ENGINEERING EDUCATION
GRADUATE PROGRAM

PHD PROGRAM HANDBOOK

PURDUE UNIVERSITY | School of Engineering Education

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LEARNING TO MAKE A DIFFERENCE

The formation of this academic unit was a bold step, a fundamental recognition that engineering education cannot remain static if society is to address pressing challenges – energy, water, biotechnology, health care, climate change, sustainable food production – all of which require the leadership, creativity, and problem-solving skills of engineers.

The School of Engineering Education gives structure to our eagerness to take on issues specific to engineering education: encouraging interest in and preparedness for entering engineering and the sciences, increasing diversity among those who do pursue those disciplines, and highlighting engineering's relevance to societal issues.

Transforming how engineering education happens means taking a research-based approach to our educational system, just as research is performed and applied in other disciplines. Research in engineering education will provide the principles upon which to build innovative curricula that lead future engineering practice to meet the needs of the nation and the world. This new paradigm combines deep knowledge of engineering with deep knowledge of learning and pedagogy. These are the defining characteristics of the School of Engineering Education.

Our school has experienced remarkable growth and many successes as we've pioneered the development of an emerging discipline and begun to reshape the practice of engineering education. We look to a promising future!

Welcome to the ENE family, Hail Purdue!

Donna Riley
Kamyar Haghighi Head, School of Engineering Education
Professor of Engineering Education

ABOUT THE ENE GRADUATE STUDENT HANDBOOK

The purpose of this handbook is to introduce graduate students in the School of Engineering Education to policies and procedures related to their experience within the department. The information in this handbook is summarized and subject to change. Please check the relevant websites for more detailed and up to date information on procedures.

The School of Engineering Education is subject to the policies of the College of Engineering and the Graduate School. Therefore, the policies laid out by those bodies supersede those of the School. Knowledge of the policies and procedures related to academics or research are the responsibility of the student.

FIRST STEPS

Orientation will be the week before classes for all new graduate students, in which some of the information in this manual will be covered. The ENE 50101 Foundations of Engineering Education course reviews some additional policies and procedures presented in this handbook. In the event that you miss something during your initial orientation and entry to the program, please note that before the end of week of classes, all new graduate students are expected to:

1. Check in with the graduate coordinator Loretta McKinniss, so the department is aware of your arrival. She can be reached via phone at (765) 494-3331 or email at lmckinni@purdue.edu.
2. Carefully review information, shared via e-mail and/or the web, about payroll and enrolling in insurance. For question about payroll email engremployment@purdue.edu, and for insurance questions contact student-insurance@purdue.edu or (765) 496-2524.
3. Log on to myPurdue (https://mypurdue.purdue.edu/cp/home/loginf) to make sure your Career account and password are working (you can find your initial Career Account ID and password in your admittance letter from the Graduate School) and you have no holds on your record/account. If you have any holds, please address them immediately. If for any reason you have problems with your login or password, see or contact the graduate coordinator to clear up any issues.
4. Obtain fobs for accessing WANG 3500 and codes for accessing lockers, which will be assigned to you on Friday before classes start. The Administrative Assistant to the Head (Cindey Hays) is in charge of these assignments.
5. Work with the graduate coordinator to register for Fall semester classes. You will also receive information from the Bursar's office about how to set up your payment plan for the fees when you confirm your enrollment.

SECTION 1: ABOUT THE SCHOOL OF ENGINEERING EDUCATION

The School of Engineering Education (ENE) was created in 2004, becoming the first such department in the United States. We grew out of the Department of Freshman Engineering, first founded in 1953, and which formally became a School in 2009 by joining with Multidisciplinary Engineering (MDE) and Interdisciplinary Engineering Studies (IDES) programs, which were first founded in 1969. The School of Engineering Education thus includes the Graduate Program, the First-Year Engineering (FYE) Program, the Multidisciplinary Engineering and Interdisciplinary Engineering Studies programs, and the INSPIRE Research Institute for Pre-College Engineering.

The current head of the school, appointed in 2017, is Professor Donna Riley. The Head oversees all of the different parts of the School. All graduate students belong to the graduate program and are overseen by the Graduate Chair. The First-Year Engineering (FYE) program is a common curricular experience which all entering engineering students must complete before they can move on to one of the other professional engineering schools in the College of Engineering. The School has professional advising staff to serve the first-year students, and many of the faculty in ENE also teach courses in the first-year program. Multidisciplinary Engineering (MDE) is an ABET-accredited bachelor's degree program for students who want to practice engineering around a focused concentration by combining several academic disciplines. Students may design their own tracks or pursue existing tracks in Acoustical Engineering, Engineering Management, Humanitarian Engineering Lighting Engineering, Theatre Engineering, Visual Design Engineering, and more. Interdisciplinary Engineering Studies (IDES) is for students who want an education in engineering but are not seeking an accredited degree and do not plan to practice engineering, e.g., students who are preparing for further study in medicine or law. INSPIRE is a research institute affiliated with the School that is focused on engineering thinking and learning to engage all pre-college learners and impact educational systems, including via research, outreach/engagement, and other activities.

THE SCHOOL OF ENGINEERING EDUCATION STRATEGIC COMPASS

VISION
The School of Engineering Education (ENE) **envisions** *a more inclusive, socially connected and scholarly engineering education.* This implies that we radically rethink the boundaries of engineering and the purpose of engineering education.

MISSION
In pursuit of this vision, the **mission** of the School of Engineering Education is to *transform engineering education based on scholarship and research.*

VALUED BEHAVIORS
The **behaviors we value** and expect are:
• *being inclusive, collegial, and mutually supportive;*
• *acting with integrity, courage and respect and building trust;*
• *achieving professional and personal satisfaction;*
• *being socially conscious in what we do and how we do it;*
• *thinking strategically and striving for excellence;*

• *being accountable.*

Above all else, we seek to put **Students First** in all we do.

GOALS
To achieve our mission, we have **four goals:**

1. **Empower our people:** Empower all members of the School (students; professional, administrative, and clerical staff; academic advisors; and faculty) to contribute to the success of our integrated, multifaceted mission and to be leaders, advocates, and change agents over their lifetime. Empowerment rests upon a shared understanding of the vision, mission, goals, priorities, and capabilities of the School within the national and global landscape of engineering education. We are a continuous platform for members of engineering education community to engage, inform, and influence each other.

2. **Set the pace (in innovative programs):** Offer a full suite of undergraduate and graduate programs that set the global standard in engineering education grounded in and contributing to cutting-edge scholarship and research. The transformation of engineering begins when we challenge the fundamental assumptions behind engineering education and strive to create engineering programs that:
   a. Diversify engineering: Open up engineering to a more diverse range of people by making their first experience of engineering (from Pre-College to 16) the most rewarding it can be;
   b. Embed creativity, innovation, and social responsibility: Create an understanding of the essential nature of engineering as creative and as contributing to a better world; and
   c. Enrich the student experience: Determine what information, advice, preparation, pedagogies, and learning experiences attract, retain, and grow global engineers.

3. **Tackle the big research questions:** Create a world-renowned interdisciplinary research concentration at Purdue that addresses the big questions and challenges facing STEM education, with particular emphasis on engineering. Use our unique infrastructure and capability to be a pathfinder based on systematic research, policy development, and assessment. Reshape the research agenda by asking questions that challenge fundamental assumptions about engineering education across both the span of life and the different modes of participation in engineering. Influence the direction of and resource allocation for engineering education scholarship nationally and internationally.

4. **Grow the (broader engineering education research and innovation) community:** Identify and build strategic global partnerships and collaborations to elevate our research capabilities and those of the wider engineering education community, while simultaneously facilitating the sharing of experiences across the global community of engineering education scholars.

Each of the four goals is accomplished progressively via a rolling set of initiatives. At the ENE Advance each May, we review current initiatives and initiate new ones as needed and set specific priorities and targets over three horizons; one year, three years and five years.

EMPOWER AGENTS OF CHANGE

Our vision, mission, and goals are sustained by a cohesive identity and sense of common purpose that empowers members of the School (graduate students; professional, administrative, and clerical staff; advisors; and faculty) to be leaders, advocates, and change agents over their lifetime. This is built upon a shared understanding of the vision, mission, goals, priorities, and capabilities of the School and of the national and global landscape of engineering education, constituting a continuous platform for members of the engineering education community to engage, inform, and influence each other.

