CONTENTS

INTRODUCTION 4
   PURPOSE 4
   THE COMMUNITY AND UNIVERSITY 4
   SCHOOL OF OCEAN AND EARTH SCIENCE AND TECHNOLOGY 4

THE DEPARTMENT OF EARTH SCIENCES 4
   EXPECTATIONS FOR CONDUCT IN THE DEPARTMENT 4
   CURRENT RESEARCH AREAS/CONCENTRATIONS 4
   RESEARCH FACILITIES 5
   GRADUATE FACULTY MEMBERS 5
   SCHOLARSHIPS AND FELLOWSHIPS 5
   NON-RESIDENT TUITION WAIVER 5
   TAX BENEFITS OFTEN AVAILABLE TO GRADUATE STUDENTS 5
   NORMAL UNDERGRADUATE PREPARATION 5
   ADVISORY COMMITTEES & MEETINGS 6
   FEEDBACK 6

GRADUATE ASSISTANTSHIP POSITIONS 6
   AVAILABILITY OF POSITIONS 6
   DUTIES 6
   GA ELIGIBILITY 7
   SALARIES 7
   TUITION ASSISTANCE SCHOLARSHIPS (TUITION WAIVERS) 7
   BENEFITS 7
   PAY DATES 7
   CONTINUATION OF FUNDING 7
   SUMMER OVERLOAD APPOINTMENTS 8
   PAYCHECK DEDUCTIONS FOR THE PTS (PART-TIME, TEMPORARY, SEASONAL) DEFERRED
   COMPENSATION PLAN 8

MASTER'S PROGRAM IN EARTH AND PLANETARY SCIENCES (EPS) 9
   MASTER'S PLAN A (Requires a Written Thesis) 9
      Residency Requirement (Plan A) 9
      Course Requirements (Plan A) 9
      Preliminary Conference (Plan A) 9
      Appointment of Committee (Plan A) 10
      Thesis Proposal: Approval of Thesis Topic (Plan A) 10
         Thesis Preparation 11
      Application for Graduation (Plan A) 11
      Schedule Thesis Defense (Plan A) 11
      Thesis Defense Announcement (Plan A) 11
      Thesis Defense (Final examination for Plan A) 11
      Submit Written Thesis (Plan A) 12
Exit Interviews (Plan A) 12
Data Integrity (Plan A) 12
Graduate Chair Approval (Plan A) 12
Conferral of Degree (Plan A) 12
Continuation to Doctoral Program 12
Semester Evaluations/Graduate Student Committee Report (Plan A) 12
Annual Evaluations (Plan A) 12
Time Allowed (Plan A) 13
Funding (Plan A) 13
Summary of Procedures (Plan A) 13

MASTER'S PLAN B (Coursework+Research Experience - Non-Thesis) 15
Residency Requirement (Plan B) 15
Course Requirements (Plan B) 15
Preliminary Conference (Plan B) 15
Appointment of Committee (Plan B) 15
Coursework and Research Proposal (Plan B) 16
Application for Graduation (Plan B) 16
Timing for the project report (Plan B) 16
Oral Presentation (Plan B) 16
Submit Written Report (Plan B) 16
Exit Interviews (Plan B) 17
Data Integrity (Plan B) 17
Graduate Chair Approval (Plan B) 17
Conferral of Degree (Plan B) 17
Continuation to Doctoral Program 17
Semester Evaluations/Graduate Student Committee Report (Plan B) 17
Annual Evaluations (Plan B) 17
Time Allowed (Plan B) 18
Funding (Plan B) 18
Summary of Procedures (Plan B) 18

DOCTORAL PROGRAM IN EARTH AND PLANETARY SCIENCES 19
Residency Requirement (PhD) 19
Coursework Requirement (PhD) 19
Preliminary Conference (PhD) 19
Qualifying Examination (PhD) 19
Comprehensive Exam Process (PhD) 20
Appointment of Doctoral Committee (PhD) 23
Dissertation Proposal: Approval of Dissertation Topic (PhD) 24
Dissertation Preparation 24
Application for Degree (PhD) 24
Schedule Dissertation Defense (PhD) 24
Dissertation Defense Announcement (PhD) 25
Dissertation Defense (final examination for PhD) 25
Revision of Written Dissertation in Light of Committee’s Evaluation (PhD) 25
Submission of Form IV and Dissertation (PhD) 25
Exit Interviews (PhD) 25
Graduate Chair Certifies Degree Requirements (PhD) 25
Conferral of Degree (PhD) 25
Semester Evaluations/Graduate Student Committee Report (PhD) 26
Annual Evaluation (PhD) 26
Time Allowed (PhD) 26
Funding (PhD) 26
MS en Route (PhD) 26
Summary of Procedures (PhD) 27

DEGREE PROGRAM TIMELINE COMPARISONS 29

ADDITIONAL INFORMATION 30
CREDIT HOURS AND COURSES 30
GRADUATE STUDENT GROUP EMAIL LIST 30
EQUIPMENT SIGN-OUT 31
RESERVING ROOMS 31
SETTING UP PRESENTATIONS 31
SETTING UP COMPREHENSIVE EXAMS 31
SETTING UP DEFENSES 31
FORMS, FORMS, AND MORE FORMS 31
INTRODUCTION

PURPOSE
This booklet explains departmental procedures and requirements for obtaining a graduate degree in Earth and Planetary Sciences (EPS) in the Department of Earth Sciences of the School of Ocean and Earth Science and Technology (SOEST) at the University of Hawai‘i. General rules of the University’s Graduate Division are stated in the University of Hawai‘i at Mānoa catalog.

THE COMMUNITY AND UNIVERSITY
The University of Hawai‘i 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 Mānoa valley, about 5 kilometers from downtown Honolulu (with an urban population of about 500,000) and 3 kilometers from Waikiki beach. The Manoa campus has about 20,000 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 Earth Sciences, Oceanography, Atmospheric Sciences, and Ocean & Resources Engineering as well as several research institutes (Hawai‘i Institute of Geophysics and Planetology (HIGP), Hawai‘i Institute of Marine Biology (HIMB), the Hawai‘i Natural Energy Institute (HNEI), the Joint Institute for Marine and Atmospheric Research (JIMAR) and Pacific Biosciences Research Center (PBRC)). SOEST also includes research centers (Hawai‘i 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 EARTH SCIENCES
The Department has a large faculty (currently 24) with diverse research interests, nearly all of whom teach at the undergraduate and graduate level. Researchers in, or associated with, the department as cooperating graduate faculty, may also advise and support graduate students, and teach departmental graduate courses. The department offers programs of research and study leading to the MS and PhD degrees. Currently, the Department offers graduate programs in four concentrations and has approximately 50 graduate students in residence.

