Graduate Student Handbook

Department of Earth and Atmospheric Sciences
2025-2026 Academic Year

1.0 INTRODUCTION

The Graduate Studies Catalog (https://catalog.unl.edu/graduate-professional/policies/) for the year you are admitted into the Graduate Program constitutes a binding contract between the University and you. The procedures that you must follow in order to graduate are in that Bulletin. Study that document closely so that you understand the rules governing your degree program. It is the final authority in all matters governed by the Office of Graduate Studies.

This reference manual consists of five parts: this introduction, some general guidelines and policies, a summary of the procedures for M.S. students, a summary of procedures for Ph.D. students, and a summary of procedures for dual-degree (M.S./Ph.D.) students. These summaries do not supersede the Graduate Studies Bulletin. **If any information in this manual conflicts with the Graduate Studies Bulletin, the latter document takes precedence.**

2.0 GENERAL GUIDELINES AND POLICIES

2.1 Admission

Applicants must have a baccalaureate or graduate degree to gain admission in full standing.

2.2 Organization and Administration

The Graduate College at the University of Nebraska is led by the Dean of Graduate Studies. The Earth and Atmospheric Sciences (EAS) Graduate Program is administered by the Earth and Atmospheric Sciences Graduate Committee. The Chair of the Earth and Atmospheric Sciences Graduate Committee serves as the liaison between the Graduate College and the Department of Earth and Atmospheric Sciences.

2.3 Degrees and Specializations Offered in Earth and Atmospheric Sciences

2.3.1 Degrees Offered: The Department of Earth and Atmospheric Sciences (formerly Geosciences) formed during the 1997–1998 academic year from existing geology and meteorology-climatology programs in the departments of Geology and Geography. Our Department offers undergraduate degrees (B.S.) in Geology and Meteorology/Climatology and graduate degrees (M.S. and Ph.D.) in Earth and Atmospheric Sciences. All M.S. students are expected to pursue Option A (thesis). Both graduate degrees (M.S. and Ph.D.) can be obtained with specializations in Geology, Hydrogeology, Meteorology/Climatology, Geoscience Education, or Great Plains Studies. A specialization in Water Resources Planning and

Management can be obtained at the M.S. level.

General requirements for the **M.S. degree**: M.S. students must complete at least 30 credit hours, including 20–24 hours of regular coursework and 6–10 hours of thesis. At least half of the credit hours, including the thesis, must be in the major. At least 8 credit hours must be graduate only courses (900-level or 800-level with no 400-level equivalent). The Memorandum of Courses must be filed prior to the completion of 50% of the total credit hours applied toward the degree (generally 15 credit hours).

General requirements for the **Ph.D. degree**: The doctorate degree requires a minimum of 90 credit hours, including a minimum of 12 hours (maximum 55) of dissertation. The Program of Studies must be filed when there are at least 45 hours remaining to be taken. Prior graduate coursework may be accepted by your Supervisory Committee to count toward your Ph.D. coursework requirements when relevant to your Ph.D. program.

2.3.2. The Geology Specialization: The required course credits (see above) for a M.S. or Ph.D. in Earth and Atmospheric Sciences with a Geology Specialization must be selected from the available GEOL and GEOS graduate-level courses, in consultation with the student's Supervisory Committee and approved by the EAS Graduate Chair.

2.3.3 The Meteorology-Climatology Specialization: The course credits (see above) for a M.S. or Ph.D. in Earth and Atmospheric Sciences with a Meteorology/Climatology Specialization must be selected from available Meteorology/Climatology courses, in consultation with the student's Supervisory Committee and approved by the EAS Graduate Chair.

2.3.4 The Hydrogeology Specialization: The course credits (see above) for a M.S. or Ph.D. in Earth and Atmospheric Sciences with a Hydrogeology Specialization must include at least 14 credit hours in Hydrogeology, chosen in consultation with the student's Supervisory Committee and approved by the EAS Graduate Chair.

2.3.5. The Geoscience Education Specialization: Students who have already completed an undergraduate and/or Master's degree in Geoscience (according to National Research Council, this includes: Geology, Earth Science, Meteorology, Atmospheric Science, Climate Science, Ocean Science, Marine Science, and Environmental Science) or closely related field are eligible to pursue this interdisciplinary specialization. The course credits must be selected from among Geoscience, Educational Psychology, Teaching and Learning, and Psychology graduate-level courses, chosen in consultation with the student's Supervisory Committee and approved by the EAS Graduate Chair.

2.3.6 The Great Plains Studies Specialization: Students are admitted to the specialization (https://plains.unl.edu/about-us/graduate-specialization/) by the Great Plains Studies Specialization Advisory Committee after admission to the Department of Earth and Atmospheric Sciences. M.S. students must take 9 credit hours of Great Plains Studies courses outside the student's major department. Ph.D. students must take 15 credit hours of Great Plains Studies courses outside the student's major department. The student's thesis or dissertation must be relevant to the Great Plains and at least one member of the Examining or Supervisory Committee

must be a Fellow of the Center for Great Plains Studies.

2.3.7. The Water Resources Planning and Management Specialization: This flexible specialization is offered to students pursuing an M.S. in multiple UNL departments. Each M.S. student must complete 9 hours of water resources-related courses from departments outside their major field (https://watercenter.unl.edu/research-and-outreach/water-resources-specialization) and approved by the Water Resources Advisory Committee, as well as complete a thesis dealing with some aspect of water resources planning and management.

2.4 Geosciences (GEOS) 099
All active EAS graduate students are required to register for the EAS Colloquium and Stout Lecture each semester. Normally, two meetings are held each week (Monday and Friday afternoons). Attendance at both is **mandatory** regardless of the topic of discussion.

2.5 Geosciences (GEOS) 900
All new EAS graduate students are required to register for GEOS 900 (Professional Development in Geosciences) in their first fall semester, unless credit has been earned for a similar course at a different institution; the latter must be approved by the EAS Graduate Chair.

2.6 Academic Performance
EAS graduate students are expected to earn a grade of B or better on all course work at the 400/800 level. A grade of C or better is required on all EAS course work at the 900 level and on all course work outside the student's home department. A grade of C or less in any EAS course at the 400/800 level, and a grade of D or less in any non-EAS course, will automatically initiate a review by the EAS Graduate Committee and the Dean of Graduate Studies. Depending on the circumstances, the result may be dismissal or imposition of additional requirements upon the student.

