

**GUIDE TO
GRADUATE STUDY**

**DEPARTMENT OF
EARTH SCIENCES**



University of Oregon

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1.0 PURPOSE OF THIS GUIDE

This guide provides a description of policies and procedures established by the faculty of the Department of Earth Sciences, and includes some policies and requirements of the Graduate School. The guide is available to aid students in familiarizing themselves with the regulations of the department and the university but it is not considered a contract between the Department of Earth Sciences and the student, **and it does not relieve the student of the responsibility of consulting the Graduate School regulations in the University of Oregon Catalog.** In general, students previously enrolled under rules that differ from any of the following have the option of continuing to operate under the previous rules if they prefer.

2.0 ADMISSION TO THE GRADUATE PROGRAM

The Graduate Admissions and Awards committee is responsible for maintaining high admission standards for entering graduate students. Admission to the graduate program is competitive and is based on academic records, letters of recommendation, and scores on the Graduate Record Examination General Test. International students whose native language is not English must also submit scores on the Test of English as a Foreign Language (TOEFL) (minimum score of 575 on the paper-based test and 88 on the internet-based test) and Test of Spoken English (TSE) if they wish to be considered for an appointment as a Graduate Employee.

Graduate students enter the department in either the M.S. or Ph.D. program. **Students initially admitted to the Master's program must reapply to the UO Graduate School if they want to change to the Ph.D. program.** Such requests should be supported by at least two letters of recommendation from University of Oregon faculty members, one of whom must be the proposed Ph.D. dissertation advisor. A student admitted to the Ph.D. program may also request to change to the Master's program. A decision will be made by the end of the Spring quarter of the year of the student's request, after consultation with the student's advisor, guidance committee, Admissions and Awards Committee, Department Head, and with input from the full faculty. Students who gain approval to change into the Ph.D. program from the Master's program are expected to

progress towards their comprehensive exams according to the timeline described in section 4.3, so that their exams will take place during the following winter quarter.

If a MS student wishes to complete their MS degree and then enter the PhD program, they must apply for Admission during the regular application and admissions cycle. Such applications should be accompanied by a new statement of purpose and two letters of recommendation from UO faculty members, one of whom must be the proposed dissertation advisor. The Graduate Coordinator will collect all documents from the student's personnel file for the committee's review. A decision will be made by the end of the Spring quarter of the year of the student's request, after consultation with the student's advisor, guidance committee, Admissions and Awards Committee, Department Head, and with input from the full faculty.

3.0 MASTER'S DEGREE

The master's degree provides students with experience and training in all aspects of scientific research, including the formulation and testing of hypotheses, acquiring skills needed for their chosen project, collection and interpretation of original data, and writing up the results in thesis or publication format. The student's advisor typically plays a lead role in defining the scale, scope, and objectives of a Master's thesis.

Typically, earth science students complete a M.S. degree, but a M.A. may be awarded if the student desires and completes the University language requirement. The full requirements for Master's degrees can be found online at the Graduate School website:

<http://gradschool.uoregon.edu/node/216>.

3.1 Coursework

24 graded classroom credits (500 or 600 level classes)	<i>Only graded courses apply.</i> Up to 15 credits may be taken in courses offered outside the department (with advisor approval)
9 credits at 600-699 level	May be taken graded or pass/no pass, but only graded courses can apply toward the 24 credits above.
9 thesis credits	ERTH 503. At least 3 thesis credits must be taken in the final term.
remaining credits	Can include research, readings, and seminars. Students are expected to register for and attend the department seminar (507) and graduate student seminar (607) each term.

45 credits total (at least 30 credit hours in residence, in the major)

A master's degree candidate must earn a minimum of 45 credits at the graduate level and complete a thesis approved by their thesis committee. Of the 45 credits, 24 credits must be earned in graded classroom courses. Nine credits must be in courses numbered 600-699,

which may be graded or pass/no pass. Students are urged to take lecture-based courses when offered if they are appropriate for their sub-discipline, but 600 level credits may also be earned through non-lecture courses such as 601 Research, 605 Reading, 607 Seminar. Masters students may NOT register for 603, which is reserved for doctoral students. Up to 15 credits may, *with the approval of the graduate advisor*, be taken in related sciences. As part of the total credits for the degree, nine credits of Thesis (ERTH 503) are required. The remaining credits may include independent work, such as reading and research, and/or the departmental seminar. The seminar, in which outside speakers, faculty, or graduate students speak on some topic of general interest, is held once weekly in the afternoon during fall, winter, and spring terms. *All students are required to register for one hour of seminar (ERTH 507) credit each term. Students are also expected to take EARTH 607—New Graduate Seminar series during their first year, and EARTH 607—Graduate Seminar when it is offered.* Students may transfer up to 6 hours of graduate work from another non Oregon University System institution. A form must be filed with the Graduate School requesting transfer of these credits.

A minimum of 30 credit hours, over a minimum of two terms, must be taken on the Eugene campus. Graduate students at the University may, with advisor and departmental approval, take graduate courses at institutions in the Oregon University System participating in the Joint Campus program. A student registers for these courses with the University of Oregon registrar, who records each grade on the academic record under Joint-Campus Course (JC 610). The student must be a matriculated UO graduate student in an advanced degree program and registered for UO courses the same term the JC 610 course is taken. A maximum of 15 JC credits may be applied toward a graduate degree program. Forms are available at the Office of the Registrar.

Graduate students are expected to maintain a GPA of 3.0 or better in their course work. If a student's GPA falls below 3.0 or they fail to show satisfactory progress toward completion of their degree (see section 5.2.4), they are subject to disqualification. A grade lower than a C- or a N (no-pass) will not be counted toward fulfilling the 24 graded credit requirement for Master's degree students. Students must score at least a B- to earn a P (pass) in a non-graded course. Graduate School policy requires that students must convert a graduate

course grade of Incomplete ("I") into a passing grade within one calendar year of the term the course was taken. After one year, the student must petition to the Graduate School for the removal of an incomplete. Instructors must submit grade changes for "I" credits.

The Graduate School requires that students must complete all work for the master's degree within 7 years, including transferred credit, thesis, and all examinations. However, the department expects all work to be complete within 2-3 years, and therefore limits the total GE funding to this duration, assuming satisfactory progress. Graduate students must register continuously, except for summers, until all of the program requirements have been completed, unless on-leave status (maximum time of three academic terms) has been approved. All masters students must register for at least three thesis credits during the term in which the degree is to be received.

3.2 Guidance Committee

Students are expected to meet with either their guidance or thesis committee at least once per year. A guidance committee of three faculty members will be assigned to each incoming student at the start of their first year to: (1) provide initial academic advising on coursework, requirements, and thesis topics; and (2) document student progress until that student assembles a thesis committee. At least one member of the guidance committee will be someone in the student's research field, and the committee coordinator shall be someone who is unlikely to serve as thesis advisor for the student. It is mandatory that faculty committee members attend guidance committee meetings or arrange for a substitute faculty member with the same general academic specialty.

The guidance committee meets with the student at least once shortly after the student arrives on campus and before they register for fall courses. At the first meeting, the committee will review the student's academic record, try to identify (and point out) gaps in the student's preparation or potential difficulties with University requirements and regulations, and plan jointly with the student for their first term in the program. If the student appears to be well prepared and reasonably knowledgeable about their aims, further meetings of the student with

the guidance committee may be scheduled infrequently. In any case, at least one Guidance or Thesis committee meeting must be held each academic year to provide advice to the student and to examine their progress.

After initial advising, the student will typically meet with their guidance or thesis committee at least once during each spring term, and more often if necessary. After each committee meeting, the coordinator will write up the minutes, circulate to the student and the committee, and send a copy to the Graduate Coordinator with a request to have a copy put in the student's file. Once a year, the coordinator of the guidance committee presents a report to the faculty of the department, outlining the student's progress.

