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GUIDELINES FOR ESE Ph.D. STUDENTS

Department of Environmental Sciences and Engineering (ESE)
UNC Gillings School of Global Public Health
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Introduction

The Ph.D. degree is the highest academic degree granted by American universities. Although the requirements set by the many departments at UNC Chapel Hill that grant this degree vary, recipients universally demonstrate mastery of their field and successfully complete and defend a dissertation. ESE permits great latitude in the choice of courses, the selection of faculty members to serve on the student's Doctoral Dissertation Committee, and choice of dissertation topic. The steps that must be taken between admission and graduation, however, are similar for all doctoral students, and are described in these Guidelines. Nothing in these Guidelines supersedes university guidelines for the Ph.D. as described in the UNC Graduate Student Handbook [<http://handbook.unc.edu>] or Gillings School of Global Public Health information [http://www.sph.unc.edu/images/stories/academic_programs/ese/documents/phd.pdf]. Ph.D. students should read the Graduate Student Handbook and the School of Public Health PhD information in conjunction with these Guidelines.

The ultimate requirement for the doctoral degree is that the student must make both an original and a significant contribution to knowledge. Doctoral students will ordinarily follow the sequence shown below to achieve this objective. The time necessary to complete a Ph.D. varies, depending in part on the background of the student, and on his/her work obligations for stipend support. The most important factor contributing to the length of a student's PhD program is the student's ability to identify critical gaps in knowledge, and to develop well-defined research objectives. An achievable rate of progress for many Ph.D. students who already have a Master's degree is shown in the Approximate Timeline below.

Approximate Timeline for Ph.D. Students in ESE

	Semesters after matriculation
1. Admission	0
2. Appoint Advisor	0
3. Outline course program	1 – 2
4. Select dissertation topic	2
5. Select dissertation committee	2
6. Approve course program	2 – 3
7. Complete course work	3 – 4
8. Residency requirement met	4
9. Doctoral written examination (qualifying)	3 – 5
10. Doctoral oral examination (qualifying)	4 – 6
11. Completion of research	7-9
12. Advisor approves dissertation draft	8-10
13. Final oral examination and dissertation defense	8-10
14. Graduation	8 – 10

General Information

1. This document summarizes requirements for the Ph.D. in ESE. The University Calendar of Events [<http://regweb.oit.unc.edu/calendars>] lists relevant deadlines. The student is responsible for checking with his/her Advisor and with ESE's Student Services Office to ensure that all of his/her records are in order and up-to-date, that he/she is progressing satisfactorily, and that all deadlines are met.
2. The department's Admissions Committee is charged with evaluating applicants for admission to the Ph.D. program (including students already enrolled in ESE for a master's degree who wish to continue for a PhD). The department's Academic Programs Committee (APC) is responsible for developing departmental PhD policy and overseeing its implementation. Decisions on questions regarding the application or fulfillment of PhD program policy are made by the Director of Graduate Studies.
3. These guidelines are intended to assist students, the Chairs of doctoral committees, and doctoral committee members in successful and timely completion of PhD studies. As the name suggests, these Guidelines provide guidance, not strict rules or regulations; however, substantial deviations from these Guidelines should be brought to the attention of the Director of Graduate Studies.

Admission to the Ph.D. Program

1. Each application for admission to the Ph.D. program in Environmental Sciences and Engineering is reviewed by both the Admissions Committee and several faculty members most likely to be familiar with the applicant's academic background and research interests. Admission is highly competitive and decisions are based primarily on grade point average; distribution of appropriate courses; Graduate Record Examination scores; prior research experience, if any; and letters of recommendation. In addition, the Department requires each applicant to submit a statement of research interests and career objectives. The Admissions Committee places great importance on this statement when selecting students for admission.
2. An applicant will be considered for admission only if one or more members of the regular¹ faculty agree to serve as the student's Advisor upon enrollment.
3. Admission to a master's program in the Department does not create any expectation that the student will be admitted to the PhD program. Students completing master's programs within the Department must apply again for admission to the Ph.D. program.
4. Applicants to the Ph.D. program often have a master's degree in an appropriate field. Applicants holding only a baccalaureate degree may be recommended to pursue a master's degree prior to being admitted to the Ph.D. program. Direct admission to the Ph.D. program is considered for exceptional students.