2.7 Supervisory Committee Meetings
All EAS graduate students should meet with their Supervisory Committees at least annually. Your defense is not the time to learn that your committee has strong disagreements over the scope or quality of your research. It can be difficult to get your committee together; be persistent, your committee members have an obligation to meet with you. It is your responsibility, however, to arrange a time, date, and place when all members of the Supervisory Committee can attend and to notify all members of your Supervisory Committee of meetings in a timely fashion.

2.8 Annual Evaluations
By the last Friday of September each year, every returning graduate student is required to complete the EAS Graduate Student Annual Report. The form (https://eas.unl.edu/eas-graduate-student-annual-report-online-form/) must first be approved by your advisor and subsequently sent to the members of your Supervisory Committee for their assessment. This form provides the basis for a review of your progress by the faculty in the spring semester.

The faculty meets annually (usually in February) to discuss the progress of every graduate student. Among the data considered will be your EAS Annual Report, your academic transcripts, and oral reports made by members of your Supervisory Committee. Some of the expectations for progress towards your degree that are used in this evaluation are summarized in

Appendix II. Soon after this meeting you will receive a letter from the Graduate Chair summarizing the Department's view of your progress. Address any concerns listed in that letter immediately.

2.9 Job Performance

Students hired by the department (e.g., teaching assistants, technical assistants, research assistants) must perform their duties satisfactorily. Failure to do so may result in cancellation of future stipends or revocation of the current stipend.

2.10 Computing Facilities

All graduate students have unlimited use of the graduate student computing facilities. Please follow these rules when using the departmental computers:

- Do not install any of your own software on the departmental computers without specific permission from UNL Information Technology Services. Disk space is limited. Unauthorized software is a major vector for computer viruses. Pirated software on a university computer makes the university and the department liable to prosecution.
- Do not copy software from the departmental computers for use on your own machines. Such unauthorized copying is a violation of the license agreement.
- Do not abuse the machines or the software. Do not move printers or other peripherals to suit your own purposes. Do not make unauthorized changes in the installed software. Do not change the parameters of the operating system. Never attempt to fix the machines yourself.

If problems arise, report them to BesseySupport [at] UNL [dot] edu.

2.11 Laboratory Restrictions

There are multiple laboratories in EAS. Some of these labs contain complex and very expensive electronic analytical devices, radiation sources, optical equipment, or hazardous chemicals. Do not use a laboratory without permission of the supervising staff member. Only the designated supervising staff member may give authorization to use a given facility or instrument. The name of the designated supervising staff member(s) for each laboratory is listed on the entry door to each lab and in the Safety Manual.

The supervising staff member is responsible for the safety of all people using the facility. Therefore, you must thoroughly understand the safety information regarding the use of that lab before you use it. This information is in the Safety Manual and in the safety notebooks in each lab. Note that if your work involves explosives, you must learn the explosives procedures from the unabridged departmental safety manual (see main office and supervising staff member). Unauthorized or unsafe use of laboratory facilities may jeopardize your continuation with EAS.

Tell your advisor if you need equipment (lab glassware, computer software, etc.) to do your work. Do not use equipment without permission. Do not take equipment from a laboratory or classroom without specific permission from the supervising staff member. Under no circumstances are you to rummage through the laboratories or classrooms in search of your equipment needs.

2.12 Sources of Research Funding

Confer with your advisor for information on sources of funding within your discipline. Graduate students are responsible for locating funding for their research projects, if funding is not already

available through an existing grant. Travel grants to attend various regional or national/international meetings are often available from the sponsoring organization. Check meetings announcements and bulletins for details. The table in **Appendix III** lists some funding options. Other funding opportunities arise periodically and are announced as they become available.

2.13 Presentation of Research

You are expected to present the results of your research at scientific meetings outside of EAS. You should discuss appropriate venues with your advisor. EAS may provide transportation and some financial support for students to attend meetings so that they can present research results and broaden their exposure to the discipline. This activity is critical to your development as a scientist and will help you establish a network of research colleagues beyond UNL.

Ph.D. students are expected to present their research progress to the entire department in an EAS Colloquium at least once per academic year. The goal of this regular presentation schedule is to practice presentation techniques and to demonstrate progress towards research goals. The first academic year presentation is expected to be a discussion of completed or planned research, with presentations in subsequent years used to show and discuss preliminary and then more final research results.

2.14 Publication of Research

"Work, finish, and publish." Faraday's advice is still relevant: your research will have little value to the scientific community until it has been through peer review and been published by a reputable outlet. Ph.D. candidates lacking a publication record will rarely be competitive for post-doctoral or tenure-track positions. Discuss the mechanics of publication and appropriate target journals with your advisor, other members of your Supervisory Committee, and other students. In most cases, it is better to write your dissertation as a series of manuscripts than as a chaptered monograph. Examine theses and dissertations by recent graduates, as well as publications derived from these works. Make use of help available through the UNL Writing Center or other resources offered on campus to help develop good writing skills.

3.0 TIMETABLE FOR THE M.S. DEGREE IN EARTH AND ATMOSPHERIC SCIENCES

3.1. First semester

3.1.1 Advisor: All graduate students have an advisor assigned on admission: a student is only admitted if at least one faculty member agrees to serve as an advisor. Although neither is obligated to continue in these roles, it is incumbent on both parties to determine the future of the collaboration in the first semester, so that if necessary the student can find a new advisor. Discussion of potential research topics should take place during the first semester.

3.1.2 Course work: All new students will enroll in GEOS 900 (Professional Development in Geosciences) during their first Fall term (unless they have taken a prior course with similar content, determined by the Graduate Chair), and GEOS 099 (Colloquium) during each semester

they are enrolled. All students should begin to clear any deficiencies noted by the Graduate Committee. Other courses should be selected in consultation with the student's advisor.