M.S. students are expected to choose a thesis topic and form their thesis committee by the end of their fourth term in residence. *Once this has been accomplished, the thesis committee will take over all advising functions for the student, and the student's guidance committee ceases to exist.*

3.3 Thesis

The primary product in fulfillment of the Master's degree is a written thesis that summarizes the scientific research performed by the student. The thesis should represent a unique and substantial scientific contribution of sufficient quality that portions warrant submission to an academic journal for broad dissemination to the scientific community. The written document should be organized in the form of a research paper, with an introduction (including motivation and background), description of the data and methods, discussion, conclusions, and bibliography. Figures and tables should be fully labeled with explanatory captions. It is critical that the student understands the expectations of their advisor and committee, who must evaluate and approve the thesis. Therefore, good communication between all parties is imperative.

Outline of Thesis Procedures

- (1) Decide on your thesis project and write a thesis proposal.
- (2) Form your thesis committee (requires Director of Graduate Study's approval) by end of the 4th term in residence.
- (3) Submit the thesis proposal to your committee for approval by the end of the fourth term (typically fall of second year). Submit one copy of the approved proposal to the Graduate Coordinator for your file.
- (4) Perform your thesis research while taking thesis credits (ERTH 503) and write the complete thesis draft.
- (5) In your final term, apply for M.S. degree with the Graduate School by Friday of the second week.
- (6) Submit the thesis draft to your committee at least two weeks before the thesis presentation.
- (7) Give the public thesis presentation.
- (8) Once the thesis is successfully presented and approved by the thesis committee, turn in an electronic version and submission approval forms to the Graduate School and pay fees.

3.3.1 Committee

Students should choose a thesis committee by the end of their fourth term of residence. A thesis committee consists of three faculty members, at least two of whom are from the Department of Earth Sciences. *The makeup of the thesis committee must be approved by the Director of Graduate Studies (DGS).* If two of the members are spouses or domestic partners, an additional committee member could be added, with approval of the DGS. Two committee members are assigned special roles:

- **Chair:** The faculty member in the department who serves as the student's primary research **advisor**.
- **Coordinator:** A faculty member in the department who facilitates committee meetings and drafts a report of the student's

progress. The student suggests a coordinator and this role is approved by the DGS.

The responsibility of this committee is to: (1) evaluate and approve the student's thesis proposal, (2) provide academic advice and monitor student progress toward completion of the degree, (3) provide feedback and advice to the student concerning the student's research project, (4) read the thesis draft, (5) examine the student at their thesis presentation, and (6) read and approve the final thesis. *The thesis committee must meet with the student at least once each year, normally during spring term. In some cases, committee meetings may be necessary more than once per year.* It is the responsibility of the student (with reminders from the department Graduate Coordinator) to ensure that these meetings are held. Students should come to the meeting prepared to update the committee on research progress. Typically, this takes the form of a concise (15-30 minute) student-led presentation with adequate time for clarifying questions and suggestions by the assembled committee members. After each meeting, the coordinator will write up the minutes, circulate to the student and the committee, and send a copy to the Graduate Coordinator with a request to have a copy put in the student's file.

3.3.2 Proposal

The student must submit a thesis proposal to their thesis committee for approval as soon as possible after the committee is formed and before the end of the 4th term. The content, format, and length of the proposal are determined by the committee. No formal credit or recognition for thesis work will be given until the thesis proposal has been circulated to each member of the thesis committee for review. After the thesis proposal has been distributed, the committee will meet to: (1) approve or request revision of the research proposal, (2) ensure that the student has obtained, or is in the process of obtaining, the academic back-ground needed to complete the work, and (3) help the student make plans for completing the project. The student must submit a copy of the approved proposal to the Graduate Coordinator for inclusion in their file.

3.3.3 Thesis Credits

Registration for a minimum of 9 credit hours of Thesis (ERTH 503) is required by the Graduate School. A student may earn as many as 15 hours of thesis credit, but only 9 will apply towards the 45 hours required for the degree. The Graduate School requires that students register for at least 3 credits during their final term: details can be found on the Graduate School website: gradschool.uoregon.edu.

3.3.4 Degree Application

By the 2nd Friday in the term in which the student plans to graduate, they must apply for the degree online at:

<https://gradweb.uoregon.edu/main/exitquestionnaire/selectTerm.asp>

Check the deadline schedule online at:

<https://gradschool.uoregon.edu/academics/completing-degree/masters-degree-deadlines>

3.3.5 Final Timetable and Presentation

A complete draft of the thesis (approved by the advisor) must be circulated to thesis committee members at least 2 weeks before the thesis presentation. During the thesis presentation, the M.S. student will present the major ideas, findings, and results of their research, and be subject to questioning by members of their committee and the general public.

3.3.6 Final Product

When the student has successfully presented their thesis and incorporated feedback from their thesis advisor and committee, they are required to upload a PDF copy of their thesis via the Graduate School's submission process. Submission instructions and forms can be found at the Graduate School web site under Thesis and Dissertation (see: <http://gradschool.uoregon.edu/node/151>). *The uploaded thesis will not be accepted unless it meets Graduate School standards of form and style.* The student should refer to the Graduate School's *Style and Policy Manual* (See link on the above page) that defines these standards. The Graduate School allows published papers

to be submitted in lieu of the standard thesis (and this format is preferred by many faculty advisors); however, these papers may need to be reformatted into the standard Graduate School style. To avoid potential problems, students are cautioned to check with the Graduate School on such formatting requirements.

All University of Oregon dissertations are submitted to ProQuest and then delivered to the University of Oregon Libraries. ProQuest is a dissertation/thesis service responsible for keeping a scholarly record of doctoral and master's recipients worldwide.

ProQuest is recognized as the publisher, cataloger, and marketer of theses and dissertations. ProQuest also offers copyrighting services. For more information, visit www.il.proquest.com.

In addition to the ProQuest copy, copies of your thesis and related files are forwarded to the UO Libraries. The UO Libraries archives the thesis with any related files and makes them available through the university's institutional repository, Scholars' Bank. For more information, visit <http://scholarsbank.uoregon.edu>.

3.4 Oral Presentations

In order to give graduate students more experience speaking in front of large, formal audiences, *every graduate student is required to give a scientific presentation at least once every two years during their residency in the department*. Oral or poster presentations at scientific meetings (e.g., AGU, GSA, AAPG, etc.) are encouraged as a means of meeting this requirement. If such a talk or poster is given, documentation (e.g., the published abstract) must be provided to the department Graduate Coordinator. Alternatively, student seminars may be presented during a departmental seminar time slot if space is available in the schedule. Otherwise, students may petition to present their seminar at an informal time. Such a presentation must be scheduled and advertised a minimum of one week in advance and will meet the requirement only if at least three faculty are able to attend. Lunchtime slots, when informal seminar series are often already scheduled, may be appropriate. Students who are judged by the faculty to have presented an unsatisfactory seminar will be advised how the

seminar can be improved and will be required to give another (satisfactory) seminar soon after.

4.0 Ph.D. DEGREE

The Ph.D. program provides students with experience and training in all aspects of scientific research, including the formulation and testing of hypotheses, acquiring skills needed for their chosen project, collection and interpretation of original data, and writing up the results as a set of published papers. The expectation for a Ph.D. student extends beyond that of a Masters student in the individual's ability to design and carry out original, independent research on a focused topic. At the Ph.D. level, the advisor provides guidance and input, but the student is expected to take the lead in designing, executing, and writing up the results of the work. This requires a reliable work ethic, intellectual and emotional maturity, and commitment to ("ownership of") the chosen research project. In addition, a successful advisor/advisee relationship requires initial and ongoing mutual consent and open communication; students are encouraged to solicit advice and support from other faculty as well (e.g. committee members, graduate advisor, department head).

