

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

AUGUST 2013

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

GUIDELINES FOR ADVANCED DEGREES IN THE
DEPARTMENT OF EARTH SCIENCE

TABLE OF CONTENTS

	Page
A. INTRODUCTION	5
1. Purpose	5
2. Your Responsibilities	5
3. Administration	5
4. Employment	5
5. Committees and Graduate Ombudsman	5
a. Graduate Committee and Director of Graduate Studies	5
b. Graduate Ombudsman	6
c. Master's Thesis Committee	6
d. Ph.D. Thesis Committee	7
e. Ph.D. Examination Committee	7
B. COURSE WORK	8
1. a. Course Requirements	8
b. University Requirements	8
c. Departmental Requirements	9
d. Courses at Other Institutions	9
e. Courses in Other Departments	9
2. Grade Requirements	9
C. TEACHING EXPERIENCE AND SERVICE REQUIREMENTS	10
D. DEGREE REQUIREMENTS COMMON TO M.S. AND Ph.D.	10
1. Preliminary Exam	10
2. Annual Requirements	11
a. Presentation	11
b. Progress Report	11
c. Thesis Committee Meeting	11

E.	M.S. DEGREE	11
1.	Thesis Proposal	11
	a. Written Thesis Proposal	12
	b. Approval of Thesis Proposal	12
2.	Oral Thesis Proposal Defense	12
	a. Time	12
	b. Examining Committee	12
	c. Scope	12
	d. Result	13
3.	Petition for Approval of Candidacy	13
4.	Time to Defense	13
5.	Thesis	13
	a. Thesis Committee	13
	b. Thesis Format	13
	c. Submitting Thesis	14
	d. Defense	14
	e. Acceptance	14
F.	Ph.D. DEGREE	14
1.	Ph.D. Qualifying Exam	14
	a. Written Component of Ph.D. Qualifying Exam	14
	b. Approval of Ph.D. Qualifying Exam	15
2.	Ph.D. Qualifying Oral Exam	15
	a. Time	15
	b. Examination Committee	16
	c. Scope	16
	d. Result	16
3.	Thesis Planning Meeting	16
4.	Petition for Approval of Candidacy	16
5.	Time to Defense	17
6.	Thesis	17
	a. Thesis Committee	17
	b. Thesis Format	17
	c. Submitting Thesis	17
	d. Defense	17
	e. Acceptance	18
	APPENDIX I: M.S. Degree Milestones and Checklist	19
	APPENDIX II: Ph.D. Degree Milestones and Checklist	20

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 you enter normally remain in effect until you complete your degree.

University regulations (see General Announcements) 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. Your Responsibilities

You are responsible for following the present guidelines of the department and those of the University. If you have any questions regarding that for which you are responsible, you should consult with the Director of Graduate Studies or the Graduate Program Coordinator. It is also your responsibility to know and follow the Rice Honor Code. Copies of the Honor Code will be made available to you.

3. Administration

Graduate requirements are administered by the Graduate Committee.

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 are, therefore, 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.

5. Committees and Graduate Ombudsman

a. Graduate Committee and Director of Graduate Studies

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 you during Orientation Week, prior to your first semester, to help you plan a schedule of classes for your first semester. It is possible that you may have worked out in advance your schedule in consultation with a member of the faculty who is or will likely become your Thesis Advisor.

b. Graduate Ombudsman

A faculty member who is not a member of the Graduate Committee will serve as an ombudsman for graduate students, that is, to be an advocate on behalf of the student(s) to investigate and resolve any grievance or problem brought forward by a student or group of students that is related to their studies, research, or service within the department. A student should consult with the Graduate Ombudsman only after first trying to resolve the problem with their Thesis Advisor and/or the Director of Graduate Studies. If the problem cannot be resolved through the Graduate Ombudsman, the student should speak with the Department Chair.

c. Master's Thesis Committee

Your official admission letter from the Department Chair will specify who your Thesis Advisor will be. He or she is the chair of your 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 Director of Graduate Studies's selection 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 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 oversees the student's progress along the way. If any committee member becomes unavailable at any stage, a replacement will be chosen by the student and the Thesis Advisor, subject to approval by the Director of Graduate Studies. 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.

