

GUIDELINES FOR ADVANCED DEGREES IN
THE
DEPARTMENT OF EARTH SCIENCE
RICE UNIVERSITY

AUGUST 2014

Dear Student,

*Read the following guidelines carefully and refer to them as needed. If there are any questions concerning any part of the guidelines, see the Graduate Program Coordinator or the Director of Graduate Studies (the chair of the Graduate Committee). **Refer to the Rice University General Announcements for more detailed explanation of University rules and regulations.** In the event of a conflict, Rice University General Announcements take precedent over departmental guidelines in this document.*

Keep this document for reference until you graduate.

The Faculty

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A. INTRODUCTION

1. Purpose

This document describes the present guidelines for advanced degrees in the Department of Earth Science. Although subject to change, the guidelines that are in place when a student enters the program normally remain in effect until the student completes his or her degree.

University regulations (see 2014-2015 General Announcements at <http://ga.rice.edu>) always have precedence over departmental ones. Therefore, the Department cannot grant exemption from any University requirements.

The Department Chair has final authority over all decisions involving departmental regulations. Graduate students have the right to petition the Department Chair for special consideration concerning any departmental regulation, including those in this document.

2. Student Responsibilities

Students are responsible for following the present guidelines of the department and those of the University. If a student has any questions regarding that for which he or she is responsible, the student should consult with the Director of Graduate Studies or the Graduate Program Coordinator. It is also the student's responsibility to know and follow the Student Code of Conduct, which can be found at: http://students.rice.edu/uploadedFiles/Students/Dean_of_Undergraduates/Code_of_Conduct/2013-2014_Code_of_Student_Conduct.pdf

3. Administration

The Graduate Committee administers the graduate requirements.

4. Employment

Students receiving financial support from department or university sources are expected to devote full-time to study, research, and departmental responsibilities, such as helping with teaching, and completing the requirements for their degree. Outside employment or consulting (part-time as well as full-time) may compromise these objectives. Students receiving financial support, therefore, are required to have the prior written consent of the Department Chair before accepting any other full- or part-time employment or consulting work during the period for which they are supported.

a. Vacation time

During the first semester of study, graduate students observe the same holiday schedule as other students engaged in course work. Graduate students do not automatically receive paid vacation time aside from designated staff holidays, including winter break when the university is officially closed. (Students do not automatically receive spring break as time off, as the university is not officially closed during this time.) Beginning in the second semester, vacation time can only be taken

with the advance permission of a student's advisor. Moreover, if a graduate student has teaching responsibilities, permission must also be obtained from all relevant course instructors and the Department Chair.

5. The Director of Graduate Studies and Graduate Committees

The main function of the Graduate Committee is to oversee the annual review and departmentally administered exams of all graduate students in the department. This includes: (i) evaluating student progress reports each year, and providing a written response to the students and their advisors; (ii) overseeing the seminar series (ESCI 403/404) in which students give a talk each year; (iii) setting the Preliminary Exam; and (iv) selecting committee members for Thesis Committees and Ph.D. Exam Committees. The chair of the Graduate Committee is the Director of Graduate Studies. The Director of Graduate Studies will sign all graduate registration forms for first year students who were not assigned a Thesis Advisor in their official admission letter.

The Graduate Committee will meet with each student during Orientation Week, prior to the student's first semester, to help plan a schedule of classes for the first semester. Incoming students are encouraged to consult with a member of the faculty who is or may become his or her Thesis Advisor, in order to work out a first semester schedule in advance. If a student does not have an advisor, he or she may receive academic advice from the Director of Graduate Studies or other faculty members until the advisor is determined.

a. Master's Thesis Committee

For a Master's student, the official admission letter from the Department Chair will specify who his or her Thesis Advisor will be. He or she is the chair of the student's Thesis Committee. This committee consists of at least three members: the Thesis Advisor, one faculty member chosen by the student, plus one faculty member chosen by the Director of Graduate Studies. The selection of a faculty member by the Director of Graduate Studies occurs after the remainder of the committee has been chosen and the student informs the Director of Graduate Studies (by e-mail). If the Director of Graduate Studies is also the Thesis Advisor, or on the Thesis Committee, another member of the Graduate Committee (not already on the Thesis Committee) will select the third committee member. All members must be tenured or tenure-track faculty at Rice; two members, including the Thesis Advisor, must be from the Department of Earth Science. Additional qualified members from within the department, outside the department, or outside of Rice are allowed on the committee at the discretion of the student and Thesis Advisor. This committee will be involved in the thesis proposal defense and the final thesis defense, and will oversee the student's progress along the way. If any committee member becomes unavailable at any stage, the student and the Thesis Advisor, subject to approval by the Director of Graduate Studies, will choose a replacement. The student should obtain the signature of any committee member who is dropped or added using a form provided by the Graduate Program Coordinator. Major changes to the research plan after the proposal defense are possible, but will require signed approval of the Thesis Committee.

