# Funding

We offer all of our PhD program students financial support covering tuition, stipend, and benefits. Specifically, we guarantee 5 years of academic-year support in the form of either Teaching Assistantships (TAs) or Research Assistantships (RAs) for PhD students making satisfactory academic progress, dependent on the availability of funds. Each academic year includes three quarter terms (Autumn, Winter, and Spring). Summer quarter funding is coordinated with your faculty advisor and is not guaranteed.

- TA appointments include assisting an instructor in teaching an undergraduate-level course (lecturing, lab instruction, leading field trips, holding office hours, proctoring exams, grading, etc.). These are assigned quarterly and are matched to your area of expertise (though this may not always be possible).
- RA appointments are funded primarily by research grants, or department or other university funding. RAs assist the primary investigator in performing research based on the conditions and objectives of the grant.

**RA/TA Appointment Eligibility and Duties**

ASE appointments classifies an individual as an Academic Student Employee (ASE) and is governed by a contract between the University of Washington and the UAW, which can be reviewed here. Both the ASE and the University of Washington are bound by the terms of this contract, so it is important to be familiar with its provisions prior to accepting this appointment.

ASEs are offered an opportunity to join UAW and members will pay dues each pay period. In order to maintain eligibility for your appointment and its benefits, students will need to enroll full-time (at least 10 credits) for each academic quarter in which the appointment is held. It is also expected that ASEs attend the planned department-sponsored orientation and training sessions. Students with appointments are generally expected to attend the university-sponsored TA conference. TAs are additionally expected to enroll in *ESS 590 Geology Teaching Seminar* during Autumn quarter.

We also require all students holding an RA or TA appointment to complete the Prevention of Sexual Harassment and Discrimination Program (PSHD) which is a joint venture supported by the University and Academic Student Employees Union (UAW-4121). RA and TA appointments, and other University employment opportunities, are contingent upon the completion of any pre-employment offer inquiries or procedures required under University policy or the law, including the sexual misconduct declaration as communicated separately. UW Employees (TAs/RAs, Faculty, Staff, Postdocs) are not permitted to have real or perceived conflicts of interest with students they supervise or instruct, as will result, for example, from romantic relationships between instructor and student. For more information, please see UW Presidential order 54.

In general, the duties for this appointment include managing quiz or lab sections (for TA appointments) and assisting faculty in their research (for RA appointments). Prior to the beginning duties each academic cycle, ASEs will be provided with a document that describes the specific tasks, times and locations related to appointment, supervision, required training programs, procedures used for evaluation, and any additional details related to the duties required for the appointment.

**Fellowships and Awards**

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ESS Graduate Students may be eligible for a number of fellowships including NSF GRFP, NASA, UW PCC, ARCS, UW Provost's Excellence, UW GSEE, and the J. Dugan Smith Endowed Graduate Fellowship, among others.

Our department is fortunate to have a large number of scholarships, awards, and fellowships funded by the generosity of our alumni and friends. We annually provide student awards totaling over a quarter of a million dollars, including about a dozen RA fellowship quarters to support student research, both locally and across the globe. All continuing students are eligible to apply; the deadline is generally in mid-April.

Students are also encouraged to apply to such organizations as the Geological Society of America, AAPG, Sigma Xi, or others for funds to support their research. Students may also take a look at the UW Graduate School Fellowships Office Resources.

# Degree Requirements

ESS graduate students should familiarize themselves with the Graduate School credit requirements for conferral of Master's and Doctoral Degrees:

- UW Graduate School Policy 1.1: Graduate Degree Requirements
- UW Graduate School Policy 1.1.1: Requirements Applying to All Graduate Degree Programs
- UW Graduate School Policy 1.1.2: The Master's Degree
- UW Graduate School Policy: 1.1.4: The Doctoral Degree other than Practice Doctorates

**Research Program Required Classes (MS & PhD)**

- ESS 590 Teaching Seminar – recommended for all TAs, required for ESS 101 TAs.
- Breadth Courses: 2 courses (each 3 credits or more) drawn from existing ESS 500-level courses and approved by the individual student's advisor. Courses in allied areas in OCEAN and ATM S may also be taken if approved by the student's advisor. If the breadth courses are not ESS, OCEAN or ATM S courses, a student and their advisor should petition to GPC to have a course added to a list of additional breadth courses and added to this guide.
  Additional provisions:
  - Students affiliated with the Program on Climate Change can count one cross-listed ESS course in that program as a breadth course if it is 3 credits or more.
  - Students doing the Astrobiology Dual-Title PhD or Graduate Certificate may *not* count ASTBIO courses for breadth since these are generally not geosciences classes.
  - Master's students must take breadth courses before their final MS exam. PhD students are strongly encouraged to complete their breadth courses before the General Exam.