3.2 Second semester

3.2.1 *Committee*: The Examining Committee (a.k.a. the Supervisory Committee or Thesis Committee) should be formed during the second semester. At least half of the members of this committee must be members of the EAS Faculty. At least three committee members must be members of the Graduate Faculty (or non-Graduate Faculty approved to perform specified Graduate Faculty duties). *If your major advisor is not a member of EAS, you must have a Co-Chair who is a member of EAS. Signatures of both co-chairs are required on forms submitted to the EAS Graduate Committee and to Graduate Studies.* You may have committee members who are external to UNL, but in this case please talk to the Graduate Chair for approval—such committee members will not be able to vote at your defense unless approved in advance.

3.2.2 Thesis Proposal: A thesis topic should be defined by the end of the second semester. This can be formalized by writing a thesis proposal. It is the responsibility of the student to demonstrate that the proposed thesis research is scientifically significant and feasible within the limits of time and available resources. In addition, students must demonstrate that they have sufficient scientific background to conduct the research. To this end, the thesis proposal should contain:

- a discussion of the specific research project, its scientific significance, and relevant background information.
- a detailed discussion of research and analytical methods to be employed.
- a detailed list of the equipment and/or funds that will be needed
- a tentative schedule for the research and its completion.

This document will serve as the basis for a required short oral presentation that will be given to the entire department before the end of the second semester, commonly as part of the Monday EAS Colloquium. The purpose of this presentation is to defend your proposal and receive feedback from members of the department.

Students are strongly encouraged to use this accepted proposal as the basis for applying for outside funds to help defer the costs of equipment, analysis, and thesis manuscript preparation.

3.2.3. Memorandum of Courses: File the Memorandum of Courses during your second semester. The Option A degree requires the student to earn at least 30 semester hours of credit. Of these 30 hours, 6 to10 hours must be in thesis research (GEOS 899) and 20 to 24 hours must be in regular course work. At least 10 hours of the regular course work must be in regularly scheduled campus courses (a maximum of 14 credits of transfer course work from the past 10 years may be accepted, subject to approval by the student's Supervisory Committee and the Graduate Chair). At least 8 hours of the regular course work must be earned in courses open exclusively to graduate students (900 level, or 800 level without 400 level counterparts). The minimum grades that you must receive to obtain credit toward your degree program are summarized in the Graduate Bulletin.

You can obtain a copy of the Memorandum of Courses at https://graduate.unl.edu/academics/program-steps/masters-degree-steps-to-completion/. The specific courses and thesis hours listed on the Memorandum of Courses must conform to the above rules and must be approved by the student's Supervisory Committee and by the Chair of

the EAS Graduate Committee. Your major will be listed as 'Earth and Atmospheric Sciences'. If you want to earn a Specialization (Section 2.3) you must declare it on the Memorandum of Courses. Post-approval changes of the Memorandum of Courses are possible but not automatic, and require the approval of the student's Supervisory Committee. Your degree must be completed within 5 years of your first term of enrollment, unless approved otherwise by the Office of Graduate Studies.

3.2.4. Admission to Candidacy: Candidacy is granted when the **Memorandum of Courses** is approved by the Dean of Graduate Studies. This must be done before one-half (1/2) of the course program (as detailed in the Memorandum of Courses) is completed. Typically, file the Memorandum of Courses before 15 hours of course work (including any approved transfer credit) is graded. This is normally before the end of the second semester of residence.

3.3 First Summer

During this time when many graduate students may not be registered or taking classes, focused time is available for making substantial research progress. Master's students are expected to take advantage of this focused research time during the summer and to continue working with their advisors to ensure they arrive at the fall semester having completed an appreciable portion of their research.

3.4 Third and Subsequent Semesters

3.4.1. Committee Meetings: Students should hold committee meetings at least annually.

3.4.2 Thesis Preparation: Early in the writing process, the Candidate should get the Guidelines for Thesis Writing. This is available at https://graduate.unl.edu/academics/degrees/guidelines/. EAS has no specific regulations regarding style; discuss thesis formatting and style with your advisor.

3.5 Final Semester

3.5.1 Application for Advanced Degree: The Application for Advanced Degree (available at https://graduate.unl.edu/academics/program-steps/masters-degree-steps-to-completion) must be submitted to the Office of Graduate Studies at the start of the semester in which you will finish all the requirements for the degree. A filing fee is required at the time the form is submitted to the Graduate Studies Office. The Application for Advanced Degree is valid for only one semester, so you must complete your degree during that semester or file the application again in a subsequent semester. This fee is neither transferable nor refundable. Some students spend a remarkable amount of money filing these documents over and over again. Talk to your advisor before the semester starts to find out whether it is realistic to expect that you will graduate.

3.5.2 Thesis Writing and Revision: You will write one or more versions in consultation with your advisor. Eventually your advisor will indicate that the thesis is ready to be seen by other members of the committee. This does not indicate that your defense will be successful, only that you are moving toward a defense.

3.5.3 Defense Date: Consult the academic calendar for permissible dates and deadlines for your thesis defense. Ensure that all committee members have access to your thesis draft no later than

two weeks prior to your defense date, unless other arrangements have been made.

3.5.4 Final Examination Report: The Final Examination Report Form must be submitted to the Office of Graduate Studies at least 4 weeks before the defense date. This form establishes the date, time, and place for the defense and must be approved by all the Supervisory Committee members and the Chair of the Graduate Committee. After it is approved and returned from the Office of Graduate Studies to the major advisor, this form serves as the final sign-off form for the examination. You can obtain a copy of the Final Examination Report Form at https://graduate.unl.edu/academics/program-steps/masters-degree-steps-to-completion.

3.5.5 Format Check: At least 2 weeks before the defense, you must submit a preliminary copy of the thesis to the Office of Graduate Studies. It will be checked for page format and general layout and returned to you.

3.5.6 Defense: Post announcements of the thesis defense (oral examination) with the title, candidate's name, and the exact time, date, and place prominently in EAS at least 48 hours before the defense. Anyone may attend the formal presentation of research results, which constitutes the public portion of the thesis defense. Guests, at the discretion of the thesis advisor, may be excused at the end of the public presentation. At the conclusion of the defense, the thesis committee will render their judgment and sign the Final Examination Report as appropriate.

3.5.7 Final Paperwork: Theses are submitted electronically. Refer to the guidelines at https://graduate.unl.edu/academics/program-steps/masters-degree-steps-to-completion.