Each student must meet with his or her Thesis Committee no later than the end of the first semester to assemble a course of study for his or her degree. While not cast in stone, this plan includes the courses the student will take for each semester of his or her graduate career. After the student and Thesis Committee agree on the course of study, a record of that plan will be put in the student's file in

the Graduate Program Coordinator's office. If the student's course of study needs to be changed, he or she must obtain the approval of his or her Thesis Committee and the Director of Graduate Studies, in writing. The Thesis Committee approves the student's thesis proposal and conducts the oral examination component of the thesis proposal defense. Each student must meet with his or her Thesis Committee as needed, as a group or individually, to report progress, discuss difficulties, etc., and at least once a year to address the Graduate Committee's response to the student's Annual Progress Report (see below). The Graduate Program Coordinator will provide a form for this purpose that must be signed by each member of the student's Thesis Committee to ensure that the annual meeting takes place.

b. Ph.D. Thesis Committee

For a Ph.D. student, if the official admission letter from the Department Chair does not specify a Thesis Advisor, the student must select a Thesis Advisor by the end of the first semester. This selection must be made by mutual agreement between the student and one of the faculty members in this department. He or she is the chair of the student's Thesis Committee. The Ph.D. Thesis Committee consists of at least four members: the Thesis Advisor, two faculty members chosen by the student, plus one faculty member chosen by the Director of Graduate Studies. The selection by the Director of Graduate Studies occurs after the remainder of the committee has been chosen and the student informs the Director of Graduate Studies (by e-mail). If the Director of Graduate Studies is also the Thesis Advisor, or on the Thesis Committee, another member of the Graduate Committee (not already on the Thesis Committee) will select the fourth committee member. All members must be tenured or tenure-track faculty at Rice; three members, including the Thesis Advisor, must be from the Department of Earth Science, and at least one must be from outside this department. The student chooses the outside committee member, since the member selected by the Director of Graduate Studies will always come from within this department. The outside committee member can be selected after the student passes the Ph.D. Qualifying exam (see below). Additional qualified members from within the department, outside the department, or outside of Rice are allowed on the committee at the discretion of the student and Thesis Advisor. This committee will be present at the Thesis Planning Meeting (after successful completion of the Ph.D. Qualifying Exam; see below), administer the final thesis defense, and oversee the student's progress along the way. If any committee member becomes unavailable at any stage, the student and the Thesis Advisor, subject to approval by the Director of Graduate Studies, will choose a replacement. The student should obtain the signature of any committee member who is dropped or added using a form provided by the Graduate Program Coordinator. Major changes to the research plan after the Thesis Planning Meeting are possible, but will require signed approval of the Thesis Committee.

Each student must meet with his or her Thesis Committee no later than the end of the first semester to assemble a course of study for the degree. While not cast in stone, this plan includes the courses the student will take for each semester of his or her graduate career. After the student and his or her Thesis Committee agree on the course of study, it will be put in the student's file in the Graduate Program Coordinator's office. If the student's course of study needs to be changed, he or she must obtain the approval of the Thesis Committee and the Director of Graduate Studies, in writing. Each student must meet with his or her Thesis Committee as needed, as a group or individually, to report progress, discuss difficulties, etc., and at least once a year to address the Graduate Committee's response to the student's Annual Progress Report (see below). The Graduate Program Coordinator will

provide a form for this purpose that must be signed by each member of the student's Thesis Committee each year to ensure that the annual meeting takes place.

c. Ph.D. Examination Committee

The role of this committee is to administer the Ph.D. Qualifying Exam, both the written and oral components. This committee will consist of the student's Thesis Committee, plus one additional faculty member chosen by the Director of Graduate Studies. The student must ask the Director of Graduate Studies (by e-mail) no later than one month before the oral exam to assign the additional faculty member to the examination committee; this person is known as the "external" member of the examination committee. The member of the Thesis Committee from outside the department is not required to participate in the Qualifying Exam, but can at the discretion of the student and Thesis Advisor. If the Director of Graduate Studies is also the Thesis Advisor, or on the examining committee, another member of the Graduate Committee (not already on the examining committee) will select the external examination committee member. The external examination committee member will normally be a tenured or tenure-track faculty member in this department. After successful completion of the Ph.D. Qualifying Exam, the external committee member's role is over, i.e., they do not become a member of the Thesis Committee, unless invited by the student and Thesis Advisor.

d. Change in Program

A graduate student may change advisor and research group only with the permission of both the old advisor and the new advisor.

6. Advisor-Student Conflicts – Informal and Formal Conflict Resolution

Always consult the Rice General Announcements for 2014-2015 for university policy concerning dispute resolutions, petitions, appeals, grievances and problem resolution. (<http://ga.rice.edu>)

Rice has a zero tolerance policy for harassment. For Rice policies concerning harassment, go to: <http://professor.rice.edu/Standard.aspx?id=2429>. For additional information about harassment, discrimination and retaliation, go to: <http://people.rice.edu/discrimination>

a. Advisor-Student Conflicts – Informal Options

At times relationships can become strained between the student and advisor. If this should occur, students should first consider informal options available to them. Other committee members are excellent resources for discussions about research. Students are encouraged to ask members of their Thesis Committees for appointments to discuss any aspects of their research. In addition, other faculty in and outside of the department can advise students informally on managing challenging workplace situations. Other resources on campus include The Rice Center for Written, Visual, and Oral Communication (cwvoc.rice.edu). Preparing a thesis or an academic publication can be stressful, and student and faculty expectations may not always be aligned during this process. The Center has staff trained in assisting scientists in effective writing. Students should attempt to use these informal options before beginning a formal department conflict resolution petition.

b. Advisor-Student Conflicts – Formal Options

Ombudsman: The Department has two ombudsmen who are available to assist if students and faculty reach a point where they cannot agree. A faculty member who is not a member of the Graduate Committee serves as an ombudsman for graduate students. A student should consult with a graduate ombudsman only after first trying to resolve the problem with his or her Thesis Advisor and/or the Director of Graduate Studies. Before contacting an ombudsman, a student should carefully outline his or her concerns, and be prepared to discuss his or her goals. In addition, if the concerns are about particular interactions, the student should compile documentation reflecting these concerns. Students should ask for a meeting with the ombudsman only after these steps have been completed. *Remember:* well-organized, clearly presented material is easiest to act upon.

