

PURDUE UNIVERSITY
ENVIRONMENTAL & ECOLOGICAL ENGINEERING

GRADUATE PROGRAM HANDBOOK

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Table of Contents		Page
I.	Introduction	1
II.	Admission Process	3
III.	Program Requirements	6
IV.	Graduate Program Learning Outcomes	13
V.	Administrative Details of the Graduate Program	15
VI.	Transferring from Another Degree Program at Purdue	17
VII.	Administrative Information	20
VIII.	Student Rights and Responsibilities	21

I. Introduction

Welcome to the graduate program in Environmental and Ecological Engineering (EEE) at Purdue University! The purpose of this handbook is to acquaint prospective, new, and current graduate students with information on admissions to and graduation requirements for the EEE graduate program. Useful information about the EEE graduate program, including this document, can be found online at: <https://engineering.purdue.edu/EEE> or by contacting the EEE Graduate Program Office at (765) 496-0545 or emailing eeegrad@purdue.edu.

The mailing address is:

Environmental & Ecological Engineering
Potter Engineering Center, Room 364
500 Central Drive, Purdue University
West Lafayette, IN 47907-2022

Degree Options

The following graduate degrees are awarded:

Professional Master's Degree & Non-Thesis Master's Degree

All students admitted to the Master of Science in Environmental and Ecological Engineering (MSEEE) program are eligible to receive the MSEEE degree from the Graduate School upon

completion of all degree requirements. The Professional MS and Non-Thesis MS degrees require completing and passing 30 hours of coursework and maintaining a GPA of 3.0 or higher

Thesis Master's Degree

All students admitted to the Master of Science in Environmental and Ecological Engineering (MSEEE) program are eligible to receive the MSEEE degree from the Graduate School upon completion of all degree requirements. The Thesis MS degree requires the completion of 12 research credits and 18 coursework credits (maintaining a GPA of 3.0 or higher). Thesis-track students are also required to defend and deposit a written thesis.

Direct Admission to PhD

All students admitted to the Doctor of Philosophy program are eligible to receive a Ph.D. degree from the Graduate School upon completion of all degree requirements. All Ph.D. students must conduct research and compose and successfully defend a doctoral dissertation. 90 credits must be completed to graduate, which consists of 30 credits of coursework (maintaining a GPA of 3.0 or higher) and 42 credits of research. The remaining credits can be coursework, research, or a combination of both, with the approval of the student's Advisory Committee.

PhD with MS Complete

Degree requirements are the same for directly admitted PhD students. Students entering the Environmental and Ecological Engineering Doctor of Philosophy (Ph.D.) program with an MS completed may transfer up to 30 credits hours of coursework, with the approval of the EEE Graduate Chair and the student's Advisory Committee, depending on the suitability of each course. For coursework at Purdue, a minimum GPA of 3.0 is required to stay in the program.

Combined BS + MSEEE Degree

This Professional Master's Degree is available to Purdue University (main campus) undergraduate students majoring in Environmental and Ecological Engineering (BSEEE), Agricultural Engineering (BSAE), Biological Engineering (BSBE), Chemical Engineering (BSChE), Civil Engineering (BSCE), Earth, Atmospheric, and Planetary Science (BS in Atmospheric Science, Environmental Geoscience, Geology and Geophysics, and Planetary Science), Industrial Management (BSIM), Materials Engineering (BSMSE), Mechanical Engineering (BSME), Natural Resources and Environmental Science (NRES), and Multidisciplinary Engineering (BSMDE).

Applicants must have an overall GPA of 3.25 and must apply to this combined degree program before matriculating into their seventh undergraduate semester (i.e., before entering their senior year). Students enrolled in this combined degree program can complete up to 12 credits of approved graduate level coursework during their senior year, which will be included on both their undergraduate plan-of-study and on their MSEEE plan-of-study. The appropriate BS degree will be awarded after satisfactory completion of the respective degree requirements. The student will have graduate status beginning in semester 9. Similar programs at other universities are often referred to as "4+1 BS/MS" programs.

Students are eligible to apply to this program if they are:

- (i) Undergraduate students on Purdue’s Main Campus currently in semester 6 (with two additional semesters yet to complete their BS degree) in the above-mentioned majors.
- (ii) A cumulative GPA of at least 3.25 at the time of application, and continuance of achieving this minimum index through semesters 6-8.

Combined MSEE + MBA Degree

This option requires a separate application and admission to the Krannert School of Business (please refer to their website for specific processes and requirements). The combined degree program includes 9 credits of graduate level business coursework applied toward the 30-credit total required to earn the MSEE. Additionally, 9 credits of engineering coursework can be applied to the MBA degree requirements.

II. Admission Process

The general requirements for admission to the graduate program are: (i) satisfactory completion of a baccalaureate degree at a college or university of recognized standing, and (ii) an undergraduate cumulative grade point average of at least 3.0 on a 4.0 scale (or equivalent). For international applicants that are non-native English speakers, there is an additional requirement of documented English language proficiency as stated below. Because of the multidisciplinary nature of the EEE degree program and the diversity of curricular topics and the associated research conducted by the faculty, no specific undergraduate preparation is stipulated. However, basic deficiencies in math or science may be grounds for denial of admission, or grounds for required completion of remedial coursework during the first year of study. In such cases, the additional coursework requirements may be stipulated in the admissions letter, but ultimately will be stipulated by the student’s advisory committee.

