteria for additional funding include the student’s progress toward completion of the degree, availability of support, and the nature of the problem that prevented the student from completing the degree as planned. Priority for awarding Teaching Assistantships is given to students within their first two years in the department.

**Summary of Procedures (Plan B)**

1. Preliminary conference; appointment of interim advisor (Student Progress Form I).
2. Appointment of program advisor and committee (Student Progress Form II).
3. Approval of research proposal (Form II).
4. Application for graduation, and payment of graduation fees. Deadlines are within the first month of each semester.
5. Defense (final examination); judgment of Plan B paper (Student Progress Form III).
6. Approval of written project report (Student Progress Form IV).
7. Submit PDF file and a hard copy of the written project report to the Geology and Geophysics Department Office (Student Progress Form V).
8. Exit interview.
9. Graduate chair certifies that all degree requirements have been met.
10. Conferral of the degree.

**MS PLAN B TIMETABLE AND SEQUENCE OF PROGRESS REPORT FORMS (SEE HTTP://WWW.SOEST.HAWAII.EDU/GG/RESOURCES/GG_FORMS.HTML FOR THE ACTUAL FORMS)**

<table>
<thead>
<tr>
<th>FORM/TASK</th>
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<tbody>
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</tr>
<tr>
<td>II. Degree Committee Selection</td>
<td>During 2nd semester</td>
</tr>
<tr>
<td>II. Approval of Research Proposal</td>
<td>During 2nd semester</td>
</tr>
<tr>
<td>III. Final Exam</td>
<td>Within two years</td>
</tr>
<tr>
<td>IV. Written Project Report</td>
<td>Within two years</td>
</tr>
</tbody>
</table>
Professional Master of Geoscience (MGeo)

The MGeo provides a Master's degree credential, basic training and practical experience in applied geoscience. The MGeo is for individuals, including working professionals, who have completed a bachelor's degree in the natural sciences, math, or engineering. The MGeo is intended to prepare students to pursue a career in a variety of fields such as geological and environmental consulting, geotechnical engineering, hydrology, natural hazard mitigation, climate change adaptation, natural resource exploration, renewable energy development, and more. The program was designed in collaboration with professionals already working in these fields and includes a final project with a local company or agency.

Residency Requirements
The minimum residence requirement by the Office of Graduate Education (OGE) is two semesters of full-time work or four six-week summer sessions or the equivalent in credit hours applicable to the student’s degree program.

Course Requirements (MGeo)
The MGeo requires a minimum of 30 credit hours at the 300 level and above. Of these, a total of 6 credit hrs must be in GG750 MGeo Professional Project. The remaining 24 credits of coursework must satisfy the following.

- At least 18 credits must be taken with a letter grade (although in some adjustments can be made if course are only offered as C/NC).
- GG740 (MGeo Seminar, 1 credit hr) must be taken once a year, up to three times.
- A minimum of 12 credits must be in GG graduate courses (GG600-798, including GG740 and excluding GG750)
- Some or all of the remaining 12 credits can in following undergraduate courses.
  - Hawaiian Geology (GG402)
  - Geological Data Analysis (GG413)
  - Coastal Geology (GG420)
  - Marine Geology (GG423)
  - Environmental Geochemistry (GG425)
  - Geophysical Methods (GG450)
  - Engineering Geology (GG454-WI)
  - Hydrogeology (GG 455)
  - Geological Remote Sensing (GG460)
  - Geospatial Information (GG461)
  - Fluid Mechanics (CEE 320)
  - Geotechnical Engineering (CEE 355)
  - Statistical Analysis for Business Decision (BUS 310)
  - Engineering Management (ENGR 401)
  - Environmental Impact Assessment (GEOG 412)
  - Fundamentals of Soil Science (TPSS 304)

Students may substitute courses other than those listed above, including courses in other departments (e.g., CEE, CTAHR, Shidler College of Business, provided those units allow the student to enroll), with approval by their primary faculty advisor and the chair of the MGeo Faculty Oversight Committee.

- At least 3 credits in a writing class are required. Eligible classes include any GG course designated as writing intensive (WI) as well as GG616, How to Write a Scientific Paper, ENG308, Technical Writing, and TPSS 657 Grant Writing for Graduate Students. Students may also arrange to meet the writing requirement in a class that would otherwise not emphasize writing. In that case, the instructor must agree to provide additional writing assignments to the student, evaluate them, and provide formal feedback as is required for a WI-focus class. The instructor must provide a memo to the GG Chair briefly describing the writing activities and confirming that they meet the hallmarks of a WI class (see “Writing Intensive Focus” in the UHM General Education requirements). The memo should be endorsed by the GG chair and kept with the student’s file.
- As per University of Hawai’i at Mānoa policy, none of the above credits can be fulfilled by a course previously taken for another degree.

Preliminary Conference (MGeo)
The purposes of the preliminary conference are to determine in which field the student will pursue the degree, to consider undergraduate deficiencies, to advise the student of a suitable selection of courses, and to discuss faculty members who are best qualified to be the student’s primary faculty advisor. Entering students will be advised by
mail as to the time and place of the preliminary conference prior to the start of their first term. The department chair and the student's advisor will be present; a representative(s) from the Graduate Admissions Committee (GAC) and/or Graduate Studies Committee (GSC) may also be present.

