

Intercollege Graduate Degree Program in Ecology



Handbook

2023/2024



The Pennsylvania State University

<https://www.huck.psu.edu/graduate-programs/ecology>

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Booking a Huck Institutes Room: <https://25live.collegenet.com/pro/psu>

If a graduate student has issues or complaints concerning their advisor, the student may speak in confidence to Jason Kaye (jpk12@psu.edu, 814-863-1614), Troy Ott, Acting Director of the Huck Institutes of the Life Sciences (tlo12@psu.edu) or contact the Graduate School Dean's Office (814-865-2516).

The Graduate School current student information and policies:

www.gradschool.psu.edu/current-students

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SECTION I

GENERAL POLICIES

A. Mission Statement

The mission of the Intercollege Graduate Degree Program in Ecology is to educate and train scientists with respect to both basic and applied aspects of ecology. Research and teaching in the program focus primarily on interactions between organisms and their environments, ranging from the molecular to the biosphere level.

B. Ecology as an Intercollege Program

An intercollege program is characterized principally by the fact that the faculty members participating in the program reside in several departments and colleges, and that the students in the program draw significantly upon the resources of several departments – their courses, faculties and facilities. For each intercollege program, a Program Chair is appointed by the Dean of the Graduate School with the concurrence of the appropriate deans and departmental heads/directors.

The Ecology Program is part of the Huck Institutes of the Life Sciences which is dedicated to encouraging new perspectives across disciplinary boundaries. The Huck Institutes catalyze innovation and excellence in interdisciplinary research and education in the life sciences at Penn State.

Each program is the responsibility of the participating departments and an intercollege graduate faculty with academic background, interest and demonstrated scholarship in areas pertaining to the program. In matters concerning the Intercollege Graduate Degree Program, the Chair reports to the Dean of the Graduate School.

C. Responsibilities of the Student, Advisor and Student's Committee

Students are expected to assume responsibility for knowing the regulations and requirements of the Graduate School and the Ecology Program as described in:

- (1) Graduate Bulletin: <https://bulletins.psu.edu/graduate/>
- (2) Thesis and Dissertation Guide: <https://gradschool.psu.edu/completing-your-degree/thesis-and-dissertation-information/>
- (3) This Ecology Program Handbook
- (4) Ecology Program Requirements <https://www.huck.psu.edu/graduate-programs/ecology/degree-requirements/required-courses>

Thesis/dissertation advisors and graduate committees have a responsibility for judicious timing of events to avoid prolonging degree programs. For example, in the initial months of residence, students may become preoccupied with course work. At this time, a student should also be outlining the entire program, choosing a thesis/dissertation topic, and drawing up research plans. Delays may result in time added to degree completion or under-

accomplishment of thesis/dissertation research. The leadership efforts of thesis/dissertation advisors and committee members are needed to forestall such delays.

SECTION II

STUDENT-FACULTY RELATIONSHIPS AND GRADUATE STUDENT COMMITTEE

Office and research space, course work and research plans will be arranged through the student's advisor and cooperating department. A graduate committee should be appointed early enough in the student's tenure to be involved in the course and research planning. The graduate student's committee is responsible for approving a student's program and promoting communication between the graduate student, the committee chair (or advisor), and the members of the committee, and more generally, for helping to ensure successful completion of a student's program. Informal meetings of the student with individual committee members and with the committee as a group are encouraged as a means of aiding the student in research and of keeping the faculty aware of the student's progress. The student should arrange to have the committee meet at least once per year, to receive guidance, finalize and approve the research proposal, assess the quality and progress of the research and discuss programmatic issues and course requirements. **A committee should be formed by the end of the first year for M.S. students and by the end of the 2nd year for Ph.D. students.**

The committee is chosen by the student with guidance from an advisor. The student should meet with the desired faculty members and determine if they are willing to serve. After getting verbal commitments, the student should contact the Huck Graduate Program Office so that the signature form can be prepared in Adobe Sign. The student, followed by all committee members in turn, and lastly the Program Chair will be sent a link to sign the form in Adobe Sign. When all signatures have been added, the form will be routed to the Graduate School and a copy will be provided to the Huck Graduate Programs Office. Formal appointments cannot be made until the sheet is fully signed. **Note that the committee must be formally appointed by the Graduate School before a Comprehensive Exam can be scheduled.**

Changes in Committee Membership

For various reasons, it may occasionally become necessary to make changes in committee membership. To make any changes to an appointed committee, contact the Huck Graduate Programs Office.

To add a member, the student must inform the Huck Graduate Programs Office of the name and committee role of the person being added. A revised appointment sheet must be prepared, and signatures will be needed from the new member, the Program Chair, and the student. This sheet must be returned to the Huck Graduate Programs Office for final processing.

To remove a member, a revised appointment sheet must also be prepared and signed by the student and the Program Chair. In order to maintain the required committee membership, it is likely that a new member will need to be added to replace the member being removed.

It may take up to two weeks after the Graduate School has received all the documents before changes in committee membership become finalized.

A. Doctoral committee: A doctoral committee consists of at least 4 members of the Graduate School Faculty

<https://secure.gradsch.psu.edu/gpms/index.cfm?facultySearch=1>:

- a chair (typically the advisor)
- one or more additional members of the Ecology faculty
<https://www.huck.psu.edu/graduate-programs/ecology/people/faculty>
- an outside FIELD member. This person may or may not be a member of the Ecology faculty but must also represent a field outside of Ecology. Please contact the Huck Graduate Programs Office for advice on selecting an outside field member
- an outside UNIT member. This person must have a primary appointment in a different administrative unit than the advisor (and co-advisor, if applicable). Please contact the Huck Graduate Programs Office for advice on selecting an outside unit member
- at least half of the members must be from the Ecology Program
- guidelines regarding doctoral committees can be found at the Graduate School's policy website: <http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-602-phd-committee-formation/>
- If a student is pursuing a Dual-Title Degree or minor, there are additional committee membership requirements.

B. Master's committee: Master's (M.S.) students are not required to report their committee members to the Graduate School. Instead, the committee is reported to the Huck Graduate Programs Office on the academic course plan available from the Huck Graduate Programs Office and in the Appendix of this handbook. A M.S. committee consists of:

- a Chair (typically the advisor)
- two other faculty members
- at least two members (including the advisor) must be from the Ecology Program faculty and as many as three may be members of the program.
- If a student is pursuing a Dual-Title Degree (e.g. INTAD) there may be additional committee membership requirements.

SECTION III

DEGREE REQUIREMENTS

A. Ecology Course Requirements and Scholastic and Research Integrity (SARI)

1a) Advances in Ecology (ECLGY 515) All Ph.D. and M.S. students need to successfully complete Advances in Ecology. Advances in Ecology must be taken during the first fall semester of enrollment in order to fulfill the SARI instructional module.

1b) SARI online module All Ph.D. and M.S. students need to successfully complete the online component of the SARI course during their first semester of study.

First year students should complete the online CITI RCR course as soon as possible in the fall semester. To register, go to the Penn State CITI website <http://citi.psu.edu/> where you will find instructions. Select your campus, then select Pennsylvania State University Courses and register for the CITI Responsible Conduct of Research (RCR) - Basic course and select an elective module that best matches your research needs. Students must work on their own to complete the course modules and pass the on-line quizzes. All modules must be completed by the beginning of the first Fall semester; and a copy of the student's Completion Report must be submitted to the ECLGY 515 instructor and the Huck Graduate Programs Office by the first day of classes of the fall semester.