4.0 TIMETABLE FOR Ph.D. IN EARTH AND ATMOSPHERIC SCIENCES

4.1 First Semester

4.1.1 Advisor: All graduate students have an assigned advisor on admission: a student is only admitted if at least one faculty member agrees to serve as an advisor. Although neither is obligated to continue in these roles, it is incumbent on both parties to determine the future of the collaboration in the first semester so that the student can find a new advisor, if necessary. Discussion of potential research topics should take place during the first semester.

4.1.2 Course work: All new students will enroll in GEOS 900 (Professional Development in Geosciences) during their first Fall term (unless they have taken a prior course with similar content, determined by the Graduate Chair), and will enroll in GEOS 099 (Colloquium) during all terms enrolled. All students should begin to clear any deficiencies noted by the Graduate Admission Committee. Other courses should be selected in consultation with the advisor. Some Supervisory Committees require Research Tools or languages. Ask your advisor about these issues and plan your course work accordingly.

4.2 Second Semester

4.2.1 Schedule and Hold Preliminary Review: The purpose of the preliminary review is to ensure

that each Ph.D. student is making satisfactory progress. The most important issues to focus on are plans for course work and the significance and feasibility of the research agenda.
The preliminary review will occur before the end of the eighth week of the second semester of residence in the Ph.D. program. The review will be attended by the student, the student's advisor, prospective Supervisory Committee members, and others invited by the student's advisor. Prior to the preliminary review, the student should provide the guests with a written summary of the proposed topic of their dissertation research and an outline of the research program that will be used to examine the proposed question(s). The meeting will be chaired by the student's advisor. The student will outline their career goals, dissertation research interests, proposed program of study, and plans to obtain funding to support the proposed research. This is followed by a discussion among all participants that is designed to provide constructive advice and consider whether the research is likely to result in a completed dissertation. The meeting should include a review of the student's performance in course work and in other functions that bear on the process of becoming a successful professional. At the end of the meeting, the student is excused, and the individuals present discuss the student's progress. If the student has demonstrated a clear vision of where they are going and how, and has performed in a satisfactory manner in both prior course work and TA/RA responsibilities, they are approved to continue in the Ph.D. program. If, on the other hand, serious questions have emerged concerning any aspects of the student's progress, the student will be required to attend a second meeting that will consist of an oral exam on pertinent topics. This exam will be attended and administered by the same faculty members described above with the addition of the Chair of the Graduate Committee, and the student's performance on this exam will determine whether they are to continue in the Ph.D. program and remain eligible for funding.

If the student is approved for continuation, three tangible outcomes should result from the student's presentation and subsequent discussion among participants: (1) recommendations on a program of study that guides the student's remaining course work and ensures mastery of theory and method in relevant fields and sub fields; (2) agreement on the timing and format for the student's comprehensive exam, and (3) formal appointment of the Supervisory Committee.

4.2.2 Appointment of Supervisory Committee: The Dissertation Committee (Supervisory Committee) must consist of at least 4 members of the UNL Graduate Faculty including at least one Graduate Faculty member from outside EAS. At least half of the members of the Supervisory Committee must be members of the EAS Faculty. All members of the Supervisory Committee must be listed on the Appointment of Supervisory Committee form that is submitted to the Office of Graduate Studies for approval. *If your major advisor is not a member of EAS, you must have a Co-Chair who is a member of EAS.* You can get a copy of the paperwork necessary for the appointment of a Supervisory Committee at https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion/.

4.2.3. Program of Studies: The Doctoral degree requires a minimum of 90 hours of credit. The Supervisory Committee has great latitude in allocating this credit between previous postgraduate work, course work taken with EAS, and dissertation hours. The following restrictions, however, must be obeyed:

- Academic Residency: at least 27 hours must be taken at UNL within a consecutive 18-month period. At least 15 of the 27 hours must be taken at UNL after receiving a Master's degree from UNL.

- At least 45 hours must be completed at the University of Nebraska.
- A grade of B or higher is required for all courses in EAS at the 400/800 level, and a grade of C or higher is required for all EAS courses at the 900 level and all course work outside of EAS.

The Program of Studies form includes a section called *Language and Research Tools*. There is not a UNL requirement for Language and Research Tools, but the Supervisory Committee may suggest or require coursework needed to adequately complete the degree (for example, programming tools, statistical tools, a foreign language).

The specific courses and dissertation hours listed on the Program of Studies must conform to the above rules and must be approved by the student's Supervisory Committee and by the EAS Graduate Chair. The student should try to ensure that all classes listed on the Program of Studies will be offered and do not require an excessive number of prerequisites that would unduly delay their completion.

Note that the Program of Studies must be submitted to the Office of Graduate Studies before 1/2 of the 90 credit minimum has been completed. **Failure to do this in a timely fashion may lead to additional course work being required.** Thus, the student should finish these steps before 45 hours of course work (including any approved transfer credit) is graded. This is normally before the end of the second semester of attendance.

The time limit on granting the Ph.D. is 8 years from the date of filing the Program of Studies in the Office of Graduate Studies. You can get a copy of the form necessary to file a Program of Studies at: https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion/.

4.2.4. Presentation in EAS Colloquium: In the first academic year you are expected to make a presentation to the department that either summarizes research that you did at a prior institution or that outlines the new research planned for your upcoming EAS degree.

4.3 First and Subsequent Summers

During this time when you may not be taking classes, focused time is available for making substantial research progress. You are expected to take advantage of this focused research time and time during the summer and to continue working with your advisors to ensure you arrive at the fall semester having made substantial progress toward your overall research plan.

4.4 Third and Fourth Semesters, the Comprehensive Examination

4.4.1 Composition of the Comprehensive Examination: The student must pass a Comprehensive Examination before admission to Candidacy. The Comprehensive Examination will have two parts and should be completed before the beginning of the fifth semester. Part I will consist of writing, presenting, and defending a proposal that will guide the dissertation research. The proposal will be presented to the Supervisory Committee. Part II will consist of an examination devised by the Supervisory Committee and must have a written component. The format of that written component is at the discretion of the Supervisory Committee.