Students are referred to the EEE webpage where all information regarding requirements for admission to the EEE graduate program is posted. It is important that each applicant realize that the requirements for admission stated above are the minimum requirements, and failure to satisfy the minimum requirements may lead to automatic denial of admission. Further, because of capacity limits, fulfilling these minimum requirements does not guarantee admission to the program. Admission is a competitive process based on (i) the student’s previous record, as documented in the application materials, and (ii) interests, as they relate to programmatic research, teaching, and outreach interests.

Admission Timeline:

Two weeks before start of 7 th semester	Applications for combined degree program, including completed form GS-27
September 15	Applications for Spring Admission

December 15	Applications for Fall admission and potential fellowship consideration
May 15	Applications for Fall admission, Professional MS only

Required documents for admission:

Required documents for admission may be found here and below:

<https://www.purdue.edu/gradschool/prospective/gradrequirements/westlafayette/eee.html>

- (i) An online application submitted through the Graduate School at:
www.purdue.edu/gradschool
- (ii) Official copies of all transcripts from all prior post-secondary enrollments:
<https://www.purdue.edu/gradschool/admissions/how-to-apply/apply-transcripts.html>
- (iii) Academic Statement of Purpose
<https://www.purdue.edu/gradschool/admissions/how-to-apply/apply-statement.html>
- (iv) Personal History Statement
<https://www.purdue.edu/gradschool/admissions/how-to-apply/personal-history.html>
- (v) Current resume
- (vi) Three recommendation letters
<https://www.purdue.edu/gradschool/admissions/how-to-apply/apply-recommendation.html>
- (vii) English proficiency test scores (if applicable)

English Proficiency

Domestic and Native English-Speaking Applicants: No specific admission requirement.

All non-Native English-Speaking International Applicants: Either a TOEFL, IELTS Test of English, or Duolingo English Test is required. If a degree was obtained in an English-speaking country 36 months prior to the time of recommendation for admission, English Proficiency Requirements can be waived.

More details about English Proficiency Requirements can be found at:

<https://www.purdue.edu/gradschool/admissions/how-to-apply/apply-toefl.html>

For any non-native English-speaking international student that wishes to be hired as a teaching assistant with sole classroom teaching responsibility, must have a score of 50 or higher on Purdue’s Oral English Proficiency Test (administered by OEPT), or successfully completing ENGL 62000, is required.

Admission to the Combined BS + MSEEE Degree Program

Combined BS + MSEEE degree Application Procedure:

In semester 6, students in the above listed programs interested in the MSEEE Combined Degree need to formally apply for graduate admissions to the MSEEE program. Information on the application procedure can be found at: <https://www.purdue.edu/gradschool/index.html> and located on this same webpage is an “Apply Now” link for initiating the necessary online application. The application process is identical to the regular graduate application process, except for three additional steps:

1. The student must submit as part of the application the “Purdue University Graduate School Combined-Degree Program Request” form. This is Form GS-27, available from the Graduate School online at: <https://www.purdue.edu/gradschool/faculty/forms.html>. This form must be approved (by signature) by the Heads of the participating Baccalaureate and Master’s degree (EEE) programs, before submitting (i.e., uploading) as part of the application. If the student is a BSEEE student, the Head of EEE will sign and date on both approval lines.
2. The Academic Statement of Purpose essay should state clearly that the student is applying to the MSEEE Combined Degree program and provide the reason(s) for seeking graduate study under this Program, and any relationship to the applicant’s career goals.
3. In requesting Letters of Recommendation from references, it is very important that the student inform the references that the application is for admission to the MSEEE Combined Degree Program. Although all letters are solicited during the online application process (by the student providing emails of all references), the applicant is encouraged to provide all references with a copy of this information sheet, so that they are made aware of the program and process.

Before the beginning of semester 7, the EEE Graduate Program will decide to accept or not accept the student into the Combined Degree Program by acting on the student’s Graduate Application. The EEE graduate chair will serve as the default graduate advisor for all combined degree students. The 12 credits which will be dual counted by the BS and MS plans of study must be identified and agreed upon by the student along with the respective graduate and undergraduate advisors no later than the beginning of semester 7. The student’s complete record will be reviewed by the EEE Graduate Program at the end of semesters 7 and 8. It is required that the undergraduate cumulative GPA of at least 3.25 is maintained. If all conditions are not maintained, the student will not be permitted to remain in the combined degree program.

Admission to the MSEEE Program

Undergraduate students generally apply for admission to the MSEEE program during their 7th semester of undergraduate study. Information on the application procedure can be found at: <https://www.purdue.edu/gradschool/index.html> and located on this same webpage is an “Apply Now” link for initiating the necessary online application. All minimum requirements stated above for application apply.

Admission to the Ph.D. Program

Admission to the PhD program can occur several ways:

1. Applicants who have earned a M.S. degree from another institution can be admitted to the PhD program directly through the application process outlined above for MSEE applicants.
2. In some cases, exceptional applicants who have earned a B.S. degree from another institution can be admitted to the Ph.D. program directly, but generally only if this is their stated educational objective, and/or if they are funded through a Ph.D. fellowship, either internal to Purdue (e.g., Ross, Andrews, Purdue Doctoral) or external to Purdue (e.g., NSF, EPA, DOE, DOD, CSC, Fulbright). If this is the case, these students may still earn a non-thesis M.S. degree once they have completed the necessary coursework for the master's degree (i.e., 30 credits of the required 48 credits necessary for the Ph.D. degree).
3. Students who complete a non-thesis or thesis M.S. degree from the Purdue Graduate School can petition to continue as a PhD student (including Combined Degree students). In this case, the student and major professor must notify the EEE Graduate Program Office at least three weeks before the end of the semester in which the M.S. degree is awarded. A new application to the Graduate School is not needed.