2) Classical Ecology (ECLGY 510) All Ph.D. students need to successfully complete Classical Ecology. Classical Ecology is offered in the fall semester and should be taken during the first year of study. M.S. students are encouraged to take Classical Ecology after consulting with their advisor and with the approval of the course instructor on a space available basis.

3) All Ph.D. and M.S. students need to successfully complete a total of 2 subdiscipline courses (6 credits) from the list below. It is recommended, for breadth of knowledge, that these 2 courses come from different subdisciplines. *

Subdiscipline Course List

Subdiscipline 1. Molecular, Physiological, Behavioral, and Evolutionary Ecology

- ANTH 560 Ecology, Evolution, and Human Behavior (fall)
- BIOL 406 Symbiosis (spring)
- BIOL 428 Population Genetics (spring)
- ENT 539 Chemical Ecology of Insects (fall)
- FOR 409 Tree Physiology (spring, odd)
- HORT 445 Plant Ecology (fall)
- PPEM 440 Introduction to Microbiome Analysis (spring)
- PPEM 456 Applied Microbial Ecology (fall)
- SOILS 512 Environmental Microbiology (spring, even)

Subdiscipline 2. Population and Community Ecology

- AEPS 510 Ecology of Agricultural Systems (spring)
- AGECO/ENT 457 Principles of Integrated Pest Management (fall)
- BIOL 412 Ecology of Infectious Diseases (fall)
- BIOL 519 Ecological and Environmental Problem Solving (spring)
- ECLGY 526 Community Ecology (fall)
- ENT 440 Plant-Insect Interactions (fall)
- FOR 508 Forest Ecology (spring, even)
- WFS 560 Population Estimation and Modeling (spring)

Subdiscipline 3. Ecosystem, Landscape, and Global Ecology

- ERM 435/WFS 435 Limnology (spring)
- GEOG 411W Forest Geography (fall, odd)
- GEOG 414 Principles and Applications in Landscape Ecology (fall or spring)
- GEOG 510 Seminar in Physical Geography (ecology-related topics)
- SOILS 571 Ecosystem Nutrient Cycles
- WFS 585 Applied Spatial Ecology (spring)

Other Ecology related courses that students have found helpful can be found on the Ecology website at: <https://www.huck.psu.edu/graduate-programs/ecology/degree-requirements/required-courses>

All graduate students are required to be registered for **9 credits** per semester to be considered full-time while on a fellowship or assistantship. Some of these 9 credits can be ECLGY 600 credits (see section III.I below). It is not recommended to register for more than 12 credits per semester.

B. Statistics Requirement*

1. For the M.S. student, at least one advanced course (500- or 800-level) or an equivalent course from a previous institution beyond an introductory statistics course.
2. For the Ph.D. student, at least two advanced courses (500- or 800-level) or equivalent courses from a previous institution beyond an introductory statistics course.

There are some 400-level statistics classes that could be considered as “advanced”, such as GEOG 464 Advanced Spatial Statistics, but if students want to use 400-level classes to meet their statistics requirement they should vet the class with their advisor and make a formal request to the curriculum committee. Introductory statistics classes at either the 400- (e.g., STATS 451) or 500-level do not fulfill this requirement, nor do “programming” classes.

**Note that one or more of these course requirements (subdiscipline or statistics) can be waived if a course of equivalent material was taken at an approved institution. Decisions are made on a case-by-case basis by petitioning the Curriculum Committee and supplying the syllabus of the course wishing to be substituted.*

C. Colloquium Requirement

Colloquium is a 2-credit seminar class intended to provide Ecology graduate students an opportunity to present their research to their peers. All presentations need to have some type of ecological context. Goals of the class are: (1) to provide practice and feedback for communicating research in a scientific forum and (2) allow for critique of research ideas and results in a constructive fashion.

All students are expected to participate regularly in Colloquium regardless of official registration. Communication with colleagues is an essential part of the scientific process.

1. M.S. students must register for 2 semesters of Ecology Colloquium (ECLGY 590). Registered students will be scheduled to present their research at one of the weekly Colloquium seminars.
2. Ph.D. students must register for 4 semesters of Ecology Colloquium (ECLGY 590). The first 2 semesters of Colloquium should be taken for graded credit prior to taking the Comprehensive Exam, normally in the first 2-3 years of the program. Registered students will be scheduled to present their research at one of the weekly seminars. The remaining semesters of Colloquium can be audited (enrollment required) after the Comprehensive Exam, typically in the semester of a presentation at a national or international meeting and in the semester of the final public dissertation defense or mini-symposium presentation. (Students presenting or defending during the summer should register for Colloquium in the Fall or Spring semester closest to their presentation or defense date.)

D. Defense Seminar and Mini-symposium Requirements

Each student will be required to present a formal **Defense seminar** on their research before degree certification. This seminar immediately precedes the final oral examination. The seminar is open to the public and is often 30-40 minutes (discuss the length with your advisor).

In addition, a short talk should be arranged with the Huck Graduate Programs Office as part of the **Mini-Symposium**. It is the student's responsibility to notify the Huck Graduate Programs Office prior to the Fall or Spring Mini-Symposium, to be included in the program.

E. Teaching Experience

The purpose of this requirement is to provide the Ph.D. student a meaningful teaching experience and to develop teaching techniques. M.S. students are not required to fulfill a teaching requirement.

1. *Setting up the supervised teaching experience:* Discuss the teaching requirement ahead of time with the advisor and consider which course is appropriate to obtain this experience. Students should be familiar with course subject material, and the course instructor must

be willing to supervise the teaching experience. Contact the course instructor ahead of time and discuss the expectations and activities which will provide a meaningful teaching experience. Register for ECLGY 602 during the semester of the supervised teaching experience. A minimum of 1 credit of supervised teaching is required, but depending on involvement, up to 3 credits may be registered.

2. *Can this requirement be met through regular TA assignments?* Yes. If the teaching experience is part of the teaching assistantship assignment, request assignment to the course where supervised teaching is to be conducted.
3. *Guidelines:* Students should have direct teaching experience. This means involvement in several types of activities crucial to teaching. Examples include designing, setting up, and/or running laboratory sessions, writing and presenting a couple of lectures, designing quizzes or questions for exams and grading them, leading discussion sessions, and helping develop modifications of the course. An assignment involving only the grading of tests, taking attendance, and cleaning labs is contrary to the purpose of this experience. An important aspect of a quality teaching experience is constructive feedback from the mentor(s). The responsibility for this feedback rests with the supervisor (instructor for the course). The instructor can use student evaluations and/or their own evaluations and observations as sources of information. Ideally, the supervisor will provide suggestions on how to improve performance. Upon completion of the teaching experience, the instructor will assign a letter grade in ECLGY 602 or equivalent departmental class.

Training opportunities for teaching experience are available, and sometimes required. Importantly, all students who TA classes in Biology must register for BIOL 893 Experiential Teaching in Biology to receive required teaching assistant training, before or in special cases concurrently to their TA experience. Additional teaching training is available through the New Instructor Orientation Course offered by the Schreyer Institute for Teaching Excellence: <http://www.schreyerinstitute.psu.edu/Events/NIO/>).

A Teaching Certificate may also be earned through the Graduate School:

<https://gradschool.psu.edu/graduate-student-life/graduate-school-teaching-certificate/>.

F. Graduate Academic Course Plan

Ph.D. and M.S. graduate students in consultation with their research advisor and thesis/dissertation committee must submit a graduate Academic Course Plan to the Huck Graduate Programs Office. This form is available in the Appendix of the handbook and from the Huck Graduate Programs Office.