4.1 Coursework

15 graded credits (500 or 600 level)	Must be taken for grade.
18 dissertation credits	ERTH 603, with a minimum of 3 credits must be taken in the last term.
48 additional credits	3+ years of full-time study (at least 9 credits/term may include research or reading credits). Students are expected to register for and attend the department seminar (507) and graduate student seminar (607) each term.
<hr/>	
81 credits total	

Ph.D. students are required to take 15 graded classroom credits at the graduate-level (500-600 level). These courses must be approved by the guidance/dissertation committee chair to ensure that they are geared toward achieving balance between increasing the breadth of

their academic experience and maintaining focus on areas of relevance to their research. They must also take 18 hours of dissertation credits (ERTH 603).

The department does not set any further specific coursework requirements for Ph.D. students, within the 81 total minimum credits required by the UO Graduate School. However, students are expected to acquire the graduate earth science background necessary to successfully complete the comprehensive examination and effectively carry out proposed dissertation research. If the student does not have a strong background in relevant areas of earth science, substantial course-work may be recommended. Undergraduate courses may, with the guidance committee's recommendation, be used to fill deficiencies in the student's background, but the majority of the work should be in graduate level courses.

At least 3 years of full-time work beyond the bachelor's degree are required, of which at least one academic year (3 consecutive terms of full time study, with a minimum of 9 credit hours per term) must be spent in residence on the Eugene campus. Courses in Research (ERTH 601), Reading and Conference (ERTH 605), and other individualized study options may be a part of the 9 credits, but the majority of the year of residency is expected to consist of regular graduate course work. A doctoral candidate may fulfill the residency requirement during the period that he or she works toward a master's degree on the University campus as long as the doctoral program immediately follows the master's degree program, the master's degree is officially awarded, and both the master's degree and doctoral degree are in the same major.

Residency Requirement: During their first year of study, Ph.D. students must complete 27 credits at the University of Oregon while classified as a doctoral student. These should be a majority of lecture-based coursework. Research (ERTH 601), Reading (ERTH 605), and other individualized study options may be part of the 9 credits, but should not be the majority. Residency must be completed before a student can advance to candidacy.

Graduate students at the UO may, with advisor and departmental approval, take graduate courses at institutions in the Oregon University System participating in the Joint Campus program. A student registers for these courses with the University of Oregon registrar, who records each grade on the academic record under Joint-Campus Course (JC 610). The student must be a matriculated UO graduate student in an advanced degree program and registered for UO courses the same term the JC 610 course is taken. A maximum of 15 JC credits may be applied toward a graduate degree program. Joint campus coursework cannot be used to meet the doctoral year of residency requirement. Forms are available in the Office of the Registrar.

Students are expected to maintain a GPA of 3.0 or better in their course work. If their GPA falls below 3.0 or they fail to show satisfactory progress toward completion of their degree (see section X), they are subject to disqualification. A grade lower than a C- or a N (no-pass) will not be counted toward fulfilling the credit requirement. Students must score at least a B- to earn a P (pass) in a non-graded course. Graduate School policy requires that students must convert a graduate course grade of Incomplete ("I") into a passing grade within one calendar year of the term the course was taken. After one year, the student must petition to the Graduate School for the removal of an incomplete. The petition is not necessary for Incompletes in Research. Instructors must submit grade changes for Research "I" credits.

The one year of residency required on the Eugene campus, the passing of the coursework, comprehensive examinations, and the completion of the dissertation must all be accomplished within a 7-year period, as required by the Graduate School. Graduate students must attend the University continuously, except for summers, until all the program requirements have been completed, unless on-leave status has been approved (maximum time six academic terms). In the term in which the degree is received, all graduate students must register for at least 3 credits of dissertation (ERTH 603).

4.2 Guidance Committee

A guidance committee of three faculty members will be assigned to each incoming Ph.D. student to (1) provide initial academic advising on coursework, requirements, and research topics and (2) document student progress until that student passes their comprehensive exams and chooses a dissertation committee. At least one member of the guidance committee will be someone in the student's research field, and the committee coordinator shall be someone who is unlikely to serve as dissertation advisor for the student. It is mandatory that faculty committee members attend guidance committee meetings or arrange for a substitute faculty member with the same general academic specialty.

The guidance committee is to meet with the student at least once shortly after the student arrives on campus and before they register. At this first meeting, the committee will review the student's academic record, try to identify gaps in the student's preparation or potential difficulties with departmental requirements and regulations, and plan jointly with the student their first term's work. If the student appears to be well prepared and reasonably knowledgeable about their aims, further meetings of the student with the guidance committee may be scheduled infrequently. In any case, *at least one guidance or dissertation committee meeting must be held each academic year* to provide advice to the student and to examine their progress. Usually, this meeting will be held near the end of spring term. After each meeting, the coordinator will write up the minutes, circulate to the student and the committee, and send a copy to the Graduate Coordinator with a request to have a copy put in the student's file.

4.3 Comprehensive Exam

The purpose of this examination is to evaluate a Ph.D. student's academic background and preparation in their field of research. The exam also reveals whether the student has the scientific, intellectual, and professional maturity required to advance the research with a sustained effort over many years. *Ph.D. students should be prepared*

to take this exam early in the winter term of their second year in the program (their fifth term in-residence). The exam consists of:

- two written proposals,
- a written exam focusing on background material related to the research,
- an oral defense of the proposed research.

The comprehensive exam tests the student's ability to:

- Identify, define, and clearly state a scientific problem.
- Understand and summarize literature relevant to the problem.
- Understand the underlying processes and fundamental concepts in their field.
- Concisely state the significance of the problem, with reference to the literature and basic principles.
- Become skilled in the techniques and methods needed to solve the problem.
- Explain how the data to be collected will be used to test competing hypotheses.
- Execute the research as exemplified by the presentation of preliminary results.

Students should work closely with their advisor prior to the exam to ensure sufficient development of the proposals and preparation for the exam. Students are strongly encouraged to seek feedback from faculty and senior graduate students about the written and oral components of the exam. It is critical that the student understands the expectations of their advisor and committee who evaluate their performance. Therefore, good communication between all parties is imperative. Once the comprehensive exam is passed, the student advances to Ph.D. candidacy, resulting in permission to continue in the Ph.D. program.

Outline of Exam Procedures

- (1) Propose your oral examination committee to the Director of Graduate Studies (DGS) by early fall of your second year.
- (2) Consult your committee to decide on two sufficiently different topics for your research project proposals, accomplished through summaries submitted to your committee and the Graduate Coordinator by Nov 7.
- (3) Write two research project proposals and distribute them to your examination committee and the Graduate Coordinator by the end of the 2nd week of Winter term.
- (4) By Friday of week 4 of Winter term, your committee coordinator will give you a summarized critical written review of your project proposals.
- (5) You have one week to write a concise response to these reviews for your committee (by Friday of week 5 of Winter term).
- (6) During weeks 6-8 of Winter term, take your oral exam and defend your two research project proposals.
- (7) Take a break! Regardless of the outcome of your exams, you deserve it!!
- (8) If you pass unconditionally, you are advanced to candidacy and can continue your studies. If you do not pass, or if you pass with conditions, you'll want to get some advice from your advisor and committee on how to proceed next.

4.3.1 Oral Examination Committee: The student must choose an oral examination committee no later than October 15 (or the next week day if on weekend) in the fall term of the student's second year (the fourth term in residence). Consultation with the prospective research advisor, the Department Head, and/or graduate advisor about the choice of committee members is recommended. This committee must then be approved by the Director of Graduate Studies (DGS).