What students can (and cannot) expect from a department ombudsman: The ombudsman will listen and make recommendations, and/or make referrals to other resources on campus. If necessary, the ombudsman will issue a written recommendation. Although the recommendations from the ombudsman are not binding, faculty and students are expected to make good faith efforts to implement the recommendations.

Department Chair: If the department ombudsman's intervention does not resolve a faculty-student conflict, either the faculty or the student can elevate concerns to their Department Chair. The student should be prepared to explain to the Department Chair what has happened, and why the ombudsman's recommendations were not sufficient to address the problem. Again, well-documented concerns are easiest to address.

Dean of Graduate Studies: If the ombudsman and Department Chair do not resolve a conflict to the satisfaction of either the faculty or the student, either party can elevate their complaint to the Office of the Dean of Graduate Studies. As with elevation to the chair level, well-documented concerns are most likely to be acted upon.

The problem-resolution procedure to be used is described in the 2014-2015 General Announcements. (http://ga.rice.edu/gr_disputes)

B. COURSE WORK

1. Course Requirements

Before the end of the first semester, each graduate student should select a primary Thesis Advisor and at least one (M.S.) or two (Ph.D.) other faculty members to serve as the student's Thesis Committee (see above). Before registration for the second semester of study, each new student, in consultation with this committee, will have planned a course of study. The course of study will be structured to focus on the student's area of interest, strengthen the student's education in areas identified by the Thesis Committee and the Graduate Committee, and provide a broad background in Earth Science. This approved course of study constitutes the student's required course work for an advanced degree. The student can revise the course of study with the written consent of the Thesis

Committee and the Director of Graduate Studies. An approved request for revision of the student's course of study must be in the student's file prior to registering each semester.

Several Earth Science courses are required of all graduate students. In principle, incoming students are expected to complete the department's undergraduate requirements in math, physics, and chemistry. Incoming graduate students also take ESCI 403/404 (Graduate Research Seminar) and ESCI 405/406 (Current Research in Earth Science) during their first Fall and Spring semester. Graduate students may also take ESCI 403/404 (Graduate Research Seminar) each subsequent year. To gain full credit for ESCI 403/404, enrolled students must attend all seminars that semester. Whether or not a student takes ESCI 403/404 after his or her first year, each student is still required to give an annual research talk in either ESCI 403 or ESCI 404 each year, or at a professional meeting (see below). Incoming graduate students without an advanced degree (e.g., Master's degree) are exempt from the presentation requirement in their first year.

Students can take **ESCI 800 (Thesis Research)** only after passing the Preliminary Exam (see below), subject to approval of their Thesis Committee. In the semester in which a Master's student prepares for the thesis proposal defense, or a Ph.D. student prepares for the Ph.D. Qualifying Exam (see below), they may especially wish to take ESCI 800 to account for the time required for preparation in that semester.

a. University Requirements

In order for a graduate student to receive a stipend during the Fall or Spring semester, he or she must be registered as a full-time student, i.e., for a minimum of 9 credit hours. The University requires 30 hours beyond the Bachelor's degree for the M.S. and 60 additional hours for the Ph.D. Students working for a Ph.D. directly after the Bachelor's degree are required to complete 90 credit hours. Students receiving stipends during summer months must register for at least 6 credits to be considered full time. Students who have not passed the Preliminary Exam should not take ESCI 800 (Thesis Research), but instead should take ESCI 501 (Special Studies for Graduate Students).

b. Departmental Requirements

The department requires that at least 20 of the credit hours be lecture courses or seminars for both the M.S. and Ph.D. degrees. Students working for a Ph.D. directly from the Bachelor's degree are required to complete 40 hours of course and seminar work. The remainder of the credit hours may be research credit hours. For courses taken in the Department of Earth Science, only 400-level or higher courses count toward the required credit hours.

c. Courses at Other Institutions

Students are allowed to supplement their Rice education by taking courses at other institutions. The student must obtain the approval of her or her Thesis Advisor and the Director of Graduate Studies.

Rice University has a reciprocal agreement with the University of Houston and the University of Texas Health Science Center so that graduate students from each institution may take courses not

offered at their school at the other facilities at no cost. The forms for registering in this program are obtained from the Office of Research and Graduate Studies.

d. Courses in Other Departments

With the prior approval of the Director of Graduate Studies, students may take courses numbered 300 and above in the other departments, and receive graduate credit for them.