III. Program Requirements

All rules of the Graduate School apply to students and degree candidates in the EEE program. The *"Policies and Procedures Manual for Administering Graduate Programs"* may be found at: <https://www.purdue.edu/gradschool/faculty/publications.html> and all prospective and current students should refer to this Catalog for basic rules and regulations. Other information on rules regulating graduate student employment at the university, and for preparing a graduate thesis are available at this site. The following information is provided to supplement the information provided by the Graduate School, and to detail the specific requirements of the EEE graduate program.

a. Program Requirements of all EEE Graduate Students

Plan of Study (POS) and Graduation Index:

Each graduate student admitted to a degree program must file a Graduate School Plan of Study (POS). A plan of study is an academic contract among a student, the faculty members on the advisory committee, and the Graduate School. All departmental and Graduate School policies related to the filing of a Plan of Study must be followed explicitly.

The student, in consultation with the major professor(s) and Advisory Committee, must prepare a "Plan of Study" for approval by the Graduate School, with the Plan consisting of the list of courses that the student plans to complete to satisfy the coursework requirement of their degree. The Plan of Study (POS) should be appropriate to meet the needs of the student's area of emphasis, as determined by the Advisory Committee. With approval of the Advisory committee, the POS for master's degree students can incorporate up to 6 credit hours of 300 or 400 level courses (unless the student is a Combined BS + MSEE degree student), and the POS for Ph.D.

degree students can incorporate up to 3 credits hours of additional 300 or 400 level coursework, beyond a maximum of 3 credit hours earned to satisfy their master's degree course requirement.

The POS is prepared and submitted by the student electronically for approval of: EEE Graduate Staff, EEE Graduate Chair, the Advisory Committee, and the Graduate School.

All students must submit a draft POS by the end of their first full semester in residence. The non-thesis POS only needs 1 faculty member to serve as an advisor and proposed 10 courses. The faculty member serving as an advisor for the non-thesis POS will be the EEE Graduate Chair. For MS-thesis and PhD Students, even if a full research committee has not been identified, the POS can be filed.

The POS must be approved, with all departmental signatures, at the end of the semester before graduation for MSEEE students and the semester prior to preliminary exams for PhD students.

Examples:

- If you want to graduate in Spring 2024 with your MSEEE, then your POS must be submitted and signed by EEE staff and faculty by the end of the Fall 2023 semester.
- If you want to complete preliminary exam in Spring 2024, then your POS must be submitted and signed by all parties in EEE and the Graduate School by the end of the Fall 2023 semester.

No courses shall be included on the POS for which a grade lower than C- is earned. Courses can be flagged as B- or better on the POS, and a B- or better is required for 30000- or 40000-level courses taken.

The Graduate School's policy on satisfactory performance is: *"A graduate student is expected to always maintain a graduation index representing a B average (3.0/4.0 GPA) or better. Indices below this level are marked "under 3.0 GPA" on the grade reports. The student also is expected to earn S grades for research registration. Two consecutive sessions of U grades for research registration mandate that the department take formal action and inform the student, in writing, and the Graduate School with regard to discontinuation or conditions for continuation of the student's graduate study. In any event, the student's progress should be reviewed each session by the student's department. The student's progress also may be reviewed by the Graduate School. Should the student fail to perform in either coursework or research on a level acceptable to the advisory committee, the departmental graduate committee, or the Dean of the Graduate School, he or she may be asked to discontinue graduate study at Purdue.*

How to File a Plan of Study Students filing their Plan of Study should complete their plan electronically.

When you have completed your Plan of Study and feel it is ready for review by your advisory committee, submit your plan as a Draft. All plans of study must first be submitted as Draft before you can submit your plan as a Final. While your plan is in Draft status:

- Review the information with your advisory committee and your departmental graduate coordinator to ensure that it satisfies department and Graduate School policies. Use your draft as a basis to discuss your academic and research goals with your advisory committee members.
- Once your entire committee has verbally accepted your Plan of Study, return to the POS, and submit your plan as "Final." The Plan of Study form will be electronically routed, reviewed and, if approved, signed by the departmental graduate coordinator, your advisory committee, and the Graduate School. You may check the status of your plan at any time by returning to the POSG and click on the Display Submitted Plan of Study link. Once the Graduate School has approved your Plan of Study, you should check it every semester to monitor your academic degree progress. Further information about the Plan of Study may be found at <https://www.purdue.edu/gradschool/faculty/forms.html>, and further questions may be directed to EEEgrad@purdue.edu.
- You do **not** need to complete the entire form in one sitting; you may save your Plan of Study and return to it later.

Candidacy. All students must be registered in the session of graduation. If registering as a candidate using:

- CAND 99100 - the student must register for course or research credits. CAND 99100 is not a registration.
- CAND 99200 - degree only is a stand-alone registration. Students should not register for any additional credits with this registration.
- CAND 99300 - examination only is a stand-alone registration. Students should not register for any additional credits with this registration.

Students with outstanding incomplete grades for courses listed on the plan of study will not be eligible to graduate. Students must complete the course requirements and register for a future session to receive the degree.

Major Professor(s) and Advisory Committee

MS-nonthesis and Professional MS:

The Chair of the EEE Graduate Committee will serve as the sole advisor for MS-nonthesis and Professional Master's Students. An oral and/or written final exam is not required, and the Graduate School will review the courses taken with respect to the alternate criteria that EEE has provided the Graduate School.