The committee has four members, one of whom may be from another department. If two of the members are spouses or domestic partners, an additional committee member could be added, with approval of the DGS. At least two members of the committee should be faculty whose research interests are outside the student's primary research field. Two of the committee members are assigned special roles:

- **Chair:** The faculty member in the department who serves as the student's primary research **advisor**.
- **Coordinator:** A faculty member who oversees the logistics of the exam and drafts a report on the outcome. The student suggests a coordinator and this role is approved by the DGS.

The role of the committee is to evaluate the student's performance on the written and oral components of the exam and to determine whether or not their preparation is sufficient to warrant advancement to Ph.D. candidacy. Students must meet at least once with each member of their oral exam committee to: 1) discuss their ideas for the two proposals; 2) receive guidance about whether proposals are sufficiently different; and 3) discuss individual faculty member's expectations on the written and oral exam.

4.3.2 Research Proposals: The student must write two research project proposals in two different areas. The purpose of developing two distinct proposals is to 1) develop breadth in the student's research experience and encourage interdisciplinary research, 2) provide a second project to evaluate the student's abilities, and 3) provide a backup project if the primary project does not come to fruition for the dissertation. The student should consult their committee as to whether their two projects satisfy this requirement. However, distinct projects are often advised by different faculty, use different data or methods (i.e., including different modeling and/or analytic approaches), and address separate scientific questions.

Each proposal should explain the scientific problem to be addressed, the tools to be used, hypotheses to be tested, the background and significance of the research, and highlight any preliminary results (data collected, exploratory models, etc.). It is common that one of

the proposals is more developed than the other, with the more developed proposal representing the primary work envisioned for the dissertation. Often, one or both of the proposals becomes incorporated into the student's dissertation proposal, but neither project need be completed after the comprehensive exams or become the dissertation topic if the student and dissertation committee decide otherwise. The objective of the proposals for the comprehensive exam is for the student to show that they can motivate and design a scientific study, and demonstrate breadth of knowledge.

One-page summaries stating the key elements of each proposal should be submitted to all committee members and the Graduate Coordinator no later than November 7 (or the next week day if on a weekend) of the fall term preceding the exam. The oral examination committee will decide, by November 20, whether or not they are appropriate and sufficiently different from each other. If the committee concludes that a summary is unacceptable, the student must meet with the committee to discuss the reasons for this decision and submit a modified or new summary that is acceptable within one week of this meeting. Committee decisions on the new summary are required within a week of the date it was submitted to the Graduate Coordinator.

Each full proposal should be a concise description of the proposed work, written in a scientific style with figures, captions, and references. The text of each proposal (abstract and main body) should be no more than 7 pages. The entire proposal, including references, figures (and captions), and tables should be no more than 15 pages (12-point font, Times New Roman, 1 inch margins, double-spaced, with line numbers). Examples of old proposals are available from the graduate student representative. Copies of the research proposals must be submitted to all committee members and the Graduate Coordinator by the end of the second week in the winter term. The student is advised to consult with their committee members about the proposals well in advance of this time. It is customary for students to work through several drafts of the proposal with their advisor before they are distributed to the broader committee. This process of drafting the proposals is key to more fully developing the detailed aspects of the proposed work. The proposals will be judged on the quality of writing, the imagination and innovation reflected in the

design of the proposals, rigor of hypothesis tests, and the student's ability to synthesize relevant information.

4.3.3 Written Component: The comprehensive exam committee will prepare critical reviews of the comprehensive exam proposals. These will be similar in nature to reviews of journal manuscripts or grant (e.g., NSF) proposals. The committee coordinator will write a summary of the reviewer comments and deliver it together with the reviews themselves to the student and graduate coordinator, in writing (typically email), by 4 pm on the Friday of Week 4. The student will have one week to assemble clear, concise responses as directed by their committee coordinator and return them to the committee coordinator and the graduate coordinator by 4 pm on the Friday of Week 5. Although strict length guidelines are not appropriate, succinct writing is both valued and encouraged. The goal of this written component of the comprehensive exam is to enable students to demonstrate their knowledge of advanced topics, argue convincingly for the relevance and feasibility of their research plans, and better prepare for the oral exam.

4.3.4 Oral Exam: Students are strongly encouraged to schedule their oral examination during the 6th, 7th, or 8th week of Winter term, faculty schedules permitting. The orals will be scheduled for 3 hours and focus on questions related to the student's two research proposals, although general questioning into the student's academic background should be expected as well. The oral exam is private; only the oral examination committee and the student are present. The student will be given about 15 minutes to present each proposal using visual aids (typically a PowerPoint presentation). Usually the student presents the first proposal and answers questions from the committee then presents the second proposal, followed by a second round of questions. After the oral examination, the committee will evaluate the student's overall performance on both the written and oral examinations as well as the student's performance in class work and progress on research. On the basis of total performance, the oral examination committee will decide if the student should be given a pass, fail, or conditional pass. A pass means that the student will be advanced to Ph.D. candidacy. If a conditional pass is granted, the committee will require some additional effort, often involving appropriate course work or rewriting of a

proposal, to remedy the perceived deficiency in the student's performance. If a student is judged to fail the examination, the committee will decide if the student is to be terminated from the program or be given an opportunity to retake the examination.

4.4 Dissertation

The primary product in fulfillment of the Ph.D. degree is a dissertation that summarizes the scientific research performed by the student. The dissertation should represent a unique scientific contribution with the expectation that much of the work will be published as a set of research papers. The volume of work that constitutes a dissertation is highly variable by discipline. However, the overall body of work is valued by its scientific impact. It is critical that the student understands the expectations of their advisor and committee, who evaluate and approve the work. Therefore, good communication between all parties is imperative.

Outline of Dissertation Procedures

- (1) Once you have advanced to candidacy, write up your dissertation project proposal within one year.
- (2) Form a dissertation committee within nine months (requires approval of the Director of Graduate Studies and the Dean of the Graduate School). The Graduate School must approve the committee at least 6 months before the defense.
- (3) Submit your dissertation proposal to the dissertation committee for approval.
- (4) Near the end of your research, take dissertation credits (ERTH 603) while completing the dissertation draft.
- (5) Apply for the degree with the Graduate School by the Friday of the second week in your final term.
- (6) Submit the dissertation draft to your committee and allow them at least two weeks to read it.
- (7) Once approval is obtained from your committee, schedule the oral defense to be held at least three weeks later in GradWeb. The approved oral defense application needs to be in 3 weeks before the defense. We recommend students start the process in GradWeb at least 4-5 weeks in advance of the defense to ensure an approved application is in by the 3 week deadline.
- (8) Hold the defense. It is the student's responsibility to be aware of defense deadlines. Please refer to the Graduate School calendar for details.
- (9) Once the dissertation is successfully defended, obtain unanimous approval of the final form of the dissertation from your committee.
- (10) Submit an electronic version of your dissertation to the Graduate School and pay fees.

4.4.1 Dissertation Committee: A four-person dissertation committee is chosen by the student after they are advanced to Ph.D. candidacy. The committee must include at least three faculty members of the Department of Earth Sciences, and one additional member of the University of Oregon science faculty outside of the department. The Graduate School requires an outside member in order to ensure that all rules and standard practices governing committee procedures are followed. The four core committee members must hold the rank of assistant, associate, or full professor. Two of the committee members are assigned special roles:

- **Chair:** The faculty member in the department who serves as the student's primary research **advisor**.
- **Coordinator:** A faculty member in the department who facilitates committee meetings and drafts a report of the student's progress. The student suggests a coordinator and this role is approved by the Director of Graduate Studies.