2. Grade Requirements

It is a University requirement that each student maintain at least a 2.33 overall grade point average (GPA). Should a student fail to do so, he or she will be given one semester in a probationary status to bring his or her GPA to 2.33. It is also a University requirement that each student achieve at least an overall B- (2.67) GPA on courses counted toward the graduate degree. However, the Department of Earth Science has a more stringent standard, requiring a cumulative GPA of at least 3.0 in all classes taken while a graduate student at Rice. Should a student's GPA drop below 3.0, the student's progress will be reviewed by the Graduate Committee. In the absence of extenuating circumstances, continued performance below a 3.0 GPA may lead to discontinuing financial support or dismissal.

The GPA is a straightforward weighted average, which uses the numerical grade equivalents given below. The total number of grade points is the summation of the numerical grade equivalent multiplied by the number of credit hours, for each course. The grade point average, then is simply this sum divided by the total number of graded credit hours a student has completed.

A+ = 4.33	B+ = 3.33	C+ = 2.33
A = 4.0	B = 3.0	C = 2.0
A- = 3.66	B- = 2.66	C- = 1.66, etc.

ESCI 405, 406, and 800 are taken on a "satisfactory/unsatisfactory" (i.e. pass/fail) basis and, therefore, do not affect a student's GPA.

C. TEACHING EXPERIENCE AND SERVICE REQUIREMENTS

Every graduate student in the Department of Earth Science is required to perform a modest amount of service as a part of the degree program. Teaching experience is a valuable part of academic training and, therefore, is the most common service. Generally, M.S. students complete their service by assisting with teaching in at least one semester, and Ph.D. students assist with teaching for at least one or two semesters during their career as a graduate student at Rice University, but in a few cases more often. The Department Chair will assign teaching responsibilities with input from the Director of Graduate Studies. Any graduate student beyond their first year who receives stipend support from department funds is typically expected to assist with teaching or with other department service at the discretion of the Department Chair. Students who bring in their own external funding for the duration of their graduate studies are exempt from this requirement.

Managing ESCI 403/404 is not considered a teaching experience since it does not involve teaching.

Students have the opportunity to plan both their programs of study and service ahead of time. However, keep in mind that the faculty has the responsibility to see that required courses receive the support that they deserve. In all cases, the Department will make every attempt to ensure fair and equitable treatment of all students.

D. DEGREE REQUIREMENTS COMMON TO M.S. AND Ph.D.

A student, in consultation with his or her Thesis Advisor and Thesis Committee, is allowed to change his or her intended degree from M.S. to Ph.D., or vice versa. However, the student should declare no later than the start of his or her third semester which degree, M.S. or Ph.D., he or she is seeking, since an M.S. student must defend his or her thesis proposal before the start of the third semester. If an M.S. student wishes to switch to the Ph.D. program, he or she must reapply as a doctoral applicant to be considered along with other applicants in a new cohort group.

1. Preliminary Exam

Each student must successfully pass a written Preliminary Exam before proceeding to his or her Thesis Proposal (M.S.) or Qualifying Exam (Ph.D.). The Preliminary Exam will be offered twice each year: near the beginning and end of the Spring semester. Students who begin at Rice in the Fall semester must take the exam at the beginning of the Spring semester, unless they petition the Director of Graduate Studies because of special circumstances. Students who begin at Rice in the Spring semester will take the exam at the end of the Spring semester. The exam will test general Earth Science knowledge at the level of an undergraduate major, including a reasonable amount of breadth from the student's declared area of specialization. M.S. and Ph.D. students will take the same exam. The Graduate Committee will set the exam with questions provided by the entire faculty, and each time it is offered it will include different questions. This exam is subject to the Rice Honor Code, and it is considered a violation to discuss the exam with other students or to share or gather information (questions or answers) about the exam with other students. All questions related to the exam should be discussed with the Director of Graduate Studies. A set of topics and/or text book(s), possibly limited to specific chapters, from which the exam questions will be drawn, will be provided to the students in the fall semester. The Graduate Committee will grade the exam. If unsuccessful, students will be allowed to retake the exam one time when it is next offered. Students who fail the exam twice must leave at the end of the current semester.

2. Annual Requirements

A record of the completion of each of the annual requirements is kept in the student's file in the department. Failure to complete any one of the annual requirements will make the student ineligible for departmental support (including travel funds).

a. Presentation

All students are required to make a presentation of their research to the department each year, starting in their first year if entering the program with a Master's degree, or in their second year if entering with a Bachelor's degree. This requirement will be met by giving a research talk in ESCI 403 or ESCI 404. A student can petition the Director of Graduate Studies, to give a talk in some other forum during the academic year, for example, by giving a talk at a professional meeting. The Graduate students will run ESCI 403/404, with one student assigned to organize and manage it each semester. In addition, a member of the Graduate Committee will oversee ESCI 403/404. All first-year graduate students, and any other student taking ESCI 403 or ESCI 404 for credit, are expected to attend all talks.

b. Progress Report

Each student must submit a written Annual Progress Report, electronically to the Graduate Committee no later than September 15, beginning in his or her second year of study. The report will describe the student's progress toward his or her degree over the past year, including research, presentations, publications, course work, fieldwork, teaching experience, service, and other work experience as appropriate. Milestones for normal progress are given in Appendices A and B. The Graduate Committee will compare a student's progress with these milestones to assess if progress has been satisfactory. If progress has been unsatisfactory, the Department Chair, with the benefit of the advice of the Thesis Advisor and Graduate Committee, may terminate the financial support of the graduate student. Alternatively, the Department Chair may elect to have the department continue the support of the student on a probationary basis to be re-evaluated each semester until the Graduate Committee and Thesis Advisor deem the student's progress satisfactory. In this case, the student should develop a written plan to bring his or her performance back to a satisfactory level. The plan should include specifics about the student's goals and deadlines and must be approved by the Thesis Advisor and by the Graduate Committee.