The Department Mission: To identify and solve fundamental and applied problems in the Geosciences; to acquire new knowledge about Hawai‘i, the Pacific Basin, and the Earth and planets; to serve society by teaching and training future geoscientists, teachers, and citizens; and to be a principal resource for objective geologic expertise to the State of Hawai‘i.

EXPECTATIONS FOR CONDUCT IN THE DEPARTMENT
The Department, like the University and scientific community at large, expects and depends on respectful, fair, and ethical behavior by its members, including students. In turn, each student can 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 and sign the Code of Student Conduct Affirmation Form when joining the Department. University policy concerning sexual harassment includes criteria to distinguish 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
Areas of concentration are Geophysics and Tectonics; Marine and Environmental Geology; Volcanology, Geochemistry, and Petrology; and Planetary Geosciences and Remote Sensing. See detailed descriptions of the current research areas in the UHM General Catalog: 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.
RESEARCH FACILITIES

Departmental faculty normally conduct research projects within the Department in conjunction with one or more of its four principal research concentrations. In addition, the research institutes within SOEST and also the Water Resources Research Center have facilities for 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 details on available facilities, see http://www.soest.hawaii.edu/GG/research/gg_facilities.html and https://www.soest.hawaii.edu/soestwp/tech/.

GRADUATE FACULTY MEMBERS

Graduate faculty of the university instruct graduate students and supervise their research. The degree committee of each graduate student is chosen from this body. For a current listing of graduate faculty members, visit the UHM graduate faculty search tool on the Graduate Division website or the online version of the UHM General Catalog. The classes of graduate faculty members, in relation to our program, are defined below. For detailed descriptions of these roles, please visit the Graduate Division website.

- **Departmental Graduate Faculty:** This consists of Regular, Cooperating, and Affiliate graduate faculty in the Earth & Planetary Sciences graduate program. The term “graduate faculty” used throughout this handbook refers to the Departmental Graduate Faculty.

- **Regular Graduate Faculty:** These are faculty members in the Department of Earth Sciences who consider the EPS program their “home” graduate program.

- **Cooperating Graduate Faculty:** These are UH faculty members outside of the Department of Earth Sciences, such as HIGP faculty, who are appointed through our department.

- **Affiliate Graduate Faculty:** These are non-UH faculty members who serve on student committees because they provide a specific expertise.

- **University Representative:** The University Representative acts as an impartial member outside of the EPS graduate program who ensures the integrity of the entire process and fair treatment of the student.

SCHOLARSHIPS AND FELLOWSHIPS

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

NON-RESIDENT TUITION WAIVER

The Graduate Division offers a small number of competitively-based tuition waivers for non-resident students attending UHM full time and who are self-supporting during their education. Inquire with the Department Graduate Chair.

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 Hawaii Department of Taxation.

NORMAL UNDERGRADUATE PREPARATION

Students are typically accepted from undergraduate majors in the physical sciences, mathematics, and engineering and have completed at least one year each of college calculus, geology, physics, and chemistry. Each applicant's additional preparation will depend on the particular branch of Earth Sciences being pursued. At the time of application, the student should state the area in which they intend to study: Geophysics and Tectonics; Marine and Environmental Geology; Volcanology, Geochemistry, and Petrology; or Planetary Geosciences and Remote Sensing. Students with backgrounds in other fields may be accepted, but advancement to candidacy may require taking one
or more courses in the Earth Sciences to fill in their background. A complete statement of courses and other work required for the MS or to prepare for the PhD comprehensive examination is in a subsequent part of this handbook.

Students entering with a BS degree outside the Earth Sciences are required to take ERTH 611. The Department believes that anyone getting a degree in Earth and Planetary Sciences should have basic information about earth processes and be able to explain introductory-level concepts (such as plate tectonics, the rock cycle, and the water cycle) regardless of the focus of their advanced work in their research topic.

ADVISORY COMMITTEES & MEETINGS
Students should feel free to consult with any faculty member at any time, but faculty appointed to a student advisory committee (hereinafter simply committee) make a special effort to get to know that student. When a student enters the department, an interim advisor and committee are appointed by the Graduate Chair. If a student is supported by a research assistantship, their research supervisor will usually be their advisor.

Students are required to meet with their committees three times a year, and it is the responsibility of the student to schedule these meetings. Meetings help committee members get to know a student better and monitor student progress towards their degree, and they give the student an opportunity to consult committee members in a group situation where new ideas often emerge. The Fall Meeting is held within the first few weeks of the Fall semester. If possible, it is recommended to hold the meeting prior to the second week of the semester so that students can adjust their courses before the last day of registration. For an entering student, this meeting will be an introduction to the department and to their interim committee members; for a continuing student it is an opportunity to review work done over the summer and discuss the next steps of the student’s project as well as their professional development. The Winter Meeting is held at the end of the Fall semester to review work done in Fall and plans for Spring, and the Spring Meeting is held at the end of the Spring semester to review work done in Spring and plans for summer. There is a form which must be completed for each meeting. One of the main purposes of the form is to update contact information and travel plans so that students and advisors can communicate quickly and efficiently.

FEEDBACK
If you have suggestions or criticisms of any aspect of the department and its degree programs, feel free to send us constructive comments at: https://goo.gl/forms/o9D2p2916BuPR8H23

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 salaries are paid over the course of twelve months. The Department of Earth Sciences sometimes makes appointments for less than a full year (i.e., a semester). Salary for TAs is paid from 1 August to 31 January for the Fall semester and from 1 January to 30 June for the Spring semester. If a student is a TA for a full academic year (Fall through Spring semester), then they are paid from 1 August to 31 July of the next year.

AVAILABILITY OF POSITIONS
The Department of Earth Sciences 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 granted to individual faculty members.