CURRENT RESEARCH AREAS SPAN FIVE CATEGORIES

- **Understanding and Assessing How People Learn** – The staple of engineering education research is characterizing how people learn key aspects of engineering education, and designing curricula and pedagogy to improve learning outcomes. Purdue ENE has excelled in addressing how people learn in such topic areas as:

  - Difficult Concepts in Engineering Fundamentals
  - Computational Thinking
  - Design
  - Teamwork
  - Ethics
  - Leadership
  - Innovation and Entrepreneurship
  - Global Competencies
  - Affective Competencies

  We focus on how to design and assess effective learning environments within and across multiple content areas. **Assessment** is its own research area in which Purdue faculty hold significant expertise.

- **Defining Frameworks, Developing Methods and Designing Data Infrastructure for Engineering Education Research and Innovation** – Purdue researchers lead the way in defining and setting standards for Quantitative as well as Qualitative research methods, working with Big as well as Small Data. Purdue faculty have pioneered small numbers research, built theory via the Design Matrix, and developed tools that serve our research community including the MIDFIELD database, the CATME teaming tool, the CLEERHub, and iKNEER and DIA2.

- **Improving Pre-College Engineering Education** – The 13 faculty and staff members and 40-plus students of the INSPIRE research group lead the nation in studying engineering thinking and learning to engage all pre-college learners and impact educational systems. They integrate engineering with science, technology, mathematics and language arts in pre-college classrooms and curricula; characterize engineering thinking to support learning in pre-college settings; and promote the participation of underrepresented groups in engineering.

- **Change in Engineering Education (Research to Practice) –** Nearly all faculty in the department conduct research that effects change in Engineering Education in some way.

Several faculty formally study change mechanisms and seek to improve the extent and sustainability of change in engineering education. The MEERCat team, with the RED and FREEform projects, are working to concretely connect the findings from engineering education research with educational practice in Mechanical Engineering, focusing on structural change at the department level, faculty reward systems, curricula, and the college-workforce transition. Several Purdue faculty are currently leading a collaborative project with Virginia Tech and ASU to define measures of Impact for Engineering Education Research and pilot these at Purdue, ASU, VT, and beyond.

- **Diversity, Inclusion, and Equity** – One of the intractable problems of engineering education has been the systematic exclusion of particular groups from STEM fields spurred by educational inequities based in race, class, gender, ability, sexual orientation, and other characteristics. Groundbreaking work at Purdue has reframed how we think about diversity, inclusion, and equity, created new methods for characterizing it, and designed improved interventions across educational levels, disciplines, and employment sectors.

SECTION 2: GRADUATE PROGRAM

GRADUATE CHAIR

The chair of the graduate committee is a faculty member who is responsible for the graduate students and operation of the graduate program. Multiple faculty members may serve as co-chair(s) the committee, depending on circumstances and need. Major academic matters relating to graduate students, such as approving plans of study, are handled by the graduate chair(s). The graduate chair(s) also oversee all policies and procedures associated with the graduate program, including making, updating, and interpreting relevant policies. The current graduate chair is Prof. Brent Jesiek (765-496-1531 or bjesiek@purdue.edu).

GRADUATE COORDINATOR

The graduate coordinator is a staff member who handles the more routine academic matters relating to graduate students, such as filing forms with the Graduate School, managing student records, managing student enrollments, etc.. He/she is also able to answer any questions related to department procedure. He/she can also register you for classes. For example, enrollment in 69900 research credit hours is done through the graduate coordinator. Please remember that he/she is here to help you, but is not your personal assistant and also has other duties. The current graduate coordinator is Loretta McKinniss (765-494-3331 or lmckinni@purdue.edu).

ENGINEERING EMPLOYMENT OFFICE

The employment office is responsible for all financial matters to graduate students. All assistantship and scholarship payments, and most fellowship payments, are processed through the employment office, and travel reimbursements. For help with payroll issues, send an e-mail to engremployment@purdue.edu. The employment office is located in WANG 4008.

PROCEDURES REGARDING WORKSPACES AND RELATED RESOURCES

WORKSPACES
Every student in the department has access to workspaces, typically in shared/communal areas for graduate students and/or in their advisor's laboratory space in Wang Hall or Armstrong Hall. Space assignments are decided by the Head, the Head's administrative assistant, and the graduate chair(s), considering each student's research group, cohort year, and any other special circumstances. Furniture in Wang should not be removed from the room in which it resides.

KEY FOBS FOR WANG HALL
ENE graduate students enrolled in the PhD program are assigned a key fob which opens the door to WANG 3500 (main door) and WANG 3531 (Quiet Zone). Once a student has been assigned to their advisor(s), access will be added to the individual fobs for the assigned research suites, as requested by the advisor(s). Your fob is provided to you for a defined period of time based on the nature and duration of employment linked to ENE. When this period ends, or if you finish your work association with ENE prior to that date, you must return your fob to Cindey Hays immediately. Please email her at isenberg@purdue.edu and she will be glad to meet with you. Immediately report any lost, missing, stolen, or damaged fobs to Cindey Hays. There is a $15 fee for lost/damaged fobs. Do not lend your key fob to anyone else. Report any lost fobs

immediately to Cindey Hays (isenberg@purdue.edue), so she can get it deactivated. If any damage or theft would happen due to someone else using your fob, you will be held accountable. This is why it is very important to let Cindey know ASAP if you encounter any issues with a lost or stolen fob!

COMMONS AND KITCHEN AREAS
None of us, no matter our position or how busy we are, is exempt from cleaning up after ourselves. It is not acceptable to assume someone else will do it. Please keep the sinks, microwaves, counter tops, and table tops clean and wipe up your spills.

WANG AND ARMS CONFERENCE ROOMS
Conference rooms are shared spaces, which means you have to be mindful of other people's schedules and needs. In essence, good office etiquette comes down to showing respect for your colleagues and our office spaces. Sharing any space can cause tension and frustration, so please be aware of how your actions affect others. **If you reserved the conference room, it is your responsibility to leave the conference room cleaner than how you found it. Please also restore tables and chairs back to their original positions**, wipe down the tables, throw away food, pick up used Kleenex, etc. Please restore all equipment in the room (e.g., Polycom microphone) back to its default arrangement.

CONFERENCE ROOM RESERVATIONS (RAT)
If you would like to reserve conference rooms in WANG or ARMS, please use this link:
https://engineering.purdue.edu/ECN/Resources/Tools/RAT/index_local

LOCKERS
ENE graduate students in the school can be assigned a locker in Wang Hall. These lockers are in the commons area of suite 3500. Cindey Hays (ARMS 1321) will provide each graduate student with their assigned locker number and the combination to the locker.

PRINTING/COPYING
A copy machine and printer are provided for graduate student use in WANG (Mailbox area). These machines are for occasional small (under ~10 pages) print jobs related to research. If the machine runs out of paper or toner, please notify an administrative assistant. Please keep in mind these are community machines. Do not leave printed pages lying in the machines and clear all paper jams. DO NOT USE THESE MACHINES FOR LARGE PRINT JOBS OR PERSONAL/CLASS RELATED PRINTING. FOR THESE KINDS OF SITUATIONS, USE A PRINTER IN. ONE OF THE ITAP LABS. See the following website for ITAP lab locations and availability on campus: https://lslab.ics.purdue.edu/icsWeb/LabInfo

MAIL
Mailboxes are located in Wang Hall around the corner from Commons Area. Each student has a mailbox, as do the major student organizations. Mail is placed in the mailbox every morning. Students may also use mailboxes to deliver documents to other students and professors. Please do not have personal mail (for example personal letters or bills) delivered here; have them mailed to your home address instead.

Mail can also be sent via campus mail. There are mail boxes available in which outgoing campus mail or US mail may be placed. There are also mail slots for campus and US mail located in the

WANG Hall mail area (first floor). Do not forget to put stamps on all non-campus mail. International mail may be sent from Boiler Copy Maker in Room 157 in the Purdue Memorial Union. Stamps can also be purchased here.

SCHOOL DIRECTORY

Faculty, staff and student office information can be found on the School of Engineering Education's official website (https://engineering.purdue.edu/ENE/People). Teresa Walker, *Director of Communications,* (teresaw@purdue.edu) will contact you by e-mail to collect information and take your picture for the website. If you would like to change or correct any information on the website, please contact Teresa and she can make the needed changes. The school also compiles a directory of students, faculty and staff home addresses and phone numbers. You may request that your information not be included, should you so wish.