The precise format to follow for the annual progress report will be provided to students in the form of a template at the beginning of the fall semester. The Graduate Committee will evaluate these reports, and a written commentary will be returned to each student, and copied to his or her Thesis Advisor.

c. Thesis Committee Meeting

Each student must arrange to meet with his or her Thesis Committee within 30 days of receiving the Graduate Committee response to his or her progress report, for the purpose of addressing the Graduate Committee's comments. This meeting can take place either individually or with the full committee. In addition, at this time each committee member may provide comments or suggestions pertaining to the student's research project, and his or her general progress toward completing the thesis. The Graduate Program Coordinator will provide a form that must be signed by each member of the student's Thesis Committee each year to ensure that the annual meeting takes place

d. Academic Petitions and Appeals

Graduate students may petition for exceptions to academic requirements, regulations, and judgments. A course requirement is an example of an academic requirement. Allowed time to degree is an example of an academic regulation. Course grades and dismissals from programs are examples of academic judgments. Academic petitions and appeals should be approached first through the informal

options or the ombudsman in the department. When the program's recommendation is negative, or when the petition requests a major exception—for example, an extension of allowed time to degree by more than 1/2 semester—the Graduate Council and the Office of Graduate and Postdoctoral Studies may also obtain the recommendation of the school overseeing the program (when relevant).

A petition regarding University requirements, regulations, or judgment must be submitted to the Office of Graduate and Postdoctoral Studies; such a petition must be accompanied by a recommendation from the program. University policy for Academic Petitions and Appeals can be found in the 2014-2015 General Announcements at: http://ga.rice.edu/GR_disputes/

E. M.S. DEGREE

For degree requirements common to both the M.S. and Ph.D. degrees, see section D.

1. Thesis Proposal

a. Written Thesis Proposal

After successful completion of the Preliminary Exam, each M.S. student will prepare a thesis proposal describing the research that the student plans to carry out for his or her graduate degree. A written thesis proposal will be submitted to the student's Thesis Committee, and unanimously approved, before an oral exam (thesis proposal defense) can be conducted. The student must submit the proposal to the student's committee no less than one week before the oral defense. Each student must prepare the written thesis proposal and defend it orally before the start of his or her third semester.

The Thesis Proposal consists of two parts: The Thesis Proposal Brief, which serves as a cover page to the proposal, and the Thesis Proposal Description. A form for the brief can be obtained from the Graduate Program Coordinator. (See <http://earthscience.rice.edu/academics/graduate.html>)

The Brief will contain a summary of the proposal and the signatures of the members of the student's Thesis Committee and the Department Chair. The proposal description cannot exceed ten (10) pages, excluding figures and references. The proposal description should include a statement of purpose, theoretical, experimental, and/or other basis for the work.

b. Approval of the Thesis Proposal

The Thesis Proposal must be submitted to, and unanimously approved by, the student's Thesis Committee before the student can schedule the oral examination (defense). The proposal Brief will then be distributed to the faculty. The complete proposal must be available in the Department Chair's office for faculty inspection at least one week before the student's oral defense.

2. Oral Thesis Proposal Defense

a. Time

The time and place of a student's oral proposal defense, and a copy of the Thesis Proposal Brief, must be communicated in writing to the entire faculty at least one week in advance of the scheduled defense. Each student should make sure that all committee members are available before scheduling the defense. When the final date and time have been agreed upon, the student should schedule his or her defense through the Graduate Program Coordinator. Due to other faculty commitments, students should avoid scheduling their oral proposal defense before the second week of classes or during the last week of classes.

b. Examining Committee

The student's Thesis Committee will conduct the oral defense, however, other faculty members are permitted to attend and will have full opportunity to ask questions. Determination of the outcome of the defense is the responsibility of the Thesis Committee. Other students may attend the oral defense at the discretion of the defending student. The Thesis Advisor's main role during the oral defense is to moderate, which includes ensuring that every committee member has sufficient opportunity to ask questions, to clarify questions as needed, and to intervene if a question is inappropriate or a discussion gets out of hand. The examining committee, including the Thesis Advisor, is not supposed to answer or help to answer questions directed at the student from the committee.

c. Scope

The defense will concentrate on the student's thesis topic. The purpose of the defense is to determine whether the thesis topic is of appropriate scope for an M.S. degree and whether the student is sufficiently prepared to pursue the research. The oral presentation should be no more than 30 minutes in length, unless approved in advance by the Thesis Committee.

d. Result

The original signed copy of the Thesis Proposal is given to the Graduate Program Coordinator and is placed in the student's file. If a student fails the exam for the first time, he or she will be permitted to retake it at a time determined by the Thesis Committee. A second failure will result in the student being terminated from the graduate program.