You must meet with your Thesis Committee no later than the end of your first semester to assemble a course of study for your degree. While not cast in stone, this plan includes the courses you will take for each semester of your graduate career. After you and your Thesis Committee agree on your course of study, it will be put in your file in the Graduate Program Coordinator's office. If your course of study needs to be changed, you must obtain the approval of your Thesis Committee and the Director of Graduate Studies, in writing. The Thesis Committee approves your thesis proposal and conducts the oral examination component of the thesis proposal defense. You must meet with your 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 your Annual Progress Report (see below). A form will be provided by the Graduate Program Coordinator that must be signed by each member of your Thesis Committee each year to ensure that the annual meeting takes place.

d. Ph.D. Thesis Committee

If your official admission letter from the Department Chair does not specify who your Thesis Advisor will be, you must have a Thesis Advisor by the end of your first semester. This is not a selection that you make alone: it must be a mutual agreement between you and one of the faculty members in this department. He or she is the chair of your 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 Director of Graduate Studies's selection 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 outside committee member is chosen by the student, since the Director of Graduate Studies's selection will always come from within this department. It is not necessary to choose your outside committee member until after you pass the Ph.D. Qualifying exam (see below). Additional qualified members from within the department, outside the department, or outside 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 oversees the student's progress along the way. If any committee member becomes unavailable at any stage, a replacement will be chosen by the student and the Thesis Advisor, subject to approval by the Director of Graduate Studies. 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.

You must meet with your Thesis Committee no later than the end of your first semester to assemble a course of study for your degree. While not cast in stone, this plan includes the courses you will take for each semester of your graduate career. After you and your Thesis Committee agree on your course of study, it will be put in your file in the Graduate Program Coordinator's office. If your course of study needs to be changed, you must obtain the approval of your Thesis Committee and the Director of Graduate Studies, in writing. You must meet with your 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 your Annual Progress Report (see below). A form will be provided by the Graduate Program Coordinator that must be signed by each member of your Thesis Committee each year to ensure that the annual meeting takes place.

e. 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 your 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.

B. COURSE WORK

1. a. 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 course of study can be revised by the student 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, you must attend all seminars that semester. Whether or not you take ESCI 403/404 after your first year, you are 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.

Only after a student has successfully passed the Preliminary Exam (see below), may they take ESCI 800 (Thesis Research), 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.

b. University Requirements

In order for a graduate student to receive a stipend during a semester, they 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 their Bachelor's degree are required to complete 90 credit hours.

c. 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.

d. 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 their 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.

e. Courses in Other Departments

With the prior approval of the Director of Graduate Studies, you 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 you maintain at least a 2.33 overall grade point average (GPA). Should you fail to do so, you will be given one semester in a probationary status to bring your GPA to 2.33. It is also a University requirement that students 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 that you take while a graduate student at Rice. Should your GPA drop below 3.0 your 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 your 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. Teaching responsibilities will be assigned by the Department Chair with input from the Graduate Program Coordinator and 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.

In consultation with your Thesis Advisor and thesis committee, it is possible to change your intended degree from M.S. to Ph.D., or vice versa. However, you should declare no later than the start of your third semester which degree, M.S. or Ph.D., you are seeking, since an M.S. student must defend their thesis proposal before the start of their third semester.

1. Preliminary Exam

All students must successfully pass a written preliminary exam before proceeding to their 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 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. The same exam will be taken by M.S. and Ph.D. students. The exam will be set by the Graduate Committee, 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 exam will

be graded by the Graduate Committee. 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 your file in the department. Failure to complete any one of the annual requirements will make you ineligible for departmental support (including travel funds).

a. Presentation

You are required to make a presentation of your research to the department each year, starting in your first year if you enter the program with a Master's degree, or in your second year if you enter with a Bachelor's degree. This requirement will be met by giving a research talk in ESCI 403 or ESCI 404. By petitioning the Director of Graduate Studies, you may request to give your talk in some other forum during the academic year, for example, by giving a talk at a professional meeting. ESCI 403/404 will be run by the Graduate students, with one student being 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