G. Examinations

1. Both M.S. and Ph.D. Students

Each student must pass a final oral **defense** before degree certification. The final oral examination for the Ph.D. student must be scheduled by the Huck Graduate Programs Office with the Graduate School at least two weeks in advance of the exam date. Therefore, the

student should contact the Huck Graduate Programs Office at least three weeks before the requested defense date in order to have the examination request form completed. Results of the exam are submitted by the committee members and committee chair through a LionPATH form and reported directly to the Graduate School and the Huck Graduate Programs Office. This report must be submitted within 5 business after the exam. Ph.D. students are expected to give a complete draft of the dissertation to the Committee at least 2 weeks prior to the defense.

The M.S. student's advisor must inform the Huck Graduate Programs Office in writing about the outcome of the final oral thesis defense using the form provided by the Huck Graduate Programs Office. This form should be requested from the Huck Graduate Programs Office at least 2 weeks prior to the defense date. M.S. students are expected to give a complete draft of the thesis to the Committee at least 2 weeks prior to the defense.

While it is best practice to conduct this exam in person, the dissertation/thesis defense may be held fully in-person, fully remote, or hybrid with some individuals participating in-person while others participate remotely. Student preference for delivery mode should be strongly considered, but the student, advisor, and committee should agree on the mode at the same time the exam date is scheduled. If the student and advisor cannot agree on the mode, the Graduate Program Chair will make the final decision. Either the student or advisor can appeal the decision of the Graduate Program Chair to the Graduate School's Associate Dean for Graduate Student Affairs.

2. Ph.D. Students only

- a) An in-person **qualifying examination** is required of all Ph.D. students. (For details see "Guidelines for Doctoral Qualifying Examinations," p. 20 of this handbook). The examining committee is appointed by the Program Chair. The Qualifying Exam consists of both a written and an oral component. The Chair of the Qualifying Examination Committee must inform the Huck Graduate Programs Office in writing about the outcome of the Qualifying Exam. The outcome of the Qualifying Exam is sent by the Huck Graduate Programs Office to the Graduate School.

The exam should be taken in the second or third semester of the Ph.D. program, after completing 18 credits of graduate-level course work, either at PSU or another institution (e.g., during an M.S. program elsewhere). It is the responsibility of the graduate student to contact the Chair of the Qualifying Examination Committee to schedule their exam. When requested by the Chair of the Qualifying Examination Committee, the student shall provide the following information: name, advisor's name, campus address, telephone number, e-mail address, date of entry into the program and a copy of the semester course schedule. If a dual-title student is taking the exam, a representative of the dual-title program must be present on the Qualifying Examination Committee for that exam. (See section O for more information about dual-title offerings for Ecology students.)

- b) The **Comprehensive Examination** for the Ph.D. will be a rigorous examination administered by the student's committee as early as possible in the student's tenure but

after the Qualifying Exam. The exam has both written and oral components. Details of how to prepare for the exam and how the exam is administered can be found in the Appendix. The Comprehensive Examination must be scheduled by the Huck Graduate Programs Office with the Graduate School at least two weeks in advance of the exam date. Therefore, the student should contact the Huck Graduate Programs Office at least three weeks before the requested exam date in order to have the proper forms completed. The student must be registered during the semester of the Comprehensive Exam, including summer.

H. English Competency Policy

Ph.D. students are required to demonstrate a high level of competence in the use of the English language. Written and speaking competence in English will be assessed by the Qualifying Examination Committee at the Ph.D. Qualifying Exam.

All entering international students and students for whom English is not their primary language are required to take the American English Oral Communicative Proficiency Test (AEOCPT) which is administered by the University's Department of Applied Linguistics. Given at the beginning of fall and spring semesters, international students are required to pre-register for the AEOCPT. Typically, students who are required to take this test will be scheduled for testing prior to the first semester by the Huck Graduate Program Coordinator, currently Dana Coval-Dinant; if you believe you should be scheduled for this test and do not receive notification of a test date, please contact Dana (dmc6@psu.edu). The test scores from the AEOCPT are provided to the Huck Graduate Programs Office via a secure website and also in LionPATH. A score above 250 on the AEOCPT satisfies the Department's requirement; students scoring under 250 must take courses to improve their spoken language and retake the test before being allowed to teach, as prescribed by the Graduate School: <https://aplng.la.psu.edu/programs/about-the-aeocpt>.

Students who are required to enroll in English as a Second Language (ESL) must complete the ESL requirement by the end of the second semester. Students who fail this requirement may be terminated from the respective graduate program at the discretion of the Program Chair.

I. Thesis Research – Grade Reporting

Students can be assigned letter grades for thesis research (ECLGY 600 on campus, ECLGY 610 off campus) credits for a total number of 6 credits for M.S. and 12 credits for Doctoral students. Any research credits over this number must be assigned an R grade.

J. Dissertation Preparation

After Doctoral students have passed the Comprehensive Examination, met the two-semester residence requirement (see checklist for Ph.D. candidates, p. 18), and completed their coursework, they should register for special non-credit dissertation preparation (ECLGY 601 full-time, ECLGY 611 part-time.) Students can still audit Colloquium or any classes up to 3.0 credits while they are taking ECLGY 601.

K. Registration near Completion of a Program

A M.S. student is **not** required to register for the final semester** in order to graduate or in order to make minor revisions to the thesis and/or to take a final examination for the degree.

A Ph.D. candidate is required to register continuously (spring/fall) for each semester from the time the comprehensive examination is passed and the two-semester residence requirement is met until the dissertation is accepted by the doctoral committee, including the semester of the comprehensive exam and the semester of the final oral exam, regardless of whether work is being done on the dissertation during this interval. **A doctoral student must register for at least one credit if they plan to take the final exam during the summer semester.**

**International students, both M.S. and Ph.D., must be registered in the semester of defense and should be aware of visa implications when scheduling the defense:

<https://global.psu.edu/taxonomy/term/75>.

L. Thesis/Dissertation Copy Requirements

M.S. and Ph.D. students must submit a properly formatted electronic copy of the thesis/dissertation to the Graduate School Office of Theses and Dissertations by the deadlines for the semester in which they intend to graduate (see the Appendix of this handbook for more details). The Ecology Program does not require a **hard-bound** copy of the thesis/dissertation, but the student's major advisor may wish to receive a bound copy. Therefore, the student should check with the advisor when ordering hard-bound copies.

M. Exit Survey

All Ecology Program students are required by the Program to complete a program-specific exit survey before leaving Penn State, and to schedule a short interview with the Program Chair. The exit survey form is available from the Huck Graduate Programs Office. The Graduate School also offers an exit survey: <http://www.gradschool.psu.edu/faculty-and-staff/forms/ges/>.

N. Change of Graduate Degree or Major/Resume Study

M.S. students in Ecology who are interested in continuing on for a Ph.D. in Ecology must submit a Change of Degree application.

A similar application is used by Ph.D. students who need to change their degree to M.S. Approval by the Program Chair and major advisor is required before making this change.

Current Penn State graduate students may use the application to change their degree or major to Ecology upon approval of the Ecology Admissions Committee.

A student who has completed a M.S. degree at Penn State (in Ecology or a different major) and now wishes to pursue a Ph.D. in Ecology must submit a Resume Study application.

Likewise, students who have had a lapse in enrollment, not approved through an official leave of absence, must submit a Resume Study application to continue pursuing their degree in Ecology.

The Change of Degree and Resume Study applications can be found at the Graduate School's website: <https://gradschool.psu.edu/graduate-admissions/how-to-apply/current-students/>. Any application to the Ecology program is subject to approval by the Program Chair and/or the Admissions Committee and is contingent upon identification of a suitable advisor/approval of the student's current advisor.