SECTION 3: EMPLOYMENT

Graduate students on assistantships are considered staff and typically hold half-time (50%) appointments. This role has an expectation of 20 hours of service per week. These 20 hours should not involve any research directly related to the student's degree. In special circumstances, students may hold a reduced appointment (e.g., as low as quarter-time, or 25%), but this may reduce employment benefits (e.g., student health insurance subsidy). With special permission, domestic graduate students may have appointments above the half-time level, up to a limit of 40 hours/week, which ius considered a 100% or 1.00 FTE (Full-Time Equivalent) appointment.

Per the Graduate Student Employment Manual, domestic students (US Citizens or Permanent Residents) must be in degree-seeking status and must be registered for a minimum of 3 credit hours in the Fall and Spring semesters to stay in paid status. To meet visa requirements, international students must be enrolled in a minimum of 6 credit hours in the Fall and Spring semesters in order to hold a graduate assistantship (GTA/GRA) or a fellowship administered as an assistantship. International students with no assistantship, or with a fellowship not administered as an assistantship, must be enrolled in at least 8 credits in the Fall and Spring semesters.

During summer session, all students are required to register for a minimum of three graduate credit hours during at least one of the summer modules in order to hold an assistantship. For international students, summer registration is not required to maintain your legal status if you were full time in the previous spring semester and you will be full time in the subsequent fall semester in the same academic program. Additionally, any student who is conducting research-related activities during any academic session, including summer, is expected to enroll in research credits in alignment with those activities, regardless of their assistantship status.

Salaries for graduate students are established by the student's major advisor(s) according to the guidelines of the School and within the limits set by Purdue University. More details on related policies and procedures can be found in the Graduate Student Employment Manual: http://www.purdue.edu/gradschool/documents/gpo/graduate-student-employment-manual.pdf

GETTING PAID

The appointment of a new graduate staff member is handled through the SuccessFactors Onboarding process. The graduate staff employee will receive an e-mail from Onboarding, which will include instructions for entering their personal and self-identification information which is a requirement to complete the hiring process. After the appointment is active in the payroll system (ECP), the student can make any future changes to their personal and self-identification information in Employee Launchpad – SuccessFactors. The student will have access to Employee Launchpad – SuccessFactors on or after the hire date. All changes to graduate appointments are processed through SuccessFactors Employment Central.

Graduate students will be paid according to the terms in their offer letter. New students must complete an Employee's Withholding Allowance Certificate Form W-4 this will be done electronically through SAP or a link emailed to the student prior to coming to campus.

For graduate staff appointments, salary payments are distributed every other Wednesday. Pay dates for fiscal year and academic year paid staff follow the bi-weekly payroll calendar at https://www.purdue.edu/business/payroll/Calendars/. Employees are paid via automatic direct deposit, i.e., directly into their checking or savings account in any bank, credit union, or other financial institution in the U.S. that is a member of the Automated Clearing House (ACH). Most banks and credit unions are members. A direct deposit notice of net pay and a detailed earning statement will be available through One Campus Portal https://one.purdue.edu/, by clicking on the SAP Portal, and then Employee Launchpad - SuccessFactors. Direct deposit notices will indicate applicable tax deductions, benefits program premiums, and other miscellaneous deductions.

To access the One Purdue SAP portal, graduate staff will need to sign up for Boilerkey, Purdue's version of two-factor authentication. BoilerKey is an extra layer of security to help keep your most sensitive information, such as your bank account number safe and private. To sign up for BoilerKey, visit purdue.edu/boilerkey. Users can choose either to download a smartphone application to their device or order a hardware token, about the size of a keychain, which will be required to access the OnePurdue SAP portal. If a user has trouble signing up or using BoilerKey, please contact ITAP at (765) 494-4000 or via email at itap@purdue.edu.

INSURANCE

To find out more about the Graduate Student Insurance follow the link: https://www.purdue.edu/push/Insurance/EnrollmentInformation/index.html. Notification e-mails also go out to all enrolled students regarding the open enrollment periods and processes.

ASSISTANTSHIPS/FELLOWSHIPS

Graduate students are often provided support by the university in the form of research, teaching, or administrative assistantships and/or fellowships. Graduate fellows are not employees of the university; they are paid a stipend, and taxes are owed on the stipend, but they are not withheld from the paycheck. Graduate assistants (teaching, research, or administrative) are staff of the university and are paid a taxable salary. Both assistants and fellows must be candidates for a degree. Any questions related to the administration of a student's assistantship or fellowship can be directed to your advisor, Graduate Chair, and/or Graduate Coordinator. An assistantship may be terminated in cases where the student fails to fulfill their obligations as laid out in their offer letter or as judged by their advisor(s). These may be circumstances where the student consistently misses deadlines, misses or disrupts group meetings, does not complete assigned tasks, allows other commitments to overshadow their research/teaching, or commits a crime. In that case the advisor(s) can contact the Graduate Chair and provide documentation of the student's behavior. The Graduate Chair will then contact the School Head, Graduate School, and Human Resources staff as appropriate to the situation. However, termination of funding does not automatically indicate the termination of the major professor/student relationship.

TUITION REMISSION

All students are charged tuition and fees every semester depending on their college and the classes for which they are registered. Payment plans are available for students. Students can

access their account, pay fees, and sign up for payment plans through My Purdue under the financial tab. Graduate student staff receive tuition remissions every semester and summer they are employed. This remission allows the student to pay only a nominal fee each semester and reduced fees during the summer. Spouses of graduate staff are eligible for remission of the nonresident tuition fee. Fee remissions to graduate staff are not taxable income. However, remissions of non-resident tuition for spouses is taxable.

TAXES

All students are responsible for filing tax returns annually. Tax returns are due on or before April 15, unless otherwise specified. Federal and Indiana local and state taxes are withheld from salary payments for students with assistantships. More information about taxes can be found in the Graduate Staff Employment Manual.

TRAVEL

Approval is required for all travel on university business. Graduate students intending to travel should complete an Engineering Education Trip Request Form and/or complete a Travel Request in the Concur system to secure appropriate approvals (e.g., from their advisor and/or other individuals who will be funding their travel). Depending on the frequency and nature of travel involved, students may request to have certain expenses pre-paid (e.g., conference registration, hotel), seek reimbursement for expenses after their return, or apply for their own travel credit card. Students must follow all relevant Purdue Travel Policies when making travel arrangements. For more details, see: https://www.purdue.edu/business/travel/

Students are expected to prepare their own expense reports in Concur for all university business travel. ENE administrative staff are not available to assist with this task. Workshops are periodically offered to orient employees to the Concur system, including how to use Concur to make travel requests, book flights, hotels, etc., and prepare expense reports upon return.

University vehicles may be used for official university business. A form RM01E must be submitted to request a vehicle. Please see the Risk Management web page about Rental Vehicles for additional rules and regulations associated with renting a university vehicle.

VACATION, HOLIDAY, AND TIME OFF PROCEDURES

Graduate students on fiscal (12-month) appointments have a maximum of twenty-two working days of vacation per fiscal year and all employee University Holidays (see the Graduate Student Employment Manual for more details). Graduate students must have approval from their advisor(s) and requested the time off in SAP (See Timesheet Recording Cheat Sheet). Students on academic (9-month) appointments will have paid time off for all University Holidays. The student will have to work with their advisor(s) to put together a summer calendar if the student is on an academic pay schedule. These summer calendars should be turned in to the advisor's account manager as early as possible. This will ensure that you continue receiving paychecks during the summer.

Graduate students permanently leaving the university may not be paid for unused vacation days or have their employment extended to cover unused vacation days. Graduate students may also take up to 2 weeks paid sick leave and 15 days of military leave per fiscal year. Students are granted paid leave for jury duty and emergency leave for events such as a death in the family. All requests must be approved by the Head.