**Appointment of the MGeo Professional Work Project Committee**

The student and his/her primary academic advisor will mutually agree on an advisory committee for the MGeo professional work project. This committee will consist of at least three members: the primary faculty advisor, another faculty member, and the project mentor at the company or agency sponsoring the work project. The primary faculty advisor will chair the committee. Both the chair and the other faculty member must be on the graduate faculty of GG. All members must finally be approved by the GG department chair. OGE will then approve the committee for their records; however, only members of the GG graduate faculty will be formally recognized by the OGE. If the member of the sponsoring organization is not on the graduate faculty, and wishes to be formally recognized by OGE (which is not necessary but may be desirable in some cases), then a petition can be submitted to OGE indicating that person’s highest degree and qualifications. For a current listing of graduate faculty members, visit the UHM graduate faculty online search tool.

**Work Project Proposal and Approval of Work Project Topic (MGeo)**

The MGeo professional work project may be done as a volunteer, intern or employee with a private or public company, or a city, state, or government agency. The project may even be done with a faculty member of a college or university, but if so, the student is ineligible to be paid with a research assistantship. The topic, nature, and scope of the project is determined together by the student and the student’s professional work project committee (see above), guided by the following principles:

1. It is an applied project pertaining to the geosciences.
2. It provides practical experience and expertise that supports the student’s career objectives.
3. It is a complete project, carried out by the student from start to completion, and in a time equivalent to about three months of full-time work.

For working professionals, the project should not be an activity that would ordinarily done as part of the regular employment activities, but should explore novel approaches or data sets. An ideal project would take advantage of the research facilities and/or expertise of the faculty in GG to address a problem encountered by the sponsoring agency.

An especially important aim of the MGeo project is for the student to develop proficiency in writing a professional document and to present it orally. Expertise in writing and speaking is essential for professional geoscientists, and therefore the quality of the document and oral presentation should be at a professional level. The oral presentation can take place at the UHM or at the location of the sponsoring company or agency. In some cases, part or all of the oral presentation may be considered confidential, in which case the content of the public presentation or the audience may be appropriately restricted according to the needs of the sponsoring organization. At minimum, the full MGeo project committee must be in attendance and must be able evaluate all aspects of the project.

A proposal for the work project is required. The student is encouraged to discuss potential projects with his/her faculty advisor as early as possible. The work project proposal should contain at least three pages of text and should include the topics listed below. Approval of the project topic is official when M GEO Student Progress Form II is filed.

**Outline of Work Project Proposal:**

1. TITLE
2. INTRODUCTION (Problem statement, rationale, previous work)
3. OBJECTIVES/SCOPE
4. APPROACH (Brief overview with references to established methods)
5. TIMELINE
6. REFERENCES

The student may only register for GG 750 (MGeo Professional Project) after the Graduate Chair accepts the recommendation of the work project. Registration in GG 750 must total 6 credit hours, including at least 1 credit...
hour in the semester or summer session in which the degree is awarded. After the project is complete, the project report must be submitted to the project committee members at least two weeks prior to the date of the oral presentation. The report will be organized in the format of a thesis, specified by the Office of Graduate Education (OGE). The student should also be aware of current OGE rules on co-authorship of publications.

**Application for Graduation**

Students who plan to graduate must file a Graduate Application of Degree with the OGE, by the deadline specified in the UHM Academic Calendar (typically within the first month of each semester, including summer).

**Schedule Oral Presentation of Work Project**

The OGE rules stipulate that copies of the completed work project report must be submitted to committee members at least two weeks prior to the date of the final examination, which for MGeo students is the oral presentation. This should be considered a minimum, and the student should coordinate the date of submittal with each member of the committee. As per GG policy, a student should not be permitted to give the oral presentation until his/her committee has agreed that the written document is nearly acceptable, meaning it is likely to require only modest revisions in consequence of the oral presentation.

**Oral Presentation Announcement**

Announcements of the oral presentation should be posted to the invited attendees (e.g., employees of the sponsoring organization only, the general public, or both as deemed appropriate by the sponsoring organization) at least one week prior to the date of the scheduled presentation. The announcement must include an abstract of the project, and specify title, date, time, and place of the presentation.

**Work Project Oral Presentation (Final Examination for MGeo)**

All efforts must be made for all three members of the student’s work project committee attend the oral presentation. If a committee member cannot be physically present, the member may attend remotely using a two-way video/audio communication. In the extreme case when even remote attendance is impossible, the student has the options of allowing a proxy member to attend, or even replacing committee member(s). Again, the location and allowable attendees of the presentation will honor the requirements of the sponsoring organization.

At the presentation, the candidate will present his/her work and principal results within a period of time (usually 30 to 40 minutes) agreed upon in advance by the committee chair. After the presentation is complete, questioning by members of the audience is allowed. Then, the room may be cleared of persons not in the graduate faculty for additional questioning by the work project committee, if the project committee so wishes. After questioning is completed, the committee decides in private session whether or not the final examination was passed. The decision is recorded on MGeo Form III. Students failing the examination may repeat it only once. The committee also records its opinion as to whether or not the written report is satisfactory. Modest rewriting may be needed, in which case signatures on MGeo Form IV may be delayed.

**Submit Written Project Report (MGeo)**

All students in the Geology and Geophysics Department are required to submit a pdf file of the thesis to the GG Department office prior to graduation. As an option, the GG will gladly accept a bound, printed copy to be kept in the department’s library. Student Progress Form IV will be submitted by the department when the report documents are in hand. The report is not submitted to the OGE, because OGE recognizes the MGeo as a Plan B masters.