O. Dual-Title Degree Programs and Options in Ecology

Dual-Title Degree programs in Biogeochemistry (BGC), International Agriculture and Development (INTAD), Microbiome Science (MBIOM), and other specialized Program Options are available to Ecology graduate students. Please see the Ecology website for specific details: <https://www.huck.psu.edu/graduate-programs/ecology/degree-requirements/options-and-dual-titles/about-options-and-dual-titles>.

SECTION IV. ADDITIONAL INFORMATION

A. Academic Integrity Policy

According to Penn State's Code of Conduct (Faculty Senate Policy 49-20), "all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts." Students should not "engage in or tolerate acts of falsification, misrepresentation or deception. Acts of dishonesty violate the ethical principles of the University community and compromise the worth of work completed by others". Academic dishonesty, cheating, and plagiarism will not be tolerated in the Ecology Graduate Program and will result in disciplinary sanctions including dismissal from the program. University Policies for handling student misconduct are available at: <http://undergrad.psu.edu/aappm/G-9-academic-integrity.html>.

B. Safety Training

Within the first semester of residence, all students are required to take and pass the laboratory safety and chemical waste disposal training sessions. For information and links regarding the Environmental Health & Safety office, go to: <http://ehs.psu.edu/laboratory-and-research-safety>.

C. Annual Graduate Student Activity Report

Annual Evaluations are an integral part of the student's professional development. The thesis/dissertation advisor should conduct annual evaluations of the student's progress and overall performance and provide guidance with regard to future goals. While students and their advisors should meet regularly over the course of a year, the annual evaluations ensure that at least one meeting has been held to specifically look at the student's progress and performance. Continued

financial support of each student will be dependent on satisfactory progress as stated in admission offer letters.

A link to the online Annual Graduate Student Activity Report (GSAR), <https://grad-activity.science.psu.edu/>, will be sent to all Huck graduate students at the end of each spring semester from the Huck Graduate Programs Office. This online evaluation must be completed and approved by August 15 each year. Each component of the report also has a deadline. For M.S. students, their thesis advisors will be provided a link to a separate form for evaluation. Students may contact the Huck Graduate Programs Office to ensure that their advisor has received the form.

Each student, in consultation with their advisor, will describe their research progress and plans according to the prompts that appear on the online form under the section “Progress and Future Plans”:

- 1) Please provide a brief description of the current status of your research project.
- 2) Please describe your research accomplishments over the past year.
- 3) Please provide a description of your research plans for the upcoming year.

In addition to this information, each student should provide all of the requested information such as publications, meetings attended, etc. The online system is self-explanatory but the Huck Graduate Programs Office will be happy to assist as necessary. Completed student reports will be reviewed by the Program Chair and, when appropriate, by the Associate Director for Graduate Education in the Huck.

D. Vacation and Sick Days – Leaves of Absence

In general, vacation time should not exceed a total of 10 days (2 weeks) per year, exclusive of the 11 designated University holidays. Days at scientific meetings or training conferences are not vacation time (extra days before or after the meeting would count as vacation). Students may take more than the regularly allocated vacation time in any given calendar year for special travel or activities if they have the **consent of their research advisor** and they take correspondingly fewer vacation days in the preceding and/or following years.

Students must inform their research advisor (or the Graduate Program Chair if a research advisor has not yet been assigned) of their vacation plans at least 15 days before the first day of their vacation. The student should submit their vacation request in writing and obtain written approval from their advisor (an email will suffice). While advisor/Program Chair will usually approve most reasonable requests, requests can be denied if there are circumstances that warrant such a denial. Such denials should not, however, impede a student from using all of their annual vacation time in a reasonable fashion.

These recommended guidelines are advisory and reflect those suggested by government agencies such as National Science Foundation and National Institutes of Health for training grant fellows. Students should consult with their advisor regarding any absences that affect other group members in the advisor’s lab. Common sense policies and procedures should apply. Note that vacation time should be planned to avoid interference with specific duties including teaching.

E. Scholarship Policy

Students are required to have a minimum grade-point average of 3.0 for the doctoral qualifying examination, admission to the comprehensive examination, thesis/dissertation defense, and graduation. One or more failing grades, a cumulative grade-point average below 3.0, or failing any of the required examinations are considered evidence of unsatisfactory scholarship and are grounds for dismissal from the University (see <https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-800/gcac-803-procedures-termination-unsatisfactory-scholarship/>).

F. Huck Institutes Resources

1. The Huck Institutes Travel Award

The Huck Institutes of the Life Sciences provide Travel Awards to Ph.D. students enrolled in all Huck graduate programs who will give poster and/or oral presentations at domestic or international conferences. To apply for this travel award, submit a request form at <https://wiki.vpr.psu.edu/display/HUCKGPA/Graduate+travel+award+requests>. The application will be sent to the Chair for review and approval. The maximum award for domestic travel is \$750, and the maximum award for international travel is \$1,500. These funds may be used for transportation, lodging, and meeting registration fees; meals and per diem charges are not allowed. Students are eligible to receive this award twice during their study at Penn State (for 2 domestic or 1 domestic and 1 international meeting).

2. Huck Graduate Student Advisory Committee

This Graduate Student Advisory Committee represents all graduate students in the Huck Institutes of the Life Sciences. Its mission is to promote graduate student interests, facilitate communication among students and faculty, and help guide students in their career plans. More information is available at:

<https://www.huck.psu.edu/resources/students/graduate-students/graduate-student-involvement/huck-graduate-student-advisory-committee>

3. Career Development Resources

To provide graduate students with the resources necessary to be successful in obtaining and securing a satisfying and rewarding career, the Huck Institutes offer a variety of resources including seminars, conferences, and workshops. See the following website for more details:

<https://www.huck.psu.edu/resources/students/graduate-students/professional-development/professional-development-overview>

4. Individual Development Plan

Students should register at myIDP (<http://myidp.sciencecareers.org/>) and use the resources there to set their career goals. This website provides:

- Exercises to examine your skills, interests, and values
- A list of 20 scientific career paths with a prediction of which ones best fit your skills and interests
- A tool for setting strategic goals for the coming year, with optional reminders to keep you on track

5. Huck Institutes Graduate Network on LinkedIn

Students are encouraged to join the Penn State Huck Institutes Graduate Network on LinkedIn: <https://www.linkedin.com/groups/8278299/>. This LinkedIn group is a great resource for students interested in careers in both industry and academia to network and connect with program alumni.

SECTION V. APPENDIX

APPLICATION PROCEDURES AND ADMISSION CRITERIA

A. Application Procedures

A pre-application form can be found on the Ecology Program website at:

<https://www.huck.psu.edu/graduate-programs/ecology/applications/pre-application>

Complete the **online Penn State Graduate School application form** at

<https://gradschool.psu.edu/graduate-admissions/how-to-apply/> (you may want to open this link in a new window). A graduate degree in Ecology is only available at the University Park campus.

Make sure you pay the **application fee. Applications without fee payment cannot be processed.** You can pay the fee online by credit card (follow the instructions associated with the online Graduate School application form). If you are unable to pay online, see the instructions to send payment by check or money order on the Application Fee Form (<http://gradschool.psu.edu/faculty-and-staff/forms/ges/appfee/>).

B. Selection of Students

Students will be selected by an Admissions Committee on the basis of overall promise for graduate work.