SECTION 4: ACADEMIC ADVISING

ADVISOR-ADVISEE RELATIONSHIP AND RESPONSIBILITIES

Every student/faculty advisor(s) relationship is unique. It is recommended that the student and doctoral advisor(s) openly discuss their expectations, responsibilities, and agree on consequences for action/inaction at the beginning of their relationship. It is also recommended that the student and doctoral advisor(s) arrange a regular meeting time at least biweekly to monitor the student's progress and provide mentoring. For more information on developing a good mentor/mentee relationship, students might examine this brochure on mentoring provided by the College: https://engineering.purdue.edu/Engr/Academics/Graduate/ProfessionalDevelopment/mentoring-handbook

Broadly speaking, doctoral advisor(s) are responsible for guiding their students as to which classes to take and monitoring their progress. This monitoring can be done by means of generating and revisiting a plan of study, use of the roadmap and requirement documents developed for the MS and PhD degree programs, the annual review process, and setting checkpoints for the portfolio.

MS ENE Requirements: https://engineering.purdue.edu/ENE/Academics/Graduate/ms-ene
PhD Degree Roadmap: https://engineering.purdue.edu/ENE/Academics/Graduate/Roadmap

The doctoral advisor(s) is also expected to review their student's preparedness to take the Readiness Assessment (RA) Exam, preliminary examination (proposal defense), and final defense, and to ensure these are taken in a timely manner. The doctoral advisor(s) is also expected to provide opportunities for the student to fulfill all the competency requirements of the department, i.e., to provide opportunities for mentored teaching, community leadership, authorship, research, and professional development. Finally, the doctoral advisor is required to keep documentation of the student's performance in developing their competencies.

A student's responsibilities include knowing and keeping track of all School, College, and University requirements for graduation, taking and succeeding in all required classes, and actively pursuing opportunities to fulfill graduate competencies. Most students are also research or teaching assistants. It is incumbent that the student complete all of the requirements associated with such positions, and to work collaboratively with their doctoral advisor(s) to fulfill the tasks requested of them suitably and on time. Students are also required to learn and maintain all standards of research and teaching laid out by the university and by law.

The student must realize that this is a graduate experience and therefore a large degree of independence and initiative is expected. A student must not wait for their doctoral advisor(s) to suggest opportunities and depend on their doctoral advisor(s) to make sure their targets are met. The advisor(s)/advisee relationship is a collaborative one with the doctoral advisor(s) acting as a mentor rather than a disciplinarian.

CHANGING YOUR DOCTORAL ADVISOR

Student/doctoral advisor(s) relationships are all different and both students and doctoral advisor(s) are encouraged to find ways to work together successfully. Students and doctoral

advisor(s) are also encouraged to remember that relationships go through various phases. When relationships become strained, please try to find a way to work through them; remember that there will always be difficult relationships in your professional life and graduate school is a good place to train for them. If necessary, pursue conflict resolution measures.

However, it is possible to change doctoral advisor(s) in cases where you are unable to resolve problems with your doctoral advisor(s), or in cases where a relationship or opportunity develops with another faculty member that is a better fit for the student. The graduate chair will then schedule a meeting with the student and doctoral advisors to mediate the situation and identify possible solutions.

Students should remember that it is also possible and completely acceptable to work in various capacities (e.g., in a GRA role) with a faculty member other than your doctoral advisor(s), so it is not necessary to change advisor(s). If, however, the student wishes to change doctoral advisor(s), then the student will request a change with the graduate chair. The graduate chair will follow-up with the student and doctoral advisor(s) to determine a plan of action. Once the request is approved, the Chair will authorize the change of doctoral advisor(s). The student will need to update their Plan of Study to reflect the change of doctoral advisor(s) through the My Purdue website listed previously.

Students can also be co-advised by two doctoral advisors (co-advisors) This is dependent upon both the student's and the advisors' preferences, interests, and expectations. Additionally, these factors may also lead to students being advised by another faculty member outside of ENE. External faculty members can only serve as co-advisors, but not as sole advisor. External faculty members can also serve as committee members as long as ENE faculty members make up more than half (greater than 50%) of the total doctoral committee. Doctoral committees serve to shape the research and professional development of doctoral students.

CONFLICT RESOLUTION

In cases of conflict between students or between students and doctoral advisor(s), there are several avenues for conflict resolution. For conflicts between students, students can appeal to the President of the ENE Graduate Student Association (ENEGSA), ENE graduate committee representatives, or graduate chair to serve as mediators. Alternatively, the student can appeal to the Graduate School's Office of Graduate Assistance. This office can provide additional support to help mediate conflicts (see https://www.purdue.edu/gradschool/student/oga/ombuds.html). The student may also appeal to another faculty member they trust or the Graduate Chair for cases involving disagreements with their advisor(s).

SECTION 5: RESEARCH AND TEACHING

Successful participation in research is an essential component of a graduate student's career in this school. It is important to be familiar with, and follow, all relevant guidelines and policies when carrying out research.

RESPONSIBLE CONDUCT OF RESEARCH

Responsible conduct of research means honesty in research endeavors maintaining high ethical standards and is a requirement of the university and the school. All research must be conducted in accordance with federal laws and regulations and university guidelines. The university maintains an Institutional Review Board (IRB) to ensure that research standards remain high and all regulatory requirements are met. According to all Graduate School policies and legal requirements, all graduate students at Purdue must complete: 1) online RCR training offered through the CITI Program, and 2) research field-specific RCR training that includes education on specific RCR issues faced by each research field. These requirements are tracked and managed centrally, as described on the university's [RCR information page](#) (see header and link to Tracking Your RCR Training). Additionally, note that graduate students who are working on grants from certain federal agencies must recertify their RCR training every four years.

CITI TRAINING

The Collaborative Institutional Training Initiative (CITI) is a public access training course in the responsible conduct of research. All graduate students in ENE are required to complete the 1st and 2nd CITI modules regarding Human Subjects Research and Social and Behavioral conduct of research. Completion of these modules is typically required in one or more of the core/foundation courses taken by ENE graduate students in their first semester. Completion of the CITI training modules is tracked centrally by Purdue – once completed, your records on the online RCR tracking system should be updated automatically.

RESEARCH FIELD-SPECIFIC RCR TRAINING

All graduate students must complete at least two hours of field-specific RCR training during their time in the program during the first year of their studies. The School is committed to offering at least one departmental seminar each year which can be used to satisfy this requirement. Some of your coursework may also include field-specific training which can be used to satisfy this requirement. As noted above, you must report and document your field-specific training using the provided online RCR tracking tool.

INSTITUTIONAL REVIEW BOARD (IRB)

The Institutional Review Board is the body that reviews all research involving human subjects to ensure that it complies with rules and regulations. An application must be prepared and submitted and approved by the IRB before any research with human subjects is undertaken. Since graduate students may not serve as Principal Investigators (PIs) on IRB applications, you will need to work with your advisor or another qualified individual in order to submit and seek approval on an IRB protocol. For additional information, visit https://www.irb.purdue.edu

TEACHING

Most students participate in some kind of teaching experience as part of fulfilling their competencies, and especially if they have career goals that include teaching. Opportunities for mentored teaching exist in the First-Year Engineering (FYE) Program, as well as other courses.

SECTION 6: COURSEWORK

Coursework is an essential part of the graduate student experience. The ENE PhD requires a minimum of 90 credits, of which 60 must be earned beyond the master's degree. 30 credits may be transferred from the master's degree at the discretion of the student's committee and the graduate committee. ENE coursework requirements include a minimum of 42 course credits, and at least 24 credits beyond the master's must be completed at Purdue. A minimum grade point average of 3.0 must be earned for courses that are listed to fulfill plan of study requirements. Course credits earned by a student whose graduate study and/or professional activity has been inactive for five years or more cannot be used on a plan of study for an advanced degree. A plan of study approved prior to such a period of inactivity is invalid.

PLAN OF STUDY (PHD)

ENE requires 15 credits of foundation courses, 9 credits of secondary engineering expertise, 9 credits of research methods, 3 credits of a research methods specialization, and 6 credits of engineering education specialization. Additional information about the specific course requirements and plan of study is provided below and can also be found on the web site for the PhD Program.