4.4.2 Part I-Defense of the Dissertation Proposal: Each student will prepare a proposal describing the research to be undertaken for the dissertation. The proposal should describe the research and address its significance to the major field of study, as well as to minor or related

fields. The Supervisory Committee may also request that specific issues be addressed or specific questions be answered. The written proposal must be submitted to the Supervisory Committee at least one week before the date of the proposal presentation to the Supervisory Committee. The student must satisfy the Supervisory Committee that the proposed research will "show technical mastery of their field and advance or modify former knowledge." When appropriate, students should write the proposal as if it was to be submitted to a major granting agency such as the National Science Foundation. This will help prepare the student for writing grant proposals and provide a first step towards applying for project funding after the proposal is accepted by the student's Supervisory Committee. In such cases the advisor and student should work together in preparing the proposal for submission to a granting agency.

4.4.3 Part II-The Comprehensive Examination: The student must take a comprehensive examination administered by the Supervisory Committee, at least part of which must be written. The Supervisory Committee is responsible for assuring that the scheduling, subject matter, and format of this portion of the Comprehensive Examination are consistent with the practices of EAS and the standards of the Office of Graduate Studies. The subject matter and format for this portion of the Comprehensive Examination will be determined by the student's Supervisory Committee. The Supervisory Committee should report the results of this portion of the Comprehensive Examination promptly to the Chair of the EAS Graduate Committee. If the student fails this portion of the Comprehensive Examination, the Supervisory Committee may recommend that the student attempt another examination. Failure to pass the Comprehensive Exam may be the basis for termination of the Ph.D. program in EAS (https://catalog.unl.edu/graduate-professional/policies/academic-program-requirements).

4.4.4 Admission to Candidacy: A student is recognized as a Candidate upon completion of the Comprehensive Examinations and any research tool and language requirements listed in the Program of Studies. Candidacy is formalized by submitting an Application for Candidacy to the Office of Graduate Studies. The Application for Candidacy must be filed at least 7 months prior to the dissertation defense. The candidacy "clock" begins upon completion of the last requirement for candidacy irrespective of the date on which the Application for Candidacy is filed. Once attained, candidacy is valid until the Program of Studies expires. The Candidate must be continually registered at the University during each academic year semester (i.e., fall and spring semesters) from the time Candidacy is granted until the degree is awarded. The Candidate must register for at least one credit hour per semester. Failure to be continually registered will terminate the Candidacy. A copy of the Application for Admission to Candidacy is available at https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion/ .

4.5 Subsequent Semesters

4.5.1. Committee Meetings: Students should hold committee meetings at least annually.

4.5.2 Dissertation Preparation: Early in the writing process, the Candidate should get the Guidelines for Dissertation Writing, available at https://graduate.unl.edu/academics/degrees/guidelines/. It presents the format information you need to prepare the dissertation. EAS has no regulations regarding style; discuss dissertation formatting and style with your advisor.

4.5.3 *Presentation in EAS Colloquium:* Each year, you are expected to make a presentation in the EAS Colloquium that describes some aspect of your research activities and progress.

4.5.4 *Data Collection: Field work, visiting off-campus labs, museums*. Ph.D. students may sometimes need to travel to other institutions or field locations to collect data for their dissertations. If grant funding is not already available for these endeavors, then Ph.D. candidates should work with their advisor to procure funding for such travel. Such funds are often available from small funding opportunities through the University and scientific societies (see Appendix III).

4.6 Final Semester

4.6.1 Application for Advanced Degree: The Application for Advanced Degree (available at https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion/) must be submitted to the Office of Graduate Studies at the start of the semester in which you will finish all the requirements for the degree. A filing fee is required at the time the form is filed with Graduate Studies. The Application for Advanced Degree is valid only for one semester, so you must complete your degree during that semester or file the application again in a subsequent semester. This fee is neither transferable nor refundable; be realistic regarding the probability that you will finish in consultation with your advisor.

4.6.2 Dissertation Writing and Revision: You will write one or more versions of each chapter in consultation with your advisor and others. Submit a complete draft to your advisor. When your advisor approves, you should submit a complete draft of the dissertation to the reading committee. The reading committee is specified on your Program of Studies and is comprised of at least two members of the Supervisory Committee exclusive of the Chair (and Co-Chair, if applicable). When the reading committee has agreed that your dissertation is of sufficient quality to defend, you may submit the dissertation to the rest of the committee. This does not indicate your defense will be successful, only that you are moving toward a defense.

4.6.3 Defense Date: The time and location of your defense should be scheduled in consultation with your Supervisory Committee. It should be held at least 2 weeks after your dissertation draft has been received by all members of your Supervisory Committee (at least 1 week in summer), though consult with all members of your Supervisory Committee to ensure they will not need your draft sooner. Consult the academic calendar for permissible dates and deadlines.

4.6.4 Final Examination Report: The Application for Final Oral Examination (https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion/) must be submitted to the Office of Graduate Studies at least 2 weeks before the defense date. This form establishes the date, time, and place for the defense and must be approved by all Supervisory Committee members. After it is approved, you will receive final instructions, a checklist, and two forms (*Report on Completion of the Doctoral Degree* and *Signature Page*) to bring to the final oral examination for signatures from your Supervisory Committee.

4.6.5 Format Check: At least **2 weeks before the defense**, you must email a preliminary copy of the dissertation to the Office of Graduate Studies. It will be checked for page format and general layout and returned to you.

4.6.6 Defense: Post announcements of the dissertation defense (oral examination) with the title, candidate's name, and the exact time, date, and place prominently in EAS at least 48 hours before the defense. Anyone may attend the public presentation of research results, which constitutes the main part of the defense. Guests, at the discretion of the thesis advisor, may be excused at the end of the public presentation. At the conclusion of the defense, the committee will render their judgment and sign the *Report on Completion of the Doctoral Degree* and *Signature Page,* as appropriate.

4.6.7 Final Paperwork: Dissertations are submitted electronically. Refer to the guidelines at https://graduate.unl.edu/academics/program-steps/doctoral-degree-steps-to-completion .