Requirements for admission shall be:

- (1) A minimum undergraduate grade point average of 3.0 for combined junior and senior years.
- (2) A strong background in at least two of the following areas: Quantitative Science, Physical Science, Life Science, Earth Science, Behavioral Science.
- (3) At least three letters of recommendation.
- (4) A statement of educational and career goals.
- (5) **English Proficiency**--The language of instruction at Penn State is English. International applicants must take and submit scores for the TOEFL (Test of English as a Foreign Language) or the IELTS (International English Language Testing System). The minimum acceptable score for the TOEFL is 550 for the paper-based test, 213 for the computer-based test, or a total score of 80 with a 20 on the speaking section for the internet-based test. The minimum composite score for the IELTS is 6.5.
- (6) A commitment from an Ecology faculty member to be the student's advisor.

C. Undergraduate Deficiencies

Candidates should have a strong background in basic science and mathematics, including chemistry through organic chemistry, mathematics through calculus, physics, and biology. However, some deficiencies can be addressed in the student's program of study.

EXPECTATIONS AND MILESTONES

Expectations of M.S. students

- Motivation, curiosity and enthusiasm for science
- General understanding of science in area of concentration including methods and techniques, philosophy and state of knowledge
- Be able to use basic statistics, sampling and experimental design
- Be able to communicate well in either written or oral format

Suggested Milestones for M.S. (should be discussed with advisor)

- Course work plan – 1st semester
- Research plan – 2nd semester; present in Colloquium
- Maintain steady progress on research. Try to reach milestones for remaining year.
- Leave at least 1 full semester for data analysis and writing
- Plan to submit at least one paper for publication at the time of graduation with a second close to submission.

Expectations for Ph.D. students

- Motivated to become a professional scientist
- Broad knowledge of philosophy, history and present state of knowledge in discipline
- Have a broad understanding of ecological techniques, especially in specialty but basic understanding of ‘standard’ techniques as well
- Expert in specialty. Student may know more than advisor in specific area of dissertation.
- Must have well-developed ability to think clearly, critically and creatively

Suggested Milestones for a Ph.D. student (should be discussed with advisor)

- Coursework plan developed by end of first semester
- Research proposal by end of second semester. If appropriate, submit proposal for funding.
- Qualifying exam taken in 2nd or 3rd semester
- Comprehensive exam taken in 4th or 5th semester. Must be taken no later than 5 years after passing the Qualifying exam.
- Maintain steady progress on research
- Submission of one paper for publication before graduation with at least two more near time of graduation. Often a review paper can be submitted as well. If the opportunity presents itself, should try to have at least one co-authored paper.

Expectations of graduate advisor

- Be interested in student’s education, welfare, areas of interest and abilities
- Challenge student to achieve but be perceptive to obstacles and handicaps
- Provide broader perspective of science including publishing, grantsmanship, interacting with colleagues, teaching and manuscript review.
- Provide financial support to the extent possible including funds for stipend, tuition, research and travel to meetings and workshops

GUIDELINES FOR DOCTORAL QUALIFYING EXAMINATIONS

University Guidelines: (GCAC 604 excerpts)

The qualifying examination is administered by the Graduate Faculty in the major program and should be taken early in the student's program. For the Ph.D. student the examination may be given after at least 18 credits have been earned in the graduate courses beyond the baccalaureate. The examination must be taken within three semesters of entry into the doctoral program. The student must be registered as a full or part-time degree student for the semester in which the qualifying examination is taken. If the student is pursuing a dual-title degree it is best to simultaneously conduct the exam for both titles, and students should contact the qualifying exam committee chair prior to the exam to ensure this is possible. It is also possible to take the Ecology and dual-title qualifying exams separately if needed. Refer the Ecology Graduate Bulletin for specific details regarding Qualifying exams for dual-title programs (<https://bulletins.psu.edu/graduate/programs/majors/ecology/>).

Ecology Guidelines:

Goals. The qualifying examination is given to evaluate the student's general level of knowledge, to evaluate the intellectual capability for the study of ecology at the doctoral level, and to identify weaknesses in the student's preparation. The examination will assess the student's oral and written communication skills—their ability to clearly convey ecological concepts in both spoken and written formats. The examination also will evaluate the student's abilities in problem solving, such as experimental design and interpretation of experimental results, critical thinking, and basic scientific knowledge. Subject areas to be covered include, but are not restricted to, the contents of basic textbooks in biology, ecology and statistics.

Qualifying Examination Committee. The Program Chair will appoint a four-member Qualifying Examination Committee to administer the examination. If a dual-title student is taking the exam, a representative of the dual-title program must be present on the Qualifying Examination Committee for that exam. The Qualifying Examination Committee will develop written questions covering the general content specified above. An examinee's advisor shall not participate in the administration of the oral examination or the marking of written examinations. However, before a final decision is made regarding qualification, the advisor will have an opportunity to give input to the Committee.

Examination. The examination will occur in two parts, a written and an oral. The written examination will consist of questions in general biology (e.g. anatomy, physiology, evolution, botany, zoology, microbiology), general ecology, basic statistics, and questions that require some synthesis (e.g. experimental design, explanation of experimental results). This examination will require 3-4 hours of writing time on 6-8 questions. (A laptop computer is recommended.)

The written portion of the examination will be read and graded by the Qualifying Examination Committee. Each student will then be given the in-person (no remote options) oral portion of the examination. The student's responses on the written portion of the examination may serve as the basis for initial oral questioning.

Schedule. Qualifying examinations will be scheduled twice each year. In the fall semester, the written portion of the exam will be scheduled for the last week of October and the oral portion for the second week of November. In the spring semester, the written portion of the exam for the third week of March and the oral portion for the first week of April.

Students must have completed 18 credits of graduate-level coursework before taking the Qualifying exam. For students entering with a master's degree or a strong background in ecology from their undergraduate institution, the qualifying examination is recommended to be taken during the second semester of study. For students entering with a baccalaureate degree with only one or two courses in ecology as an undergraduate, the examination will normally be taken during the third semester of study.

Results. The Committee will assign grades based on majority opinion (3 of 4 members) using both the written and oral examination results. Grades will be pass, unsatisfactory (fail with opportunity to retake), or fail. A student who receives a grade of unsatisfactory may be offered an opportunity to retake the qualifying examination at the next scheduled examination time. For the second examination, only grades of pass or fail will be given. Failure results in the student not being permitted to continue in the Ph.D. program. Typically, the student will be offered the opportunity to complete a M.S. degree. Students receiving a passing grade will be permitted to continue as a Ph.D. student.

The examining committee may recommend to the student's advisory committee specific courses or readings based on evidence of weaknesses in the student's preparation. The student's advisory committee will have responsibility for determining the program of study and the content of the comprehensive examination.

ECOLOGY IGDP COMPREHENSIVE EXAM

Overview

The purpose of the Comprehensive Examination is to evaluate the student's mastery of ecology and assess potential to succeed in their proposed dissertation research (adapted from [PSU GCAC 606](#)). A "mastery of ecology" is assessed based on the student's knowledge of historical and contemporary advances in the field, especially those most related to the student's research. The "potential to succeed" is assessed based on research progress to date and proposed research. The proposed research will be evaluated for innovation, potential impact, experimental design, and feasibility based on both the written and oral components of the exam.

The exam should be taken soon after all required coursework is completed, typically in the 5th or 6th semester. Students must be in good academic standing with a minimum GPA of 3.0 and no missing or deferred grades to schedule this exam. The Comprehensive Examination is administered by the student's doctoral committee, and it consists of a written research proposal followed by an oral examination. The student is required to inform the Huck Graduate Programs Office of the date, time, and location for the oral examination **at least 3 weeks before** the oral exam so that formal exam request can be prepared. The Examination Request form submitted by the Huck Graduate Programs Office must be approved by the Program Chair and must reach the Graduate School at least 2 weeks before the exam. Comprehensive examinations are scheduled and announced officially by the Office of Graduate Enrollment Services upon recommendation of the program head and must not be held without official notification from the Graduate School.