MS-thesis and PhD:

Upon admission, each MS-thesis and PhD student will be assigned a faculty member as an academic advisor.

Before the end of the first full semester of residence, all those students for whom a Graduate Committee member serves as the temporary advisor are required to select a permanent

academic advisor. This selection should be mutually acceptable to both the student and the faculty member. The advisor will act as the Major Professor on the student's Advisory Committee and must have an appointment (i.e., partial or full time) in EEE, or have a courtesy appointment in EEE.

Faculty members who do not have an appointment in EEE (full, partial, or courtesy) may serve as a co-chair of a student's Advisory (and examining) committee, if the student, EEE advisor, and non-EEE faculty member deem it appropriate. A faculty member with an appointment in EEE must be a co-chair.

For thesis M.S. students, the advisory committee consists of three members: The Major Professor and two other faculty members (including any co-Chair) selected by the student and major professor, on a mutually acceptable basis with the other faculty members.

For all Ph.D. students, the advisory committee consists of four members: The Major Professor and three other faculty members (including any co-Chair) selected by the student and major professor, on a mutually acceptable basis with the other faculty members. All persons serving on the Advisory Committee must be regular or special graduate faculty, i.e., certified by the Graduate School to serve on the committees of graduate students. Normally, the members of the student's advisory committee also will serve on the student's Examining Committee, which is responsible for reading the student's thesis or dissertation and conducting the final exam. Any MS-thesis or PhD student may have one Major Professor, or two co-Major Professors, who then act as co-Chairs of the Advisory Committee.

The purpose of the Major Professor is to:

1. Advise the student on course selection.
2. Supervise the research the student performs to fulfill any thesis or dissertation requirement, as described below.

The duties of the Advisory Committee are to assist the student in developing an acceptable Plan of Study and advise the student during the period of graduate work, including research and thesis preparation when these are required components of the student's degree program.

The student may change Major Professors. However, if the student is funded on a research assistantship or fellowship, students must discuss their contractual obligations with the current Major Professor before initiating the process to change advisors. All changes in advisor must be coordinated through the EEE Graduate Program Office, via e-mailing EEEgrad@purdue.edu, and changed on the Plan of Study.

Annual Review Requirement. Every 12 months, each thesis-track student (M.S. and Ph.D.) in EEE is recommended to meet with their Advisory Committee to ensure that the student is performing the research activities necessary to fulfill all research requirements of their respective degree in a timely manner. For thesis M.S. students, this review is required two years from their start of the program and for PhD students, this review is required four years from the start of the program.

During all other annual meetings, the student should give an oral update of the research performed to date, what research is anticipated during the next 12 months (or until graduation), and what research (if any) is necessary to complete during additional years. Written updates may consist of: The POS and current transcripts, research papers published or submitted, research outlines, or other materials requested by the adviser before the annual meeting is held. For additional procedural details, please see the "Annual EEE Research Graduate Student Review" evaluation form available online.

Course Requirements for all EEE Graduate Students. Because students in the EEE graduate program have a wide variety of academic, research, and career interests, there are no specified course requirement, other than (i) completion of nine credit hours of EEE graduate-level (500- and 600-level) courses and (ii) completion of EEE69500, which counts toward the nine credit hours of EEE coursework. EEE69500 must be taken the first semester it is offered after a student starts the program. Research credits cannot count toward these nine credit hours.

All MS-thesis and PhD students are required by EEE to take EEE69000 and will be auto-enrolled into this course each semester (Fall, Spring)

Below are the detailed rules for EEE690:

1. Ph.D. and thesis-based master's students enrolled in Fall 2023 or after are required to take EEE 69000 every semester until they graduate. This rule also applies to those who have passed prelims.
2. Exceptions:
 1. Ph.D. and thesis-based master's students enrolled in Spring 2023 or earlier are strongly encouraged to take EEE 69000, although it's not required. Their advisor needs to approve it and EEE graduate committee chair and EEE69000 instructors should be notified.
 2. If a student is off campus for professional reasons, such as an internship, or is only taking asynchronous courses, then the student doesn't need to take EEE 69000 in that semester.
 3. If a student is on campus but needs to take a course that is important for the student's research but has a scheduling conflict with EEE 69000, the student can be excused for that semester but needs to seek approval from their advisor and EEE graduate committee chair and also notify EEE 69000 instructors.
 4. A Ph.D. student needs to attend at least 10 meetings in EEE 69000 in a semester and the rest can be replaced with alternate seminars if those seminars are more relevant to their research. However, the Ph.D. student should seek approval from EEE69000 instructors, and a reflection report needs to be finished for each alternate seminar.

b. Specific Program Requirements for Professional MS Students and Non-thesis MS Students (non-combined degree)

Students admitted to the MSEEE degree program, after completing a baccalaureate degree at a college or university of recognized standing, may choose the Professional master's or non-thesis MS degree option, which requires completion of a minimum of 30 credit hours of coursework. The cumulative POS GPA must be 3.0 (on a 4.0 scale) or greater to graduate. The list of courses that comprises these 30 credit hours constitutes the student's Plan of Study and requires approval of the student's advisory committee.