The Advisor

1. The Advisor is a faculty member who agrees to support the student's admission to the Ph.D. program. In the Department of Environmental Sciences and Engineering the Advisor will, in most cases, ultimately supervise the student's dissertation research and chair the Doctoral Dissertation Committee. The Advisor must be a regular member of the Department's faculty and a member of the Graduate

¹ "Regular" is defined here as a tenured, tenure-track, or research-track faculty member in the Department of Environmental Sciences and Engineering, or a faculty member who holds a joint appointment in the Department.

School faculty.

2. The Advisor is responsible for guiding the student's academic program. Based upon the student's background and goals, the student and his/her advisor should outline a program of formal courses. They should also discuss areas of original research appropriate to the resources available. The student should select a research topic for the dissertation as soon as possible, preferably in the second semester, so that it may be developed during the formal course work. The student often has responsibilities to his/her advisor or to the Department for work on a research grant or as a teaching assistant. Time for this work must be considered when designing the program of graduate courses, in scheduling examinations, and in conducting the student's doctoral research.

3. If the student's Advisor is not the appropriate individual to direct the dissertation research that the Ph.D. student ultimately decides to pursue, it is the responsibility of the student to discuss his/her research with other members of the faculty and to obtain their agreement to serve on the Doctoral Dissertation Committee.

The Doctoral Dissertation Committee

The student's Doctoral Dissertation Committee plays an important role in aiding the student to achieve excellence.

1. Members of the Doctoral Dissertation Committee will be chosen by agreement between the student and his or her Advisor. The Advisor will chair the Doctoral Dissertation Committee. The majority of this Committee should be identified by the end of the first year of the student's program. The full committee must be established no later than one month prior to the Doctoral Written Examination.

2. The Doctoral Dissertation Committee must have at least five members. The majority of the members must be regular faculty in the Department of Environmental Sciences and Engineering, UNC Gillings School of Global Public Health, and members of the UNC Graduate Faculty.

3. Besides the Advisor, other Committee members may be regular faculty; fixed-term members of the Graduate Faculty; or "special appointees." Doctoral students may include scholars from outside the Department on their committees as "special appointees." These "special appointee" committee members may be individuals from other UNC departments or other persons with scholarly interests and expertise relevant to the student's research area. Special appointees must be approved by the Dean of the Graduate School prior to serving on a Doctoral Dissertation Committee.

4. The Doctoral Dissertation Committee will be responsible for the evaluation of the student's qualifications and progress toward achieving the Ph.D. degree. The evaluation will include appraisal of the student's academic coursework, feasibility and quality of the research project, and all aspects of the student's performance. Together with the student, the Doctoral Dissertation Committee will establish the dates for the Doctoral Written Examination and the Doctoral Oral Examination, and the Committee will administer these examinations.

5. Members of the student's Doctoral Dissertation Committee play a central role in helping him/her earn the Ph.D. and should be consulted regularly for academic and technical advice. The expectation is that the Dissertation Committee will meet twice a year, and the Advisor will provide a written summary of the Committee's discussion and conclusions for the student's file (located in the Department's Student Services Office).

6. A checklist is kept in each student's folder to record completion of each stage of the doctoral program. The items in the checklist are those in the table on the first page of these Guidelines.

Academic Course Work

1. It is expected that a graduate student who seeks the Ph.D. will take sufficient coursework and other studies to demonstrate mastery in the theory, methods, and other disciplinary knowledge of his/her chosen field of research. The criterion for accomplishment is through appropriate performance in this coursework and through the Doctoral Written and Oral Examinations. No specific number of courses is required for the PhD degree; in most cases a Ph.D. student will take at least two years of graduate coursework. For students with master's degrees from other institutions, some of these courses may have been taken at the other institutions. The final decision on the adequacy of the coursework necessary for the Ph.D. degree is determined by the Doctoral Dissertation Committee based on the student's background, research study needs, and the results of the Doctoral Written and Oral Examinations.