If two of the members are spouses or domestic partners, an additional committee member could be added, with approval of the DGS. *The committee must be approved by the Director of Graduate Studies and the Dean of the Graduate School.* Membership of the committee should be proposed to the Director of Graduate Studies within nine months of advancement to candidacy and approved by the Graduate School no later than six months before the expected date of the dissertation defense. Once the committee has been approved by the Graduate School, changes must be petitioned in writing, so the student should carefully consider their choice of advisor(s) and committee members.

The responsibilities of the dissertation committee are to: (1) evaluate and approve the student's dissertation proposal, (2) provide academic advice and monitor student progress toward completion of the degree, (3) provide feedback and advice to the student concerning the student's research project, (4) read the dissertation draft, (5) examine the student at their dissertation defense, and (6) read and approve the final dissertation.

Ph.D. students are required to meet with their dissertation committee at least once per year (in spring term), and more often than that if necessary (additional, informal meetings to solicit advice from individual committee members are encouraged). It is the responsibility of the student (with reminders from the Graduate Coordinator) to ensure that the required committee meetings are held. At the annual committee meeting, the student will give a well-organized, semi-formal presentation of their project, research objectives, data, and emerging results – using slides or hard-copy graphics – followed by an open-ended informal discussion about the science and the student's progress. This format allows committee members to provide substantive input to the student's research, and helps to ensure that the student makes good progress and stays on track. After each meeting, the coordinator will write up the minutes, circulate them to the student and the committee, and send a copy to the Graduate Coordinator with a request that a copy be added to the student's file.

4.4.2 Dissertation Proposal: Within one year of advancement to candidacy, students are expected to furnish a copy of their dissertation proposal to each member of their dissertation committee. The proposal should be similar in form, although not necessarily in content, to the research project proposals written for the oral examination. After the dissertation proposal has been distributed to members of the committee, the committee will meet to: (1) approve or request revision of the research proposal, (2) ensure that the student has obtained, or is in the process of obtaining, the academic background needed to complete the work, and (3) help the student make plans for completing the project.

4.4.3 Dissertation Credits: After the student has advanced to Ph.D. candidacy, they may register for dissertation credit (ERTH 603). At least 18 hours of dissertation credit must be earned in order to obtain the Ph.D. The Graduate School requires the student to register during any term in which a student is using advisor or committee assistance including feedback. The student must enroll in at least 3 credits of ERTH 603 during their final term.

4.4.4 Degree Application: By the 2nd Friday in the term in which the student plans to graduate, they must apply for the degree online in GradWeb at: <https://gradweb.uoregon.edu/main/mainStudent.asp>.

The deadline schedule should be checked online at:

<https://gradschool.uoregon.edu/academics/completing-degree/doctoral-degree-deadlines>.

4.4.5 Defense: *A complete draft of the dissertation (approved by the advisor) must be circulated to dissertation committee members at least three weeks before the defense is held (the draft includes text, figures, tables, references, etc.). Scheduling your defense could well be your biggest challenge in graduate school. Frequent communication regarding schedules is advised. Committee members are allowed two weeks to read the dissertation before they are required to give approval (or disapproval) to schedule the defense. At least three weeks before the date of the public defense, an approved application for Final Oral Defense must be on file with the Graduate School. Students should apply in GradWeb at least 4-5 weeks in advance of the final oral defense to ensure an approved application is received by the 3-week deadline.* A formal public defense of the dissertation on the Eugene campus is mandatory. During this public defense, the candidate will present the major ideas, findings, and results of the dissertation research, and be subject to questions by members of the dissertation committee and the general public. The candidate's dissertation committee must attend the oral defense, and the dissertation advisor must certify to the Graduate School that the defense occurred as scheduled.

4.4.6 Final Product: Following the dissertation defense, but before the dissertation is submitted to the Graduate School, each member of the dissertation committee must confirm in writing that he or she approves or disapproves of the final version of the dissertation. Formal approval of the dissertation requires a unanimous vote. In the event that the dissertation fails to gain unanimous approval of the dissertation committee, it becomes the responsibility of the Dean of the Graduate School, after consultation with the student, the department's DGS, the Department Head, and the committee, to determine the review procedure.

When the student has successfully defended their dissertation, they are required to upload a PDF copy of their dissertation via the Graduate School's secure website. You can find the submission instructions and forms on the Graduate School's web site under Thesis and Dissertation Policies and Procedures (see <http://gradschool.uoregon.edu/node/151>). *Uploaded dissertations will not be accepted unless they meet Graduate School standards of form and style.* The student should refer to the Graduate School's *Style and Policy Manual* (See link on the above page) that defines these standards. The Graduate School allows published papers to be submitted in lieu of the standard dissertation; however, these papers may need to be reformatted into the standard Graduate School style. To avoid potential problems, students are cautioned to check with the Graduate School to ensure that the appropriate form and style requirements are met.

All University of Oregon dissertations are submitted to ProQuest and then delivered to the University of Oregon Libraries. ProQuest is a dissertation/thesis service responsible for keeping a scholarly record of doctoral and master's recipients worldwide.

ProQuest is recognized as the publisher, cataloger, and marketer of theses and dissertations. ProQuest also offers copyrighting services. For more information, visit www.proquest.com.

In addition to the ProQuest copy, copies of your dissertation and related files are forwarded to the UO Libraries. The UO Libraries archives the dissertation with any related files and makes them available through the university's institutional repository, Scholars' Bank. For more information, visit <http://scholarsbank.uoregon.edu>.

4.5 Oral Presentation Requirements

In order to give graduate students more experience speaking in front of large, formal audiences, *every graduate student is required to give a scientific presentation at least once during each 2-year period of residency in the department.* Oral or poster presentations at scientific meetings (e.g., AGU, GSA, AAPG, etc.) are encouraged as a means of meeting the requirement. If such a talk or poster is given,

documentation (e.g., the published abstract) must be provided to the department Graduate Coordinator. Alternatively, student seminars may be presented during a departmental seminar time slot if space is available in the schedule. Otherwise, students may petition to present their seminar at an informal time. Such a presentation must be scheduled and advertised a minimum of one week in advance and will meet the requirement only if at least three faculty are able to attend. Lunchtime slots, when informal seminar series are often already scheduled, may be appropriate. Students who are judged by the faculty to have presented an unsatisfactory seminar will be advised how the seminar can be improved and will be required to give another (satisfactory) seminar soon after. Additionally, each graduate student is expected to attend the weekly Graduate Seminar and give an informal talk to their peers on their research once a year (except during their first year).

5.0 EMPLOYMENT AND FUNDING

5.1 Teaching

5.1.1 The Union: Graduate student teaching and research assistants employed by the UO are known as Graduate Employees, or GEs. They are represented on campus by a union, the Graduate Teaching Fellows Federation (GTFF), which negotiates pay, insurance benefits, and rules concerning workloads, handling of grievances, etc. Membership in the GTFF is not mandatory, but all GEs pay a small percentage of their salary to the GTFF in return for representation.

5.1.2 How Awards are Made: Recipients of GE teaching appointments in the Department of Earth Sciences are selected by the Admissions and Awards Committee primarily on the basis of scholarship and academic promise. The process of selection begins during the winter quarter and continues until all positions for the upcoming academic year have been filled. Currently enrolled graduate students who do not have a GE research appointment or other fellowship lined up for the upcoming year and who wish to be considered for a teaching position must submit a formal application for support. Recipients are notified in writing as soon as a final decision is made. Persons who are not chosen for an award in the first round of selection remain candidates should vacancies occur through declination of offers or resignations, but they cannot be guaranteed a position.