- 1 Data Analysis Class (ESS 521, ESS 522, ESS 523, ESS 525, ESS 579, ESS 580, ATM 552, AMATH 506, AMATH 581, AMATH 582, CEE 574, QSCI 482) or another course with permission of the Graduate Program Coordinator (GPC)
- ESS 594, Autumn and Spring quarters of the first year
- ESS 599, every quarter each year (except summer)
- Courses determined in consultation with the student's advisory committee to ensure both depth and breadth
- Experiential Learning Requirement (MS & PhD): The experiential learning requirement has students gain practical research experience in their field of research. Past examples include: ESS Field School, extensive field work with your faculty advisor, Astrobiology Lab Rotation, lab

exchange with another institution, intensive academic/disciplinary workshop, and experiential research. This requirement should be coordinated and will need approval from the GPC.

- Teaching Experience Requirement (MS & PhD): Teaching experience is required for the ESS MS and PhD degrees. Most students gain this experience as a Teaching Assistant (minimum of one quarter), but other alternatives include teaching a course, leading a workshop, or similar activities. Alternatives can be coordinated with the GPC. The department strongly encourages all graduate students to gain teaching experience beyond the required minimum.
- Research and Thesis/Dissertation Credits: Students will take Research Credits (ESS 600) in their first year. After successful completion of the Preliminary exam, students should take Thesis or Dissertation Credits (ESS 700 or 800) depending on their program. Students should register for a maximum of 10 credits of research each quarter.

**Additional Options in ESS Graduate Tracks**

- *Astrobiology Dual Title PhD Program*
  For students admitted to the Astrobiology program, please note that there are additional graduation requirements, which can be found for the Dual Title PhD here.

- *Astrobiology Graduate Certificate (available for MS and PhD)*
  For students admitted to the Astrobiology program, please note that there are additional graduation requirements, which can be found for the Graduate Certificate in Astrobiology here.

- *ESS Data Science Option PhD*
  In addition to the requirements for the ESS Research Program courses (above), Data Science Option students additionally take:
  - 11 credits from the Standard Data Science Option list below. At least 3 out of 4 courses from the thematic fields
    - Software Development for Data Science: CSE583, ME574, CHEM 546, AMATH 583
    - Statistical and Machine Learning: ATM 552, FISH 546, FISH 560, SEFS 502; CEE 465, CET 521-IND E 546, CSE/STAT 416, CSE 546, CSE 599, ME/EE 578, ME 599; AMATH 515, AMATH 563, AMATH 582, STAT 435, STAT 509, STAT 512-513, STAT 535
    - Numerical Modeling, Data Management, Data Visualization: AMATH 581, ATM 559, ATM 581, ATM 582, FISH 454, FISH 458, FISH 554, FISH 556, FISH 559, OCEAN 502, SEFS 502, SEFS 540, SEFS 557; CSE 414, CSE 412, CSE 512, CSE 544, HCDE 411/511;
    - Department-Specific Courses related to Data Science: ESS 420, ESS 469/569, ESS 521, ESS 522, ESS 523, ESS 524, ESS 529
  - 2 credits CHEM E 599 (Topics in Data Science)

- *Program on Climate Change (PCC) Graduate Certificate (available for MS and PhD)*
  The Graduate Certificate in Climate Science (GCeCS) was created to provide an interdisciplinary training in methods, research issues, and communication of climate science that enhances the scientific breadth and professional employability of GCeCS awardees. The certificate combines the PCC courses, specifically designed to address the cross-linkages in the earth system that disciplinary curricula are not able to do, with a capstone in Climate Science Communication.

Detailed information about the PCC GCeCS can be found on the Program on Climate Change website.

# Supervisory Committee

In order to be making satisfactory academic progress, all ESS Research Program Graduate Students must have a supervisory committee. The supervisory committee make-up will depend on where the student is in the program, and which degree is being pursued. Students should carefully review Graduate School Policy 4.2: Supervisory Committee for Graduate Students.

**Once a student and their faculty advisor have confirmed membership of any committee with the committee members, the student should propose the exam to the Graduate Program Coordinator (GPC) using the ESS Forming a Supervisory Committee Form.**

**First Year Committee**

While a First Year Committee is not mandated by the Graduate School, ESS first year graduate students are required to appoint and work with a First Year Committee during their first year of graduate school. The First Year Committee should consist of your inviting Faculty Advisor (e.g., who you were admitted to work with), and one or two other faculty in your research interest area. The role of the First Year Committee is to mentor new graduate students during their first year, and to help prepare them for the Preliminary Exam. First Year Committees are automatically disbanded after a student has taken a Preliminary Exam.