5.0 TIMETABLE AND PROCEDURES FOR DUAL-DEGREE (M.S./Ph.D.) IN EARTH AND ATMOSPHERIC SCIENCES

Students on this degree track will earn an M.S. on the way to their final goal of a Ph.D. The timeline is reduced compared to earning both degrees separately since there will generally be overlap between the research components leading to the M.S. and Ph.D. Refer to sections 3.0 and 4.0 above for more detail on specific components mentioned below, which largely overlap the requirements for the separate M.S. and Ph.D. degree tracks.

5.1 First Semester

As with the M.S., first-semester students in the dual degree track will:

- Meet with their advisor (assigned at admission) and discuss potential research topics.
- Enroll in GEOS 900 (Professional Development in Geosciences) during their first fall term (if applicable) and in GEOS 099 (Colloquium) during each semester they are enrolled in an EAS graduate degree program.
- Work with their advisor to select coursework for future terms.

5.2 Second Semester

Requirements are similar to those for a M.S. student; see the discussion under subsection 3.2:

- Students will form a Supervisory Committee. *Committee selection should follow the guidelines for a Ph.D. student (subsection 4.2.2)* rather than those for a M.S. student (subsection 3.2.1). The Supervisory Committee formed at this time will generally remain consistent throughout the student's degree program, facilitating the transition between research projects, which are generally expected to be related.
- Students in the dual-degree program are expected to write a thesis proposal which will form the basis for a presentation to the department during the student's second semester. This proposal, as described for M.S. students (subsection 3.2.2), will include background information, specific research question(s), analytical methods, needed equipment and/or funding, and a tentative schedule for completion of the project.
- Students will present their proposal to the department as part of the Monday colloquium series.

- A Memorandum of Courses will be filed consisting of a minimum of 30 credit hours, according to the guidelines for M.S. students (see subsection 3.2.3).

5.3 First and Subsequent Summers

Students are expected to use their first and subsequent summers to make considerable progress on their research project.

5.4 Third and Subsequent Semesters

During this/these semester(s), students will be focused on finishing the coursework on their Memorandum of Courses, continuing their research, and writing their thesis:

- As noted for M.S. students (subsection 3.5), the thesis should go through one or more revision rounds with the advisor before going out to the full Supervisory Committee. Students should confer with their advisor to determine the best format for their thesis, and keep consistency with Graduate Studies requirements (see subsection 3.4.2).

5.5 Final M.S. Semester

The student will conclude their writing and defend their thesis:

- Early in the semester when the requirements for the M.S. will be met, the student should apply for the degree (see subsection 3.5.1) after consultation with their advisor.
- The thesis draft should go to the students' full committee after the advisor has approved the draft, at least 2 weeks prior to the thesis defense.
- The student will defend the thesis, make revisions, and submit their final thesis after their Supervisory Committee has approved. The advisor will file the Final Examination Report Form once the final thesis has been approved by the full Supervisory Committee. See subsection 3.5.4 for more details.
- The student should finalize all requirements for a M.S. degree as described by the Office of Graduate Studies (https://graduate.unl.edu/academics/program-steps/masters-degree-steps-to-completion/).

5.6 First Ph.D. Summer and/or Semester

- Students should work with their advisor to further develop a plan for how the M.S. research will be extended into a Ph.D. project. This process should result in the beginning of a draft of the students' summary/proposal of their dissertation research.
- Students should generally take substantial coursework early in the Ph.D. portion of their program, focusing on content and tools that will be helpful for their Ph.D. research.
- Students should also work with their advisor to prepare/submit/revise a manuscript for the peer-reviewed literature based on their M.S. thesis work.

5.7 Second Ph.D. Semester

During the second semester, students will formalize their Ph.D. project and Supervisory Committee:

- Complete a short proposal of dissertation research and distribute it to the Supervisory Committee at least 2 weeks before the preliminary review meeting.
- Hold the preliminary review meeting with the Supervisory Committee, as described in subsection 4.2.1. This meeting will result in:

- Committee discussion of the proposed research plan.
- Assessment of the students' ability to carry out the proposed research.
- Formal appointment of the Supervisory Committee for the Ph.D. (see subsection 4.2.2). This will generally be the same as the committee for the M.S. portion of the degree, but changes are allowed if needed. The student will also file the appropriate paperwork to formally establish their Supervisory Committee.
- Discussion between the student and their Supervisory Committee about the proposed Program of Studies (see subsection 4.2.3). Once a set of courses are agreed upon, the student will file the Program of Studies. It is generally expected that the 30+ credit hours from the M.S. portion of the students' degree program will transfer to the Ph.D. portion of their program, but this is up to the judgment of the Supervisory Committee (e.g., if major project changes are needed, some courses could be judged not sufficiently relevant).
- Discussion between the student and their Supervisory Committee about the timing and format of the comprehensive exam, which will occur in the 3rd or 4th semester.

- Students will also give a presentation in the EAS colloquium highlighting their research plan for their Ph.D. program.

5.8 Third or Fourth Semester

During the third or fourth semester as determined by the student and their Supervisory Committee, the student will take their comprehensive examination. This exam consists of two parts (see subsection 4.4 for more details):

- Part 1: Dissertation Proposal Defense: the student will provide a formal proposal of dissertation research (e.g., in NSF proposal format or another format appropriate to the discipline) to their Supervisory Committee at least 2 weeks before the defense. At the defense, the student will present their proposal to the Supervisory Committee and will answer questions focused on the appropriate background and methods. Committee members will assess whether the student has a clear plan for completing the work and whether the work represents an important step forward in the specific research area.
- Part II: Written Portion: though the procedures for the written exam portion may vary by discipline, all Supervisory Committee members should have the opportunity to ask appropriate question(s) and assess the responses to all questions asked.
- Once Parts I and II of the comprehensive exam have been passed, the Admission to Candidacy Form should be filed with Graduate Studies (see subsection 4.4.4).

5.9 Subsequent Semesters

In the following semesters leading up to graduation, students should:

- Meet annually with their Supervisory Committee to discuss progress and seek input.
- Present annually in the EAS colloquium series.
- Conduct research and write up the results. Students in the dual-degree track are expected to submit at least one paper to the peer-reviewed literature during their degree program, and the comments received in peer review should be used to strengthen the project.

- Format of the dissertation can vary according to the expectations of the advisor and Supervisory Committee. In a degree program with a publication-heavy focus, the dissertation may be a collection of submitted papers with Introduction and Conclusion chapters added. If the student has not been strongly encouraged to write up results as a series of journal articles, a coherent document with chapters may be a better option.