Within the minimum 30 credit hours, 0 to 6 credit hours of independent project coursework can be applied, as well as 0 to 6 credit hours of coursework at the 300 or 400 level. Independent project coursework generally is completed under the supervision of an EEE-affiliated faculty member under the course number EEE 59800.

c. Combined BS + MSEEE non-Thesis degree Students. Because combined degree students are allowed to "double count" 12 credits of graduate coursework, some additional constraints are placed on the remaining 18 credits that are earned as a graduate student during the 5th year as a graduate student. Specifically,

- During the last 2 semesters of the baccalaureate degree program, 12 credit hours of graduate courses (e.g., three 3-credit 50000 level courses) can be taken and added to both the BS and MSEEE Plans of Study. A cumulative GPA of 3.25 must be maintained during semesters 6-8 of undergraduate studies.
- The MSEEE Plan-of-Study must **not** contain any undergraduate courses (i.e., all courses need to be 500 level or above), and the MSEEE POS must be filed before the end of semester 9 (first semester post-baccalaureate degree) and must be approved by the EEE Graduate Program before registration for the final semester.
- All normal MSEEE non-thesis degree requirements must be satisfied, including (but not limited to) completion of EEE69500 and 9 credits of EEE graduate-level coursework.

d. Program Requirements of Thesis MSEEE Degree Students

After having completed a baccalaureate degree at a college or university of recognized standing, students admitted to the MSEEE degree program may choose the thesis Master's degree option, which requires completion of a minimum of 18 credit hours of coursework and a minimum of 12 credit hours of thesis research (EEE 69800) through which a Master's thesis is researched and composed. The 18 coursework credits (i.e., Plan of Study) may include 0 to 6 credits at the 300 or 400 level, but cannot include any independent project coursework, as this is replaced with thesis research credits.

Thesis research must be completed under the supervision of the Chair or co-Chairs of the Advisory Committee (i.e., the student's Major Professor(s)). The Committee determines whether the student is approved (certified) for graduation, with this typically conducted through an oral final examination in which the student must defend their written thesis to all members of the examination committee.

There are typically two parts to the oral exam, which must be completed within a maximum period of two hours:

- 1) The first part (twenty to thirty minutes) generally is open to the public, during which time the student presents and explains their research goals, methods, and results to the committee and public, followed by a brief open question time.
- 2) The second part is a closed question-and-answer session conducted by the examination committee. Members of the final examination committee also have the option of requiring the student to provide written responses to questions posed to them before the final oral exam. Final approval is also required from the Graduate School.

The student must submit a *Form 8: Request for Appointment of Examining Committee* to request the final examination. The Form, which can be found on myPurdue, must be submitted and must receive all department signatures at least two full weeks before the requested exam date. All Committee Members must complete a *Form 7: Report of Master's Examining Committee* after the defense is complete.

In addition to recommending (or not recommending) the candidate for the MSEE degree, the major professor and other committee members also may recommend (or not recommend) whether the candidate is allowed to continue study toward the Ph.D. degree.

MS Thesis Defense Preparation Timeline:

- Infinite weeks in advance:
The student should be in regular communication with advisor and committee about progress toward exam and expected timelines. If external committee members are included in the thesis or examination committee, this process should start as soon as possible. External committee members are committee members who are not affiliated with Purdue University, and students may request an external committee member be added by emailing EEEgrad@purdue.edu.
- Four weeks in advance (or earlier):
The student should work with graduate program administrator and coordinate with committee members to schedule the exam and book appropriate rooms. Students should submit a title and abstract to the graduate program administrator. The request for examination must be submitted to the Purdue Graduate School.
- Two weeks in advance (or earlier):
The student submits the document (prelim or thesis) to committee members for their review. If the two-week deadline is not met, the exam will be cancelled and must be rescheduled.
- One week in advance:
Committee members inform the student of any additional written questions, which must be addressed.

d. Program Requirements of Ph.D. Degree Students

All students admitted to the Doctor of Philosophy program are eligible to receive the Ph.D. degree from the Graduate School upon completion of all degree requirements. All Ph.D. students must research, compose, and successfully defend a doctoral dissertation.

The Ph.D. degree requires a minimum of 30 credit hours of coursework, 42 credit hours of research, and 90 total credits of coursework and research. The balance of 18 credits may be coursework or research and is left to the discretion of the thesis committee based on the educational needs of the student.

Coursework and research credits earned in the completion of a master's degree, earned at Purdue or at another college or university of recognized standing may be included in the 90-credit total. As an example, for students who have earned a non-thesis degree at another university, the Ph.D. Advisory Committee in EEE may allow up to 30 coursework credits, earned at another university, to be included on the Ph.D. Plan of Study, depending upon the suitability of each course in addressing the student's academic goals within the EEE graduate program, as determined by the Ph.D. Advisory Committee.

A minimum of 18 credits of coursework applied toward graduation must be from Purdue, so a PhD student who earned an MS from another institution will still have a mix of coursework and research credits earned while a Purdue student. Any coursework credits earned during completion of a thesis master's degree may be included on the Ph.D. Plan of Study, if approved by the Ph.D. Advisory Committee.

Similarly, up to 9 credit hours of research credits earned in completion of a thesis master's degree may be applied toward completion of the 42 required research credits. The 30+ coursework credits (i.e., Plan of Study) may include 0 to 6 credits at the 300 or 400 level but cannot include any independent project coursework earned beyond the master's degree.

Any additional research credits, beyond the master's degree, are earned through registration in EEE 69900, with all work completed under EEE 69900 supervised by the student's Major Professor. Coursework earned from one (and only one) master's degree may be used on the Ph.D. plan of study, and only those research credits earned for this one degree may be counted towards the Ph.D. research credit requirement. An official transcript showing the completion of the master's degree must be on file with Purdue University's Graduate School if courses are to be transferred to the Ph.D. POS, or if any associated research credits are to be applied.

