Ice & Ocean Group at the University of Virginia | PhD milestones and requirements

Written by Dr. Lauren Miller largely based on text from Dr. Max Castorani

Last modified on 6 July 2023

Checklist of EVSC PhD degree requirements

- ✓ Complete coursework with five 3–4 credit graduate courses (1 in each of the four disciplines + 1 more) and enroll in Departmental Seminar once prior to semester of proposal defense.
- ✓ Form committee with 3 department faculty (with me as one of the members and one outside of area of specialization) + 1 Dean's Rep. (from any college/school at UVA)
- ✓ Comprehensive exam: Complete 2-day written exam + 2-hour oral exam.
- ✓ Proposal: Submit written proposal and defend (30 min. presentation + Q&A).
- ✓ Write 1+ publication-worthy paper, ideally submitting it for peer review is the departmental requirement (note this is different than our research group's expectations).
- ✓ Write dissertation comprising no less than 3 chapters (e.g., stand-alone papers).
- ✓ Defend dissertation (30 min. presentation + Q&A).
- ✓ Deliver department-level seminar (45-50 min. + 10-15 min. of Q&A).

Coursework. Ph.D. students must pass with a "B" or better one 3- or 4-credit graduate level (5000- or 7000-level) non-seminar course from each of the four areas of the department: Geosciences (EVGE), Hydrology (EVHY), Ecology (EVEC), and Atmospheric Sciences (EVAT). Please note that new 5000-level courses or EVSC 7559 (first-time offerings) may not yet be listed officially under a discipline, but may count; in these cases, please consult with the professor. Otherwise, courses offered as EVSC may be used to fulfill this requirement only with prior approval of the Graduate Academic Review Committee (GARC). Ph.D. students must also pass one additional 5000- or 7000-level Environmental Sciences (EVSC) non-seminar course of 3–4 credits. In addition, each student must register for EVSC 7092, Department Seminar, one time; this course may be counted only once for graded credit.

In total, Ph.D. students must complete 72 graduate credits including at least 24 credits in graded graduate-level coursework. During each semester, full-time students must be registered for 12 credits of graduate credit; the 12 credits do not have to be in formal courses. Non-Topical Research (EVSC 9999) should be used to augment regular coursework to bring the total to 12 credits. During the first two semesters, graduate students must enroll in a minimum of 9 credits per term of graded coursework on the standard letter scale (A–F). Students holding a Master's degree from another institution must still complete a minimum of 18 credit credits of graded graduate course work at UVA (i.e. other than Non-Topical Research) if up to 6 credits of graded course is transferred upon approval by the Department Director of Graduate Studies and the Graduate School.

Not all graduate courses are taught every year; many are taught on a two-year cycle. Hence, it is very important to plan well in advance so that you can be strategic about courses, particularly those outside of your discipline (geoscience). Aim to finish all of the required courses within your first two academic years (four semesters). Finishing within this time frame will help you prepare for your comprehensive exam. Additional advanced topical or skills courses can be taken in subsequent years at the discretion of the student and advisor. You can find a tentative list of upcoming courses on the departmental website (https://evsc.as.virginia.edu/schedule-upcomingcourses/), and the university course catalog on SIS (https://in.virginia.edu/sis/) and 'Lou's List' (https://louslist.org/). The Ice & Ocean Group also has a list of recommended courses available.

Committee formation. The dissertation committee serves several roles for the Ph.D. student. First and foremost, the committee exists to ensure that degree-granting standards and guidelines are adhered to,

and to protect the university from giving too much power to any individual professor. The committee, therefore, provides a checks and balances service to the university. In more practical terms, the dissertation committee helps guide you (the student) in transitioning from coursework to research; assess your preparedness through the comprehensive exam; and advise and evaluate your proposal and dissertation while providing meaningful feedback. The overarching goal of the committee is to help prepare the student to be an independent and capable Ph.D.-level scientist, identify areas in which the student needs additional expertise, strengthen their proposal and dissertation, and steer the student away from problematic research ideas and other pitfalls.