While it is best practice to conduct this exam in person, the comprehensive examination may be held fully in-person, fully remote, or hybrid with some individuals participating in-person while others participate remotely. Student preference for delivery mode should be strongly considered, but the student, advisor, and committee should agree on the mode at the same time the exam date is scheduled. If the student and advisor cannot agree on the mode, the Graduate Program Chair will make the final decision. Either the student or advisor can appeal the decision of the Graduate Program Chair to the Graduate School's Associate Dean for Graduate Student Affairs.

Preparation

Because the exam is intended to be comprehensive, preparation for the exam begins when students start their graduate work. The exam may draw on the student's full knowledge of the subject area and will likely require details that students learned from courses, primary literature, review papers, books, seminars, research, etc. While the dissertation research proposal may form the foundation for the exam, the student's full program of study - whether or not directly relevant to a student's research interests - may be assessed during the oral exam. To build a solid foundation for the exam, students should expose themselves to different views, competing hypotheses, research methods, and various analyses, and be able to synthesize information from various fields. Months before the exam, students should have conversations with each committee member to learn their expectations and obtain some guidance on what knowledge areas about which they are likely to ask questions. Students should share a copy of the results from their Qualifying exam with the doctoral committee upon forming the committee, and again at the time the Comprehensive exam is scheduled. If students had deficiencies identified during the

Qualifying Exam, they should be prepared during their Comprehensive Exam for questions in those areas so faculty can assess whether the deficiencies have been rectified.

Format

The exam includes a written proposal and an oral exam. The written proposal, which must be shared with the committee at least **two weeks prior** to the oral exam, should identify and address a theme (or themes) that unifies (unify) the dissertation while providing sufficient background in context of related work to establish the importance of the work and justify the goals of the research. The proposal should identify discrete topics (i.e., eventual dissertation chapters) that envision specific research questions/hypotheses, and are packaged with appropriate methods, results, and discussion of actual or expected results. This proposal should be of sufficient detail to provide committee members with a clear vision of the dissertation, individual projects with experiments/protocols, results (or expected results), and their potential significance, but should be short enough to be digestible by committee members. Students should consult their committee members to find the balance between big picture/broad concepts and details/fine points, but recognize that both matter. Typical length of the proposal is 10 to 25 single spaced pages, with shorter versions associated with cases including peer reviewed publications of completed dissertation research.

The student should use discussions with the advisor and/or dissertation committee to develop the key themes, framing, objectives, methods, and expected results for the proposal. However, the writing of the proposal text should be done by the student alone. This is not to say that the advisor will not be engaged. Writing the proposal is a good opportunity for advisors to mentor in writing, so while the text should be original work by the student, the advisor should read drafts and mentor the student on ways of writing the proposal more clearly and concisely. The advisor should refrain from doing the writing themselves or doing heavy handed editing that includes rewriting student work. Students can include published work [e.g., a review or research paper] in their proposal. This is acceptable because we want to encourage that sort of student productivity. While the advisor may have contributed to the published portion, the rest of the proposal is expected to be written by the student.

The oral exam will begin with a presentation (target 30 minutes) that the student prepares and that parallels the proposal. The student is encouraged to practice this presentation in front of others to receive general feedback prior to the exam, but as with the written portion of the exam, the final product should reflect original work of the student.

The presentation and proposal together provide inspiration for questions from the committee. After (or interspersed with) the presentation, the oral exam provides committee members opportunities to ask questions about ecology and appropriate related fields of study, and the proposal, ranging from big picture/context issues down to experimental details, statistical analyses, and data interpretation. It is up to the committee members to determine which areas of knowledge are important for testing mastery of ecology and potential for the proposed research to succeed. Therefore, it is prudent for students to meet with committee members well in advance of the exam to discuss knowledge areas that are likely to be covered. Even with these discussions it is possible (and appropriate) that exam themes will veer in unexpected directions. While the proposed research represents a launching point for questions, a “good” exam will go

well beyond this launching point to find the edge of the student's knowledge. Thus, even in a very successful exam, students will find themselves not knowing the answers to some of the questions. The length of the oral portion of the exam is not to exceed three hours.

Expectations and Evaluation

During the exam, the student is expected to demonstrate mastery of ecology, relevant coursework, the literature associated with their research area, the details of their system, methodological details, statistical analyses and interpretation. Beyond these technical details, students must communicate their ideas clearly, both orally and in writing. In addition, the committee will assess the potential for the student to succeed in completing the Ph.D. based on research progress to date and proposed research as synthesized in the written proposal, the presentation and subsequent discussions during the exam. The written portion of the exam should be treated as a formal writing assignment. The proposal should be written in grammatically correct English with attention to details.

The written and oral performances will be evaluated qualitatively; students will pass or fail, but they will not receive a grade. Categories on the Graduate School Comprehensive exam form are Superior, Above Average, Average, Below Average, and Fail. A rating above "Fail" from at least two-thirds of the members of the Ph.D. committee is required to pass the exam. Students will receive feedback on their performance immediately following the exam. If a student does not pass the exam, the default expectation is that a second exam will be allowed. The second exam should be scheduled within one year of the first exam. If the committee decides not to offer a second chance to pass the exam, the extenuating circumstances for that decision should be provided to the Chair in writing. Some reasons why a second exam may not be allowed are that progress toward degree has not been sufficient or evidence of academic integrity violations (e.g. plagiarism on the written exam). If the Chair concurs with the committee decision not to provide a second exam then no second exam will be offered.

If a committee decides not to offer a second chance to take the exam, or if a student fails the exam twice, then the student will have to leave the Ph.D. program. If the advisor and committee feel it is appropriate, a student who fails the exam can change their degree and complete an M.S. instead.

Results of the Comprehensive Examination will be formally reported to the Graduate School by the committee via LionPATH. A link to the official report form will be sent to the committee on the day of the exam. All committee members must participate in the exam and submit their evaluations, and the committee chair must submit the overall result. Evaluations and final result must be submitted within 5 business days after the exam.

Best practices for professional conduct during the exam.

Students are encouraged to discuss with the Ph.D. committee members the types of questions that might be asked on this exam. Faculty are expected to respond positively and in a timely way to requests for these discussions. It is customary for committee members to ask the student to leave the exam room at the beginning of the exam for a short time (< 10 min) to gather thoughts on how faculty perceive the written exam, and the order of questions and to follow a model

where multiple faculty pursue a line of questions, or a model in which questioning moves from one faculty member to the next (usually it is a mix of these). It is also customary for committee members to ask the student to leave the exam room after the exam so that the committee can discuss the outcome. Challenging, rigorous and thorough lines of questioning are considered a best practice. Asking students to diagram ideas is also a best practice. During the exam all parties should conduct themselves professionally. In particular, avoid interrupting, allow the student appropriate time to complete their thoughts, and distribute questioning equitably among committee members. It is the responsibility of the advisor to ensure that no committee member dominate the exam either in time or tenor. Unprofessional conduct by a committee member during the exam could be grounds for permitting a second exam (in the event that the student failed) while unprofessional conduct by a student could be reflected in the exam outcome. In either case, unprofessional conduct should be reported to the Chair as soon as possible after the exam by any student or committee member.

The Graduate School requirements for Comprehensive Exams can be found at <https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-606-comprehensive-examination-research-doctorate/>.

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. The Student Disability Resources (SDR) website provides contact information for every Penn State campus: <http://equity.psu.edu/sdr/campus-contacts>. For further information, please visit Student Disability Resources: <http://equity.psu.edu/sdr>.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <http://equity.psu.edu/sdr/guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with an accommodation letter. Please share this letter with your advisor and dissertation committee and discuss the accommodations with them as early in your exam planning as possible. You must follow this process for every semester that you request accommodations.