3. Petition for Approval of Candidacy

A petition to the Office of Graduate Studies for Approval of Candidacy for the M.S. degree must be filed before the beginning of the fifth semester of the student's residency at Rice, and before November 1 (for a December conferral), or February 1 for May Commencement, of the academic year in which the student plans to graduate. The student will not be allowed to graduate that year if this deadline is not met. The petition can be filed at any time after completion of all degree requirements for graduation, except the thesis. Students should meet with the Graduate Program Coordinator when they are ready to file their petition. Once filed, students should refer to the time line for defense of theses, which can be found in the Rice General Announcements. After the Office of Research and Graduate Studies has approved a student's Petition for Candidacy, they will send the student a copy of "Thesis Procedures and Forms" which should be followed during thesis preparation.

4. Time to Defense

All M.S. students must defend their thesis before the end of their eighth semester of their residency at Rice.

5. Thesis

a. Thesis Committee

The selection and makeup of the Thesis Committee has been described previously in section A. The same committee that was involved in the student's thesis proposal defense will carry through to the final thesis defense. If one of the three required committee members becomes unavailable to continue to serve on a student's committee, a replacement to the committee will be permitted, after approval from the student's Thesis Advisor and the Director of Graduate Studies.

b. Thesis Format

The written M.S. thesis will consist of at least one manuscript that has been submitted to a recognized peer-reviewed journal based on the thesis research, with the student as first author. In addition, brief introductory or summary chapters, and/or appendices, will be included at the discretion of the Thesis Committee. The student must receive the approval of his or her Thesis Advisor or Thesis Committee before a paper is submitted. A letter signed by the student and Thesis Advisor and submitted to the Director of Graduate Studies stating the student has submitted a manuscript will be required. After the student's oral defense and final acceptance of the thesis by his or her Thesis Committee, a version of the thesis that meets the requirements of the Office of Research and Graduate Studies must be produced and submitted to that office according to their guidelines.

c. Submitting Thesis

Students must submit the thesis to each Thesis Committee member at least one week before the oral defense, although it is recommended to submit the thesis earlier in consultation with the committee to provide adequate time for evaluation. At this time, the student must also give an additional copy to the Graduate Program Coordinator.

d. Defense

The thesis defense typically lasts about 2-3 hours. Students should schedule a room and time for the defense through the Graduate Program Coordinator. Students may defend their thesis any time during the regular academic year, except during official examination periods. However, students must abide by the deadline for submission of their thesis to the Office of Research and Graduate Studies to ensure that they will be eligible to graduate as planned. Students must submit their thesis to the Office of Research and Graduate Studies no later than six months from the date of examination.

e. Acceptance

Acceptance of the student's thesis requires unanimous approval of the Thesis Committee. Each member of the committee must sign the Approval of Candidacy form and two cover pages of the thesis before it is turned in to the Office of Research and Graduate Studies.

The student must provide an electronic version of the written thesis to the Thesis Advisor and to the department before final submission to the Office of Research and Graduate Studies. For the department, the thesis should be given to the Graduate Program Coordinator as one PDF file containing all text and figures on CD (or equivalent). For the Thesis Advisor, the files constituting the thesis must be provided in the final word processor and figure formats (e.g., Word and Illustrator documents), along with a complete PDF file, on CD (or equivalent); two copies should be provided.

The final thesis should be submitted to the Office of Research and Graduate Studies electronically, according to their guidelines. After the student has submitted the thesis electronically to the Office of Research and Graduate Studies, he or she must take the original Approval of Candidacy Form and the two original signed copies of the thesis title page to the Graduate Office to complete the thesis acceptance requirements.

F. Ph.D. DEGREE

For degree requirements common to both the M.S. and Ph.D. degrees, see section D.

1. Ph.D. Qualifying Exam

a. Written Component of Ph.D. Qualifying Exam

Each Ph.D. student must prepare two distinct research projects and defend them orally; typically one of these projects will represent the core of the student's thesis research project. The second project will be developed independently from the student's Thesis Advisor. The student may ask questions of any faculty member regarding the second project, as long as the response does not entail supervision or guidance on the part of the Thesis Advisor. Brief outlines of the two projects must be provided to the Graduate Committee for approval to ensure that they are sufficiently distinct topics. Possible models for the second project include, but are not limited to:

- i. a research project that is part of the student's proposed thesis work, but sufficiently distinct from the first project, e.g., the second phase of the thesis research;
- ii. a research project related to, but not duplicating, the student's proposed thesis work;
- iii. a research project devised independently by the student;
- iv. a research project carried out under the advisement of a faculty member who is not the student's Thesis Advisor (and may or may not be on the Thesis Committee).

After successful completion of the Ph.D. Qualifying Exam, the second project may or may not become part of the thesis research at the discretion of the Thesis Committee. Nonetheless, the second project should be designed in such a way that it likely can be completed, i.e., resulting in a first-author or co-authored publication for the student; whether or not such a first-author publication will constitute one of the three required papers for a Ph.D. thesis (see point 6b below) is at the discretion of the Thesis Committee.

The written portion of each project must be submitted to the student's Ph.D. Exam Committee, and unanimously approved, before the oral exam on each can be conducted. The student must submit the projects to his or her committee no less than one week before the oral exam. The Ph.D. Qualifying Exam (including oral defense) must be completed no later than the end of the student's fourth semester.