2. The Ph.D. student must complete the following courses as part of his/her program of study:

ENVR 400	Departmental Seminar	(3 credits)	ESE requirement;
ENVR 401	Unifying Concepts	(3 credits)	ESE requirement;
ENVR 994	PhD Thesis	(6 credits)	Graduate School requirement.

In addition, PhD students are expected to present a seminar on their doctoral research in ENVR 400.

In accordance with Graduate School requirements, at least 3 credits of ENVR 994 must be earned during the semester in which the dissertation is defended.

3. Before the end of a Ph.D. student's second semester, the student should submit to his/her Advisor a program of academic course work and studies that will enable the student to demonstrate mastery in the theory, methods, and disciplinary knowledge of his/her research field. The members of the Doctoral Dissertation Committee will then meet to discuss this program. The student's final program of coursework and studies must be approved by the Advisor and by the Doctoral Dissertation Committee before the student is eligible to take the Doctoral Written and Oral Examinations.

Minor

Although ESE does not require a minor, the student may designate a minor. A designated minor must meet the requirements of the Graduate School for a formal minor program.

Research Skill or Foreign Language

1. The Department of Environmental Sciences and Engineering requires each Ph.D. student to take at least six semester hours studying a research skill in an area relevant to the student's research plan. Examples of courses commonly taken include those in computer science, biostatistics, statistics, laboratory methods, econometrics, and mathematics.

2. With the approval of the Doctoral Dissertation Committee, the student may substitute a foreign language of demonstrated utility in her/his academic discipline for a research skill, in accordance with guidelines set by the Graduate School.

Transfer of Courses from Other Institutions

A doctoral student may include relevant graduate courses taken at accredited institutions, in his/her program of academic course work and studies, in accordance with the requirements of the Graduate School. The student may be examined upon all such coursework during the Doctoral Written and Oral Examinations.

Residence Credit and Time Limits

1. A doctoral student must obtain a minimum residence credit of four full semesters, in accordance with the requirements of the Graduate School. At least two of these semesters must be earned in continuous registration of no fewer than six credit hours on the UNC-CH campus.
2. In accordance with the requirements of the Graduate School, a Ph.D. student has eight calendar years from the date of first registration to complete the doctoral degree. See the Graduate School Handbook [<http://handbook.unc.edu>] for details concerning approved leaves of absence. Extensions of this limit may be requested in writing, but are not automatically granted.
3. A PhD student receiving full-time financial support through the University must maintain full-time registration (nine or more credit-hours per semester) through the semester in which the Doctoral Oral Examination is passed.

Doctoral Written Examination (Part I of the Qualifying Exam)

1. The student should call a meeting of his/her Doctoral Dissertation Committee when he/she and his/her advisor consider him/her ready to take the Doctoral Written Examination. The expectation is that the student will take the Doctoral Written Examination shortly after the completion of the fourth semester. The Advisor should consult with the Director of Graduate Studies and seek guidance as how best to proceed if the student has not taken the Doctoral Written Examination by the end of the fifth semester.
2. The Department has specified that the Doctoral Written Examination be the first part of the doctoral qualifying examination. It cannot be taken until the student has completed all required coursework or is in the final semester of required coursework. The residency requirement and any conditions attached to admission must be met before the student is permitted to take the Doctoral Written Examination.
3. The student must notify the Director of Graduate Studies in writing of his/her readiness to take the Doctoral Written Examination at least one month before this examination is scheduled. The Advisor must submit to the Director of Graduate Studies a written statement certifying that all the requirements of paragraphs 1 and 2 above have been completed, and that the Doctoral Dissertation Committee has reviewed these requirements and approved the student's readiness to take the Doctoral Written Examination.
4. The form and content of the Doctoral Written Examination will be determined by the Advisor and the Doctoral Dissertation Committee after discussion with the student. In accordance with the Graduate School Handbook, the Doctoral Written Examination should:
 - “assess the extent and currency of the candidate’s knowledge in a manner that is as comprehensive and searching as the best practices of the field require;
 - test the candidate’s knowledge of all transferred courses;
 - discover any weaknesses in the candidate’s knowledge that need to be remedied by additional courses or other instruction; and
 - determine the candidate’s fitness to continue work toward the doctorate.”
5. The student’s answers to the Doctoral Written Examination will be evaluated by the Doctoral Dissertation Committee who will decide whether the student has passed. A student passes only after the approval of a majority of the Committee members and the approval of a majority of the Committee members who are regular faculty in the department. The vote of the Committee is final. Results of the examination and the Committee's decision should be available to the student no later than four weeks after the Examination, and typically are conveyed in a memo from the student’s Advisor (with copies to