A written Annual Progress Report will be electronically submitted to the Graduate Committee no later than September 15, beginning in your second year of study. The report will describe your progress toward your degree over the past year, including research, presentations, publications, course work, field work, teaching experience, service, and other work experience as appropriate. The precise format to follow for the report will be provided to you in the form of a template at the beginning of the fall semester. These reports will be evaluated by the Graduate Committee, and a written commentary will be returned to you and your Thesis Advisor.

c. Thesis Committee Meeting

Within 30 days of receiving the Graduate Committee response to your progress report, you must arrange to meet with your Thesis Committee, either individually or as a group, for the purpose of addressing the Graduate Committee's comments. In addition, at this time each committee member may provide comments or suggestions pertaining to your research project, and your general progress toward completing your thesis. A form will be provided by the Graduate Program Coordinator that must be signed by each member of your Thesis Committee each year to ensure that the annual meeting takes place.

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, all M.S. students will prepare a thesis proposal describing the research that they plan to carry out for their graduate degree. A written thesis proposal will be submitted to your Thesis Committee, and unanimously approved, before an oral exam (thesis proposal defense) can be conducted. You must submit the proposal to your committee no less than one week before the oral defense. You must prepare the written thesis proposal and defend it orally before the start of your third semester.

Your 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. It will contain a summary of the proposal and the signatures of the members of your 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 your Thesis Proposal

Your Thesis Proposal must be submitted to, and unanimously approved by, your Thesis Committee, before you can schedule the oral examination (defense). Your 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 your oral defense.

2. Oral Thesis Proposal Defense

a. Time

The time and place of your oral defense, including the Thesis Proposal Brief, must be communicated in writing to the entire faculty at least one week in advance. Make sure that all your committee members are available before you schedule your defense. When a final date and time has been agreed upon, schedule your defense through the Graduate Program Coordinator. Because of other faculty commitments, avoid scheduling your oral defense before the second week of classes or during the last week of classes.

b. Examining Committee

The oral defense is conducted by your Thesis Committee, however, other faculty members are permitted to attend and 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 your thesis topic. The purpose of the defense is to determine whether the thesis topic is of the appropriate scope for an M.S. degree and whether you are sufficiently prepared to pursue the research. The oral presentation should be no more than 30 minutes in length, unless approved by the Thesis Committee in advance.

d. Result

The original signed copy of the Thesis Proposal is given to the Graduate Program Coordinator and is placed in your file. A student failing the exam the first time 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 your residency at Rice, and before November 1 (for a December conferral), or February 1 for May Commencement, of the academic year in which you plan to graduate. You 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. Once filed, refer to the time line for defense of theses, which is located in the General Announcements. When your Petition for Candidacy has been approved by the Office of Research and Graduate Studies, they will send you a copy of "Thesis Procedures and Forms" which you will follow in preparing your thesis. See the Graduate Program Coordinator when ready for filing.

4. Time to Defense

You must defend your thesis before the end of the eighth semester of your residency at Rice.

5. Thesis

a. Thesis Committee

The selection and makeup of the Thesis Committee has been previously described in section A. The same committee that was involved in your 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 your committee, a replacement to the committee will be permitted, after approval from your 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/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 they have submitted a manuscript will be required. After your oral defense and final acceptance of the thesis by your 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

You must submit the thesis to each Thesis Committee member at least one week before the oral defense, although it is recommended that you submit it earlier in consultation with your committee to provide adequate time for evaluation. At this time you must also place an additional copy in the Department Chair's office.

d. Defense

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

e. Acceptance

Acceptance of your thesis requires unanimous approval of your Thesis Committee, and each member of the committee must sign the front sheet (Approval of Candidacy form) of your thesis before it is turned in to the Office of Research and Graduate Studies. A copy of the signed Approval of Candidacy form is sent to the Office of Research and Graduate Studies. The original is placed in your file until you retrieve it to put with your written thesis.