**Exit Interviews**

All GG graduate students are required to participate in an exit interview prior to graduation. The Student Progress Form V will be signed by the GG Office only upon completion of the exit interview. Interviews will not be conducted by faculty members. These required interviews are conducted as part of the University of Hawaii’s accreditation with the Western Association of Schools and Colleges (WASC). Appointments and inquiries about the interviews are handled by the GG Office.
Graduate Chair Approval (MGeo)
The graduate chair submits the Certification of Degree Award, attesting that all degree requirements have been met.

Conferral of Degree (MGeo)
Degrees are conferred three times annually: December, May, and August.

Semester Evaluations/Graduate Student Committee Report
Department policy requires that a graduate student meet with the MGeo professional project committee every semester to review progress and seek guidance. It is the student’s responsibility to organize this meeting and to complete the required Committee Report Form. In the rare case when a meeting of all committee members is not possible, a gathering of those who are available will occur, and the missing faculty member will be provided with a copy of the form.

Annual Evaluations
The academic record of all students and the length of time taken to earn that record will be evaluated annually in mid-spring. This evaluation of progress will include a written statement of progress and problems from the student, and an interview of the student by members of the Graduate Studies Committee. The student's advisor or committee chair, or his or her employer (if any), will not be present at the oral evaluation, although they will complete written evaluations to the Graduate Studies Committee prior to the meeting. Members of the Graduate Studies Committee will review and evaluate the student's plan of study and progress. Suggestions from students for departmental improvements during the interview are greatly appreciated. The results of the spring evaluation become part of the student's file.

Time Allowed
All work toward an MGeo degree must be completed within seven years preceding the date upon which the degree is conferred. Credits earned prior to the seven-year period are not valid for the application toward the degree. Candidates who fail to complete all requirements in the specified time are automatically dropped from the program. Reinstatement for a limited period of time is only possible upon favorable recommendation by the Department Chair and concurrence of the Dean of the Office of Graduate Education (OGE).

Funding
MGeo students are eligible for Teaching Assistantships and Research Assistantships, as well as paid internships, but must demonstrate that these paid positions will not interfere with the rapid attainment of the degree.

Summary of Procedures (MGeo)
1. Preliminary conference; appointment of interim advisor (completed Student Progress Form I).
2. Appointment of work project committee (completed Student Progress Form II).
3. Approval of work project topic and proposal (completed Student Progress Form II).
4. Application for graduation, and payment of graduation fees. Deadlines are within the first month of each semester.
5. Schedule project oral presentation (completed final examination).
6. Oral presentation (completed Student Progress Form III).
7. Approval of written project report (completed Student Progress Form IV).
8. Submit pdf file and a bound hard copy (optional) of written thesis to the Geology and Geophysics Department Office (Student Progress Form V).
9. Exit interview.
10. Graduate chair certifies that all degree requirements have been met.
11. Conferral of degree.

**Deadlines for submission of degree applications, final examination and project report deposit vary between the fall, spring, and summer semesters. Deadlines are indicated on the UHM Academic Calendar.**
***NOTE: The Geology and Geophysics Department does not require a general examination.

**M GEO TIMETABLE (For a 2-year degree only) AND SEQUENCE OF PROGRESS FORMS**

<table>
<thead>
<tr>
<th>FORM/TASK</th>
<th>EXPECTED PROGRESS FOR A 2-YR DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Preliminary Conference</td>
<td>1st semester (typically, before registration)</td>
</tr>
<tr>
<td>I. Admission to Candidacy</td>
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</tr>
<tr>
<td>II. Appointment of Committee</td>
<td>During 2nd semester</td>
</tr>
<tr>
<td>II. Approval of Work Project Proposal</td>
<td>During 2nd semester</td>
</tr>
<tr>
<td>III. Final Examination (Oral Presentation)</td>
<td>End of second year</td>
</tr>
<tr>
<td>IV. Work Project Approval</td>
<td>End of second year</td>
</tr>
</tbody>
</table>
DOCTORAL PROGRAM

The minimum requirement for the doctoral degree is three semesters of full-time work or its equivalent in credits at University of Hawaii at Manoa. Candidates must be registered in the GG 800 dissertation research course during the term in which the degree is awarded. Procedures for the doctoral program are laid out on the Office of Graduate Education website. A summary of these procedures is given below.

Requirements for Coursework and Residence

All PhD students are required to have completed a program of coursework equivalent to that required for the Geology and Geophysics MS degree in their area of study. In addition, all students are required to take GG 610, Graduate Seminar, once each year for a maximum of five years. Students who obtain an MS degree en route to a PhD may apply their existing GG 610 class credits to meet the minimum requirements for a PhD. For those students entering with an MS degree, the coursework requirement normally will be waived if, during the period of their MS studies, they completed the required MS courses or acceptable equivalents. Beyond this and the list prepared at the preliminary conference, courses may be added or substituted by the advisor and doctoral committee.

Directed Research (GG 699) courses may only be taken on a credit/no credit basis. *If a student is receiving a research assistantship, teaching assistantship, or tuition waiver, then he or she must be registered for nine program-related credit hours during the semester in which he or she has the assistantship or waiver.* Graduate Assistants registering for more than nine credits will require a memo from the department chair.

OGE requires a minimum residence requirement of three semesters of full-time work while registered at the University of Hawaii at Manoa. A master’s degree earned at UHM in the same field may be used to satisfy two semesters of the three-semester doctoral residence requirement.