the student's file and the Director of Graduate Studies).

6. A report of the Committee decision will be sent to the Graduate School by the Student Services Office on the form "Report of the Doctoral Written Examination."

7. In the event of failure on one or more portions of the Examination the student should review the Examination with his/her Advisor and other members of the Committee involved in its preparation and grading. The student may retake the portion(s) that he/she failed after at least three months, but no more than six months after the initial Examination. If these portions are subsequently passed, the Graduate School will be notified that the student has passed the written exam. A student who fails an Examination (or a portion) a second time becomes ineligible for further graduate work. No student may continue in a program or take an Examination for a third time without approval of the Administrative Board of the Graduate School.

Doctoral Oral Examination (Part II of the Qualifying Exam: Proposal Defense)

The Doctoral Oral Examination focuses on the dissertation topic, its scholarly value, and the feasibility of the research proposed.

1. The Doctoral Oral Examination will normally be taken within six months following successful completion of the Doctoral Written Examination. It will be scheduled by the student's Advisor in consultation with the Doctoral Dissertation Committee.

2. To be admitted to the Doctoral Oral Examination, the student must have passed the Doctoral Written Examination and must have prepared a written dissertation proposal acceptable to his/her Advisor. This proposal should be made available to Doctoral Dissertation Committee members at least two weeks before the Doctoral Oral Examination. It is in the student's interest to discuss the proposal with each member of the Doctoral Dissertation Committee before the Examination.

3. The form "Departmental Request for Student Permit to Take Doctoral Oral Examination (Proposal Defense)" must be obtained from the Student Services Office, completed, and returned for filing with the Graduate School at least one week prior to the Examination.

4. The Doctoral Oral Examination will be administered by the Doctoral Dissertation Committee with the Advisor serving as chair. At least five members of the Doctoral Dissertation Committee must participate in the Examination.

5. The Doctoral Oral Examination examines the adequacy of the student's preparedness, knowledge and understanding of his/her research field. During the Examination, the members of the Doctoral Dissertation Committee will evaluate the feasibility and adequacy of the written dissertation proposal and of the candidate's background for, and ability to, complete his/her research successfully.

6. A student passes only upon approval of a majority of the Committee members and the approval of a majority of the Committee members who are regular faculty in the department. Results of the examination will be reported to the Graduate School on the form "Report of the Doctoral Oral Examination," to be completed by the Advisor and Committee members.

7. The scope of the dissertation research shall be determined at this meeting. After approval of the dissertation proposal by the Doctoral Dissertation Committee, any significant changes in direction, depth, or scope must also be approved by the Committee.

8. After passing both the Doctoral Written and the Doctoral Oral Examinations, and acceptance of the dissertation proposal by his/her Committee, the student should apply to the Graduate School for Admission to Candidacy.

The Research Program

1. Conducting original research requires abilities different from those required to pass formal courses and examinations. Accordingly, students should demonstrate grasp of the relevant literature, ability to synthesize knowledge in diverse disciplines, ability to identify gaps in knowledge, and ability to develop or apply techniques appropriate to execute the research, interpret the findings, and draw defensible conclusions.

2. A Ph.D. student should seek advice and aid whenever needed from members of the Doctoral Dissertation Committee, from other members of the UNC faculty, or from any others qualified to provide critical consultation. The student remains responsible for the originality of the study, the progress of the research, the quality of the results, the soundness of the interpretations, and the skillfulness of its presentation.