ENGINEERING EDUCATION FOUNDATIONS (15 CREDITS)
The purpose of the Foundation requirements is to provide a bridge into this interdisciplinary program by integrating engineering and education concepts, providing breadth and depth of knowledge, and complementing a student's area of specialization. The selection of Foundation courses was guided by the five research areas defined by the Engineering Education Research Colloquies (EERC): **Engineering Epistemology, Engineering Learning Mechanisms, Engineering Learning Systems, Engineering Diversity and Inclusiveness, Engineering Assessment Methodologies.**

The current Foundation courses are:
- ENE 50101 Foundations of Engineering Education (3 cr; Fall)
- ENE 50200 History and Philosophy of Engineering Education (3 cr; Fall)
- ENE 50400 Leadership, Policy and Change in STEM Education (3 cr; Spring)
- ENE 50500 Theories of Development and Engineering Thinking (3 cr; Spring)
- ENE 50600 Content, Pedagogy, and Assessment (3 cr; Fall, Spring)
- ENE 69000 Seminar in Engineering Education (0 cr; Fall, Spring)

SECONDARY ENGINEERING EXPERTISE (9 CREDITS)
Students are required to complete 9 credits of graduate-level engineering coursework outside of ENE to demonstrate a depth of understanding of engineering concepts. Prior graduate coursework in engineering, including credits from a prior master's degree, can be used to meet or waive this requirement. Students are expected to complete a coherent sequence of engineering graduate courses (must be 500 or 600-level). Some flexibility may be afforded in allowing one course from outside the College to count toward this requirement (e.g., technical coursework offered by Purdue Polytechnic Institute), at the discretion of the graduate chair(s) and the student's committee.

RESEARCH PREPARATION (9 CREDITS)

Students must complete 9 credits of coursework to establish a foundation in social science research, typically including introductory coursework in both quantitative and qualitative methods.

- ENE 50300 Engineering Education Inquiry (3 cr.)
- Research methods elective I (3 cr.)
- Social science statistical methods (3 cr.)

RESEARCH METHODS ELECTIVE (MINIMUM 3 CREDITS HOURS)
A selection of courses is available for students to fulfill this requirement, many of which may be offered in the College of Education. EDPS 533 cannot be used to fulfill research methods elective requirements.

ENGINEERING EDUCATION SPECIALIZATION (MINIMUM 6 CREDITS)
Specialization coursework typically covers one or more of the five EERC areas (see list under Engineering Education Foundations), must consist of 500- or 600-level courses, and is not restricted to ENE course offerings (i.e., students may take courses in other programs).

OTHER COURSEWORK
Some students take additional elective coursework beyond the requirements summarized here. Successful completion of such courses counts toward the overall credit requirements for the degree. Other classes may also be required by the student's advisory committee to fill identified gaps in coursework or expertise.

PLAN OF STUDY (MS ENE)

REQUIRED COURSEWORK
The following foundation courses (15 credits) are required for the MS ENE degree:
- ENE 50101 Foundations of Engineering Education – 3 credit hours
- ENE 50200 History and Philosophy of Engineering Education – 3 credit hours
- ENE 50300 Engineering Education Inquiry – 3 credit hours
- ENE 50500 Theories of Development in Engineering Thinking – 3 credit hours **or** ENE 50400 Leadership, Policy and Change in STEM Education – 3 credit hours
- ENE 50600 Content, Assessment and Pedagogy – 3 credit hours
- ENE 69000 Seminar – 0 credit hours – must be taken twice

Any deviations from these requirements must be approved by the graduate chair and the student's academic advisor.

ELECTIVE COURSEWORK
For the non-thesis MS ENE degree, the student is required to take 15 additional credit hours of elective specialization courses comprised of appropriate graduate level coursework in ENE and/or other programs. The elective specialization must be coherent, thematic, and named accordingly, with approval by the student's academic advisor. The elective courses for the online MS ENE fall into two groups -– at least 6 credit hours to be selected from a specified group of ENE courses plus 9 additional credit hours which will be determined in consultation with (and require approval of) the advisor. Selection of those 9 credit hours will be based, in

part, on the student's previous degrees and future plans. Questions about appropriate elective coursework for the MS ENE degree should be directed to the graduate chair and/or the student's academic advisor.

HOW TO REGISTER

Class registration is done via myPurdue (mypurdue.purdue.edu) or Student Scheduling Assistant: https://www.purdue.edu/registrar/faculty/scheduling/student_scheduling_assistant.html. Once you have registered for classes, your fees will be assessed and you will receive an e-mail confirmation. If you would like to register for a class in another department, you may have to email the instructor for permission to take the class (not all will require permission). Once you have the e-mail from the instructor, forward it to the graduate coordinator to register you for the course. Please pay the fees by the due date to avoid cancellation of your registration. Each student must confirm their enrollment and set up a payment plan before classes start. Late registration will incur additional fees.

USING MYPURDUE
To register for classes, log into myPurdue (mypurdue.purdue.edu) using your career account username and password, and under the academic tab select Add or Drop Courses and enter the correct term. Next, enter your pin and enter the desired CRNs. CRNs can be found by clicking on class search using the Add/Drop courses feature. Some classes require the permission of an instructor to register (especially if you are trying to register for a course in another school). This can be obtained by e-mailing the instructor, if you get the message that instructor permission is needed in myPurdue. If the class is an ENE course, for example research credits, the instructor can send the Graduate Coordinator an e-mail giving permission. For courses outside the department the instructor can send an e-mail OR the graduate coordinator from the outside department can give you an override to complete the registration. They might ask you to have the ENE graduate coordinator register you once you have e-mail permission from the instructor.

SCHEDULING ASSISTANT
The Scheduling Assistant can be used to drop, add or modify your academic schedule. This is being used in place of the Form 23. This will simplify the scheduling process for students. To access this tool, log into myPurdue, and from the Registration tab select the Use Scheduling Assistant option.

DROPPING A CLASS
Dropping a class can be done using myPurdue up through the first week of classes. After the deadline the student will need to use the Scheduling Assistant. For relevant drop deadlines, see: https://www.purdue.edu/registrar/documents/calendars/academicCalendars/academicCal_21-22.pdf

PERFORMING AN INDEPENDENT STUDY

A student can undertake courses of independent study to develop depth in an area related to their research, or when a course they are interested in is not available. The designation for such a course is ENE 59000. A student may undertake more than one independent study, up to a maximum of 6 credits of ENE 59000 toward their specific plan of study requirements. Work undertaken in an independent study must be demonstrably different from a student's research work. The ENE 59000 course request contract can found as a link on the following page:

https://engineering.purdue.edu/ENE/Academics/Graduate/Courses#independent

Please fill out the contract at least two weeks before classes begin for the semester, and return to the Graduate Coordinator to have the Graduate Chair to review, sign off, and register you. You will be notified once you are registered for the 59000.

The ENE Graduate Chair will approve the form based on completeness and the following criteria
- The ENE 59000 course cannot replace a course or content of a course that already exists,
- The student agrees that the work is differentiated from thesis work (e.g., ENE 69900),
- The student agrees that the work is differentiated from the work they are paid for, and
- The student agrees to present on the work completed for their 59000 in the ENE research seminar or equivalent outlet, either in the term it occurred or in the following term.

Note that all of the items above are addressed and must be completed in the contract template. Most 59000 contracts that are not approved are sent back for additional or clarifying information. Once approved, the 59000 contract will be added to the student's file as an official record, and the coordinator will document and arrange seminar presentations for the current or next term.

REGISTERING FOR RESEARCH CREDITS

Students may register for research credits (i.e., ENE 69900) with the permission of their advisor(s). Registration may be done by having the instructor send the Graduate Coordinator an e-mail giving permission and the number of credits to be taken. Note that research credit enrollments should: 1) somehow be related to a student's anticipated dissertation research topic, 2) be distinct from other course enrollments, including ENE 59000 independent study credits, and 3) be distinct from work tasks and responsibilities associated with a student's graduate research assistantship role.

REQUESTING A TRANSCRIPT

Transcript requests can be made under the academic tab in myPurdue. Transcripts can then be mailed to an address you provide or picked up in person at the Registrar's office in Hovde 45.

RESOLVING TRANSCRIPT ERRORS/ ERRONEOUS GRADES/INCOMPLETE COURSEWORK

Correcting a transcript error can be done by completing an Academic Record Change Form 350, which the Graduate Coordinator will provide to fill out for you. In some instances, grade changes can instead be submitted by faculty via the myPurdue portal. The same processes can be used for grade completion. In the event a student fails to complete coursework, the instructor may establish a time interval for the student to resolve the incomplete coursework. According to university policy, a student who receives a grade of I, PI, or SI in a course and who successfully completes his/her work in the time interval specified by the instructor, but no later than one calendar year after the I grade was given, will receive from the instructor whatever permanent grade his/her work would have deserved if it had been completed on time regardless of the student's enrollment status. Once the work is completed the instructor must request the grade change following the procedures described above (Form 350 or via the myPurdue portal).