DUTIES
TAs typically teach undergraduate laboratories under the direction of the faculty member in charge of the course. RAs 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. GAs 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. GAs with eleven-month appointments (RAs) are entitled to one
GA ELIGIBILITY
Students are required to maintain a 3.0 grade point average. Half-time GAs (0.50 FTE) must carry nine credit hours and quarter-time GAs (0.25 FTE) must carry a minimum of six credit hours of degree-related coursework (excluding audit hours) each semester while holding the assistantship. Students who wish to enroll for more than nine credit hours may sometimes do so with department approval (requiring completing a Graduate Division form - Graduate Assistant Petition to Enroll in More than 9 Credits). According to University policy, non-native English speakers with any instructional responsibility must demonstrate proficiency in English; the 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. 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 website). TAs within the Department receive a GA-9 month scale salary at Step 15. Incoming GAs with a BS degree receive a GA-11 month scale at Step 15, while those with a MS degree receive a GA-11 month scale at Step 16, reaching a maximum of Step 17 or 18, 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 tuition fee waivers), which does not include non-tuition fees set by the University. Students are responsible to pay for non-tuition University fees themselves at the time that they register for classes. These include the Board of Publications fee, the Student Health Fee, the Graduate Student Organization fee, etc.

BENEFITS
GAs 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. GAs are not eligible to accumulate vacation or sick leave.

PAY DATES
GAs receive their paychecks on the 5th and 20th day 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 financial 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 and the availability of GA slots. 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 (PART-TIME, TEMPORARY, SEASONAL) 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. GAs 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.

GAs 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 provides contact information.
MASTER’S PROGRAM IN EARTH AND PLANETARY SCIENCES (EPS)

For a complete listing of the requirements, PLEASE view the Graduate Division website. Department of Earth Sciences additions and modifications to the Graduate Division policies and procedures are explained below.

MASTER’S PLAN A (Requires a Written Thesis)

Residency Requirement (Plan A)
The minimum residency requirement by the Graduate Division is two semesters of full-time work or four 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 (ERTH 699 and ERTH 700); of these, six credits must be for ERTH 700. Credits for ERTH 700 can only accrue after a thesis proposal is approved. Please note that NG (no grade) grade is assigned for work in progress until the thesis is submitted. In the meantime, the transcript will temporarily show 0 credits. The full credits earned and S (satisfactory) grade will be awarded upon graduation.

At least 18 credits must come from courses taken for a letter grade (A, B, C, etc.) at the 300-level or above (excluding ERTH 699 and 700). At least 12 of the credits from courses must be from graduate courses (600 and above, excluding ERTH 699 and ERTH 700). All students must take ERTH 610, Graduate Seminar, once each year up to three times. Only credits earned with letter grades may be applied towards the degree, with the exception of courses offering only credit/no credit. Undergraduate courses used to make up undergraduate deficiencies are not applicable.

Specific departmental course requirements vary depending on the area of concentration. Requirements for students entering from fields other than Earth Sciences will be determined on an individual basis by the Graduate Studies Committee on the recommendation of the degree committee. Directed Research (ERTH 699) may only be taken on a credit/no credit basis. If a student is receiving a RA, TA, or tuition waiver, then they must be registered for nine program-related credit hours during the semester in which they have the assistantship or waiver. GAs registering for more than nine credits will require approval from the Department Graduate Chair and Graduate Division.

Preliminary Conference (Plan A)
The purposes of the preliminary conference—for an entering student this is the first of their three annual committee meetings—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 and committee. 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 Graduate Chair and the student’s interim advisor and committee 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 Hawai‘i at Mānoa (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 they intend 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). Undergraduate deficiencies should be remedied within the first two semesters.
**Appointment of Committee (Plan A)**

During the second semester, the student and their advisor will mutually agree on a thesis committee and complete Student Progress Form IIA. Members must sign the form to indicate their willingness to serve on the student’s committee. The committee selection must then be approved by the Department Graduate Chair. Form II should be filed after the topic has been finalized with the committee.

The committee will consist of at least three members:

1. Committee Chair: Departmental Graduate Faculty Member (Level 2 or 3)
2. Departmental Graduate Faculty Member
3. Any UHM Regular, Departmental, or Cooperating Graduate Faculty Member
4. (optional) Additional Department Graduate Faculty Member, or non-graduate faculty (with approval)

The majority of the committee should be from the student’s field of study and members of the Department’s Graduate Faculty, but exceptions are possible. Nominating a non-graduate faculty as a fourth member requires approvals, first from the Department Graduate Chair and then from Graduate Division. Justification and the faculty member’s CV must be attached to Form II.

For a current listing of graduate faculty members, please refer to the Graduate Division website’s “Select Committee Members” search tool or the online version of the UHM General Catalog. Additional details about this procedure can also be found under Committee Composition & Potential Members on the Graduate Division website.

Any change to the committee after the submission of Form II must be requested via the Petition to Revise Thesis Committee form. A short justification and the expected defense date must be included and all committee members (current and revised) must sign their support. The request then needs to be approved by both the Department Graduate Chair and Graduate Division. An example reason for a committee change is a major change in scope of the thesis that requires the expertise of a new/different committee member. For committee members to properly perform their duties, no changes to the committee are allowed within 4 months of the defense date. The only exceptions are death, incapacitation, personal leave, or termination of employment. Otherwise, students should consider either remote participation, a proxy member, or postponement of their defense.

**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 their work in a logical and clear manner. The student is encouraged to discuss potential thesis topics with the committee as early as possible. The thesis proposal should clearly and concisely describe the anticipated thesis research, contain at least three pages of text, double-spaced, 12-point font, 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 Graduate Division Student Progress 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 ERTH 700 (Thesis Research) until Graduate Division accepts the Department Graduate Chair’s recommendation of the thesis topic. Registration in ERTH 700 must total at least 6 credit hours, including at least 1 credit hour in the semester or summer session in which the degree is awarded.

**Thesis Preparation**

The Department encourages theses to be organized so that they are ready for submission (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 Graduate Division rules on co-authorship of publications. The current instructions for the preparation of the thesis are available on the Graduate Division website.

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 their own right. The research program typically involves the following: a review of the literature to establish a broad base of knowledge; making new measurements, or finding an intriguing and previously undiscovered method for 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 addition, 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 for Degree with the Graduate Division 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)**

Graduate Division 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 far enough in advance to accommodate them. The policy of the Department of Earth Sciences 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 (Plan A)**

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 administrative assistants for electronic and paper posting as soon as possible.