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 containing all text and figures on CD (or equivalent); two copies will be provided. This departmental copy should be provided to the Graduate Program Coordinator. 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 will be provided.

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

All Ph.D. students will prepare two distinct research projects and defend them orally; one of these will typically represent the core of the thesis research project. The second project will be

developed independently from the Thesis Advisor. The student may ask questions of any faculty member, so 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 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. The second project should be designed in such a way that it can likely 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 your Ph.D. Exam Committee, and unanimously approved, before the oral exam on each can take be conducted. You must submit the projects to your 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 your 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. It will contain a summary of the projects and the signatures of the members of your 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, a lower limit can be set by your examining committee. The project descriptions may be in a proposal or research paper format; the choice of proposal or paper style is left to the student, and you 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 your Ph.D. Qualifying Exam Committee, and unanimously approved, before you can schedule the oral examination. The Qualifying Exam Brief is then distributed to the faculty, and the complete projects must be available in the Department Chair's office for faculty inspection at least one week before the oral exam.

2. Ph.D. Qualifying Oral Exam

a. Time

The time and place of your exam, including the Qualifying Exam Brief, must be communicated in writing to the entire faculty at least one week in advance. Make sure that all your qualifying exam committee members are available before you schedule your exam. When a final day and time has been

agreed upon, schedule your exam through the Graduate Program Coordinator. Because of other faculty commitments, avoid scheduling your exam before the second week of classes or during the last week of classes.

b. Examination Committee

The oral exam is conducted by your Ph.D. Qualifying Exam Committee, however, other faculty members are permitted to attend and 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 you are 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 by the examining committee in advance.

d. Result

The original signed copies of the projects are given to the Graduate Program Coordinator and are placed in your file. The result of a student failing the exam is left to the discretion of the Qualifying Exam Committee. Some possible options are to permit a retake (once), or recommend removal of the student from the graduate program, or, in the case of students without a Master's Degree, that the student complete an M.S. Degree. The latter option allows a student to seek a Ph.D. Degree in the department after completing an 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 prelim 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 your residency at Rice, and before November 1 (for a December conferral), or February 1 for May Commencement, of the academic year in which you plan to graduate. You 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. Once filed, refer to the timeline for defense of theses, which is located in the General Announcements. When your Petition for Candidacy has been approved by the Office of Research and Graduate Studies, they will send you a copy of "Thesis Procedures and Forms" which you must follow in preparing your thesis. See the Graduate Program Coordinator when ready for filing.

5. Time to Defense

You must defend your thesis before the end of the sixteenth semester of your residence at Rice.

6. Thesis

a. Thesis Committee

Although Rice University requires that a Ph.D. Thesis Committee have only 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 your 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 your committee, a replacement to the committee will be permitted, after approval from your 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/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 your oral defense and final acceptance of the thesis by your 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

You must submit the thesis to each Thesis Committee member at least one week before the oral defense, although it is recommended that you submit it earlier in consultation with your committee to provide adequate time for evaluation. At this time you must also place an additional copy in the Department Chair's Office.

d. Defense

The thesis defense typically lasts about 2-3 hours. Schedule a room and time for your defense through the Graduate Program Coordinator. You may defend your thesis any time during the regular academic year, except during official examination periods. However, be aware of the deadline for

submission of your thesis to the Office of Research and Graduate Studies to ensure you will be eligible to graduate as planned. You must submit your thesis to the Office of Research and Graduate Studies no later than six months from the date of examination.

e. Acceptance

Acceptance of your thesis requires unanimous approval of your Thesis Committee, and each member of the committee must sign the front sheet (Approval of Candidacy form) of your thesis before it is turned in to the Office of Research and Graduate Studies. A copy of the signed Approval of Candidacy form is sent to the Office of Research and Graduate Studies. The original is placed in your file until you retrieve it to put with your written thesis.

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 containing all text and figures on CD (or equivalent); two copies will be provided. This departmental copy should be provided to the Graduate Program Coordinator. 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 will be provided.

APPENDIX I: 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	

APPENDIX II: 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	