CHECKLIST OF REQUIREMENTS FOR MASTER'S STUDENTS

Graduate School Guidelines for master's students can be found at the following link: <http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-631-degree-requirements-research-masters/>.

In summary, in order to graduate, master's students are required to:

- have at least 30 credits
- have 18 credits at the 500 & 600 level
- have 12 credits in courses in the major (400-, 500-, 800-level courses)
- have no missing or deferred grades
- have at least 6 thesis credits (600 or 610)
- have no more than 6 thesis credits with a letter grade other than "R"
- submit thesis electronically: <https://submit-etda.libraries.psu.edu/main>. Electronic signatures of committee members will be applied after the thesis is uploaded. (Student should check with advisor to see if a hard-bound copy is requested.)

CHECKLIST OF GRADUATE SCHOOL REQUIREMENTS FOR PH.D. STUDENTS

Following is a summary of requirements that Ph.D. students must meet before the Graduate School may approve their graduation. Please use this summary as a guide for advising your students. For more detailed information on these and other requirements, please refer to the Graduate School's Graduate Education Policies (<http://gradschool.psu.edu/graduate-education-policies/>).

- **Residence requirement.** Over some twelve-month period during the interval between admission to the Ph.D. program and completion of the Ph.D. program, the student must spend at least two semesters (summer sessions are not included) as a registered full-time student engaged in academic work at the University Park campus. Students should note that 601 cannot be used to meet the full-time residence requirement.
- A Ph.D. student must have satisfied the departmental communication and foreign language requirement before taking the comprehensive examination. For Ecology students this requirement is met when the qualifying exam is passed.
- Three or more months must have elapsed between the passing of the comprehensive examination and the scheduling of the final oral examination.
- The final oral examination must be held within six years of the date the comprehensive examination was passed. If more than six years have passed, a second comprehensive examination must be given before scheduling the final oral examination.
- **Continuous registration requirement.** Students must be registered continuously each semester (excluding summers) beginning with the semester of the comprehensive examination and continuing each semester until the final oral examination is passed.
- **Time limitation.** All requirements including submission of the dissertation must be completed within eight years of the qualifying exam date.
- Students **MUST** be registered the semester of both the oral comprehensive examination and the final oral examination – even if taken during the summer session.
- No missing or deferred grades can appear on a student's transcript when the oral comprehensive examination or the final oral examination is scheduled.
- Students must have at least a 3.0 grade point average to schedule an oral comprehensive examination or final oral examination and to graduate.
- Doctoral candidates can be assigned quality letter grades for thesis research (600 on campus, 610 off campus) for a total number of 12 credits. Any credits over this maximum must be assigned as/changed to 'R' before a student will be permitted to graduate.
- Students cannot register for dissertation preparation (601/611) until they have passed the comprehensive examination and have met the two-semester residence requirement.

THESE CHECKLISTS DESCRIBE **GRADUATE SCHOOL REQUIREMENTS ONLY**. ADDITIONAL SPECIFIC PROGRAM REQUIREMENTS ARE DETAILED IN SECTION III ABOVE.

How to Submit a Master's Thesis (from the Thesis and Dissertation Guide)

- (1) Become familiar with the format requirements by reading the Thesis and Dissertation Guide carefully and completely (<https://gradschool.psu.edu/completing-your-degree/thesis-and-dissertation-information/thesis-and-dissertation-guide>)
- (2) Apply for graduation in LionPATH (<https://www.lionpath.psu.edu>) during the semester in which you plan to graduate. Go to <https://www.registrar.psu.edu/graduation/intent.cfm> for instructions. Go to <http://www.gradschool.psu.edu/current-students/etd/thesisdissertationperformance-calendar/> for deadlines.
- (3) Upload a draft of your thesis for format review to the eTD Web site (<https://submit-etda.libraries.psu.edu/author>) by the specified deadline. Corrections and detailed instructions will be returned to you by e-mail. (Note: the format review can be done either before or after the oral defense, as long as the deadline is met.)
- (4) Defend the thesis and make any changes required by thesis advisor and/or readers. Committee member and program chair signatures will be added electronically after the thesis has been uploaded.
- (5) Review the thesis one final time to be sure that no further changes are needed. It will not be possible to make corrections after final approval by the Office of Theses and Dissertations. Convert the file into a pdf for eTD submission. If you cannot do this, contact the Office of Theses and Dissertation for assistance.
- (6) Go to the eTD Web site (<https://submit-etda.libraries.psu.edu/author>) and upload the final eTD. The \$25 thesis fee can be paid at <https://secure.gradsch.psu.edu/paymentportal/>.
- (7) Await verification of thesis approval by email. If further changes are required, you will be notified. Your eTD will be accessible on the eTD Web site immediately after graduation unless you have chosen restricted access.
- (8) If bound copies are needed, contact the Multimedia & Print Center on campus (<http://www.multimediaprint.psu.edu/>) or you may use an off-campus source. All copies are the author's responsibility. The Graduate School does not provide copies.

How to Submit a Doctoral Dissertation (from the Thesis and Dissertation Guide)

- (1) Become familiar with the format requirements by reading the Thesis and Dissertation Guide carefully and completely (<https://gradschool.psu.edu/completing-your-degree/thesis-and-dissertation-information/thesis-and-dissertation-guide>).
- (2) Apply for graduation in LionPATH (<https://www.lionpath.psu.edu>) during the semester in which you plan to graduate. Go to <https://www.registrar.psu.edu/graduation/intent.cfm> for instructions. Go to <http://www.gradschool.psu.edu/current-students/etd/thesisdissertationperformance-calendar/> for deadlines.
- (3) Upload a draft of your dissertation for format review to the eTD Web site (<https://submit-etda.libraries.psu.edu/author>) by the specified deadline. Corrections and detailed instructions will be returned to you by email within. (Note: The format review can be done either before or after the oral defense, but the deadlines must be met.)
- (4) Defend the dissertation and make any changes required by your committee. Committee member and program chair signatures will be added electronically after the dissertation has been uploaded.
- (5) Review the dissertation one final time to be sure that no further changes are needed. It will not be possible to make corrections after final approval by the Office of Theses and Dissertations. Convert the file into a pdf for eTD submission. If you cannot do this, contact the Office of Theses and Dissertations for assistance.
- (6) Go to the eTD Web site (<https://submit-etda.libraries.psu.edu/author>) and upload the final eTD; submit the supporting materials to the Office of Theses and Dissertations (Note: It does not matter if you upload first or submit the materials first). Supporting materials are: ProQuest/UMI Agreement, Survey of Earned Doctorates, and \$95 fee (the fee can be paid at and all forms can be found at <https://secure.gradsch.psu.edu/paymentportal/>).
- (7) Await notification of eTD approval by email. If changes are required, you will be notified. Your eTD will be accessible on the eTD Web site immediately after graduation unless you have chosen restricted access.
- (8) If bound copies are needed, contact the Multimedia & Print Center (<http://www.multimediaprint.psu.edu/>) or you may use an off-campus source. All copies are the author's responsibility. The Graduate School does not provide copies.

Guidelines for Advisor-Student Interactions

Effective mentoring, open communication, and ethical professional conduct are essential for a high quality graduate education and research environment. Effective mentoring must be based on a commitment to provide every student access to supportive guidance on a range of professional, ethical and collegial issues. A productive mentorship requires that students are treated respectfully and fairly, and that the mentor serves as a role model - upholding the highest ethical standards. These guidelines embody many of the best practices used by the majority of our faculty here and elsewhere. They are intended to provide a heightened awareness of the need to consciously establish an effectual mentorship based on trust, courtesy, and shared expectations.