Preliminary Conference

Students admitted to the program attend a preliminary conference with the department chair and representatives from the Graduate Admissions Committee and Graduate Studies Committee as discussed earlier for MS students. Any undergraduate deficiencies will be assessed. At the preliminary conference, a list of courses, if any, will be determined and assigned to the student with the purpose of helping to prepare the student for his or her intended research and comprehensive examination.

Qualifying Examination

The purpose of the qualifying examination is to determine whether or not a student with a bachelor's degree meets the academic standards of the department for direct entry into the PhD program without completing an MS degree. For students entering with an MS degree and thesis in the sciences, the qualifying examination is waived. This examination is designed to evaluate the student's ability to conduct research. The qualifying examination, normally held at the end of the student's first full year in the program (for students entering in the fall no later than the following September and for students entering in the spring no later than the following February), is required of all students entering with a bachelor's degree who wish to be considered for the PhD rather than the MS program.

The examination will consist of a presentation intended to demonstrate the student’s ability to conduct PhD-level research. Two alternative types of presentation will be allowed: (1) results of an original research project (which may be an expansion of the student's undergraduate honor's thesis or other undergraduate research), or (2) a proposal for an original research project. Either (1) or (2) may lead on to the topic of the dissertation, but need not do so. The scope of the project should be limited to independent but guided research that can be accomplished within one semester – it is not meant to be equivalent in workload to a thesis chapter. The final product to be judged by the qualifying examination committee will consist of either:

Option 1: 
a written description of the research methods, procedures, results, bibliography, etc. of approximately 10-12 pages (a published paper for which the student is first author may
substitute for the written description), or

Option 2: a written research proposal of similar length and similar in style to student proposals for aid from the Geological Society of America.

In either case, there also will be an oral presentation of approximately one-half hour, to be followed by questions. A committee of at least three graduate faculty, including the student's advisor (or interim advisor) and at least one member of the Graduate Studies Committee, evaluates the qualifying examination. If the student's performance on the qualifying examination is judged by the committee to be acceptable for entry directly into the PhD program, the student will be admitted to PhD candidacy; if the performance is deemed unacceptable by the committee, the student will be required to complete the MS degree before receiving further consideration for entry into the PhD program. The result of the examination must be submitted to the GG Chair via the Doctorate Student Progress Form 1-0.

Admission to Candidacy
Following selection of a field of specialization and successful completion of the qualifying examination (where applicable), the student advances to candidacy. Admission to candidacy requires the approval of the graduate chair and OGE. Form I is complete once this is granted.


1. GENERAL
   a. The exam assesses the student’s reasoning abilities, and the depth and breadth of the student's knowledge relevant to her or his field(s) of specialization and the geological sciences in general.
   b. Results form the basis for a decision as to whether or not the student has sufficient knowledge to undertake the independent research needed for a PhD project, and what, if any, additional work is needed.
   c. The exam is to be taken by the end of the fourth semester if entering without an MS.
   d. The exam is to be taken by the end of the second semester if entering with an MS.
   e. The exam consists of a written and an oral component; students are evaluated on the basis of overall performance on both.

2. SCOPE
   a. Exam topics include the student's field(s) of specialization and the geological sciences in general.
   b. The student and advisor, in consultation with the rest of the committee, will decide upon the intended field(s) of specialization. These fields should be as broad in scope as possible while maintaining a focus on the student’s PhD research topic (for example, seismology, geochemistry, volcanology, but not reflection seismology, sedimentary isotope geochemistry, chemical volcanology).
   c. Based on the description of the field(s) of specialization, each committee member assigns the student a reading list consisting of review papers, research articles, or books so that the student may prepare in the areas in which he or she is to be tested.

3. COMMITTEE
   a. The Examination Committee consists of five members of the Regular or Cooperating GG Graduate Faculty, including the advisor. The advisor must submit Doctorate Student Progress Form 1A (“Proposal of Comprehensive Examination Committee”) to the GG Department Chair for approval of the committee’s composition. Any subsequent change in the committee also must be approved by the GG Department Chair.
   b. To supply breadth, two committee members must come from an outside specialty (there are four specialty areas: Geophysics and Tectonics; Marine and Environmental Geology; Volcanology, Geochemistry,
Petiology; Planetology and Remote Sensing). If sufficient breadth cannot be provided by the Regular or Cooperating Graduate Faculty of GG, one UH Graduate Faculty member who is not on the GG Regular or Cooperating Graduate Faculty may serve as an outside member, pending the approval of the GG Graduate Chair (usually the same person as the Department Chair) and OGE (by memo request from the graduate chair). According to Manoa Graduate Division (Feb. 2009), this member need not be a GG Affiliate Graduate Faculty member or affiliated in any other official capacity with GG, but they should have obtained the degree which the student is studying for (MS for MS and MGeo students, doctorate for PhD students) or have a very strong justification for a waiver of this requirement.

c. After approving the composition of the Examination Committee, the GG Graduate Chair will pick one of the members of the committee to serve as the Examination Chair. The student’s advisor cannot serve as the Examination Chair. The duties of the Examination Chair are to:
   i. convene the committee 6 months before the desired exam date
   ii. review the purpose of the examination with the committee
   iii. outline examination procedures
   iv. oversee and referee the selection of general and topical areas by committee members during this first meeting (see “d” below).
   v. review the written questions submitted by committee members for appropriateness of content and length to complete (each examiner should design a question that can be answered in 50 min. or less for both the topical and general parts of the exam)
   vi. approve the details of the format (see sections 5a, g, h)
   vii. indicate the order of questioning for the oral exam
   viii. ensure that the examination is conducted impartially and in a manner consistent with the program’s procedures as well as those of OGE.

d. The Examination Chair will hold a meeting of the Examination Committee to ensure breadth of coverage of questions in the appropriate fields of specialization and allied subjects. At this meeting, Doctorate Student Progress Form 1B (“Timeline of Comprehensive Examination”) will be filled in. The Examination Chair will subsequently obtain the signatures of the student and GG Department Chair on this form.

e. In cases where the GG Graduate Chair is also the student’s advisor, the GG Department Chair (if not the same person) or Associate Chair if the grad chair is the dept. chair) must approve the committee, pick the Examination chair, and approve any subsequent changes to the committee.

f. The actions described in 3a-3e should all occur approximately four months before the examination.