5.10 Final Ph.D. Semester

In the final semester, the student should generally follow the guidelines for Ph.D. students (see subsection 4.6):

- Apply for the degree early in the final semester.
- Complete and revise the dissertation in coordination with the advisor and the input of the reading committee, then send the dissertation to the full Supervisory Committee at least 2 weeks prior to the defense. Also submit the dissertation draft to Graduate Studies for a format check.
- The Final Examination Report Form is submitted to Graduate Studies.
- Defend the dissertation in a public presentation, including a private session with the Supervisory Committee (at the discretion of the advisor).
- Revise and submit the dissertation; file all final paperwork.

APPENDIX I: EXPECTATIONS

Graduate school is a challenging experience that comes with many rewards. However, most new students begin their work without a clear idea of what it takes to succeed as a graduate student. This document is intended to summarize basic expectations and provide a framework for interaction with your advisor.

Your advisor may have additional expectations beyond those covered in this document. You should discuss those expectations with them.

Goals

Your reasons for entering our graduate program vary, but regardless of your exact reasons, your major goal should be to learn how to be a professional scientist. One of your advisor's roles is that of a mentor who will help you learn how to develop into a professional scientist.

Your advisor will provide advice and direction on your research project, including direction in choosing a thesis topic, designing research questions, investigating the relevant background information, planning and conducting field and/or laboratory analyses, writing and revising proposals, abstracts, and publishable manuscripts, and giving professional presentations. Advisors often select and design (and/or guide you in selecting/designing) research projects with the intent that the results will be sufficiently new and important to merit publication. They have selected you as a student because of your talents and promise. Seeing a project through to publication requires enormous commitment and self-discipline, and will typically require significant work that extends beyond the formal duration of your time in the graduate program.

Advisors expect to write letters of recommendation for you, upon your request. Therefore, you should keep them aware of your progress and successes. In other words, help your advisor to find good things to say about you! Advisors can help you fix shortcomings and develop a professional attitude that keeps any insecurities in their proper place. In the end, they will want to write letters that describe your skills and ability as positively and honestly as possible. If you want your advisor to write that you consistently do more than expected, then make that effort—impress them.

Advisors are there to provide help, advice, and suggestions, but <u>you</u> are ultimately responsible for completing your research satisfactorily.

Time Commitment

The time commitment to research is a key issue for graduate students and mentors. In graduate school, your top priority should be your research. In this regard, many advisors will expect you to construct a project timeline with specific goals each semester and during the summer, and to meet these deadlines. You should let them know if problems arise in terms of meeting deadlines and expectations, such that a mutually acceptable solution can be found. Just as your advisor is imposing demands on your time, you have a right to their time as well, in terms of mentoring you in your project progress. Accordingly, you should expect to have periodic meetings to review progress and discuss any issues or concerns.

Most new graduate students struggle with time management. If you are a full-time student—and especially if you are supported as a GTA (Graduate Teaching Assistant) or GRA (Graduate Research Assistant)—you should regard graduate school as *at least* a full-time job. Downtime for mental refueling is certainly necessary, but the typical "good" graduate student is expected to work hard. This often requires working weekends and evenings. This is the standard expectation for any good student in any decent program, and you will find that your advisors impose the same demands upon themselves. A minimum workweek for a graduate student should be regarded as at least 45 hours. Consider that 8-9 credit hours of (non-research) coursework require around 20 hours per week. Research will require a minimum of 10 to >25 hours per week. On top of this, a Teaching Assistantship (GTA) requires 10-15+ hours per week. If you are on a GRA or fellowship, you should spend more than 20 hours/week on research during the school year and at least 40 hours/week during the summer. Your duties may include research tasks that your advisor assigns. These numbers will shift and evolve to some degree, depending on your stage in the program. For example, as a beginning graduate student, your available time will be largely expended in non-project coursework and, perhaps, GTA or GRA responsibilities. Your time available for research will be correspondingly less. As you progress through the program, however, your non-thesis coursework will diminish, and you should spend the majority of your time on research.

Remember that a RA or TA-ship is a paid job and the funding that you are receiving is not easy to secure. Therefore, you should undertake the duties and commitments inherent in this job with a high degree of integrity and responsibility.

Professionalism

Part of your higher education includes developing or honing skills of "professionalism". Professionalism includes (1) taking responsibility for one's own actions and duties, (2) maintaining reasonable respect for and tolerance of other views, (3) a willingness to make reasonable compromises to meet shared goals, (4) maintaining a pleasant demeanor, (5) a focus on accomplishing tasks as expeditiously and skillfully as possible, and (6) an ability to escape, avoid, or ignore petty arguments and gossip. You should also strive to project a professional demeanor in appropriate circumstances (e.g., mock or professional presentations, interviews, etc.). Note that a professional relationship does not require friendship but should allow you to work reasonably well even with people you personally dislike, or who dislike you (although we all hope that is never the case).

A professional manner carries us through periods of disagreement and difficulty with minimal stress. It allows one to become displeased or angry with another, yet avoid furious denunciation and accusation. It should allow one to calmly consider a situation and discuss it with others involved as a problem to be solved. With specific regard to your research products, it should allow one to invite and accept reasonable criticism as constructive rather than destructive or personal.

Intellectual Property, Authorship, Writing

You should plan to publish the results of your research in a peer-reviewed outlet. There are two important reasons for this. One is important to you, and the other is important to your advisor and the EAS graduate program:

(1) You will spend significant effort on your project, and it is a wonderful feeling to see that effort translate into a high-quality publication that will benefit the scientific community, contribute to your personal CV, and make your family proud. If your work appears only in your thesis, it will collect dust in the university library or digital collection. Furthermore, there is no better way to learn scientific writing than to write a manuscript and receive reviews from experts in the field. Accordingly, many advisors prefer that students write their thesis as a manuscript (or series of manuscripts) targeted for submission to peer-reviewed journals or equivalent (e.g., special publications). Ideally one or more or your manuscripts will be submitted prior to your defense. Others should be ready to be submitted about the time you graduate from the program, which means that revision and resubmission will continue for a time beyond your formal commitment in the graduate program. We recognize that the timetable for publication of any one paper depends heavily on the peer-review system. Having manuscripts nearly ready for submission by graduation will accelerate publication of your work and make it easier for you to pursue new projects thereafter.