Ph.D. Preliminary Exam. After the student's Advisory Committee has approved the student's Plan of Study, and after completion of the course work on the initial Plan of Study (8-10 courses for direct PhD students and 4-6 courses for PhD students with MS from outside Purdue), the student must successfully pass the Ph.D. preliminary (prelim) examination. The exam is administered by a Preliminary Examination Committee, which generally consists of all Advisory Committee members. The public is not allowed to attend the Preliminary Examination. The Examination Committee should communicate Preliminary Examination expectations and format preferences no later than the first week of the semester planned for the exam.

The Preliminary Examination is an oral examination in which the student describes and defends the research plan that they intend to follow in developing their research dissertation. This research plan must be documented in a written proposal provided to the examining committee at

least two weeks before the exam. The student is responsible for making sure the written proposal is in a *format* that is acceptable to the advisor and other committee members before finalizing it and before providing it to the committee. Generally, a 15 page, single-spaced, NSF-style written proposal (that includes an abstract, introduction and significance (broader impacts), list of hypotheses or research tasks, brief methods and/or theory section, and preliminary results) is acceptable. Other materials (including references, draft of papers or published papers, standard operating procedures, or other detailed experimental methods sections) may be attached as appendices. A long proposal, which is essentially an early draft of the dissertation, is not acceptable.

The Preliminary Examination committee has the option of requiring the student to provide written responses to questions posed by them to the student before the oral prelim exam. The objective of the Ph.D. preliminary examination is to determine if the student qualifies for admission to candidacy for the Ph.D. degree based on the student's technical knowledge, reasoning skills, creativity in formulating their research plan, and ability to convey each of these in written and oral formats. If the student fails to pass the Preliminary Examination on the first attempt, they must retake the exam during the next semester. If the student fails for a second time, they will be automatically withdrawn from the Ph.D. program.

The student must submit a *Form 8: Request for Appointment of Examining Committee* to request the preliminary examination. The Form, which can be found on myPurdue, must be submitted and receive all department signatures at least two full weeks before the requested exam date. All Committee Members must complete a *Form 10: Report of the Preliminary Examination* after the defense is complete.

Upon satisfactory completion of the Ph.D. Preliminary Examination, and with final approval required from the Graduate School, the Ph.D. student holds the position of "Ph.D. Candidate". One time each year after satisfactory completion of the Preliminary Exam, the Ph.D. candidate needs to schedule the annual review meeting with their Advisory Committee to inform the committee of the student's academic and research progress, and to help identify any major issues or concerns regarding the student's work prior to the Final Examination meetings.

Ph.D. Final Exam

At least two full semesters (of registration) must elapse between the Preliminary Exam and the Final Defense (described below).

The Examination Committee will be comprised of four or more members. In most cases, this Committee is composed of members of the Preliminary Examination Committee. This Committee determines whether the student is approved (certified) for graduation, with this typically conducted through an oral final examination in which the student must defend their written dissertation to all members of the examination committee.

There are typically two parts to the oral exam, which must be completed within a maximum period of two hours. The first part is open generally to the public (e.g., except in cases such as when proprietary information is discussed), during which time the student presents and explains

their research goals, methods, and results to the committee and public; and the second part is a closed question-and-answer session conducted by the examination committee. Members of the final examination committee also have the option of requiring the student to provide written responses to questions posed to them before the final oral exam.

The student must submit a *Form 8: Request for Appointment of Examining Committee* to request the final examination. The Form, which can be found on myPurdue, must be submitted and receive all department signatures at least two full weeks before the requested exam date. All Committee Members must complete a *Form 11: Report of the Final Examination* after the defense is complete.

PhD Preliminary and Final Defense Preparation Timeline:

- Infinite weeks in advance:
The student should be in regular communication with advisor and committee about progress toward exam and expected timelines. If external committee members are included in the thesis or examination committee, this process should start at least eight weeks before the proposed exam date.
- Four weeks in advance (or earlier):
The student should work with graduate program administrator and coordinate with committee members to schedule the exam and book appropriate rooms. The student should submit a title and abstract to the graduate program administrator. The request for examination must be submitted to the Purdue Graduate School.
- Two weeks in advance (or earlier):
The student submits the document to committee members for their review. If the two-week deadline is not met, the exam will be cancelled and must be rescheduled.
- One week in advance:
Committee members inform the student of any additional written questions, which must be addressed.

IV. Graduate Program Learning Outcomes (MSEEE and Ph.D.)

The faculty-approved Learning Outcomes for the graduate degree program in Environmental and Ecological Engineering are adapted from the Environmental Engineering Body of Knowledge developed under the auspices of the American Academy of Environmental Engineers & Scientists.

Outcome 1: Basic Environmental Math and Science

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must have an ability to apply mathematics, physics, chemistry, biology, ecology and earth science knowledge to analyze coupled natural and engineered systems and to design, construct and manage strategies that promote stewardship of the environment and ecosystems.

Outcome 2: Design and Conduct Experiments

An experiment is a procedure to take measurements or model a system in order to test or establish understanding of a process. Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must have an ability to design and conduct experiments necessary to gather data and synthesize information for use in analysis and design.

Outcome 3: Use of Modern Engineering Tools

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must have an ability to apply measurement, modelling, statistical and risk analysis tools and techniques required for engineering practice.

Outcome 4: Risk, Reliability and Uncertainty

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must have knowledge of the risks associated with human or environmental exposure to contaminants in our environment and incorporate sound uncertainty and reliability principles into engineered systems that are designed and managed for the protection of ecosystems and human health, welfare and safety.