4. PREPARATION
   a. Soon after the meeting of the committee (see 3d), the student should meet with each member individually for advice on how to prepare for the examiner’s questions and to receive the list of recommended reading.

1. THE EXAM
   a. The written component of the exam consists of two halves, both of which are closed book and to be completed without the aid of calculators, smart phones, internet devices, word processor programs or the like. In other words, exam questions are answered old-school hard copy style. Students with disabilities may request an exception to the hard-copy rule through the UH KOKUA program.
   b. The written exam may be taken in one of two formats: in a single day (with a break for lunch) or on two consecutive days, depending on the choice the student has conveyed to the Examination Chair (see 5h). The student will be given four hours for each half, for a total duration of eight hours (or as recommended by KOKUA for students with documented writing disabilities). Upon completion of the written examination, the Examination Chair will distribute copies of all answers to all committee members.
   c. One half of the written portion consists of questions aimed at examining broad knowledge in any aspect of the geological sciences. The other half of the written portion consists of questions aimed at the student’s
field(s) of specialization. The student has the option of letting the Examination Chair know his or her choice of which half comes first (see 5h).

d. Each examiner will provide to the Examination Chair at least one question for each half of the written exam at least 1 week before the scheduled exam date. Each examiner's questions are to be answered by the student (although an examiner may give instructions to answer, for example, one of two questions, etc.). For each half of the written exam, an examiner should design questions that can be answered in a total of approximately 45 minutes (note that this will leave time for one or two short breaks). The questions in the half of the written exam that deals with the student's field(s) of specialization will be based on the reading lists that the examiners have provided to the student.

e. Within one day of completion of the written exam, each examiner will provide to the Examination Chair written comments on particulars of the student’s answers to that examiner’s questions. Upon receipt of all the comments, the Examination Chair will give them to the student to aid the student in preparing for the oral exam. A copy of all the comments will also be provided to each of the examiners.

f. The oral exam follows the written portion within 7 days of the beginning of the written exam.

g. The oral exam should last no more than three hours. The Examination Chair will run the oral exam, for which all five members of the committee must be physically present.

h. Each member will ask questions of his or her choosing in the oral exam, but usually within the general and specialized topic areas they agreed upon at the initial meeting. Questions will be asked in a round-robin fashion, typically with a total of two rounds. Each committee member will have about 15 minutes for questioning in each round. The order of questioning may be determined either by the Examination Chair or by the student (at the student’s request to the Examination Chair at any time before the Examination Chair sets the final format; see i).

i. The one- vs. two-day format of the written exam, the choice of which half of the written exam is given first, and the order of questioning in the oral exam cannot be changed after they have been approved by the Examination Chair.

j. Upon completion of the oral exam, the student will leave the room. After discussion, each committee member will vote, by closed ballot, either Fail or Not Fail. If a majority of Fail votes are cast, a grade of Fail is assigned. Otherwise, a second discussion occurs, in which each member explains whether he or she thinks the student fell short and, if so, what the solution is. Then a second round of voting will take place, in which each member votes Pass or Conditional Pass, again by closed ballot. If four or five Pass votes are cast, a grade of Pass is given. Otherwise, a grade of Conditional Pass is assigned.

6. EXAM OUTCOMES

The possible outcomes are:

**Pass:** Successful completion of the examination

**Conditional Pass:** The student demonstrated weaknesses that can be corrected by remedial work. The details of the remedial work must be stated clearly on Doctorate Student Progress Form 1C (“Results of Comprehensive Exam”), which must be completed within one day of the end of the exam. The committee members are responsible for evaluating the remedial work. If satisfactory, the student will receive a Pass. If unsatisfactory, a Fail grade will be assigned. The committee’s decision is recorded on Doctorate Student Progress Form 1D (“Results of Remedial Work Following Conditional Pass on Comprehensive Examination”). Remedial work is to be completed **within 6 weeks** of the examination unless it involves
requiring the student to successfully complete, or serve as a T.A. in, an additional course, in which case **6 months** are allowed. Should a course be required, it must be taken within 6 months of the exam. If an assigned course is not available in that time frame, the committee must consider alternate remedial work (such as a directed reading). **Failure to complete remedial work**: Those who fail to complete the remedial work within 6 months of the exam will be dropped irrevocably from the program.

**Fail**: The student does not demonstrate sufficient knowledge within the field(s) of specialization and/or in the geological sciences in general. On Doctorate Student Progress Form 1C, the committee will advise the student on how to acquire this knowledge. The student may take the comprehensive examination one more time **within six months**. Those who fail the second examination will be dropped irrevocably from the program.

**Appointment of Doctoral Committee**
As a result of a successful comprehensive examination, the department chair, on the advice of the student and his or her advisor, recommends appointment of a doctoral committee to the dean of the Office of Graduate Education. The doctoral committee guides the student, approves the dissertation topic, and conducts the final examination. The rules* are as follows:

(i) The committee must have at least five members from the graduate faculty of the University of Hawaii at Manoa.