My role as the chair of your dissertation committee is: (1) to lead in the evaluation of your professional preparedness and the advising of your dissertation; and (2) to advocate for you in cases where your other dissertation committee members pull you in multiple conflicting directions, thereby avoiding unnecessary delays in your degree progression. So, you should expect me to simultaneously challenge you and support you. You may consult your committee members at any time on various topics related to your dissertation and career, such as research, teaching, and professional development. You should be strategic by assembling a committee that draws upon multiple sources of expertise, which should give you appropriate help when it is needed.

The Ph.D. committee can be formed by the student at any time after entry and prior to the comprehensive exams. The committee consists of at least four faculty members: 3 from the department (including 1 member of the department outside the student's core area of study, so not a geoscience faculty) and 1 Dean's Representative (from another department at UVA). General committee members may be chosen from other institutions. The Dean's Representative is an overseer responsible for making certain that the dissertation content and evaluation process meet the general standards of UVA and academia in general (according to the GSAS Manual, their job is "to simply confirm that the student was treated fairly and that the rules of the GSAS were observed"). At a minimum, the Dean's Representative must be present at the dissertation defense; however, their participation is encouraged at any and all milestone events. It is typical for the Dean's Representative to not submit questions for the written comprehensive exam, but they might ask questions during the oral comprehensive exam, generally something broad or prompted by the discussion. Often this person will ask some questions during the proposal and final defenses; however, their involvement depends on their level of interest and availability.

Start thinking about forming your dissertation committee during your first year. Aim to complete this task by your third semester at the beginning of your second year. The signed committee formation form can be submitted to Administrative Coordinator ShaRhonda Swann. Although I will be the chair of your committee, you should assume responsibility for mediating communication and scheduling among your committee members. Shortly after committee formation, you should schedule a meeting (or individual meetings) with your entire committee to do introductions, discuss your research, formalize a timeline for, at least, comprehensive exams and proposal defense, as well as present a tentative list of topics that you view as likely to be covered on the comprehensive exams. Committee contributions to your written comprehensive exam should be sent to me two weeks prior to your scheduled two-day written exam.

Written and oral comprehensive exams. All Ph.D. students must take a Comprehensive Examination. This examination consists of a written exam created by the student's committee administered over a 2-day period followed a week or two later by a 2-hour oral exam. Aim to complete your comprehensive exam at the end of your second year (fourth semester) and at the latest at the beginning of your third year (fifth semester); however, scheduling over the summer might be feasible if your committee members are able and willing.

The primary objective of the comprehensive examination is to evaluate the student's ability to think independently, creatively, and critically, and to evaluate the student's mastery of breadth and depth in a range of subject areas in and related to geoscience, including the ability to synthesize broad concepts and

detailed information. This level of knowledge must be sufficient to demonstrate competency for professional work at the Ph.D. level. Since the exam is comprehensive in nature, students are well-advised to begin with a curriculum that has been developed thoughtfully with long-term career objectives in mind. Committee members are expected to help in this preparation phase by meeting with the student to focus and guide them to appropriate literature and significant questions. Be prepared to be examined on five focal areas or themes. Typically, one of these will be "general geology" and another will be "glaciology/glacial geology". The other areas will be chosen in consultation with your advisor (me) based on your interests and career goals. Good study resources are available in the Ice & Ocean Group Laboratory (Halsey 210) and include Glaciers and Glaciation (Benn & Evans), Antarctic Marine Geology (Anderson), Two Mile Time Machine (Alley), and several paleoclimate, sedimentology/stratigraphy, and geomorphology books. Here is an open-source physical geology textbook and here is one on historical geology. Furthermore, students should seek the advice and experience of students who have already taken the exam. It is recommended that you ask your peers to give you a set of practice questions - written and oral. In our research group meeting, you will have a mini-oral comps practice 3-4 weeks before your written comps are scheduled, when each group member will ask you 4-6 questions.