The written component consists of two parts: the Qualifying Exam Brief, which serves as a cover page, and the Qualifying Exam Description. A form for the brief can be obtained from the Graduate Program Coordinator. (See <http://earthscience.rice.edu/academics/graduate.html>) The brief should contain a summary of the projects and the signatures of the members of the Ph.D. Qualifying Exam Committee and the Department Chair. The Qualifying Exam Description may not exceed ten (10) pages (excluding figures and references) for each project (20 pages total), however, the examining committee can set a lower limit. The project descriptions may be in a proposal or research paper format; the choice of proposal or paper style is left to the student, who may choose one of each type or both of the same type.

b. Approval of Ph.D. Qualifying Exam

Each project must be submitted to the student's Ph.D. Qualifying Exam Committee, and unanimously approved, before the student can schedule the oral examination. The Qualifying Exam Brief is then distributed to the faculty, and the complete projects must be available in the office of the Graduate Program Coordinator for faculty inspection at least one week before the oral exam.

2. Ph.D. Qualifying Oral Exam

a. Time

The time and place of the student's exam, and a copy of the Qualifying Exam Brief, must be communicated in writing to the entire faculty at least one week in advance. Each student should make sure that all qualifying exam committee members are available before scheduling the exam. When the final date and time have been agreed upon, the student should schedule his or her exam through the Graduate Program Coordinator. Due to other faculty commitments, students should avoid scheduling their exam before the second week of classes or during the last week of classes.

b. Examination Committee

The student's Ph.D. Qualifying Exam Committee will conduct the oral exam, however, other faculty members are permitted to attend and will have full opportunity to ask questions. Determination of the outcome of the exam is the responsibility of the Qualifying Exam Committee. Other students may attend the oral exam at the discretion of the defending student. The Thesis Advisor's main role during the exam is to moderate, which includes ensuring that every committee member has sufficient opportunity to ask questions, to clarify questions as needed, and to intervene if a question is inappropriate or a discussion gets out of hand. The examining committee, including the Thesis Advisor, is not supposed to answer or help to answer questions directed at the student from the committee.

c. Scope

Questioning may cover all areas relating to the research projects, including the relevant background material necessary to carry out the research. The purpose of the exam is to determine whether the student is sufficiently qualified to pursue high-quality, Ph.D.-level research. The oral presentations should be no more than 30 minutes in length for each project, unless approved in advance by the examining committee.

d. Result

The original signed copies of the projects are given to the Graduate Program Coordinator and are placed in the student's file. If the student fails the exam, the result of the exam is left to the discretion of the Qualifying Exam Committee. Some possible options include permitting a retake (once) or recommending removal of the student from the graduate program. Alternatively, if the student does not have a Master's Degree, the student can complete an M.S. Degree. The latter option leaves open the possibility for the student to seek a Ph.D. Degree in the department after completing the M.S. Degree.

3. Thesis Planning Meeting

Shortly after successful completion of the Ph.D. Qualifying Exam, the student will arrange the Thesis Planning Meeting. The meeting will include all members of the student's Thesis Committee. The purpose of this meeting is to formalize the research plan and timeline, and to address any weaknesses encountered in the proposed research or the student's background as a result of the preliminary and qualifying exams.

4. Petition for Approval of Candidacy

A petition to the Office of Graduate Studies for Approval of Candidacy for the Ph.D. degree must be filed before the beginning of the ninth semester of the student's residency at Rice, and before November 1 (for a December conferral), or February 1 for May Commencement, of the academic year in which the student plans to graduate. Students will not be allowed to graduate that year if this deadline is not met. The petition can be filed at any time after completion of all degree requirements for graduation, except the thesis. (See the Graduate Program Coordinator when ready to file). Once filed, students should refer to the timeline for defense of theses, which can be found in the General Announcements. After the Office of Research and Graduate Studies approves the student's Petition for Candidacy, they will send the student a copy of "Thesis Procedures and Forms" which should be followed during thesis preparation.

5. Time to Defense

All Ph.D. students must defend their thesis before the end of the sixteenth semester of their residence at Rice.

6. Thesis

a. Thesis Committee

Although Rice University only requires that a Ph.D. Thesis Committee have a minimum of three members, the Department of Earth Science requires that a Ph.D. Thesis Committee have at least four members. The selection and makeup of the Thesis Committee has been previously described in section A. The same committee that was involved in the thesis planning meeting will carry through to the final thesis defense. If one of the four required committee members becomes unavailable to continue to serve on the student's thesis committee, a replacement to the committee will be permitted, after approval from the student's Thesis Advisor and the Director of Graduate Studies.

b. Thesis Format

The format of the written Ph.D. thesis will consist of at least three manuscripts that have been submitted to recognized peer-reviewed journals based on the thesis research, with the student as first author, at least one of which must be "in press" or published at the time of the Thesis Defense. In addition, brief introductory or summary chapters, and/or appendices will be included at the discretion of the Thesis Committee. The student must receive the approval of his or her Thesis Advisor or Thesis Committee before each paper is submitted. A letter signed by the student and Thesis Advisor and submitted to the Director of Graduate Studies stating they have submitted at least three manuscripts will be required. After the student's oral defense and final acceptance of the thesis by his or her Thesis Committee, a version of the thesis that meets the requirements of the Office of Research and Graduate Studies must be produced and submitted to that office according to their guidelines.