5.1.3 Appointments and Workloads: Most graduate teaching fellowships awarded for the academic year carry a salary for an appointment of 0.40-0.49 FTE (40-49% of full time employment). These positions require service to the department as follows: 0.40 FTE positions require service to the department of about 150-175 hours/term; 0.49 FTE positions require no more than 215 hours of service per term (see the Graduate Duties and Responsibilities document for more detailed information). Earth Sciences uses two GE levels: (1) GE I - regularly enrolled students admitted to a master's degree program or doctoral students who have not yet advanced to candidacy, (2) GE III - regularly enrolled doctoral students who have passed their comprehensive exams and been

advanced to candidacy. Some academic year awards are for a lower FTE (0.20 FTE) and salary. These require up to 88 hours of service to the department. Both levels of award include remission of tuition and most fees, but GEs are currently required to pay a portion of the mandatory fees each term for access to personal resources (i.e., student recreation center). The appendix gives workload standards and reappointment criteria for GEs.

GEs are usually assigned to assist with one course per term. Specific teaching assignments will be made in the week prior to the start of each term. In some cases, a GE may be assigned to 2 different courses in order to meet the workload requirement for their assigned FTE (usually 0.49). Course assignments for all earth science GEs are handled by the Associate Department Head. GEs can request to be assigned to a particular course, but there is no guarantee that they will receive the exact assignment they want. GEs will be provided with desk copies of all required texts.

5.1.4 Teaching Responsibilities: Duties of GEs may include teaching lab and/or discussion sections, preparing materials for lecture and lab classes, attending class lectures, running slide projectors or other equipment during class, proctoring exams, giving an occasional lecture if the professor cannot attend class, etc. These expectations will change from class to class and instructor to instructor. It is important that GEs communicate effectively with course instructors about expectations to ensure a successful teaching collaboration. GEs with a certain level of experience may request to teach a course entirely on their own to build their teaching resume (see 5.1.7 below).

5.1.5 Teacher Training: Every new GE is strongly recommended to attend a teacher training session the week before fall term begins. These sessions are usually provided entirely or in part by the Teaching Effectiveness Program (TEP) on campus. TEP is part of the Office of the Provost and provides free support to all UO instructors, including GEs. In addition to new GE workshops, they offer a variety of services including private consultations, videotaping, class interviews, courses to support new teachers, topical workshops, technology house calls, etc. You are strongly

encouraged to look over their website, <https://tep.uoregon.edu>, for more information and to consult TEP when you need advice to improve your teaching. As a complement to TEP, the Science Literacy Program (<https://scilit.uoregon.edu/>) provides mentored teaching opportunities where graduate students can learn the theory and practice of scientific teaching and effectively communicating ideas to audiences of non-scientists.

5.1.6 Teaching Evaluations: GEs receive a written evaluation of their performance each term by the instructor for whom they taught. They are also evaluated by the students in their lab(s) at the end of the term. At any time, a GE can also arrange to give their students a mid-term analysis of teaching (MAT) with the assistance of the Teaching Effectiveness Program (TEP). See the TEP website for more information: <https://tep.uoregon.edu>.

5.1.7 Teaching Your Own Course: The department encourages doctoral students who are interested in pursuing an academic career to consider setting aside time to teach their own course at some point during their studies. Teaching experience beyond the teaching assistant level can be a very important component of a successful job application. Students are expected to take the initiative (in consultation with their advisor) by contacting the Department Head to propose a teaching opportunity for themselves within the department and to plan ahead in order to avoid potential conflict with research goals.

The opportunity to teach a full course can sometimes be extended to graduate students who (1) have earned a master's degree or equivalent OR have passed their comprehensive exams for the Ph.D., (2) have at least one year (3 classes) of experience as a GE, (3) have earned good teacher evaluations as a GE, and (4) are recommended by one or more professors for whom they were a teaching assistant. If two students are interested in team-teaching a course, they may be permitted to do so, provided that both students meet these criteria. The courses that graduate students are eligible to teach are usually limited to introductory level, non-major, and/or elective courses for majors (not core courses). These include primarily the 300-level courses such as Geology of Oregon and the Pacific Northwest, Geology of National Parks, The Fossil Record, and Earthquakes and Volcanoes. Students are also welcome to design a new course or revive an

old course, most likely to be assigned a EARTH 199 designation. In extraordinary cases, students may teach upper division (4/500) level courses in their specialty.

In order to get courses taught by graduate students into the regular class schedule, advance planning is important. *Course schedules are usually decided at least two terms in advance*, so interested students should begin talking to the Department Head and office manager as much as a year in advance of the term in which they would like to teach. Keep in mind that professors have first priority in choosing the classes they wish to teach, so there may not be a course available for a graduate student to teach during every term.

Once a class has been scheduled, adequate preparation time should be set aside to get course materials and plans together before the course begins. Professors in the department, other GEs, and/or the Teaching Effectiveness Program should all be consulted for advice if needed. The GE is encouraged to choose a faculty teaching mentor who can provide advice, guidance, and evaluation during the term.

5.1.8 Changing from teaching to research status: Students who are awarded teaching appointments are sometimes offered a research appointment by a department faculty member after the academic year has begun (see 5.2 below). In such cases, the student must receive the approval of the Associate Department Head before making the change from teaching to research status. If the Associate Department Head has reason to believe that such a change will impair the teaching function of the department, they may refuse to grant the change. In any case, a student who begins a term as a teaching associate must complete the term before resigning their teaching appointment and accepting a research appointment. From an employment perspective, both teaching associate and research associates are GEs.

5.2 Research

5.2.1 Research Appointments: Many graduate students are offered a research appointment (usually 0.20-0.49 FTE) by a department faculty member at some point during their studies. These appointments are essentially the same as GE teaching associate positions except that the

source of salary, tuition, fees and insurance benefits is the faculty member's grant, rather than the department. Workloads and responsibilities vary widely, so each student should make sure they have a clear understanding of their faculty sponsor's expectations. On a 0.49 FTE position, the student may be required to work no more than 215 hours per term on a research project other than their own.

5.2.2 Non-departmental Fellowships: Students are encouraged to apply for graduate fellowships from outside organizations to support one or more years of their graduate studies. For example, grants are made directly to graduate students by organizations such as the Geological Society of America, Clay Minerals Society, Sigma Xi, AAPG, National Science Foundation, Environmental Protection Agency, etc. (see <http://gradschool.uoregon.edu> or <http://orsa.uoregon.edu/> for ideas on additional funding sources). Of particular note, most incoming and second year graduate students in the PhD program are eligible for NSF graduate fellowships, and a three-part workshop designed to assist with such applications is held on campus at the beginning of fall quarter. Students should check with their research advisor or committee for further information about proposal procedures.

There are many positive aspects to fellowships, including formal recognition of academic achievement, release from teaching and research assistantship duties, and potentially higher pay. However, students on external fellowships (excluding some non-departmental fellowships awarded by UO) are not considered GEs, so they may have slightly different arrangements for their covered health insurance.

5.2.3 Department Grants and Awards: The department has limited funds with which to assist graduate students in their research, but certain special scholarships are awarded in the spring of each year (Baldwin, Stovall, Condon, Staples, and Weiser awards). Most awards are earmarked for students working in a particular research area (soft rock, hard rock, etc.) or at a particular stage in their studies. Before deciding on award recipients, the faculty solicit student proposals and/or research budgets for the internal awards that require them. Students are encouraged to consult with their advisors as to whether they should apply for these funds.

5.2.4 Satisfactory Academic Progress: All graduate students are expected to make satisfactory progress each term towards the completion of their degrees. Students must meet this standard to be eligible for departmental support in the form of either a teaching or research GE position. The guidance or thesis/ dissertation committee evaluates each student's progress at least once a year (typically in the spring). To be in good standing, students are expected to meet the following criteria:

- Make adequate research progress as evaluated by the committee such that the student is on track to finish their degree within a reasonable time frame (5-7 years for Ph.D.; 2-3 years for M.S.).
- For Ph.D. students, pass the comprehensive exam no later than the third year.
- Maintain a 3.0 GPA and resolve any incomplete grades within one year.
- Make a research presentation at a conference or other formal seminar at least once every 2 years.
- Attend and participate in the graduate student and departmental seminars.
- Adhere to Graduate School and departmental deadlines and policies.
- Maintain a high ethical standard with research, teaching, and scholarship (instances of plagiarism, falsification of data, misconduct, etc., will not be tolerated).