(2) A great deal of time and money are invested in your graduate research, and this requires follow-through with publication of results. Your advisor must demonstrate results from funded research, or funding agencies will deny future funding. Furthermore, research is expensive, and someone – whether taxpayers (all of us), private corporations/donors, or scientific societies—commonly helps us pay for it. Therefore, it is incumbent upon us to demonstrate appreciation for these funds via publication. Papers resulting directly from your thesis work are yours, and you will likely (and preferably) be first author on them. If your advisor (and/or others) have a substantial role in producing the idea, designing the project, and/or writing the manuscript (which is the case for nearly all theses), then your advisor (and/or others) will be a co-author. First authorship means that you have performed the majority of the intellectual and physical effort, completed the project, and conducted the majority of the writing. If you cannot complete your work or decline to follow up with a manuscript, you forfeit your right to be first author.

Writing and presenting well are key skills that you should develop and hone during graduate school. To bolster your written and oral skills, the department requires you to take Professional Development in Geosciences (GEOS 900) and to present your work in a departmental seminar and thesis or dissertation defense. You may also be expected to present your work in lab meetings and meetings with your committee. In addition, your advisor will help you with your writing by requiring multiple drafts of outlines, proposals, abstracts and manuscripts, and providing you with prodigious feedback on the content and structure of these drafts. As a side note, you should not expect your advisor to serve as your copyeditor; the use of correct grammar, spelling, etc. are primarily your responsibility. Such issues should be cleaned up as much as possible before submitting drafts to your advisor.

Consider the purpose when you hand a draft to your advisor: do you want feedback on the ideas or on the writing? Be specific about your needs to get timely and appropriate feedback. Be prepared to re-write multiple drafts of your paper; it typically takes at least five drafts to hone the ideas and the writing. If you ask for assistance with writing clarity, make sure you take their suggestions and fix your manuscript or be prepared to explain why you did not.

Acknowledgements

Special thanks to Lynn Soreghan (OU, Norman, OK) for sharing her summary of expectations. Additional thanks to Heideman (2000), who provided inspiration for much of the content in this appendix.

Useful References

Christopher, S. A. (2011), *Navigating Graduate School and Beyond: A Career Guide for Graduate Students and a Must Read for Every Advisor*, 158 pp., AGU, Washington, D. C., doi:10.1029/SP064. http://www.agu.org/books/sp/v064/

APPENDIX II: KEY MILESTONES

As a graduate student, you'll need to take responsibility for knowing when various university forms are due, securing the requisite signatures, etc. Detailed information is available on the UNL Office of Graduate Studies website. Some major milestones that you should keep in mind are indicated below. These criteria are used by the faculty for the February Graduate Student Evaluation meeting. Students in their first semester are normally not scrutinized during this process, although there is an expectation that first semester students will have begun to clear any entrance deficiencies, be enrolled with a suitable class load, be performing satisfactorily in their assistantship (if any), and begun exploring research topics with their advisor.

M.S. Students

2nd Semester:

- Not on Academic Probation
- Any remaining entrance deficiencies cleared by end of this semester
- In the process of completing the majority (>16) of class hours needed
- Met with Supervisory Committee
- Filed a Memorandum of Courses
- Formulated thesis topic agreeable to Supervisory Committee
- Give thesis proposal seminar in Monday Colloquium by end of 2nd semester

3rd Semester:

- Not on Academic Probation
- In the process of completing all required class hours
- Thesis research and writing underway

4th Semester:

- Not on Academic Probation
- In the process of completing all required class hours
- Making good progress on thesis with expectation of May (or August) graduation

Ph.D. Students

2nd Semester:

- Not on Academic Probation
- Any remaining entrance deficiencies cleared by end of this semester
- In the process of completing the majority of class hours needed for degree
- Met with Supervisory Committee
- Filed a Program of Studies
- Formulated dissertation topic agreeable to Supervisory Committee
- Scheduled comprehensive exams

3rd Semester:

- Not on Academic Probation
- In the process of completing all required class hours
- Defense of a dissertation proposal
- Scheduled to complete comp exams
- Begun dissertation research

4th Semester:

- Not on Academic Probation
- Completing all required class hours
- Completed comprehensive exams
- Making good progress on dissertation with expectation of 1st publication submission

5th Semester:

- Not on Academic Probation
- Doctoral Candidate status (Comprehensive exams and classes completed)
- Present research results at national meeting

Beyond 5th Semester:

- Publish or Perish

APPENDIX III: FUNDING SOURCES

Name of Grant	Funding Agency	Funding Objectives
Graduate Fellowships	National Science Foundation	masters, doctoral
Graduate Fellowships	NASA	masters, doctoral
Graduate Fellowships	Department of Energy	masters, doctoral
Predoctoral and Dissertation Fellowships	National Research Council	ethnic minorities
Graduate Fellowships	Natl. Physical Science Consort.	women & minorities
Graduate Fellowships	U.S. Dept. of Defense	masters, doctoral
Schlanger Fellowships	Joint Oceanographic Institutions	ocean drilling related
Graduate Research Grants	Amer. Assoc. Petroleum Geol.	masters, doctoral
Graduate Scholarships	Amer. Geological Inst.	ethnic minorities
Graduate Fellowships	Amer. Meteorological Soc.	masters, doctoral
Chrysalis Scholarships	Assoc. Women Geosci.	non-trad. women
Graduate Research Grants	Geol. Soc. America	masters, doctoral
Graduate Grant-In-Aid	Sigma Xi Honorary Soc.	(national & local)
Graduate Scholarships	Soc. Explor. Geophysics	exploration geophys.
Graduate Research Grants	Regional geologic societies	regional topics
Yatkola-Edwards Fund	Nebraska Geological Society	Nebraska-related
Research Award	Lincoln Gem & Mineral	any level
Travel grants to meetings	UNL Chapter Sigma Xi	research presentations
Dissertation Travel Grant	UNL Graduate Studies	doctoral
Research Grants	UNL Center Great Plains Stud.	graduate students