Faculty Advisors/Mentors will:

- provide an environment that is intellectually stimulating, emotionally supportive, safe, and free of harassment;
- be supportive, equitable, accessible, encouraging, and respectful;
- recognize and respect the cultural backgrounds of students;
- be sensitive to the power imbalance in the student-advisor relationship;
- avoid assigning duties or activities that are outside students' academic responsibilities or are detrimental to the timely completion of their degrees;
- respect students' needs to allocate their time among competing demands, while maintaining timely progress towards their degree;
- advise graduate students on the selection of a thesis topic with realistic prospects for successful completion within an appropriate time frame;
- assist students on selecting and forming a thesis committee;
- set clear expectations and goals for students regarding their research and thesis;
- discuss policies and expectations for work hours, vacation time and health contingencies;
- meet regularly and individually with students to provide feedback on research progress and expectations (weekly meetings are recommended);
- provide students with training and oversight in the design of research projects, development of necessary skills, use of rigorous research techniques, and all other aspects of research;
- arrange for the on-campus supervision and advisement of graduate students during extended absences as well as regular contact (e.g. by phone) when possible;
- provide and discuss clear criteria for authorship at the beginning of all collaborative projects;
- encourage participation in professional meetings and try to secure funding for such activities;
- provide career advice, help with interview and application preparation, and write letters of recommendation in a timely manner;
- ensure students receive training in the skills needed for a successful career in their discipline, including oral and written communication and grant preparation;
- schedule at least one meeting each semester to discuss topics other than research, like professional development, career objectives and opportunities, climate, laboratory personnel relations, etc;
- be a role model by acting in an ethical, professional, and courteous manner toward students, staff, and faculty.

Graduate Students will:

- acknowledge that they bear the primary responsibility for the successful completion of their degree;
- exercise the highest ethical standards in all aspects of their research, including collection, storage, analysis, and communication of research data;
- complete to the best of their abilities all tasks assigned by the program, including teaching duties;
- be informed about regulations and policies governing graduate studies at the program and graduate school levels and take responsibility for meeting program and graduate school deadlines;
- set up meetings with their mentor and communicate regularly with their thesis committees;
- prepare progress reports and request feedback from their full committee annually;
- be considerate of time constraints and other demands imposed on faculty and staff;
- take an active role in identifying and pursuing professional development opportunities;
- be proactive about improving their research skills, including written and oral presentation skills;
- inform faculty mentors of potential and or existing conflicts and work toward their resolution;
- seek mentoring and support resources beyond their faculty advisor, including other faculty mentors, peers, and organizations;
- consult outside help from graduate program chairs, ombudsmen, or other faculty if conflicts arise with your advisor;

- be aware that if they feel compelled to change advisors or research direction, they may have options and should consult with their program chair;
- always act in an ethical, professional, and courteous manner toward other students, staff, and faculty.

Programs will:

- provide students with up-to-date information that includes policies, practices, degree requirements, and resources;
- guide students through lab rotations (when applicable), assist students with selection of their advisor and resolution of student-advisor conflicts
- provide students with contacts and resources for potential conflict resolution in addition to the Program Chair (e.g. ombudsperson, director of graduate studies);
- provide pedagogical training and regular assessment of the teaching activities;
- monitor graduate student progress towards their degrees and professional development, including mentoring meetings, committee meetings, exam completions and other benchmarks appropriate to their discipline;
- provide and monitor training in the ethical conduct of research;
- provide appropriate infrastructure to allow students to complete their education and research in a timely and productive manner;
- establish and communicate policies for emergencies and unplanned situations that may disrupt the work of students and/or faculty;
- encourage and monitor student and faculty adherence to these guidelines.

These Guidelines are endorsed by the **Huck Institutes of the Life Sciences Graduate Education Office** and were adapted from guidelines recommended by the **Eberly College of Science Climate and Diversity Committee**.

Graduate Academic Course Plan: IGDP in Ecology

Instructions: Prior to the first semester of registration, students consult with advisors to select courses for the first semester. Complete the GRADUATE ACADEMIC COURSE PLAN for the *entire degree program* within three months, if a M.S. student, or immediately after the Qualifying Exam, if a Ph.D. student. After the course plan form is completed, return it to the Huck Graduate Programs Office, IGDP in Ecology (101 Huck Life Sciences Bldg.; Jean Pierce, jep32@psu.edu). It will be added to the student's file, and copies sent to the student and advisor. The advisor reviews the plan with the student before registering each semester; the committee should meet *at least annually* to review the plan.

Student:	PSU ID#
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Required Courses

<u>Prerequisites*</u>	Semesters Required	Semesters Taken Before PSU Ecology Program	Semesters Taken During PSU Ecology Program	Requirement Satisfied
Biological Sciences	3			
Physical Sciences (Including Categories Below)	5			
Chemistry	1			
Physics	1			
Calculus	1			

*It is up to the committee to determine whether and how deficiencies in these prerequisites will be remedied.

<u>Core Courses</u>	Course #	Credits	Title	Semester
Advances in Ecology	ECLGY 515	3.0	Advances in Ecology	
Classical Ecology	ECLGY 510	2.0	Classical Ecology	

<u>Subdiscipline Courses</u> (Need 6 credits total; should select courses from 2 different categories)	Course #	Credits	Title	Semester
Molecular, Physiological, Behavioral, and Evolutionary				
Population and Community				
Ecosystem, Landscape and Global				

<u>Advanced Statistics</u>	Course #	Credits	Title	Semester
First Course				
Second Course (Ph.D.)				

Colloquium	Course #	Credits	Title	Semester
1 st Colloquium	ECLGY 590	1.0	Colloquium	
2 nd Colloquium	ECLGY590	1.0	Colloquium	
3 rd Colloquium (Ph.D.)	ECLGY 590	1.0 (audit)	Colloquium	
4 th Colloquium (Ph.D.)	ECLGY 590	1.0 (audit)	Colloquium	

Additional Courses	Course #	Credits	Title	Semester

Program Options	Option Chosen	Required Courses Met (please list)	Additional Courses Met (please list)
Conservation Biology			
Microbial Ecology			
Quantitative Ecology			
Physiological Ecology			

Signatures

(Please print name and then sign.)

Student:	Date:
Advisor:	Date:
Committee Members At least ½ of committee membership must be members of the Ecology program faculty. M.S. students must have at least 3 members, including their advisor. *Ph.D. students must have at least 4 PSU Graduate Faculty members, including their advisor. *Ph.D. students must have one member whose primary appointment is in a different department from their advisor's primary appointment (Outside Unit Member). *Ph.D. Committees must be reported on an official form submitted via the Huck Graduate Programs Office.	
	Date:
	Date:
	Date:
	Date:
Special Member (non-PSU faculty member; not required; rare)	
	Date:

For administrative use only

Student:	PSU ID#
Option (if applicable):	
Thesis/Dissertation Topic/Title:	

Dates of Major Events

Entered Program:	Research Plan Approved:
SARI online component completed:	
Qualifying Exam (Ph.D.): Date: Passed ___ Not Passed ___ Date: Passed ___ Not Passed ___	Comprehensive Exam (Ph.D.): Date: Passed ___ Not Passed ___
English Language Competency Demonstrated During Qualifying Exam (All Ph.D. students must be evaluated): Yes _____ No _____	
Seminar Presented (colloquium):	Mini-symposium Presented:
Final Oral Exam (Defense, Ph.D.):	Thesis Defense (M.S.):