**Thesis Defense (Final examination for Plan A)**

The Earth Sciences Department prefers a final oral exam in which results are presented at a departmental seminar. At the discretion 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. Remote participation is allowed with prior approval from the Graduate Chair. If a committee member cannot be present at the defense, the student should consider rescheduling the defense date; however, the student has the option of allowing a proxy member, or changing the committee entirely (though this would require postponing the defense by 4 months). 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 on 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.

Submit Written Thesis (Plan A)
The approved thesis is to be electronically submitted to Graduate Division via ProQuest ETD. Specific instructions are included on their website. All students in the Department of Earth Sciences are also required to submit a PDF file to the Department office prior to graduation.

Exit Interviews (Plan A)
All graduate students in the Department of Earth Sciences are required to participate in an exit interview prior to graduation. Student Progress Form V will be signed by the Department Graduate Chair only upon completion of the exit interview. Interviews will be conducted by a department administrative staff member. Only the staff member and the Department Graduate Chair will see the feedback from these interviews. These required interviews are conducted as part of the University of Hawai‘i’s accreditation with the Western Association of Schools and Colleges (WASC).

Data Integrity (Plan A)
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.

Continuation to Doctoral Program
If the student wishes to continue their graduate work in this department, a final duty of the thesis committee is to recommend to the Graduate Chair whether or not the student may be admitted to the PhD program. An official memo must be written by the MS committee chair, signed by all committee members, and then approved by the Graduate Chair.

After the student has obtained internal approval from the Department, they must fill out a regular e-application for admission through the Grad Division. The Graduate Admissions Committee will process the request and generate a formal offer letter from the department.

Semester Evaluations/Graduate Student Committee Report (Plan A)
As noted above, Department policy requires that each graduate student meet with their committee at the beginning and end of the fall semester and at the end of the spring semester. Except for the first meeting for incoming students (also called the Preliminary Conference), it is the student’s responsibility to organize such meetings and to complete the required Committee Report Forms. In the rare case when a meeting of all committee members is not possible, a majority of those who are available will occur, and the missing faculty member will be provided with a copy of the form.

Annual Evaluations (Plan A)
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 their 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. It is preferred that these evaluators not be a part of the student’s division or on any of their committees. All evaluators will report to the Graduate Studies Committee concerning potential for award nominations, issues with academic progress, and the performance of GA job duties. Suggestions from students for departmental improvements are strongly encouraged during the interview. The results of the spring evaluation become part of the student’s confidential Annual Evaluations folder, kept separately from their student file.

**Time Allowed (Plan A)**
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 unless transferred officially through Graduate Division. 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 from the Graduate Chair and advisor, and concurrence of the Dean of the Graduate Division.

**Funding (Plan A)**
The initial offer letter details the Department’s commitment to funding. Not all graduate students enter the Earth and Planetary Sciences 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 Graduate 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 TAs is given to students within their first two years in the Department.

**Summary of Procedures (Plan A)**
1. Preliminary conference; appointment of interim advisor (Student Progress Form I).
2. Appointment of thesis committee (Student Progress Form IIA).
3. Approval of thesis topic and admission to candidacy (Student Progress Form II).
4. Apply for graduation and pay graduation fees. Deadlines are within the first month of each semester. (Graduate Application for Degree)
5. Schedule thesis defense.
6. Defend thesis (Student Progress Form III).
7. Submit a written thesis to the Graduate Division office (Student Progress Form IV).
8. Submit PDF file of written thesis to the Earth Sciences Department Office (Student Progress Form V).
9. Exit interview (Student Progress Form V).
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 Earth Sciences 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)**

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<td>Within two years</td>
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<td>IV.</td>
<td>Thesis Approval</td>
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<td>V.**</td>
<td>Exit Interview, Submit Thesis to Dept</td>
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** Earth Sciences Department Forms
MASTER’S PLAN B (Coursework+Research Experience - Non-Thesis)

Normally, students in Earth and Planetary Sciences 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 (Plan B)**
The minimum residence requirement by the Graduate Division is two semesters of full-time work or four 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 ERTH 700, which is not for Plan B students). A minimum of 18 credits must be taken at the graduate level (600 and higher). A maximum of 6 research credits (ERTH 699) may be applied to the overall credit requirement. All students must take ERTH 610, Graduate Seminar, once each year up to three times. Only credits earned with letter grades may be applied towards the degree, with the exception of courses offering only credit/no credit. Undergraduate courses used to make up undergraduate deficiencies are not applicable.

Departmental course requirements vary depending on the area of concentration. Requirements for students entering from fields other than geological sciences will be determined on an individual basis by the Graduate Studies Committee and the project committee. Directed Research (ERTH 699) may only be taken on a credit/no credit basis. If a student is receiving a RA, TA, or tuition waiver, then he or she must be registered for nine program-related credit hours during the semester in which they have the assistantship or waiver. GAs registering for more than nine credits will require approval from the Department Graduate Chair and Graduate Division.

**Preliminary Conference (Plan B)**
The purposes of the preliminary conference—for an entering student this is the first of their three annual committee meetings—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 and committee. 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 Graduate Chair and the student’s interim advisor and committee will be present; a representative(s) from the GAC and/or 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 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). Undergraduate deficiencies should be completed within the first two semesters.

**Appointment of Committee (Plan B)**
During the second semester, the student and their advisor will mutually agree on a Plan B project committee and complete Student Progress Form IIA. Members must sign the form to indicate their willingness to serve on the student’s committee. The committee selection must then be approved by the Department Graduate Chair. Form II should be filed after the topic has been finalized with the committee.

The committee will consist of at least three members:
1) Committee Chair: Departmental Graduate Faculty Member (Level 2 or 3)  
2) A Departmental Graduate Faculty Member  
3) Any UHM Regular, Departmental or Cooperating Graduate Faculty Member  
4) (optional) Additional Departmental Graduate Faculty Member, or non-graduate faculty (with approval)  

The majority of the committee should be from the student’s field of study and on the Department’s Graduate Faculty, but exceptions are possible. Nominating a non-graduate faculty as a fourth member requires approval from the Department Graduate Chair. Justification and the faculty member’s CV must be attached to Form II.

For a current listing of graduate faculty members, please refer to the Graduate Division “Select Committee Members” search tool or the online version of the UHM General Catalog.