GRADE APPEAL

If a student cannot resolve a grade dispute with an instructor, they may appeal to the School Head. If still unsatisfied the student may launch a grade appeal. The student must file a written statement explaining all facts and circumstances related to the disputed grade with the Grade Appeals committee of the college/school in which the course was taken. The appeal must be filed within 30 days of the beginning of the semester following that in which the grade was received. The chair of the committee will then give a copy of the statement to the instructor who will have 7 days to respond on writing. The statement and response will be submitted to the committee for consideration within seven days and at least one member of the committee has to find merit or the appeal will be denied. If merit is found, a hearing will be held within 14 days to determine a course of action.

DEADLINES

There are strict deadlines for adding/dropping courses. Please make sure you are aware of all deadlines which apply to you. Deadlines can be found on the Registrar's website or at this link: https://www.purdue.edu/registrar/documents/calendars/academicCalendars/academicCal_20-21.pdf

SECTION 7: PLAN OF STUDY

A plan of study (POS) is an official agreement between the student and the college as to the student's coursework required for graduation. It is recommended that the POS be drafted once at least one-third of the required coursework has been completed and filed once about 75% of the coursework is completed. For full-time students, this means a draft POS should be submitted to the student's Advisory Committee before the end of their second semester. Students are then expected to prepare a POS before the end of their third semester, and the POS should be filed with the graduate school before the end of the fourth semester. The POS may include one 400 level course and two independent study courses. All grades must be recorded as B- or higher. A draft POS must be prepared before the Readiness Exam is undertaken and an official POS must be filed electronically with the graduate school before the Preliminary Exam is taken.

CREATING A PLAN OF STUDY

The first step in creating a POS is to download the POS Degree Requirements Form at: https://engineering.purdue.edu/ENE/Academics/Graduate/POS#electronic

The student should fill in the form in conjunction with their advisor(s), making sure all the ENE requirements are fulfilled. The student must then select faculty to serve on their Advisory Committee and obtain the approval of those faculty. Once the plan of study has been approved by the advisor(s), the student will go to myPurdue and enter their POS into the Graduate School Plan of Study generator under the academic tab. Once the POS is ready, please submit as a draft so your advisor(s) and the Graduate Coordinator can look it over. Once all agree the POS is ready, the student can submit the POS. The POS must be approved by the Graduate School prior to the student taking their Preliminary Exam.

CHOOSING YOUR ADVISORY COMMITTEE
The graduate advisory committee is the panel of experts that judges whether the student has fulfilled their requirements for graduation, including by formally evaluating the Readiness Exam, the Preliminary Exam, and the Dissertation. A student selects their advisory committee in consultation with their advisor(s). A minimum of three individuals is required for an RA or prelim committee, and at least four individuals are required for the final examination (dissertation defense). There is no maximum number, but keep in mind that more people generally mean more requirements to satisfy and greater difficulty scheduling meetings. Your advisor(s) must serve on your committee. Other committee members may be faculty from any college or university, or experts from industry if they have appropriate and relevant qualifications. If you plan to invite an external member, start this process early since all such individuals must go through an approval process to obtain special graduate faculty certification before being formally added to a committee. Having more than one external member is typically discouraged. All committee members must have expertise regarding your thesis topic or methods. Your committee composition must be 51% or greater faculty with formal ENE affiliations, including full, partial, and/or courtesy status. If you have an advisor with courtesy faculty status in ENE, you must have a co-advisor with a formal appointment in ENE (full or partial).

TRANSFERRING CREDITS

To be eligible for transfer, credits must have been earned in the past 10 years, must be beyond the bachelor's level, and were not counted toward a prior degree. Since the core classes are unique to our program, credit transfers for one of these classes will only be considered in special circumstances. The graduate chair typically evaluates credit transfers, based on documentation provided by the student (e.g., a course syllabus), and often in consultation with the graduate committee and/or Purdue faculty who teach similar graduate course offerings. Note that 51% of credits for any given degree must be earned through enrollments at Purdue University.

If the courses in question were taken more than 10 years ago, the student must demonstrate how their experiences in the intervening years have kept that expertise current. This document will be reviewed by the graduate chair and/or graduate committee. If approved, they will be forwarded to the college for credit transfer.

More commonly, prior graduate coursework may allow you to waive various POS requirements, but these are not considered transfer credits because they do not count toward the total credits needed for your degree. All such determinations are reviewed and approved by the Graduate Chair and/or Graduate Committee. Such requests are most common for students who have taken prior graduate-level engineering coursework and wish to waive the secondary engineering expertise requirement, and for students who have completed graduate-level courses in the social sciences and wish to waive similar required or elective coursework required for an ENE degree.

MAKING CHANGES TO THE PLAN OF STUDY

Once the POS has been generated and approved, minor changes (such as substituting one class with a similar one, changing the committee composition, etc.) to the POS can be made by logging into the POS generator on myPurdue and entering a request for change. These minor changes must be approved by the student's advisor(s) and the graduate chair(s).

MASTER'S DEGREE WITH PHD

A student may pursue a master's degree in another department while completing their PhD in ENE. Since this would require an additional input of time, the student must discuss the workload and funding requirements carefully with their advisor(s). The student will have to fill out a Graduate School Dual Degree Form 18. The form will be filled out by the student and signed by the Graduate Chair and the Chair of the school offering the intended Masters. The student will upload the fully signed form into their Slate Application. The Graduate Coordinator can assist with the steps needed to formally enroll in and receive the master's degree.

SECTION 8: INTERMEDIATE MILESTONES AND PORTFOLIO

READINESS ASSESSMENT (RA) EXAM

The Readiness Assessment (RA) exam is designed to evaluate your preparedness to advance in your program and begin conducting independent ENE research. Successful completion of the exam is an indicator of the breadth and depth of your fundamental knowledge applied to a potential area of research in the field, and a demonstration of your ability to review literature, synthesize ideas, and critically evaluate topics related to your research. It involves both a take-home portion (typically two weeks to complete) and an oral presentation and exam occurring one to two weeks after. Please visit https://engineering.purdue.edu/ENE/Academics/Graduate/RA for additional information about the readiness exam. Your advisor(s) will work with you when you feel you are ready to take the RA and help determine the specific timeline and process. The RA exam requires that you form an initial committee comprised of at least three faculty members. There is no predefined schedule or deadline for the RA, but most students complete the RA in their third, fourth, or fifth semester. In many cases, the RA provides valuable opportunities for students to explore specific directions for dissertation research, thus helping to set the stage for developing and defending their dissertation proposal.

PRELIMINARY EXAM

The Preliminary Exam is a written and oral defense of your dissertation proposal and is taken after successful completion of the Readiness Assessment exam and approval of your Plan of Study. Its primary purpose is review and approval of your thesis research proposal and your admission to candidacy for the PhD. Successful passage of the Preliminary Exam constitutes "Admission to Candidacy" (Ph.D.). Please work with the Graduate Coordinator to schedule your Preliminary Exam and file the paperwork with the Graduate School. At minimum, the examining committee for your preliminary exam must have three members. However, you are strongly encouraged to hold your preliminary defense with the same full committee (comprised of four or more members) that you plan to work with through the final defense. Adding committee members after the preliminary defense is not advisable, because you are inviting new members who did not have an opportunity to review and sign off on the original dissertation proposal. A complete final draft of your dissertation proposal should be shared with your committee at least two weeks, and preferably three weeks, before your scheduled defense date.

After admission to candidacy, you must devote at least two semesters to research before taking the final examination. Since one goal of the Preliminary Examination is to provide research direction and feedback, you must take it early enough to allow the Graduate Advisory Committee to make an effective contribution.

Please visit https://engineering.purdue.edu/ENE/Academics/Graduate/Prelim for the procedures of the preliminary exam.