(ii) At least one will be a UH-Manoa faculty member NOT affiliated with the Department of Geology and Geophysics (for example, a professor from geography or oceanography) and is formally recognized as the University Representative (formerly the Outside Member)

(iii) The chair and a majority of members must be from the student's field of study and affiliated with the Department of Geology and Geophysics.

* Deciding who is eligible to be a member of your committee is one of the most difficult tasks you will face. The graduate faculty is a group of scholars who have been selected to work with and advise graduate students. It includes regular members, whose academic appointment is in the school housing the graduate field affiliates from outside the University. All three classes may serve on a doctoral committee. Most HIGP graduate faculty are appointed via our department and therefore do NOT meet criterion (ii) above. Affiliate graduate faculty (people outside the UH system) do NOT qualify as an “outside member” either, as the person must be a UH Manoa employee. You must, in consultation with your advisor, identify a willing regular member of the graduate faculty from another graduate field of study (e.g., geography, meteorology, oceanography, sociology) to serve as your outside member. At the discretion of the department chair, the committee MAY include a specialist from outside the graduate faculty. Your advisor will need to submit a written request plus the individual's CV to the department chair in order to achieve this. For a current listing of graduate faculty members, visit the UHM graduate faculty online search tool.

**Dissertation Proposal: Approval of Dissertation Topic**
A written dissertation proposal that concisely describes the objectives and approach of the planned Ph.D. research is required. Approval of the dissertation topic will result from the successful oral defense of the written dissertation proposal before the doctoral committee. The proposal will include a clear statement of the problem or problems to be investigated, the relationship of the problems to the broader aspects of geological science as referenced by classic and current literature, and an outline of the proposed methods of approaching the problem, including a timetable, estimates of cost, and any computer time, equipment or facilities needed. You MUST talk with your advisor concerning her or his expectations of you in this regard; typical dissertation proposals are 10-15 pages in length and include figures and a complete reference list. The committee will record approval on Form II. Once the form is accepted, the candidate may then register for Dissertation Research, GG 800, during his or her remaining semesters.
Progress and Dissertation Preparation
Although candidates should look to the chair of the doctoral committee for primary direction regarding research methods and the preparation of results, it is the joint responsibility of the candidate and his or her chair to keep all committee members informed of the scope, plan, and progress of research and writing. Each semester, the student should meet with the committee (see below).

Current instructions for the preparation of the dissertation are available online. The department urges that the dissertation be organized and written so that whole sections or chapters can be submitted for publication with a minimum of rewriting and editing.

The purpose of the dissertation is to allow a student to develop an original scientific project under the tutelage of a faculty mentor, so as to add to the knowledge of the discipline and to establish the student as a qualified scientist in his or her own right. The research program typically involves:

1. A survey of the literature to establish a broad base of knowledge.
2. Making new measurements or finding an intriguing and previously undiscovered method of understanding existing data.
3. Explaining the results, defending the thesis, and publishing.

It is especially important for students to gain direct, first-hand experience in creating their own database when this is practical and feasible. In any case, scientific integrity mandates that the student fully acknowledge in the dissertation all collaboration; e.g., samples, sample preparation, measurements, analyses, data, or computer algorithms produced by others involved in the crafting of the thesis research.

In the range of endeavors that encompass modern research, from single-investigator to complex multi-investigator programs, the level and intricacy of collaboration vary. It is important for the graduate student to identify and carve out a niche that will allow the student to make unique and valuable contributions, as well as to acknowledge the contributions made by others to his or her progress and professional development.

Application for Degree
Students who plan to graduate must file a Graduate Application of Degree with the Office of Graduate Education Student Services, by the deadline specified in the UH Manoa Academic Calendar (typically within the first month of each semester, including summer).

Schedule Dissertation Defense
Copies of the completed dissertation must be submitted to all committee members at least four weeks prior to the date of the final oral examination, and OGE must be notified at least three weeks prior to the examination. The policy of the Geology and Geophysics Department is that a student should not be permitted to defend until his or her committee has agreed that the written dissertation is defendable; i.e., that the dissertation is likely to require only modest revisions in consequence of the oral defense.

Dissertation Defense Announcement
Announcements should be posted at least one week prior to the date of the scheduled defense. The announcement must specify title, date, time, and place of defense. It also needs to include the student’s abstract. Students should provide the above information to the unit secretaries for electronic and paper posting as soon as possible.

Dissertation Defense (final examination)
A public oral examination in defense of the dissertation is required of all candidates. It must be passed at least six weeks before the end of the semester or summer session in which the degree is granted. It must be at least one hour in duration. All members of the doctoral committee must be present.
The candidate presents the salient points of the background, methods, results, and conclusions of the research in a period of about 45 minutes. The chair of the dissertation committee then will ask for questions from members of the graduate faculty and the public. Following the open question period, there will be a closed-session question and answer period with the dissertation committee.

When questioning is completed, all members of the doctoral committee vote in private session on the candidate's performance. A majority of the members must vote "pass"; otherwise, the candidate fails. A member voting in the minority may request a review by the Dean of the Office of Graduate Education. A candidate who fails may petition to repeat the final examination. Upon a second failure, the student is dropped from candidacy. Approval of the dissertation defense is noted by filing Form III.