Any change to the committee must be requested via the Petition to Revise Plan B Project Committee form. A short justification and the expected presentation date must be included and all committee members (current and revised) must sign their support. The request then needs to be approved by the Department Graduate Chair. An example reason for a committee change is a major change in scope of the project that requires the expertise of a new/different committee member. For committee members to properly perform their duties, no changes to the committee are allowed within 4 months of the oral presentation date. The only exceptions are death, incapacitation, personal leave, or termination of employment. Otherwise, students should consider either remote participation, a proxy member, or postponement of their defense.

Coursework and Research Proposal (Plan B)  
In order to enter the Plan B program, a student must submit an acceptable proposal to their committee explaining the academic focus of the MS, outlining planned coursework, and defining a short research project that they will complete. The project will involve no more time than the equivalent of two classes and as such is approximately half the scope of the more formal thesis study conducted for Plan A. It should culminate in a short written report and a brief oral presentation evaluated by the project committee. 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 for Degree with the Graduate Division by the deadline specified in the UH Manoa Academic Calendar (typically within the first month of each semester, including summer).

Timing for the project report (Plan B)  
The department recommends that copies of the completed project report must be submitted to project committee members at least two weeks prior to the date of the final examination.

Oral Presentation (Plan B)  
The topic must be approved by the student’s entire committee. The finished report must be delivered to the committee at least two weeks prior to the oral presentation. This process takes the form of a presentation and Q&A covering the student's research report and general earth science knowledge is required. The audience for oral presentations is the student's advisory committee and a faculty member from the Graduate Studies Committee who is not also a member of the advisory committee. Remote participation is allowed with prior approval from the Graduate Chair. A limited number of additional audience members may be invited by the student with the advisor’s approval. The oral exam can be repeated only once.

Submit Written Report (Plan B)  
A written research report is required. All students in the Department of Earth Sciences are required to submit a PDF file of their research report to the Department office prior to graduation. The student’s committee will advise the student on the scope of the report, which should be at least ten (10) pages in length, double-spaced, 12-point font,
exclusive of title pages, figures, tables, and references. Approval by the Department Chair is required before a degree can be conferred.

**Exit Interviews (Plan B)**
All graduate students in the Department of Earth Sciences are required to participate in an exit interview prior to graduation. The Student Progress Form V will be signed by the Department Graduate Chair only upon completion of the exit interview. Interviews will be conducted by a department administrative staff member. Only the staff member and the Department Graduate Chair will see the feedback from these interviews. 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 (Plan B)**
The advisor affirms by signature on Form V that the data and other materials used in the reports 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.

**Continuation to Doctoral Program**
If the student wishes to continue their graduate work in this department, a final duty of the MS committee is to recommend to the Graduate Chair whether or not the student may be admitted to the PhD program. An official memo must be written by the MS committee chair, signed by all committee members, and then approved by the Graduate Chair.

After the student has obtained internal approval from the department, they must fill out a regular e-application for admissions through the Grad Division. The Graduate Admissions Committee will process the request and generate a formal offer letter from the department.

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

**Annual Evaluations (Plan B)**
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. It is preferred that these evaluators not be a part of the student’s division or on any of his or her committees. All evaluators will report to the GSC concerning potential for award nominations, issues with academic progress, and the performance of GA job duties. Suggestions from students for departmental improvements are strongly encouraged during the interview. The results of the spring evaluation become part of the student’s confidential Annual Evaluations folder, kept separately from their student file.
Time Allowed (Plan B)
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 unless transferred officially through Graduate Division. 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 Graduate Division.

Funding (Plan B)
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 Graduate 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 TAs 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 project committee (Student Progress Form IIA).
3. Approval of research proposal and admission to candidacy (Student Progress Form II).
4. Apply for graduation and pay graduation fees. Deadlines are within the first month of each semester. (Graduate Application for Degree)
5. Schedule oral presentation.
6. Final examination of research report; judgment of Plan B paper (Student Progress Form III).
7. Approval of written project report (Student Progress Form IV).
8. Submit PDF file of the written project report to the Department Office (Student Progress Form V).
9. Exit interview (Student Progress Form V).
10. Graduate Chair certifies that all degree requirements have been met.
11. 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)

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</tr>
<tr>
<td>IV.** Written Project Report</td>
<td>Within two years</td>
</tr>
<tr>
<td>V.** Exit Interview, Submit Project Report to Dept</td>
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</tr>
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** Earth Sciences Department Forms
DOCTORAL PROGRAM IN EARTH AND PLANETARY SCIENCES

Candidates must be registered in the ERTH 800 dissertation research course during the term in which the degree is awarded. Procedures for the doctoral program are laid out on the Graduate Division website. A summary of these procedures is given below.

**Residency Requirement (PhD)**
The minimum residence requirement by the Graduate Division is three semesters of full-time work or the equivalent in credit hours applicable to the student’s degree program. A master’s degree earned at UHM in the same field may count towards two of the three semesters.

**Coursework Requirement (PhD)**
All PhD students are required to have completed a program of coursework equivalent to that required for the Earth and Planetary Sciences MS degree in their area of study. In addition, all students are required to take ERTH 610, Graduate Seminar, once each year for a maximum of five years. Students who obtain an MS degree through the Department of Earth Sciences may apply their existing ERTH 610 class credits to meet the minimum requirements for a PhD (credits earned over five years prior may be applied, subject to approval). 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 (ERTH 699) courses may only be taken on a credit/no credit basis. If a student is receiving a RA, TA, or tuition waiver, then he or she must be registered for nine program-related credit hours during the semester in which they have the assistantship or waiver. Graduate Assistants registering for more than nine credits will require approval from the Department Graduate Chair and from Graduate Division. The only exception is Dissertation Research (ERTH 800). Enrolling in one credit of ERTH 800 is considered full-time and fulfills the “nine-credit requirement” for tuition waiver recipients.

PhD students can only enroll in ERTH 800 Dissertation Research after a topic proposal is approved. They must enroll in one credit of 800 in the semester of graduation. Please note that NG (no grade) grade is assigned for work in progress until the dissertation is submitted. In the meantime, the transcript will temporarily show 0 credits. The full credits earned and S (satisfactory) grade will be awarded upon graduation.

**Preliminary Conference (PhD)**
The purposes of the preliminary conference—for an entering student this is the first of their three annual committee meetings—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 and committee. 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 their intended research and comprehensive examination. Undergraduate deficiencies should be completed within the first two semesters.

**Qualifying Examination (PhD)**
The purpose of the qualifying examination is to determine whether or not a student 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. The applicability of a student’s MS degree for this purpose will be at the discretion of the Graduate Chair with guidance from the student’s advisor. 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 honors 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, double-spaced, 12-point font (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](https://www.geosociety.org).  