PORTFOLIO

Students must demonstrate achievement of an overarching JEDI principle and a set of graduate competencies (all 10 competencies for PhD students, and at least 6 of the 10 for MS students) required by the department through the development of a portfolio. The portfolio is designed to

help scaffold your professional development, and is often also a helpful resource and tool as you apply for jobs. Every advanced doctoral student should have a professional website and/or easily accessible online place where others can view their professional accomplishments (e.g., publications, awards, CV, etc.). There are numerous opportunities to develop the designated competencies through coursework, service and research. Prior and extra-curricular experiences may also be applied to the completion of these competencies. The acceptable format/medium for the portfolio and the appropriate level of achievement will be judged by the student's advisor(s) and committee. The basic structure is expected to be one or more artifact(s) (a report, picture, video, document, etc.) demonstrating the competency accompanied by a statement describing how that artifact demonstrates the competency and the lessons learned. Previous formats have included hardcopy folders and interactive websites. Portfolios should be started in the first semester and reviewed at least annually by the student's advisor to monitor progress. Students must satisfy all competencies and present a draft portfolio to their advisor at least one month before scheduling the dissertation defense. For PhD students, the completed portfolio must be submitted to the advisory committee one week before the dissertation defense. For MS students, the completed portfolio should be submitted to their advisor for review and approval at least two weeks before the candidate audit deadline during the student's final semester in the program.

ENE GRADUATE COMPETENCIES

The graduate competencies are designed to ensure that a doctoral student graduating from ENE has undergone a wide range of experiences and achieved a depth and breadth of skills and knowledge necessary for a competent engineering educator. The engineering education graduate competencies are as follows:

Overarching Principle:
Engage With and Act Upon Advancement of Justice, Equity, Diversity, and Inclusion (JEDI)

Graduate Competencies:
1. Synthesize knowledge
2. Create knowledge
3. Communicate knowledge
4. Think critically and reflectively
5. Apply engineering education principles to the solution of instructional or curricular problems
6. Demonstrate engineering skills
7. Engage in professional development
8. Participate actively in professional community
9. Explain and critique educational policy
10. Teach engineering

For a more detailed explanation of the competencies, please see the following documentation: https://engineering.purdue.edu/ENE/Academics/Graduate/Competencies

SECTION 9: DISSERTATION RESEARCH

The dissertation is one of the most important aspects of pursuing the doctoral degree. Defense of the dissertation is the final exam required by the graduate school and administered by the department. It consists of a written manuscript and oral defense.

GENERAL RULES AND PROCEDURES FOR THE DISSERTATION

Full procedures can be found on the Graduate School's Thesis and Dissertation Office pages, located at School at https://www.purdue.edu/gradschool/research/thesis/. Please visit this website and go through the procedure at the beginning of the academic year in which you intend to graduate. Workshops are also available to help with dissertation preparation. Starting your thesis using one of the templates on the thesis office website will save you a lot of time.

Students are encouraged to visit the Graduate School's Calendar of Events, Dates and Deadlines (https://www.purdue.edu/gradschool/about/calendar/deadlines.html) for deadlines related to the dissertation. Note that two semesters (summer included) are required between the preliminary exam and final exam, unless a special exception is requested and approved by the Graduate Chair and Graduate School. For example, a student successfully passing their preliminary examination (proposal defense) in Fall 2021, the earliest possible final examination would be in Fall 2022.

The final POS and declaration of candidacy must be received by the graduate school before the end of the first month of the semester of graduation. Registering as candidate must be done with the help of the Graduate Coordinator as the paperwork must go through the Graduate School rather than registering online.

The process of preparing the dissertation begins with the prelim. The prelim is the dissertation proposal. Once the student passes the prelim, they begin working on their dissertation research and writing their dissertation. Students usually enroll primarily or exclusively in research credits (ENE 69900) while completing the dissertation. The student, in conjunction with their committee, sets the date for completion of the dissertation. When registering for the semester in which the dissertation is expected to be completed, the student must indicate that they are a candidate and register for at least 3 credits of research or seek permission to enroll in candidate only status. The student must also inform the graduate coordinator that they are a candidate for graduation that semester.

Preparing the dissertation is an iterative process undertaken in conjunction with the committee. A final draft of the dissertation should be e-mailed to the committee at least two weeks and preferably at least three weeks before the scheduled defense date. Once the defense has been scheduled, the graduate coordinator will file a Request for Appointment of Examining Committee, GS Form 8. The graduate coordinator will assist you in finding a room and publicizing the defense. The exam must be held before the last week of classes. Once the graduate school has approved the Request for Appointment of Examining Committee, GS Form 8, a Graduate School Examination Report Form 11 will be created for your examining committee to fill out on the day of the defense, Prior to the defense, the student must go to myPurdue to create a Thesis Acceptance Form that the committee will approve when the thesis document is

ready to be deposited. Detailed directions for creating the TAF can be found at: https://www.purdue.edu/gradschool/documents/thesis/Student-Instructions-Thesis-Acceptance-Form.pdf

The defense is typically about two hours in length. During the first hour, the student will give a presentation which is open to the public, followed by a short question and answer session. The public then leaves and the student undergoes further questioning by the committee. The student then leaves the room and the committee deliberates. The student is then called back in and informed of a pass/fail decision. After the defense, the committee will complete the Form 11 in the Graduate School database, and also submit an evaluation rubric in paper or PDF format.

The dissertation is a published document and Purdue University is the publisher. There are prescribed rules for the preparation and formatting of the manuscript. The department also has thesis guidelines. Once the thesis is completed, the academic advisor must run the document through iThenticate and the committee then signs the Thesis Acceptance Form in the Graduate School database. The Graduate School Thesis Office provides instructions for formatting and depositing your thesis at https://www.purdue.edu/gradschool/research/thesis/index.html. You will need to schedule a consultation with this office so they can look over your thesis for formatting issues prior to depositing.

The deposit copy of the dissertation is the final copy produced after the dissertation has been defended and all changes have been made and approved. Once the deposit copy has been accepted, it cannot be altered in any way. The deposit copy must follow the formatting guidelines laid out by the graduate school. The thesis must be deposited by 5 PM (EST/EDT) on the deposit deadline date.

RESEARCH IN ABSENTIA

A doctoral student may leave the university and continue their candidacy in absentia. A student who wishes to do this must obtain the approval of their advisor(s). Once approved the student must submit a Graduate Request for Research in Absentia Form 12 to the graduate coordinator for submission to the School Head and then Graduate School at least one month before the session when the student will be absent. To be eligible, students must have completed their coursework, passed the prelim exam, and established a plan for completing their research with suitable arrangements made for supervision.

PROCEDURES FOR UNSATISFACTORY RESEARCH (ENE 69900)

If the advisor(s) deems a student's research progress towards the dissertation unsatisfactory a grade of U (unsatisfactory) may be given for research credits. These credits will not be counted towards the degree. Unsatisfactory grades received in two consecutive semesters will be referred for review to the Graduate Chair, and could result in a recommendation that the student in question be removed from the program, continue under special oversight or conditions, or exit the program with an MS degree.

SECTION 10: CO-CURRICULAR ACTIVITIES

Students are expected to have activities in addition to their academic ones. These activities provide an opportunity for the completion of the graduate competencies.

SERVICE

Service to the department, the college, the university, and the engineering education community is an important part of the graduate experience. There are many opportunities to serve these various communities, some are outlined below.

GRADUATE COMMITTEE
The graduate committee is a departmental committee that is concerned with matters pertaining to the graduate program. The committee is responsible for admissions, approving plans of study, approving credit transfers, and creating departmental policy related to graduate programs. The graduate committee is also concerned with graduate student recruitment, including through events such as the annual open house. The committee is made up of the department head, the graduate chair, the graduate coordinator (non-voting member), several faculty members, and graduate student representatives. The graduate students are elected by the ENE Graduate Student Association and serve following an annual succession model to facilitate the transition and mentoring process.

OTHER COMMITTEES AT PURDUE
There are a large number of departmental, college and university committees on which students can serve. These committees play an important role in the decision-making and smooth running of the university.

ENE GRADUATE STUDENT ASSOCIATION (ENEGSA)
The ENE Graduate Student Association (ENEGSA) is the umbrella organization to which all ENE students belong. The ENEGSA has a president, vice president, secretary and treasurer who serve as the executive board. All student representatives on the various department and university committees and the student senator are elected through, and answer to, the ENEGSA.

PURDUE GRADUATE STUDENT GOVERNMENT (PGSG)
The Purdue Graduate Student Government (PGSG) is a student organization which considers matters of policy for, and advocates on behalf of, graduate students across the campus. Each department has one elected student who serves as the senator.