Revision of Written Dissertation in Light of Committee's Evaluation
Modest rewriting of the dissertation may be needed. The doctoral committee, including the advisor, is required to make their judgment of the dissertation on Form III, and a minimum of three committee members must sign the signature page of the final dissertation. Students are cautioned to acquaint themselves with the deadline for submission of the dissertation to OGE, as well as deadlines for fees, doctoral forms, and the dissertation abstract.

Submission of Form IV and Dissertation
A copy of the approved dissertation must be submitted to OGE together with the completed UMI forms and payment of fees. All students in the Geology and Geophysics Department are required to submit a pdf file and a printed copy of the dissertation to the Geology and Geophysics Department office prior to graduation. OGE’s Dissertation Submission will be submitted by the department when the dissertation documents are in hand.

Exit Interviews
All graduate students in Geology and Geophysics are required to participate in an exit interview prior to graduation. The Student Progress Form V will be signed by the GG office only upon completion of the exit interview. Interviews will not be conducted by faculty members. These required interviews are conducted as part of the University of Hawaii’s accreditation with the Western Association of Schools and Colleges (WASC).

Graduate Chair Certifies Degree Requirements
The graduate chair submits the Certification of Degree Award, attesting that all degree requirements have been met.

Conferral of Degree
Degrees are conferred three times annually: December, May, and August.

Semester Evaluations/Graduate Student Committee Report
Department policy requires that a graduate student meet with the thesis/dissertation committee every semester to review progress and seek guidance. It is the student’s responsibility to organize this meeting and to complete the required Committee Report Form. In the rare case when a meeting of all committee members is not possible, a gathering of those who are available will occur, and the missing faculty member will be provided with a copy of the form.

Annual Evaluation
The academic record of all students and the length of time taken to earn that record will be evaluated annually in mid-spring. This evaluation of progress will include a written statement of progress and problems from the student, and an interview of the student by members of the Graduate Studies Committee. The student’s advisor or committee chair, or his or her employer (if any), will not be present at the oral evaluation, although they will complete written evaluations. Members of the Graduate Studies Committee will review and evaluate the student's plan of study and progress. All evaluators will report their opinions to the Graduate Studies Committee and the department chair, including how deserving of financial aid and office space each student is for the
following year. Suggestions from students for departmental improvements are strongly encouraged during the interview. The results of the spring evaluation become part of the student’s file.

**Time Allowed**
In general, the department expects that a student progressing normally will complete the PhD degree within six semesters of residence if he or she arrives with a MS in a geological field, and within eight semesters for other backgrounds. The department will strive to provide space and support for students for this period. OGE states that candidates for doctoral degrees are expected to complete all requirements within seven years after admission into the doctoral program. Candidates who fail to complete all requirements within this specified time are automatically dropped from the program. Reinstatement for a limited period of time is only possible upon favorable recommendation of the dissertation committee and the department chair and with concurrence of the Dean of the Office of Graduate Education.

**Funding**
The initial offer letter details the department’s commitment to funding. No funding is guaranteed beyond the initial offer. If additional funding is needed to complete the degree, this must be negotiated with the advisor and the department chair. Criteria for additional funding include the student’s progress toward completion of the degree, availability of support, and the nature of problem that prevented the student from completing the degree as planned. Priority for awarding Teaching Assistantships is given to students within their first two years in the Department.

**MS en Route**
The MS en-route plan is for PhD students who decide to complete both their master’s and doctoral degrees within seven years at UH-Manoa. These students will be considered MS students until all requirements for the MS program are fulfilled. Advancing upward from the MS to the PhD can take place at any time as long as these students are aware of their time constraints and follow the OGE requirement for non-contiguous degrees (meaning content used for the MS cannot ALSO be used for the PhD).

Forms: GG requires the students to complete all the MS forms for the Plan A or Plan B MS (whichever applies to them, but most commonly the Plan B) as evidence that they completed all the steps in our MS program prior to awarding the MS degree.

For example: If a MS en-route student completes the MS program in two years and goes on unofficial leave from the university for two years then decides to return to obtain a PhD, that student will have a total of three years to complete the program (7 years minus 2 years to complete the master’s program minus 2 years of unofficial leave equals 3 years to complete the doctoral program). On the other hand, if a student takes a leave of absence, those semesters do not count towards the 7-year limit.

**Summary of Procedure**
1. Preliminary conference; appointment of preliminary advisor (Student Progress Form I).
2. Qualifying examination, if applicable (Form I).
3. Admission to candidacy (Form I).
4. Comprehensive examination (Departmental Form IC).
5. Appointment of doctoral committee (Form II).
6. Approval of dissertation proposal (Form II).
7. Application for degree.
9. Final examination (defense of dissertation) (Departmental Form III)
10. Revision of written dissertation in light of committee’s evaluations.
11. Submit pdf file and a hard copy of written dissertation to the GG Department Office (Student Progress Form V).
12. Exit interview.
13. Submit Form IV. Submit 1 copy of dissertation with CD to OGE, then pay fees.
14. Graduate chair certifies all degree requirements have been met.
15. Conferral of degree.