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 Department Graduate Chair via the Doctorate Student Progress Form 1-0.

**Comprehensive Exam Process (PhD)**

1. **GENERAL**
   a. The exam assesses the student’s reasoning abilities, and the depth and breadth of the student’s knowledge relevant to their field(s) of specialization and the earth and planetary 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 earth 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 they are to be tested.

3. **COMMITTEE**
   a. The Examination Committee consists of five members of the Regular or Cooperating Department of Earth Sciences Graduate Faculty, including the advisor. The advisor must submit Doctorate Student Progress Form 1A (“Proposal of Comprehensive Examination Committee”) to the Graduate Chair for approval of the committee’s composition. Any subsequent change in the committee also must be approved by the Graduate Chair.
b. To supply breadth, two committee members must come from an outside specialty. These two are drawn from two different areas of interest. The department currently recognizes four areas of interest: 1) Geophysics and Tectonics; 2) Marine and Environmental Geology; 3) Volcanology, Geochemistry, Petrology; 4) Planetary Geoscience and Remote Sensing. The examination committee must be approved by the Graduate Chair prior to the examination schedule (Form 1B). If sufficient breadth cannot be provided by the Regular or Cooperating Department of Earth Sciences Graduate Faculty, a UHM Regular Graduate Faculty, not affiliated with the Department, may serve as a member, pending the approval of the Graduate Chair and Graduate Division (by memo request from the Graduate Chair). According to Manoa Graduate Division (Feb. 2009), this member need not be an Earth & Planetary Sciences Affiliate Graduate Faculty member or affiliated in any other official capacity with the Department of Earth Sciences, but they should have obtained the degree that the student is studying for (doctorate for PhD students) or have a very strong justification for a waiver of this requirement.

To assist with building a committee, the Department of Earth Sciences maintains a list of graduate faculty and their areas of specialty as a google sheet at:
https://docs.google.com/spreadsheets/d/1PW0hmis9C77tVe6NWY-fTUSuBlarKLvGof51XPbsHfQ/edit?usp=sharing

c. After approving the composition of the Examination Committee, the Department 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 at least four 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 time 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 Graduate Division.

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 Department Graduate Chair on this form.

e. In cases where the Department Graduate Chair is also the student’s advisor, the Department Chair (if not the same person) or the 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 at least 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.

5. THE EXAM
   a. The written component of the exam consists of two halves, both of which are closed book. The exam is to be completed by the student solely using materials supplied by the Examination Chair. The student may not consult any other material during the exam. The student may not access the internet during the exam.
Material provided shall include a laptop or other computer for text entry and simple calculations, and writing material for making sketches or handwritten responses. Additional computer capability may be provided for students with disabilities under the guidelines of 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 earth 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 barring exceptional circumstances.

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 they think 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.

k. Students who fail and who wish to take the comprehensive examination a second time must do so within six months (see section 6). Students who receive a conditional pass and fail to clear the conditions through completion of the assigned workload after 6 months (see section 6) will be considered terminal and not given an opportunity to retake the comprehensive examination.

6. EXAM OUTCOMES

The possible outcomes to be documented on the Doctorate Student Progress Form 1C (“Results of Comprehensive Exam”) 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 Form 1C, 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 TA 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 earth sciences in general. On 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 (PhD)**
After a successful comprehensive examination, the student and their advisor will mutually agree on a dissertation committee and complete Student Progress Form IIA. Members must sign the form to indicate their willingness to serve on the student’s committee. The committee selection must then be approved by the Department Graduate Chair. Form II should be filed after the topic has been finalized with the committee.

The committee will consist of at least five members:

1) Committee Chair: Departmental Graduate Faculty Member (Level 3)
2) Departmental Graduate Faculty Member
3) Departmental Graduate Faculty Member
4) Any UHM Regular, Departmental or Cooperating Graduate Faculty Member
5) University Representative – UHM Regular Graduate Faculty, not affiliated with the Department, from another graduate field of study, approved to serve as a University Representative (Level 3)
6) (optional) Additional Department Graduate Faculty Member, or non-graduate faculty (with approval)

The majority of the committee should be from the student’s field of study and on the Department’s Graduate Faculty, but exceptions are possible. Nominating a non-graduate faculty, such as a specialist, as the sixth member requires approval, first from the Department Graduate Chair and then, from Graduate Division. Justification and the faculty member’s CV must be attached to Form II.

For a current listing of graduate faculty members and eligible University Representatives, please refer to the Graduate Division website’s “Select Committee Members” search tool or the online version of the UHM General Catalog. Additional details about this procedure can also be found under Committee Composition & Potential Members on the Graduate Division website.

Any change to the committee after the submission of Form II must be requested via the Petition to Revise Thesis/Dissertation Committee form. A short justification and the expected defense date must be included and all committee members (current and revised) must sign their support. The request then needs to be approved by both the Department Graduate Chair and Graduate Division. An example reason for a committee change is a major change in scope of the dissertation that requires the expertise of a new/different committee member. For committee members to properly perform their duties, no changes to the committee are allowed within 4 months of the defense.
The only exceptions are death, incapacitation, personal leave, or termination of employment. Otherwise, students should consider either remote participation, a proxy member, or postponement of their defense.

**Dissertation Proposal: Approval of Dissertation Topic (PhD)**
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 earth and planetary sciences 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 their expectations; typical dissertation proposals are 10-15 pages in length, double-spaced, 12-point font, and include figures and a complete reference list. The committee will record approval on Form II. Following determination of a dissertation topic and successful completion of the comprehensive examination, the student advances to candidacy. Admission to candidacy requires the approval of the Graduate Chair and Graduate Division on Form II. Once the form is accepted, the candidate may then register for Dissertation Research, ERTH 800, during their remaining semesters.

**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 their 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 their 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 online database when this is practical and feasible. In addition, 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 their progress and professional development.

**Application for Degree (PhD)**
Students who plan to graduate must file a Graduate Application for Degree with the Graduate Division 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 (PhD)**
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. Graduate Division must be notified at least two weeks prior to the examination by submitting the following form from their website: Final Oral Examination for Doctoral Dissertation Defense. The
policy of the Department of Earth Sciences is that a student should not be permitted to defend until their 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 (PhD)**
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 administrative assistants for electronic and paper posting as soon as possible.