Failure to meet any of the above criteria may lead to a decision by the faculty committee that the student's academic progress is unsatisfactory. The process for evaluating whether satisfactory progress towards a graduate degree is being made requires a meeting during the Spring term involving the student and the Guidance, Thesis or Dissertation committee. In advance of the meeting, the committee will give the student instructions on the format for presentation of the student's research progress. The meeting will also include a discussion of the student's timeline to completion of their degree. After the meeting, the committee will decide whether the student is making satisfactory progress, and the committee will report to the full faculty during the final faculty meeting of the Spring term.

If it is decided that the student is not making satisfactory progress, the committee will issue a warning to the student, outline a specific set of expectations for the future, and create a plan for the student to help them regain satisfactory academic progress. In rare circumstances, the committee may rescind the offer for future GE support. Any assessment or conditions that arise from the committee meeting will be presented to the student in writing and included in the student's academic file.

In addition to satisfactory academic progress, all GEs are expected to fulfill the basic duties associated with assistance of teaching: attending assigned sections and organizational meetings, adequately preparing for class, timely completion of tasks such as grading, assisting with the proctoring of exams, etc.

6.0 ADDITIONAL INFORMATION

6.1 People You Should Know

Josh Roering: (jroering@uoregon.edu) Department Head. Josh oversees the running of the department.

Emilie Hoofft: (emilie@uoregon.edu) Associate Department Head. Emilie oversees all curriculum and teaching-related activities and fills in for Josh when he is not available. Ask Emilie about any GE and teaching-related issues.

Alan Rempel: (rempeal@uoregon.edu) Director of Graduate Studies (DGS) and Graduate Advisor. Alan is your go-to guy for questions about requirements and advice involving graduate study. Approves all committee assignments for grad students.

Marla Trox: (mtrox@uoregon.edu) Graduate Coordinator and department receptionist. She handles the paperwork concerning graduate students. If you have questions concerning your degree, she either knows the answer or knows how to find it. Also, if you need supplies, AV equipment, access to the departmental email list, conference room etc., see Marla. She also pre-authorizes open-end course registration and updates student progress reports.

Dave Stemple: (stemple@uoregon.edu) Department Accountant. Dave handles all the accounting on grants, Concur and travel, purchase orders, etc. See him about any financial matters in advance of your spending. If in doubt, ask!

Sandy Thoms: (sthoms@uoregon.edu) Department Manager. Sandy oversees the running of the Earth Sciences office and buildings. See Sandy about payroll issues or concerns, and non-departmental room scheduling.

ERTH Graduate Student Representative: A different graduate student is elected to this position each year (usually someone who has passed their comprehensive exams but is not planning to finish in the

current year). The official duties of the representative are to (1) attend all departmental faculty meetings to represent grad student interests, (2) run semi-regular grad student meetings to report on happenings at faculty meetings and any other relevant news, (3) keep an eye on the grad student funds, and (4) organize or delegate organization of a fun field trip for the department just before fall term begins. The representative may also coordinate other fun/informative grad-student-related events or projects.

Lab and Technical Staff:

Jim Palandri: (palandri@uoregon.edu) – Assists in isotope lab, experimental petrology lab, and other areas (ask him for details).

John Donovan: (donovan@uoregon.edu) – Director of the CAMCOR Microanalytical Facility. Contact him for use of equipment.

Joshua Méndez: (jmendez7@uoregon.edu) -- Lead Research Engineer Joe Dufek's Sensors for Extreme Environment Lab. Josh specializes in the design, production, and implementation of precision instrumentation for geoscience applications, focusing on volcanoes, dust storms, and the ionosphere. He is also a competent machinist and has extensive experience integrating electronics with mechanical hardware. If you would like to use sensors, computer aided design (CAD), embedded systems, or general electronics in your research, please knock on Josh's door. Lastly, Josh is a skilled bike mechanic and a Bike Law Ambassador. He will gladly assist you with any two-wheeled woes.

Julian McAdams: (jmcadams@uoregon.edu) – Machinist in the UO machine shop and Lab Manager for Joe Dufek. Assists in design and fabrication of instrumentation needed for experiments as well as repair and maintenance of existing equipment.

Oregon Hazards Lab: (<https://ohaz.uoregon.edu>) uses science, technology, and community engagement to understand, monitor, and mitigate multi-hazards within the Pacific Northwest in effort to protect the public and build community-level resilience. The

program builds and maintains real-time telemetry systems to facilitate remote data collection. Expertise in radio systems, power systems, project logistics, and construction. “OHAZ” currently partners in the following efforts:

- In collaboration with University of Washington, OHAZ is responsible for maintaining and monitoring seismic sensors and stations located in Oregon under the Pacific Northwest Seismic Network.
- In collaboration with the USGS and four leading west coast universities, OHAZ is working to improve seismic monitoring and implement an onshore public earthquake early warning system on the west coast, known as ShakeAlert. In August 2020, O-HAZ was awarded \$7.5M to complete the buildout of the ShakeAlert system in Oregon by the year 2023.
- In collaboration with the University of Nevada Reno and UC San Diego, OHAZ is deploying state-of-the-art Pan-Tilt-Zoom (PTZ) fire cameras and associated tools to help firefighters and first responders discover fire ignition, quickly scale fire resources, and monitor fire behavior.

Headed by Professor Doug Toomey, as of printing the group includes: Leland O’Driscoll, Emilie Hooft, Lucy Walsh, Sara Meyer, Gillean Arnoux, Andrew Hadlock, Silas Thoms, and Mats White. Contact project manager **Leland O’Driscoll** for more information (lelando@uoregon.edu).

6.2 Student Info

6.2.1 Student Offices: Graduate students in Earth Sciences will be assigned shared, lockable office space in Cascade Hall, Cascade Annex, or Volcanology. Student offices contain one or more desks for Graduate student use. In offices that include shelving and partitions, the shelving and partitions will be properly and securely installed; furnishings in offices will be appropriate and safe. Graduate students may use their offices for private discussions with students or faculty. See the office manager if you have any questions about your office assignment. When you leave the department you will be responsible for removing all of your materials and for cleaning your area. Any materials left behind will be discarded.

6.2.2 Student Records: A record of items relating to the student's progress toward the degree (minutes of committee meetings, documentation of talks/posters that fill the oral presentation requirement, teaching evaluations by students and professors, notices of awards and honors, etc.) is kept on file. Student files are kept in the departmental office, and a student may examine their file upon request. (See Graduate Coordinator)

6.2.3 Driver Certification: In order to drive *any* vehicle on university-related business (fieldwork, class or club field trips, etc.) you must be a UO certified driver. *Graduate students are permitted to drive vehicles from the motor pool only after they are certified by the Office of Public Safety.* Students should see the Graduate Coordinator to arrange for certification.

6.2.4 Van Training: In addition to becoming a UO certified driver, if you will be driving a van for field trips you must also complete van training. *Students are permitted to drive vans from the motor pool only after they have completed an online van safety exam and are UO certified drivers.* For more information about van training see the Graduate Coordinator.

6.2.5 Keys: Keys for your office, outside building doors, labs, TA rooms, and other rooms to which you need access can be obtained by talking to the office manager or the Graduate Coordinator. Once the key request has been input online, there is a 24-hour waiting period. You then take the request form to the ID Card Services Office (EMU, room 2), where you will receive your key(s). A refundable deposit is required (usually \$10 per key). Remember: *keys must be turned in before you leave the University of Oregon.* Your deposit will be refunded upon return of your keys.