c. Submitting Thesis

Students must submit the thesis to each Thesis Committee member at least one week before the oral defense, although it is recommended to submit the thesis earlier in consultation with the committee to provide adequate time for evaluation. At this time, the student also must place an additional copy in the office of the Graduate Program Coordinator. The Office of Research and Graduate Studies requires that students post their defenses on the University Calendar at least two weeks before the defense. See the Graduate Student Coordinator for assistance.

d. Defense

The thesis defense typically lasts about 2-3 hours. Students should schedule a room and time for the defense through the Graduate Program Coordinator. Students may defend their thesis any time during the regular academic year, except during official examination periods. However, students must abide by the deadline for submission of their thesis to the Office of Research and Graduate Studies to ensure that they will be eligible to graduate as planned. Students must submit their thesis to the Office of Research and Graduate Studies no later than six months from the date of examination.

e. Acceptance

Acceptance of the student's thesis requires unanimous approval of the Thesis Committee. Each member of the committee must sign the Approval of Candidacy form and two cover pages of the thesis before it is turned in to the Office of Research and Graduate Studies.

The student must provide an electronic version of the written thesis to the Thesis Advisor and the department before final approval of the thesis by the Thesis Committee. For the department, the

electronic format will be one PDF file provided to the Graduate Program Coordinator containing all text and figures on CD (or equivalent). For the Thesis Advisor, the files constituting the thesis must be provided in the final word processor and figure formats (e.g., Word and Illustrator documents), along with a complete PDF file, on CD (or equivalent); two copies should be provided.

The final thesis should be submitted to the Office of Research and Graduate Studies electronically, according to their guidelines. After the student has submitted the thesis electronically to the Office of Research and Graduate studies, he or she must take the original Approval of Candidacy Form and the two original signed copies of the thesis title page to the Graduate Office to complete the thesis acceptance requirements.

APPENDIX A: M.S. Degree Milestones and Checklist

Below is checklist of key milestones for completion of the M.S. degree. Please contact the Graduate Program Coordinator or Director of Graduate Studies with any questions.

Year 1

Milestone or Task	Date Completed
Signed guidelines form to Graduate Program Coordinator (GPC)	
Signed advisor/research agreement to GPC	
Finalize Thesis Committee	
Pass Preliminary Exam	
Attend all ESCI 403, 404, 405, and 406 seminars	
Schedule MS Thesis Proposal defense through GPC	
Complete MS Thesis Proposal Defense	

Year 2

Milestone or Task	Date Completed
Submit annual progress report to Director of Graduate Studies	
Annual progress meeting with Thesis Committee	
Submit Thesis Committee meeting form to GPC	
Make annual presentation in ESCI 403 or 404	
Complete Petition for Candidacy	
Submit first-authored paper to peer-reviewed journal	
Coordinate time for Thesis Defense with Thesis Committee	
Schedule Thesis Defense through the GPC	
Complete thesis revisions	
Provide GPC and Thesis Advisor with all thesis-related files as described in Graduate Guidelines	
Submit thesis to University	
Take original Candidacy Form and two signed copies of the thesis cover to the Office of Research and Graduate Studies	

APPENDIX B: Ph.D. Degree Milestones and Checklist

Below is checklist of key milestones for completion of the Ph.D. degree. Please contact the Graduate Program Coordinator or Director of Graduate Studies with any questions.

Year 1

Milestone or Task	Date Completed
Signed guidelines form to Graduate Program Coordinator (GPC)	
Signed advisor/research agreement to GPC	
Finalize Thesis Committee (outside member can be added after Qual. Exam)	
Pass Preliminary Exam	
Attend all ESCI 403, 404, 405, and 406 seminars	
Research presentation in ESCI 403 or 404 (if already have an M.S. degree)	

Year 2

Milestone or Task	Date Completed
Submit annual progress report to Director of Graduate Studies	
Annual progress meeting with Thesis Committee	
Submit Thesis Committee meeting form to GPC	
Make annual presentation in ESCI 403 or 404	
Finalize Ph.D. Qualifying Exam committee	
Coordinate time for Ph.D. Qualifying Exam with Thesis Committee	
Schedule Ph.D. Qualifying through the GPC	
Pass Ph.D. Qualifying Exam	
Submit first first-authored paper to peer-reviewed journal	

Year 3

Milestone or Task	Date Completed
Submit annual progress report to Director of Graduate Studies	
Annual progress meeting with Thesis Committee	
Submit Thesis Committee meeting form to GPC	
Make annual presentation in ESCI 403 or 404	
Add outside member to Thesis Committee	
Submit second first-authored paper to peer-reviewed journal	

Year 4

Milestone or Task	Date Completed
Submit annual progress report to Director of Graduate Studies	
Annual progress meeting with Thesis Committee	
Submit Thesis Committee meeting form to GPC	
Complete Petition for Candidacy	
Make annual presentation in ESCI 403 or 404	
Submit third first-authored paper to peer-reviewed journal	
Coordinate time for Thesis Defense with Thesis Committee	
Schedule Thesis Defense through the GPC	
Complete thesis revisions	

Provide GPC and Thesis Advisor with all thesis-related files	
Submit thesis to University	
Take original Candidacy Form and two signed copies of the thesis cover to the Office of Research and Graduate Studies	