The Dissertation

A dissertation is a scholarly work. It must be a significant, original contribution to knowledge, logically and skillfully presented with due regard to literate usage of the English language.

1. The acceptable format for a Ph.D. dissertation is described in the Graduate School's document, "Thesis and Dissertation Guide", <http://gradschool.unc.edu/etdguide/index.html>.

2. The student's Doctoral Dissertation Committee plays an important role in aiding the student to achieve excellence. The student is encouraged to consult with his/her committee members during the writing of the dissertation.

3. If the Advisor and a majority of the Doctoral Dissertation Committee believe that the student's scholarly development is best served by so doing, the student may submit a dissertation comprising manuscripts of journal article length in lieu of a single monograph. Just as with a dissertation in monograph form, such manuscripts should demonstrate independence and originality of thought. A dissertation in such manuscript form should be accompanied by an introduction that places the work in context and poses a problem statement, and by a conclusion that explains the overall implications and significance of the work and presents any relevant research issues yet to be resolved. For a dissertation in this form to be approved, the Doctoral Dissertation Committee must judge that the manuscripts are publishable in a major, refereed journal in the student's research field and, under normal circumstances, that the student is correctly designated as the first or sole author. Because much of the research conducted by students in ESE is conducted as part of research teams, manuscripts that have been submitted, or are intended to be submitted, for publication may have multiple authors. The PhD student should include with each manuscript a list of any co-authors and identify which components of the work described in the manuscript are attributable to each author.

4. The Advisor is responsible for determining when a draft of the dissertation is in appropriate form for evaluation by the Doctoral Dissertation Committee. If the Advisor believes that substantial revisions are necessary, they should be completed by the student before the Final Oral Examination is scheduled.

5. The Doctoral Dissertation Committee may request other persons within or outside the University to review and comment on the dissertation.

Final Oral Examination and Defense of the Dissertation

1. The date for the Final Oral Examination will be set by the Advisor when the dissertation is complete. A draft of the complete dissertation, prepared in accordance with Graduate School requirements, must be delivered to each member of the Doctoral Dissertation Committee in the format (print or electronic) requested by the Committee member. Public announcement must go out at least three weeks before the Final Oral Examination. Before the distribution of the public announcement of the Final Oral Examination, Committee members must have made an initial review and concur that the

dissertation is ready for a Final Oral Examination. Thus the Committee members will have received the dissertation at least three weeks before the defense.

2. The student must be registered for "Dissertation for Credit" (ENVR 994) during the semester in which the Final Oral Examination is taken.
3. The Final Oral Examination should be a true defense of the dissertation. The initial part of the Examination will be open to the public and notices of the Examination will be posted within the Department. Notices may also be sent to other interested departments. The candidate will give a lecture that presents the dissertation. Following the lecture, the candidate will answer questions from the audience and from the Doctoral Dissertation Committee. Thereafter, at the Committee's discretion, the Committee may ask the candidate additional questions in a session that is closed to the public. ESE regular faculty who are not members of the Doctoral Dissertation Committee may participate in any questioning at the Final Defense that is closed to the public.
4. At least five members of the Doctoral Dissertation Committee must participate in the Final Oral Examination. A student passes only upon approval of a majority of the Committee members and the approval of a majority of the Committee members who are regular faculty in the department. The vote of the Committee is final.
5. There are four possible outcomes of the Final Oral Examination:
 - 1) Dissertation is accepted by the Committee as is;
 - 2) Dissertation is accepted with minor revisions. The student should typically be able to complete minor revisions within 1-2 weeks. The Doctoral Committee members may agree that the Advisor is responsible for verifying that the requested minor changes are made.
 - 3) Accepted with major revisions. The student should typically be able to complete major revisions within 4-6 weeks. In this case, all of the Doctoral Committee members should review and approve the final version of the dissertation.
 - 4) Failure.

Application for the Degree

The candidate must apply for a graduate degree for a specific graduation date. This application must be made by the deadline shown in the Calendar of Events [<http://regweb.oit.unc.edu/calendars/>].

These Guidelines were approved by vote of the ESE faculty on 15 July 2011