6.2.6 Copy Facilities: Facilities for copying are available in the Earth Sciences Office. To make copies for courses that you are helping to teach, use the department's copy code. However, students cannot use the departmental copier for personal use (including copying or printing for courses in which you are enrolled). Printers are available in all campus libraries, the EMU, and the University Bookstore. Research

accounts can be setup on the copier if the photocopying is related to a grant.

6.2.7 Office Supplies and Postage: The department furnishes necessary supplies (pencils, pens, paper, etc.) to enable teaching fellows to carry out their duties. *Please ask for supplies at the front desk.* The department cannot furnish supplies of any kind to students or faculty for personal use. Letterhead paper, envelopes, and fax services will be furnished only when a student's correspondence involves departmental business. In general, the department will not pay postage costs for students.

6.3 Departmental Equipment

6.3.1 Audio/Visual Equipment: Projectors, laptops, a 360° conference room camera, and various adapters and cables may be checked out in the department office.

6.3.2 Microscopes: A graduate student whose research requires the use of a polarizing microscope or binocular microscope may check out one for use in their office during the time that the microscopes are not needed for classes. A student assumes the responsibility for security of the microscope while it is in their possession. When a microscope is needed for short period of time in a class in which microscopes are not routinely used, the student should get a note from the instructor and then check out the microscope. Microscopes may not be removed from the department and taken to a student's home for use.

6.3.3 Stereoscopes, Brunton Compasses, GPS Units: These may be checked out for short periods of time from the department office. See the Graduate Coordinator.

6.3.4 Field Equipment: For use of field equipment for field trips and field work by students and faculty, please see the Graduate Coordinator for the key to the Field Camp room. The Field Camp rooms are 41A Columbia and 144 & 148 Cascade Annex. When returning equipment, be sure the items are completely clean and void of food. Also, it is against University policy to store propane tanks in buildings; these must be stored in the "cage" over by Klamath Hall.

Damaged or lost equipment will need to be repaired or replaced by the user.

6.3.5 TOTAL Station and Surveying Equipment: The Neotectonics group has surveying equipment that can be checked out by students for field work (for a fee) when it is not otherwise in use. You must be trained to use this equipment. See Ray Weldon for more information.

6.3.6 Field Vehicles: Vehicles can be rented from the OSU Motor Pool (3233 Franklin Boulevard). Phone number is (541) 346-2000. You must hold UO Driver Certification to use these vehicles.

6.4 Department Facilities

It is common courtesy as well as the responsibility of the user to report any problems with equipment. Equipment that is broken or not working properly is a hazard to other users.

6.4.1 Thin Section and Saw Lab: Columbia 56. This room contains a Hillquist water-cooled, 16" diamond saw for large rocks, 8" diamond cutoff saw, 6" trim saw, lap wheels to prepare samples for thin sections on the Hillquist thin section machine, and a Franz Magnetic Separator. This lab also contains polishing equipment to prepare rock slabs and is equipped to prepare petrographic thin sections for reflected light microscopy or electron microprobe analysis. Students who make their own sections must buy their materials (primarily slides and epoxy) but are not charged for use of the lab. See thin section lab technician for training. See Graduate Coordinator to obtain access to this room after completing your training.

6.4.2 Rock Crushing Lab: Columbia 40. This room contains a rock splitter and anvil, 3 jaw crushers to crush and pulverize large samples, sample splitters, and a Spex shatterbox and mixer mill with tungsten carbide grinding containers to reduce samples to fine powder for XRF, XRD, or other types of analysis. This lab also contains a Rotap sieve shaker and sieves for sediment size sorting. See rock crushing lab technician for training. The door to this room can be opened with a TA key.

6.4.3 X-ray Diffraction Lab: Cascade 310A. The department has a Rigaku Miniflex CN2005 X-ray diffractometer. You must be trained to use this machine. Contact Greg Retallack for more information (gregr@oregon.edu).

6.4.4 PC Computer Lab: Cascade 101. Has 16 24" PCs. Installed software includes MS Office, Adobe Acrobat and Illustrator, and Matlab. In addition, there are a variety of scientific applications available via a VM and the command line such as GMT, as well as several compilers and shells for software development.

6.5 Facilities outside the Department

6.5.1 Map Library: Documents Section of Knight Library: The University Map Library contains an excellent collection of topographic and geologic reference maps, air photographs, some ERTS imagery, and a complete collection of Lunar Orbiter photographs. These materials may be consulted in the Map Library or checked out for short periods of time; however, students planning to use maps or photos extensively in the field should buy their own. See <https://library.uoregon.edu/map-library> for more information.

6.5.2 Computer Software: The University maintains site licenses for several software packages, including GIS, VPN, Mathematica, and anti-virus software. Visit (<https://software.uoregon.edu/>) for more information. If you are interested in installing Matlab on a local computer, speak with CAS IT about the available options.

6.5.3 Science Stores: The UO operates Science Stores in 109 Cascade Annex (on pathway between Cascade & Annex). Chem/Science Stores carries chemicals, glassware, lab safety equipment, and much more. For purchase of department or research-related supplies, talk to the accountant to obtain the proper index. Students may obtain a personal card for purchasing materials from Science stores from the Office of the Cashier in the Business Office.

6.5.4 Science Services/Student Machine Shop: Pacific Hall. The shop contains tools, metal lathes, milling machines, etc. Machine Shop staff can provide expert help and instruction if needed. A well-stocked

storeroom is available, or you can supply your own materials. Contact Julian McAdams for more information.

6.5.5 Center for Advanced Materials Characterization in Oregon (CAMCOR): Located in the Lorry Lokey lab (access through the north entrance of Huestis Hall), this facility has the following and more:

- **Scanning Electron Microscope (SEM):** The department's FEI Quanta-FEG has basic abilities to image secondary electrons and backscattered electrons under low or high vacuum conditions, as well as a semi-quantitative EDX X-ray system and cathodoluminescence detector.
- **Electron Microprobe:** The department's CAMECA SX-100 microprobe has quantitative X-ray capabilities, SEM and BSEM imaging modes, TV imaging of transmitted and reflected light, digital image analysis, and capabilities for unattended operation.
- **X-Ray Diffraction Lab:** equipment for using X-ray diffraction applications to study 3-D atomic structure and other characteristics for a wide range of materials.
- **High-Resolution Analytical TEM Facility:** chemical mapping at the nanoscale and for crystallography.
- **Focused Ion-Beam and Scanning Electron Microscopy Facility (FIB-SEM):** State-of-the-art equipment used to excise microscopic parts of a sample for use on a different tool such as the microprobe or TEM.

CAMCOR also contains a prep lab with everything one would ever need to prepare a sample for microscopic analysis. For more details on CAMCOR and contact information: <http://camcor.uoregon.edu/>

6.5.6 Visualization Lab: Price Science Commons B006. The Visualization Lab has 24 HD displays tiled and connected to create a 50-million-pixel screen. It is available to those who need high-resolution images on a big screen for research or instruction, or for videoconferencing, or who would like to make use of the room's capacity to display material from multiple inputs side by side. See the Graduate Coordinator for more information on this space.

6.5.7 DeArmond MakerSpace: Price Science Commons B005. The MakerSpace is available for creating objects using 3D printing; the router; the sewing equipment; the cutting equipment; and/or the electronics. Workshops and trainings are held frequently, and are required before some of the equipment is available to individuals. For more information: <https://library.uoregon.edu/scilib/psc-dearmond-makerspace>

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NOTES

(Committee deadlines, your comps schedule, random doodles, whatever!)