**Dissertation Defense (final examination for PhD)**
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. Under special circumstances, remote participation is allowed with prior approval of the Graduate Chair.

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 Graduate Division. 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 (PhD)**
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 Graduate Division, as well as deadlines for fees, doctoral forms, and the dissertation abstract.

**Submission of Form IV and Dissertation (PhD)**
A copy of the approved dissertation must be electronically submitted to Graduate Division via ProQuest ETD. Specific instructions are included on their website. All students in the Earth Sciences Department are required to submit a PDF file of the dissertation to the Department office prior to graduation.

**Exit Interviews (PhD)**
All graduate students in the Department of Earth Sciences are required to participate in an exit interview prior to graduation. The Student Progress Form V will be signed by the Department Graduate Chair only upon completion of the exit interview. Interviews will be conducted by a department administrative staff member. Only the staff member and the Department Graduate Chair will see the feedback from these interviews. These required interviews are conducted as part of the University of Hawai‘i's accreditation with the Western Association of Schools and Colleges (WASC).

**Graduate Chair Certifies Degree Requirements (PhD)**
The Graduate Chair submits the Certification of Degree Award, attesting that all degree requirements have been met.

**Conferral of Degree (PhD)**
Degrees are conferred three times annually: December, May, and August.
Semester Evaluations/Graduate Student Committee Report (PhD)
Department policy requires that a graduate student meet with the thesis/project/dissertation committee every semester to review progress and seek guidance. Except for the first meeting for incoming students, 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 majority of those who are available will occur, and the missing faculty member will be provided with a copy of the form.

Annual Evaluation (PhD)
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 their 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. It is preferred that these evaluators not be a part of the student's division or on any of their committees. All evaluators will report to the Graduate Studies Committee on the potential for award nominations, any issues with academic progress, and the performance of GA job duties. Suggestions from students for departmental improvements are strongly encouraged during the interview. The results of the spring evaluation become part of the student's confidential Annual Evaluations folder, kept separately from their student file.

Time Allowed (PhD)
In general, the department expects that a student progressing normally will complete the PhD degree within six semesters of residence if they arrive with a MS in the sciences, and within eight semesters for other backgrounds. The department will strive to provide space and support for students for this period. Graduate Division 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 Graduate Chair and with concurrence of the Dean of the Graduate Division.

Funding (PhD)
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 Graduate 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.

MS Students Changing to PhD Program
When a student is interested in changing from the MS to PhD program, both the current MS advisor and new PhD advisor (who may be the same individual) must write a memo to the Graduate Chair requesting the change in level and outlining the qualifications of the student to succeed in a PhD program. The Graduate Chair will then review the memo(s). If the chair approves, then the student submits the official online application to formally acknowledge the request to the Graduate Division. The processed application will come to the department to approve the admittance to the PhD program (same as regular admissions).

MS en Route (PhD)
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. All students entering without a MS degree in the sciences are required to take a Qualifying Examination, but they can use the contents of the Qualifying Examination to complete a MS Plan B non-thesis report. If a student would prefer to obtain a MS Plan A en-route degree, then they have the option to replace the Qualifying Examination with a thesis and defense. In essence, students getting their MS Plan A and then starting the PhD program are like any other student coming in with a MS, but with the time constraint of seven years for
both degrees combined. Please note that these students must also follow the Graduate Division requirement for non-contiguous degrees (meaning data and content of the MS report/thesis cannot be reused for the PhD dissertation).

Time to degree 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 an approved leave of absence, for a maximum of two semesters, those semesters do not count against the 7-year limit.

If a student is returning after five years or more from the last semester of registration, then the academic clock will restart with a new 7-year-to-degree. However, previous courses are not automatically counted towards the new program and the student will need a petition to the Graduate Division to count those that are still relevant.

Summary of Procedures (PhD)

1. Preliminary conference; appointment of preliminary advisor (Student Progress Form I).
2. Qualifying examination, if applicable (Student Progress Form I-0). MS en route: The qualifying examination may be used in completing a MS Plan B en route. A Plan A thesis and defense may substitute the Qualifying examination if the student wants to pursue a MS en route.
3. Complete MS coursework, if applicable.
4. MS en route: Complete MS requirements and request for the MS en route. (Student Progress Form I-I)
5. MS en route: Apply for graduation for a MS degree and pay graduation fees. Deadlines are within the first month of each semester. (Graduate Application for Degree)
6. Comprehensive examination (Student Progress Form IC).
7. Appointment of doctoral committee (Student Progress Form IIA).
8. Approval of dissertation proposal (Student Progress Form II).
9. Admission to candidacy (Student Progress Form II).
10. Apply for graduation and pay graduation fees. Deadlines are within the first month of each semester. (Graduate Application for Degree)
12. Notify Graduate Division of your defense. (Final Oral Examination for Doctoral Dissertation Defense)
13. Final examination (defense of dissertation) (Student Progress Form III)
15. Fill out the electronic Survey of Earned Doctorate (SED) at https://sed-ncses.org. Submit your Certificate of Completion and Student Progress Form IV to Graduate Division.
16. Submit 1 electronic copy of dissertation via ProQuest ETD to Graduate Division, then pay fees. The ProQuest ETD procedures can be found on the Graduate Division website.
17. Submit PDF file of written dissertation to the Department Office (Student Progress Form V).
18. Exit interview (Student Progress Form V).
19. Graduate Chair certifies all degree requirements have been met.
20. Conferral of degree.