**Master's Committee**

ESS MS students should begin putting together a Master's Committee as soon as possible after receiving a Preliminary Exam results letter, and aim to have the committee approved and submitted to the Graduate School by the end of Winter Quarter in their second year. The Graduate Program Coordinator, in consultation with the student and appropriate faculty members, appoints a committee of two to four members. The Chair and at least one-half of the total membership must be members of the graduate faculty. Detailed information can be found in the Graduate School Policy 4.2: Supervisory Committee for Graduate Students.

**PhD Supervisory Committee**

ESS PhD students should review the ESS Forming a Supervisory Committee guide and begin putting together a PhD Supervisory Committee as soon as possible after receiving a Preliminary Exam results letter, and aim to have the committee approved and submitted to the Graduate School by the end of Winter Quarter in their second year—and no later than Spring Quarter of their second year. Responsibilities of the Doctoral Supervisory Committee include the approval of a course of study which will fulfill the general course requirements of the student's major and supporting fields; the conducting of the student's General Exam, and when appropriate, recommending advancement to candidacy. The Doctoral Supervisory Committee assists and guides the students to carry out appropriate research for the dissertation. The Graduate Program Coordinator, in consultation with the student and appropriate faculty members, appoints a committee of at least 4 members (Chair, Graduate School Representative (GSR), and 2 others), at least 3 of whom (including the Chair and GSR) must be members of the Graduate Faculty (have an endorsement to chair graduate committees). Detailed information can be found in the Graduate School Policy 4.2: Supervisory Committee for Graduate Students.

**Dissertation Reading Committee**

A dissertation reading committee must be established before a Final Exam can be scheduled. The reading committee should consist of three members of the Supervisory Committee, including the Chair. The Reading Committee reviews the Student's dissertation and communicates approval of the dissertation to the Graduate School. Graduate School Policy 4.2.3.8 discusses the role of the reading committee.

# Exams

**Preliminary Exam**

The Preliminary Exam is taken by all ESS Graduate Research program students (MS and PhD students) at the beginning of the second year, typically the Thursday/Friday or Monday/Tuesday before the first day of Autumn Quarter. The exam is an oral presentation of a research proposal. Exam results determine whether students are permitted to begin progress toward MS project/thesis or dissertation research. Please review the detailed guide document here.

**Milestone Exams**

ESS Graduate Students will take a combination of milestone exams including Master's Exams for students pursuing an MS, and General and Final Exams for students pursuing a PhD. Students should have and are strongly encouraged to have completed their required coursework before taking a milestone exam. Eligibility for milestone exams includes having completed the Graduate School Degree Requirements.

Students must have established relevant supervisory committees prior to scheduling an exam (Master's Supervisory Committee for Master's Exams, PhD Supervisory Committee for General Exams, and Dissertation Reading Committee for Final Exams).

Exams must be scheduled with the Graduate School via the MyGrad Program Student Portal and should be entered at least 2 weeks ahead of the exam. Exams can be scheduled in the quarter ahead of the exam, but do not use the MyGrad Program Portal during quarter breaks to schedule exams (the system will lose your request). Students may request a room for exams using the ESS Room Scheduling Tool or contacting ESS Student Services.

Exams can be fully in-person, hybrid, or fully remote per the Graduate School Policy. ESS allows exams in any format so long as the committee members, in particular the GSR for doctoral exams, do not submit an objection to the GPC. Students must be enrolled for credits in the quarters in which exams are taken and cannot take multiple milestone exams in the same quarter. Additional Graduate School Resources can be reviewed here.

- **Master's Exam**: The final examination for the MS degree consists of an oral presentation defense of the thesis/project paper and an examination by the Supervisory Committee. The exam is not necessarily restricted to the immediate thesis topic. The thesis/project paper must have been approved by the Supervisory Committee before the student can arrange for the final oral presentation.
- **General Exam**: The General Exam is assesses the breadth and depth of the student's knowledge related to their proposed dissertation research. The primary vehicle for the exam is a written dissertation research proposal. During the General Exam the student will explain the significance and impact of the research problem, and demonstrate their mastery of the relevant fundamentals and research methods needed to pursue the plan. The written proposal must be submitted at

least two weeks in advance of the oral exam. Doctoral students should take their General Exam during their third year of studies, and no later than their 4th autumn quarter, unless their committee chair has petitioned the GPC for an extension. Students missing this deadline will not be making satisfactory progress. Students who pass their General Exam will be awarded candidacy. Carefully review the ESS General Exam Policy here and the Graduate School General Examination: Advancement to candidacy for Doctoral Degree notice.

- **Final Exam**: The Final Exam is an oral exam given by members of the Supervisory Committee and interested Graduate Faculty members. It is based on the dissertation and an oral presentation of the results of research by the Student. Members of the Graduate Faculty, non-voting faculty and visitors may attend and question the Student.