The 2-day written exam may be open- and/or closed-book at the discretion of the committee. All committee members will submit questions, generally excluding the Dean's Representative, to me one week in advance of the first day of the written exam. I will collate questions, seek any needed clarifications from committee members, and split the exam into two parts. Each question will state whether it is open- or closed-book and an expected time to complete. The exams will be held at a convenient time during the year for the committee and the student, and preferably should not be held during regular exam periods nor during the summer. The committee members will take turns asking questions for 10-20 minutes each (depending on number of committee members). The first round of questions will generally focus on follow-up from the written exam, the second round will be more broad and potentially conversational, and a final optional round for those still with questions to ask. After about 1 hour and 45 minutes, the committee will convene without the student. Finally, the student will be asked to rejoin the committee, when the results of the written and oral exams will be announced. The results will be 'pass', 'conditional pass', or 'fail'. A conditional pass means pass, providing the student demonstrates elimination of inadequacies by means stipulated by the committee. In the event of a failure, the committee may elect to allow a single repetition of the exam. A signed copy of the PhD Comprehensive Exam Decision form should be delivered to the Administrative Coordinator. Copies of the written exam questions along with the candidate's answers will be placed in the student's file.

You should anticipate that the exam will push you to the limits of your knowledge. Hence, in the oral exam you will almost certainly be asked questions to which you do not know the answer –this is normal and expected. Prepare yourself for the possibility of a conditional pass, which may happen if you demonstrate deficiencies for one or a few exam topics. This can happen when you don't know the answer (e.g., you did not study that concept) or you can't communicate the answer clearly (e.g., you were nervous or exhausted). Conditional passes are common and do not reflect your intelligence or scholarly talents, your ability to complete your dissertation, or your potential to publish rigorous and impactful science.

Written proposal and oral defense. As soon as possible after formation of the committee, preliminary discussions should be held between the student and the committee members concerning the proposed research. This leads to a formal written proposal from the student including a literature review, experimental plan, and results (and preliminary interpretations) that is no less than 15 pages but not longer than 25 pages (excluding references), single-spaced and no smaller than 11-point font, with as many informative, clear, and appropriately sized figures as needed. Following the comprehensive exam, and after allowing the committee at least one week to read the proposal, an open meeting ("proposal defense") is held for the purpose of discussing the proposed research, making modifications, and, finally, approving the proposal. The ~1.5-hour proposal defense will begin with a ~30-minute presentation of the proposal by the student. This will be followed by questions from the audience, questions from the

committee, deliberation by the committee, and a closed-door discussion with the student. The results of the proposal defense will be announced immediately following the defense. The results will be pass, conditional pass, or fail. A conditional pass means pass, providing the student demonstrates elimination of inadequacies by means stipulated by the committee. In the event of a failure, the committee may elect to allow a single repetition of the proposal defense. The signed should be delivered to the Administrative Coordinator.

Aim to complete your proposal defense in the same semester as your comprehensive exam or during the subsequent semester (end of your second year or beginning of your third year). This decision will be based in part upon your coursework load and teaching obligations during your third and fourth semesters, and progress on preliminary research activities.

Completion of degree: Submission of dissertation, dissertation defense, and seminar.
Doctoral students must apply for their degrees online in SIS by the deadline for the term in which they plan to graduate: Fall - September 30; Spring - January 31; Summer - June 30. Doctoral Students applying for a master's degree en route MUST email by attachment the Master's Degree Request Form to the Enrolled Students Office prior to the deadline. In the same semester as your dissertation defense, you need to give a departmental seminar talk that consists of you speaking for 45-50 minutes and 10-15 minutes for questions. To plan ahead, this means that you need to know several months in advance so that you can get on the seminar schedule list and apply for your degree.

Final drafts of the dissertation should be circulated to committee members at least two weeks prior to the defense. You must advertise via email your defense date at least one week in advance. The length and format of the dissertation defense is a brief introduction from me, a 30-minute talk that summarizes your chapters, open questions from the audience, and closed questions from your committee. The signed Graduate Student Thesis/Dissertation Defense Decision needs to be delivered to the Administrative Coordinator. Once finalized, your dissertation will be uploaded to the UVA Library (Libra). In rare cases, you may need to embargo the online publication of your dissertation until after all chapters have been published in a peer-reviewed journal. You must also complete the steps/forms required by GSAS listed here.

With the approval of myself, the DGS, and GSAS, modifications to the timelines for comprehensive exams, proposal defense, seminar, and dissertation defense can be made.