Outcome 5: Problem Formulation and Analysis

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must have an ability to assess engineering challenges, effectively communicate complex problems, formulate and evaluate alternative management strategies and recommend professionally acceptable solutions.

Outcome 6: Design

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must have the ability to engage in creative and critical thinking, incorporation of uncertainties and use of engineering judgment to design a system, component or process to meet desired needs for the protection of ecosystems and human health, welfare and safety.

Outcome 7: Sustainability

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must integrate the principles of sustainability into analysis and design. Constraints imposed by the long-term sustainability of our natural and social systems must be a critical factor in the design and selection of engineered systems.

Outcome 8: Societal Impact and Environmental Policy

Environmental and Ecological Engineers are regularly involved in the implementation of public environmental policy. Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering should recognize societal impacts of engineering activities, should communicate these impacts to stakeholders, including policy makers, and should consider stakeholder inputs in developing engineering solutions.

Outcome 9: Globalization and other Contemporary Issues

Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must be able to function in a globalized system of development and delivery of professional services, taking into consideration local cultural norms for values, beliefs, communication and technology. Maintaining awareness of emerging contemporary issues and their impact on the profession is required.

Outcome 10: Thrive in Multi-Disciplinary Teams

The solutions to most engineering problems require the expertise and participation of a variety of disciplines. Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must be able to use management and communication skills to create, manage and/or participate in teams composed of professionals from a broad range of disciplines.

Outcome 11: Professional and Ethical Responsibilities

The National Society of Professional Engineers has published a Code of Ethics for Engineers that applies to Environmental and Ecological Engineering. A fundamental canon of this Code is that engineers "Hold paramount the safety, health and welfare of the public." Unique to Environmental and Ecological Engineering is the principle that natural ecosystems support human existence and thus service to the public must include the preservation of species and habitats. In addition, environmental and ecological engineers recognize that all of nature has intrinsic value and that ecological stewardship and preventing the destruction of the natural environment is part of their professional responsibility.

Outcome 12: Effective Communication

The environmental and ecological engineer has a critical role interpreting environmental policy issues and the implementing of strategies for protecting public health and the environment. Graduates of the Master's and Ph.D. program in Environmental and Ecological Engineering must effectively communicate in an appropriate and understandable manner when interacting with the non-technical public as well as the technical community.

V. Administrative Details of the Graduate Degree Program

a. Residency Requirements and Transfer Credits

MSEEE Program Duration. It is expected that no more than three years (and typically two years or less) shall be required for completion of all requirements for a thesis or non-thesis MSEEE degree, even if the student conducts research in absentia or participates in a graduate student coop experience. In the event that more than three years are required, the student and advisor should contact the EEE Graduate Office to discuss plans for completion, as no student will be permitted to register as a master's degree student beyond three years without the prior review and approval of the Graduate Committee. At least one-half (15) of the total credit hours (30) used to satisfy degree requirements must be earned at the Purdue University, West Lafayette campus. The Combined Degree Option allows students in several undergraduate programs on Purdue's main campus to complete the additional MSEEE graduate coursework within one year (i.e., the additional MSEEE graduate coursework beyond that earned while still an undergraduate student).

Ph.D. Program Duration. It is expected that no more than six years (beyond the master's degree) shall be required for completion of all requirements for the Ph.D. degree (and typically four years or less), even if the student conducts research in absentia or participates in a graduate student coop experience. In the event that more than six years are required, the student and advisor should contact the EEE Graduate Office to discuss plans for completion, as no student will be permitted to register as a Ph.D. degree student (or Ph.D. candidate) beyond six years

without the prior review and approval of the Graduate Committee. At least one-third (30) of the total credit hours (90) used to satisfy degree requirements must be earned at the Purdue University, West Lafayette campus (including research credit hours). At least two full semesters (of registration) must elapse between the Preliminary Exam and the Final Defense.

For students wishing to transfer course credits from another college or university of recognized standing, the transfer process happens when the student submits their POS, as there is no mechanism to approve transfer courses prior to the generation of the POS. It is strongly advised that the student discuss with their major professor the appropriateness of each transfer course before the POS is electronically generated. For courses taken elsewhere, only courses with a grade of B- or better can be used on the POS. An official transcript(s) with the courses to be transferred must be on file with Purdue University's Graduate School, if courses are to be applied to an MSEE or Ph.D. POS, or if any associated research credits are to be applied.

b. Ethical Conduct of Research

All EEE graduate students should be familiar with and adhere to the Purdue University Statement of Integrity and Code of Conduct available at:

https://www.purdue.edu/purdue/about/integrity_statement.php

First semester EEE graduate students are required to perform the "Responsible Conduct of Research" for Physical Sciences from the Collaborative Institutional Training Initiative (CITI), available online at:

<https://www.citiprogram.org/>

To do this, click on the "Register" link under create an account. Enter "Purdue University" for Organization Affiliation. Enter your name as written on your Purdue ID. Enter a username and password of your choice, and set a security question. Enter your gender, ethnicity, and race. Select No for CME/CEU credits, and continue to answer the remaining questions.

First semester EEE graduate students are required to perform the Discipline Specific Responsible Conduct of Research.

More information about this two-part requirement may be found here:

<https://www.purdue.edu/research/oevprp/regulatory-affairs/responsible-conduct.php>

Students should notify EEEgrad@purdue.edu once both requirements are complete.

c. Financial Support

Unless a student receives an official letter from the EEE Graduate Program Office stating that the student will be supported financially, the EEE program has made no financial commitment to the student. Many Master's students invest their own resources to support their education and obtain the knowledge and credentials needed for success in professional practice.