PhD TIMETABLE (Full Time Student) AND SEQUENCE OF PROGRESS REPORT FORM

Without MS or without MS in the sciences ***

<table>
<thead>
<tr>
<th>FORM</th>
<th>TASK</th>
<th>EXPECTED PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Preliminary Conference</td>
<td>1st semester</td>
</tr>
<tr>
<td>I-0.**</td>
<td>Qualifying Examination</td>
<td>Beginning of 2nd semester</td>
</tr>
<tr>
<td>I-I.**</td>
<td>Master’s Plan B en route to PhD (if applicable)</td>
<td>4th semester</td>
</tr>
<tr>
<td>IA.**</td>
<td>Approval of Comps. Committee</td>
<td>At least 4 months before comps</td>
</tr>
<tr>
<td>IB.**</td>
<td>Timeline of Comps. Exam</td>
<td>As soon as committee formed</td>
</tr>
<tr>
<td>IC.**</td>
<td>Results of Comps. Exam</td>
<td>4th semester</td>
</tr>
</tbody>
</table>

27
### With MS in the sciences***

<table>
<thead>
<tr>
<th>FORM</th>
<th>TASK</th>
<th>EXPECTED PROGRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
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</tr>
<tr>
<td>IA.**</td>
<td>Approval of Comps. Committee</td>
<td>At least 4 months before comps</td>
</tr>
<tr>
<td>IB.**</td>
<td>Timeline of Comps. Exam</td>
<td>As soon as committee formed</td>
</tr>
<tr>
<td>IC.**</td>
<td>Comprehensive Exam</td>
<td>2nd semester</td>
</tr>
<tr>
<td>IIA.**</td>
<td>Appointment of Dissertation Committee</td>
<td>3rd semester</td>
</tr>
<tr>
<td>II.</td>
<td>Approval of Dissertation Topic/Proposal</td>
<td>3rd semester</td>
</tr>
<tr>
<td></td>
<td>Advance to Candidacy</td>
<td>3rd semester</td>
</tr>
<tr>
<td>III.</td>
<td>Final Exam (Dissertation Defense)</td>
<td>6th semester*</td>
</tr>
<tr>
<td>IV.</td>
<td>Dissertation Approval</td>
<td>6th semester*</td>
</tr>
<tr>
<td>V.**</td>
<td>Exit Interview, Submit Thesis to Dept</td>
<td>6th semester*</td>
</tr>
</tbody>
</table>

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*The Graduate Studies Committee may under some circumstances consider the 8th semester to be normal progress.

** Earth Sciences Department Forms

***The applicability of the MS degree is at the discretion of the Graduate Chair.
<table>
<thead>
<tr>
<th>Semester Due (Maximum)</th>
<th>MS Plan B</th>
<th>MS Plan A</th>
<th>PhD w/ MS</th>
<th>PhD w/o MS</th>
<th>PhD w/ MS en route (w/ Qualifying Exam as Plan B or Thesis/Defense as Plan A)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
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<tr>
<td>1st</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
<td>Preliminary Conference</td>
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<tr>
<td>2nd (1 yr)</td>
<td>Topic/Committee</td>
<td>Topic/Committee</td>
<td>Comps Exam</td>
<td>Qualifying Exam</td>
<td>Qualifying Exam (or Thesis/Defense)</td>
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<tr>
<td>3rd</td>
<td></td>
<td></td>
<td>Topic/Committee</td>
<td></td>
<td><em>30 credit hrs to be awarded MS en route</em></td>
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<tr>
<td>4th (2 yrs)</td>
<td>Presentation/ Written Report</td>
<td>Defense/Thesis</td>
<td></td>
<td>Comps Exam</td>
<td>Comps Exam</td>
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<tr>
<td>5th</td>
<td></td>
<td></td>
<td></td>
<td>Topic/Committee</td>
<td>Topic/Committee</td>
</tr>
<tr>
<td>6th (3 yrs)</td>
<td></td>
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<td>Defense/ Dissertation</td>
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<tr>
<td>7th</td>
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<td>8th (4 yrs)</td>
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<tr>
<td>9th</td>
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<tr>
<td>10th (5 yrs)</td>
<td></td>
<td></td>
<td>Defense/ Dissertation</td>
<td>Defense/ Dissertation</td>
<td></td>
</tr>
</tbody>
</table>
ADDITIONAL INFORMATION

WHO’S WHO

Department Chair
Garrett Apuzen-Ito
earth-chair@soest.hawaii.edu

Graduate Chair
Henrietta Dulai
earth-grad-chair@soest.hawaii.edu

Undergraduate Chair
Scott Rowland
earth-ugrad-chair@soest.hawaii.edu

SOEST Director of Student Services
Heather Saito

Earth Sciences Department Office Manager
Earth Sciences Department Graduate Program Coordinator
Lily Shao
Christine Amado

Earth Sciences - VGP Division Administrative Assistant
Christine Amado

Earth Sciences - MEG Division Administrative Assistant
Arlene Sullivan

Earth Sciences - GT Division Administrative Assistant
Lily Shao

Hawaii Institute of Geophysics and Planetology Director
Robert Wright

Secretary to the Director
Office Assistant
Jason McCartney, Anela Nishimoto

CREDIT HOURS AND COURSES

Here are some pointers and guidelines to follow when registering for classes. Please refer questions to your advisor, to the Dept Graduate Program Coordinator, or to the Graduate Chair, in that order. Advisors do not always have definitive answers, so if you are at all unsure, please check with Lily or the Graduate Chair.

- Students who have defended their thesis/dissertation proposals may enroll in ERTH 700 (MS Plan A) or ERTH 800 (PhD).
- MS students may take a limited number of courses on a pass no pass basis (the number depends on the degree program).
- Both ERTH 699 and ERTH 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).
- Each English Language Institute (ELI) course is equal to 3 credits.
- All half-time TAs, RAs, and tuition waiver recipients are required to be enrolled as a full time student, which means 9 degree-related credits in our department. Any number of credits over 9 will require permission, which is easy to obtain from the Graduate Chair by completing this Graduate Division form - Graduate Assistant Petition to Enroll in More than 9 Credits. Quarter-time GAs are required to enroll in a minimum of 6 degree-related credits.
- PhD students who enroll in 1 credit of ERTH 800 are considered full-time, which fulfills the departmental “nine-credit requirement” for tuition waiver recipients. They also have a special tuition and fee rate.
- MS students who have completed all of their coursework requirements may register for 1 credit of ERTH 700F and be considered full-time. To register for ERTH 700F, students must first submit a Petition to Enroll in GRAD 700F form to Graduate Division. MS students taking 1 credit of ERTH 700F do not have a special tuition and fee rate.

GRADUATE STUDENT GROUP EMAIL LIST

The group email list for EPS graduate students is eps-grads@soest.hawaii.edu. Only our graduate students and the Graduate Program Coordinator are on this email list. The department utilizes it to reach our students regarding important information, reminders, etc. If you notice that you have not been receiving emails, please see the
Department Office Manager in POST 701. You may use this list to reach your fellow students, but please observe proper email etiquette.

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 Earth Sciences 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 and do not conflict with any other EARTH event. See Earth Sciences Department Office Manager (POST 701) regarding room requests.

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.

SETTING UP DEFENSES
See Lily 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, ask for one! Please check with Lily.