**PhD TIMETABLE AND SEQUENCE OF PROGRESS REPORT FORM**

*Without MS or with non-geological MS*

<table>
<thead>
<tr>
<th>FORM</th>
<th>TASK</th>
<th>NORMAL PROGRESS</th>
<th>YOUR PROGRESS</th>
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<tbody>
<tr>
<td>I.</td>
<td>Preliminary Conference</td>
<td>1st semester</td>
<td></td>
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<tr>
<td>I.</td>
<td>Qualifying Examination</td>
<td>Beginning of 2nd semester</td>
<td></td>
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<td></td>
<td>Admission to Candidacy</td>
<td>2nd semester</td>
<td></td>
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<tr>
<td>IA.**</td>
<td>Approval of Comps. Committee</td>
<td>At least 4 months before comps</td>
<td></td>
</tr>
<tr>
<td>IB.**</td>
<td>Timeline of Comps. Exam</td>
<td>As soon as committee formed</td>
<td></td>
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<tr>
<td>IC.**</td>
<td>Results of Comps. Exam</td>
<td>4th semester</td>
<td></td>
</tr>
<tr>
<td>II.</td>
<td>Approval of Dissertation Committee</td>
<td>5th semester</td>
<td></td>
</tr>
<tr>
<td>IIC.</td>
<td>Dissertation Defense (final exam)</td>
<td>8th – 10th semester</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>Dissertation Approval</td>
<td>8th – 10th semester</td>
<td></td>
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*With MS in geological field*

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<td>Timeline of Comps. Exam</td>
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<td></td>
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<tr>
<td>IC.**</td>
<td>Comprehensive Exam</td>
<td>2nd semester</td>
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<tr>
<td>II.</td>
<td>Approval of Dissertation Committee</td>
<td>3rd semester</td>
<td></td>
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<tr>
<td>II.</td>
<td>Approval of Dissertation Topic/Proposal</td>
<td>3rd semester</td>
<td></td>
</tr>
<tr>
<td>III.</td>
<td>Dissertation Defense (final exam)</td>
<td>6th semester*</td>
<td></td>
</tr>
<tr>
<td>IV.</td>
<td>Dissertation Approval</td>
<td>6th semester*</td>
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*The Graduate Studies Committee may under some circumstances consider the 8th semester to be normal progress.
** GG Department Forms
ADDITIONAL INFORMATION

WHO'S WHO
Department Chair ................................................................. Ken Rubin
Graduate Chair ................................................................. Ken Rubin
Associate Chair ................................................................. Greg Ravizza

SOEST Director of Student Services ........................................ Leona Anthony
GG Department Graduate Program Coordinator ...................... Lily Shao
GG Office Manager ............................................................... Susan Van Gorder

GG POST 6th Floor Administrative Assistant ............................... Connie Tsui
GG POST 7th Floor Administrative Assistant .............................. Arlene Sullivan
GG POST 8th Floor Administrative Assistant ............................. Lily Shao

Hawaii Institute of Geophysics and Planetology Director (Acting) ........... Rob Wright
Secretary to the Director ........................................................ Violenda Nakahara
Hawaii Institute of Geophysics and Planetology Secretary ................... Grace Furuya
Planetary Geosciences Secretary ............................................. Rena Lafevre

CREDIT HOURS AND COURSES
Here are some pointers and guidelines to follow when registering for classes. Please refer questions to your advisor, to Lily Shao, or to the Graduate Chair (currently Ken Rubin), in that order. Advisors do not always have definitive answers, so if you are at all unsure, please check with Lili or the graduate chair.

- Students who have defended their thesis/dissertation proposals may enroll in GG 700 (MS) or GG 800 (PhD).
- MS and MGeo students may take a limited number of courses on a pass no pass basis (the number depends on the degree program).
- Both GG 699 and GG 700/800 can be taken during the same semester.
- Graduate students can enroll in lower division undergraduate courses (100 and 200 level) but these do not count towards the unit requirement for graduation in any of our degree programs. A limited number of upper division courses do count towards graduation (the number depends on the degree program).
- All TAs, RAs, and tuition waiver recipients are required to be enrolled as a full time student, which means 9 degree-related credits. Any number of credits over 9 will require permission, which is easy to obtain from the graduate chair.
- Each English Language Institute (ELI) course is equal to 3 credits.
- Students who have applied for graduation may register for 1 credit of GG 700F or 800 and be considered full-time (this excludes TAs, RAs, and tuition waiver recipients). PhD students taking 1 credit of GG 800 have a special tuition and fee rate. MS students taking 1 credit of GG 700F do not have a special tuition and fee rate.

EQUIPMENT SIGN-OUT
The department owns a small number of Brunton compasses and hand-held GPS units. When they are not reserved for class use, they can be borrowed for field work. To do so, please see the Geology and Geophysics Department office manager. You will be asked to sign a form that states that you agree to replace or repair whatever you borrow in the event that it is lost, stolen, or broken while in your custody.

RESERVING ROOMS
When you wish to reserve a room, make sure that you have the following information: date, time, room desired, alternates. If you are reserving a room for an exam or defense, make sure that the dates and times are mutually agreed upon by all members of your committee. See Geology and Geophysics Department office manager (POST 701) regarding room requests.
SETTING UP THESIS/DISSERTATION PROPOSALS
See appropriate personnel to reserve room. Ask Leona for Student Progress Form II.

SETTING UP COMPREHENSIVE EXAMS
For the oral portion of the exam, consult department secretaries or appropriate personnel to reserve a room. Rooms may not be reserved to accommodate such a long exam for one person. See Leona for Student Progress Form II.

SETTING UP DEFENSES
See Susan or your Floor Secretary to assist you with the logistics. Make sure that you have the date, time, room desired and alternates decided before seeing her. Make sure that the date(s) and time(s) you selected have been mutually agreed upon by all members of your committee.

FORMS, FORMS, AND MORE FORMS
Just about everything has a form. If you did something and didn’t get a form, make sure you ask for one. You never know.