However, in order to compete for the very best graduate students, financial support is often provided as an incentive to attend Purdue University. The primary source of these funds is from external research grants that support Graduate Student Research Assistantships (RAs). A limited number of Teaching Assistantships (TAs) in EEE and in other departments on campus, and competitive College and University fellowships are available.

Graduate students who are U.S. citizens also may compete for external fellowships, such as those awarded by the U.S. National Science Foundation, the U.S. Environmental Protection Agency, and the U.S. Department of Energy. International students may compete for external fellowships awarded in their country of citizenship, including Fulbright fellowships. Funding is competitive, however for Ph.D. students that are in good standing, good faith efforts are made to financially support the student.

d. Course Registration

For each upcoming semester, course registration begins with a meeting between the student and the academic advisor (major professor) to discuss courses the student should enroll in. Once courses are agreed upon, students will register for courses on the Scheduling Assistant, found in myPurdue: <https://wl.mypurdue.purdue.edu/>.

At this time, the student is provided will use a PIN with which they can register for classes online. All graduate students will use the PIN 999999.

Students enrolled in 69800 or 69900 need to have a documented agreement of the research expectations and outcomes that justify the enrolled credits. More information about registering for research credits may be found here: <https://engineering.purdue.edu/EEE/Academics/CurrentStudents/Graduate/ResearchRegistration>

Thesis students who have completed all necessary coursework, must register for research hours (EEE 69800 or EEE 69900) if they are working on their thesis/dissertation in any way. Students should register for research hours in proportion to their effort. Students are required to register for research during any semester an exam is held (preliminary exam, MS or Ph.D. defense exam), unless they are CAND 992 or CAND 993. Rules regarding the necessary credit hours that each student must be registered for at any time are stipulated by the Graduate School (<https://www.purdue.edu/gradschool>) must be followed. Rules regarding “research in absentia” also are documented by the Graduate School.

f. International Students

It is especially important for international students to understand how course and research credit registration may affect their visa status.

Questions involving services related to immigration statuses may be forwarded to the ISS Office:

"The Office of International Students and Scholars (ISS) is committed to the internationalization of Purdue University by providing appropriate services and support to international clientele and various University departments and offices.

ISS seeks to enhance the academic, cultural, and social pursuits of students and scholars from abroad through knowledge and expertise in immigration, intercultural engagement, and advising. ISS is a constituent unit of Purdue's Global Partnership and Programs."

More information about the ISS Office for current students may be found here:

<https://www.purdue.edu/IPPU/ISS/student/current/index.html>

VI. Transferring from Another Degree Program at Purdue

A student who: 1) has established a graduate academic record at Purdue University (WL), 2) has current eligibility to register in a graduate degree program, and 3) wishes to transfer to the EEE graduate degree program needs to submit a completed Request for Transfer of Department (G.S. Form 17) to the Graduate School. International students who wish to transfer from one department to another must check with the Office of International Students and Scholars to determine if their visa status will be affected by the transfer. All original admissions packet materials and other records (i.e., student transcripts) held in the initial department must be made available to the EEE graduate program for review (i.e., transcripts, letters of recommendation). EEE will accept transfer students on the following conditions:

- The student is in good standing in their current graduate program.
- The chair of the graduate committee approves the transfer after reviewing the admissions packet and after discussions with the academic unit the student is transferring from.
- A faculty member in EEE is willing to serve as the major professor. If the transfer student is a PhD candidate, good faith efforts will be made to financially support the student.

If a student completes a graduate degree in one department and wishes to seek an additional graduate degree in another department, a new application is not required.

VII. Administrative Information

a. Mail. Mail can be addresses to and received by EEE graduate students at the following location. Be sure to let the EEE Graduate Office know that mail will be sent under your name to this location:

The current mailing address is:
Environmental and Ecological Engineering
Purdue University
Potter Engineering Center, Room 364
500 Central Drive
West Lafayette, IN 47907-2022

b. Business Office. Business office services are provided in Potter 364J.

c. Work Space. Office and research space assignments are coordinated through the EEE Office. If a student is assigned office and research space by their major professor in the School or Department in which the Major Professor has a joint appointment, the EEE office should be notified of this. Any keys for buildings, laboratories, offices, or other research space necessary for a student's work must be authorized by the major professor. No laboratory keys will be assigned until safety training is completed.

d. Leave From Campus. Before temporary departure from campus for attendance at an out-of-town conference or workshop, or to conduct research at another location, or for vacation (see Section e), or any other authorized activity, a graduate student must complete the necessary forms. Such departures require approved by the major professor. In case of an emergency that requires the student to be absent from campus, the student should inform their advisor and the EEE office as soon as possible.

e. Vacation Policy. Any student in pay status (i.e., research assistantships, fellowships, etc.) is allowed vacation days consistent with all applicable laws and University regulations (such as accrual rates). Requests for vacation must be submitted via SuccessFactors.

VIII. Student Rights and Responsibilities

Per Purdue University's Office of Student Rights and Responsibilities: "We promote responsibility and encourage honesty, integrity, and respect among Purdue students. We accomplish our mission through education, compliance through behavioral standards and support of individual rights. Our work helps enhance the quality of the University and community environment."

More information about Student Rights and Responsibilities may be found at the following link: <https://www.purdue.edu/odos/osrr/index.html>