# Culminating Manuscripts

ESS Students planning to submit a Master's Thesis or Dissertation should carefully review the Graduate School's instructions regarding Thesis and Dissertation submission. Theses and Dissertations must be submitted to the Graduate School by the last day of the quarter in which the degree will be conferred (the student will graduate), unless the student has paid a registration waiver fee. Theses and Dissertations should also be submitted to the ESS Department Student Publications Page. Master's Project Papers and General Exam Manuscripts should be submitted to the ESS Department Student Publications Page when appropriate, but are not submitted to the Graduate School.

- **Master's Thesis**: The MS thesis should give evidence of the ability to do independent research and to present the results in a clear and systematic form. The student should provide the Supervisory Committee with an abstract of the thesis six weeks or more before the end of the quarter in which the Master's Exam will be taken. The draft must be complete and acceptable to their supervisory committee. Theses must be written according to instructions provided by the Graduate School. A completed and signed Master's Thesis approval form must be submitted electronically via ETD with the Master's Thesis.
- **Master's Project (non-thesis) Paper**: A non-thesis option is identical in every respect to the thesis option except that instead of writing a thesis, the student will write a research paper. This paper may have coauthors, but the student must be first author. This paper must be in a form that it is suitable for submission to a peer-reviewed scientific journal. The Supervisory Committee will determine whether the research paper is sufficient for conferral of a Master's Degree. Master's project papers are often submitted to scholarly journals.
- **Dissertation Proposal:** The dissertation proposal is part of the General Exam. Please review the ESS General Exam Policy for detailed information.
- **Dissertation:** The Student must present to the faculty a dissertation representing original and independent investigation and achievement. It should reflect mastery of research techniques and ability to select an important problem for investigation and to deal with it competently. Dissertations must be read and approved by the dissertation reading committee to be accepted by the Graduate School for degree conferral. The reading committee should consist of three members of the Supervisory Committee, including the Chair. The Reading Committee reviews the Student's dissertation and communicates approval of the dissertation to the Graduate School. Graduate School Policy 4.2.3.7 discusses the role of the reading committee.

# Satisfactory Progress

Students are expected to maintain satisfactory academic progress. Satisfactory progress must be maintained to remain in good academic standing (not placed on warning or probation status) and remain eligible for funding.

Satisfactory progress in the Department of Earth and Space Sciences Program is defined as:

- Successful passage of a Preliminary Exam after the first year, and completion of any recommendations by the Preliminary Exam committee
- Creation of a supervisory committee by the end of the second year
- Satisfactory Academic progress as outlined by the student's research advisor
- Satisfactory Research progress as outlined by the student's research advisor
- Successful passage of a General Exam in the third year and no later than the end of the 4th Autumn Quarter (PhD Students Only)
- Successful passage of a Final Exam following a plan and timeline as outlined by the student's research advisor and supervisory committee (PhD Students Only)
- Annual submission of a Graduate Student Scholarly Activities Report
- Annual meeting with your supervisory committee
- Annual progress meeting with ESS Student Services

The GPC reviews the progress of all the graduate students annually via the Graduate Student Scholarly Activities Report (GSAR). The review looks at factors such as grades, research, service and student progress towards a degree. The review is based, in part, on information provided by the student and their faculty advisor.

If at any point, the Supervisory Committee concludes that the academic performance and/or progress is not proceeding appropriately, the Graduate Program Coordinator may request in writing to the Graduate School that the student is placed on warning, probation, or final probation status. Graduate School Policy 3.7 describes the process in detail.

# Graduating (Degree Conferral)

Students planning to graduate should plan to meet with their Supervisory Committee and the Graduate Program Advisor in ESS Student Services to discuss steps to graduation. Graduating students should carefully review the Graduate School's Preparing to Graduate Document. This includes:

- Important Dates and Deadlines
- Proquest Electronic Thesis and Dissertation Portal
- Graduation checklists for Thesis MS, Non-Thesis/Project MS, and Doctoral program students

Graduate degrees post to UW transcripts between 2-8 weeks after the quarter concludes and grades are posted. Diplomas are shipped via post approximately 2 months after the student's graduation date. Students are also able to request an Electronic Diploma. Students who need informal degree verification for a future employer can request a degree verification letter from ESS Student Services.

Students are encouraged to participate in UW Commencement, which happens annually in June for any annual Autumn-Summer quarter graduates. Information about the annual ESS Graduation Celebration Ceremony can be found here.

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Further ESS Department guides can be found via the Policies and Procedures page and the ESS Intranet. Further policy information from the Graduate School can be found on the Graduate School Policies and Procedures page.