OTHER SERVICE OPPORTUNITIES
Other opportunities for service are many. They include the PGSG committees which are open to all graduate students, including the academic and professional development committee, the social committee, the advancement committee, the legislative and strategic planning committee, the student affairs committee, and the travel grant committee. There are also university committees such as the university library committee and the grade appeals committee, and college committees such as the graduate student advisory council which review issues related to students. Other opportunities include serving as a peer ombudsperson or a resident assistant. For more opportunities, visit getinvolved.purdue.edu.

PROFESSIONAL DEVELOPMENT

It is important for students to participate in professional development activities. There are many opportunities for this, some of which are outlined below.

PURDUE STUDENT CHAPTER OF ASEE

The American Society for Engineering Education (ASEE) is the major professional society for engineering education and Purdue maintains a student chapter. This chapter was the nation's first, and is concerned with professional development matters for both graduate and undergraduate students interested in engineering education. The chapter organizes events to provide opportunities in support of this mission. The chapter has a president, vice president, secretary, and treasurer who serve as the executive board. Elections are held once a year.

CONFERENCES

There are a large number of conferences where students can disseminate their research, make professional connections, and learn what is happening in various scholarly communities. The nature of engineering education opens up a wide range of conferences. Some of the major conferences in the engineering education field include the annual ASEE conference, the annual Frontiers in Education (FIE) conference, and the biennial Research in Engineering Education Symposium (REES). International engineering education conferences include the European Engineering Education Association (SEFI) Annual Conference, meetings of the International Society for Engineering Education (IGIP), and the Global Colloquium on Engineering Education. Engineering educators are also encouraged to attend conferences in their engineering specialization; in addition to these, some engineering professional societies now have education-oriented conferences such as the IEEE Educon conference. ENE exists at the intersection of a number of disciplines, opening up opportunities to interact with other disciplines. For example, many ENE faculty and students are also involved with the American Educational Research Association (AERA), including through its annual conference.

CLASSES AND WORKSHOPS

Classes and workshops, both teaching and taking them, provide opportunities for professional development. A large number of workshops can be found organized by the graduate school, the college, and divisions such as the Center for Instructional Excellence (CIE). There are also opportunities to teach workshops and seminars through various student organizations. Opportunities for teaching, tutoring, and mentoring include the Gifted Education Research Institute (GERI), which runs programs for gifted elementary and high school students; the Women in Engineering Program (WIEP); the Minority Engineering Program (MEP); and Engineering Projects in Community Service (EPICS). Other Purdue offices and organizations such as International Students and Scholars (ISS) have opportunities for language instruction and other skills. There are also teaching opportunities with other departments. Students are encouraged to explore these options through interactions with their advisor, committee members, and other students and staff.

SECTION 11: EXIT PROCEDURES

A student leaving the department permanently for any reason must participate in an exit interview. The student should inform the graduate coordinator at their earliest convenience before leaving. The student will need to talk to the Administrative Assistant to the Head to schedule the exit interview with the head of the School. The exit interview involves a set of questions about the graduate school experience in ENE that is intended to improve departmental services.

The student leaving the department will also receive an exit checklist. The checklist must be signed off by the Administrative Assistant to the Head as documentation that their office and desk keys have been returned to the school. The student must also remove all personal belongings from their desk, drawers, shelves, cabinet, and any bulletin boards. Students must leave their office clean and clutter free. The keys to the desk and cabinets should be left with appropriate staff in Armstrong and/or Wang Hall. The Graduate Coordinator will send you an exit interview document to fill out prior to your interview with the Head. The checkout form can be submitted to Administrative Assistant to the Head, along with your fob and any other keys.

SECTION 12: EMERGENCY PROCEDURES

The university has an integrated emergency plan for natural and human made emergencies. Call 911 in the event of any emergency. Detailed procedures can be found at: https://www.purdue.edu/ehps/emergency_preparedness/. Stay out of elevators in emergencies.

FIRE

There are fire detection and suppression systems in all university buildings. In the event of a fire please pull the fire alarm then leave the building and call 911 from outside. If the fire alarm goes off, please exit the building immediately and move at least 30ft away.

SEVERE THUNDERSTORM/TORNADO

In the event of a severe thunderstorm or tornado, please move to the designated safety area or a basement or corridor. Stay away from windows and open areas and avoid cars.

EARTHQUAKE

In the event of an earthquake if indoors move to a doorway or under a desk or table and hold on. Stay away from windows, heavy equipment or anything which may fall e.g. shelves. If you are outside move away from buildings or other structures and utility lines. If in a car stop in an open area and remain in the car. Prepare for aftershocks.

VIOLENCE

If there is an active shooter, take cover immediately, barricade/lock yourself in a secure area if possible and only open the door for the police. Call 911 immediately and remain out of sight. If you see a crime or are the victim of a crime report it to the Purdue Police at 494-8221 (if on campus) or the West Lafayette Police at 775-5200 (if in West Lafayette). If it is an emergency, dial 911. Emergency telephone boxes are placed around the campus and can be used to connect directly with 911.

In the event of a bomb threat, if a suspicious object is observed do not touch it. Call 911 and leave the area. If a bomb threat is called in, do not hang up the phone, transfer the call or put the call on hold. Call 911 on another phone.

In the event of an explosion take cover under tables or desks; protect yourself from shrapnel e.g. falling glass. Call 911; evacuate the building once it is safe to do so.

HEALTH EMERGENCIES

In the event of a medical emergency call 911 and do not move the patient unless safety dictates. Minor illnesses or injuries can be referred to the Purdue Student Health Center.

If someone is threatening to harm themselves contact Counseling and Psychological Services at 494-1707 (for students), Employee Assistance Program 494-7707 (for faculty or staff), or the Crisis Center at 742-0244 (for everyone). If the danger is immediate, call 911. In the event

of a hazardous material spill, call 911, evacuate the area, and pull the fire alarm if further evacuation is necessary.

PURDUE EMERGENCY ALERTS

You can sign up for emergency notification delivered to you cell phone by going to:

https://www.purdue.edu/securepurdue/

From this page, follow the link to "Purdue Alert Sign-Up," sign in using your PUID and password, and then go to "Emergency Contact Information" and indicate your alert preferences.

COVID 19

Protect Purdue Website: https://protect.purdue.edu/

If you are having symptoms, please call 765-496-4636 or 833-571-1043

To get tested; https://protect.purdue.edu/

If you are running a fever, please do not come to campus, and let the Graduate Coordinator know if you have been exposed to someone who tested positive for COVID19. The registered nurse case manager will help you determine the correct course of care, which should include self-quarantine and a COVID 19 test. Follow all directions provided by the case manager, and do not return to class until you receive clearance to do so from the Protect Purdue Health Center.

SECTION 13: ADDITIONAL RESOURCES

NON-EMERGENCY PHONE NUMBERS

University Police Department (765) 494-8221
University Fire Department (765) 494-6919
Radiological & Environmental Management (765) 494-6371
Campus Emergency Preparedness & Planning (765) 494-0446
Purdue University Student Health (765) 494-1700

OTHER USEFUL WEB SITES AND RESOURCES

Safety handbook: http://www.purdue.edu/policies/facilities-safety/

Graduate School Website: https://www.purdue.edu/gradschool/

Graduate School Forms: https://www.purdue.edu/gradschool/faculty/forms.html

All University Forms: http://www.purdue.edu/hr/Forms/

Funding information: http://www.gradschool.purdue.edu/funding/

ENE Student Resource: http://engineeringeducationlist.pbworks.com/

Graduate School Calendar: http://www.gradschool.purdue.edu/calendar/

Registrar's Calendar: https://www.purdue.edu/gradschool/about/calendar/index.html

Computing Issues: http://www.itap.purdue.edu/

Graduate Staff Employment Manual:
http://www.purdue.edu/gradschool/documents/gpo/graduate-student-employment-manual.pdf

Graduate Student Services: https://www.purdue.edu/gradschool/index.html

Purdue University Student Health (PUSH): https://www.purdue.edu/push
Dental, vision, life, and legal insurance plans: http://www.purdue.edu/hr/Benefits/

International Students and Scholars: http://www.iss.purdue.edu/

Purdue Libraries: http://www.lib.purdue.edu/

PGSG Tips for Graduate Living: http://web.ics.purdue.edu/~pgsg/files/projects/gradtips.pdf

American Society for Engineering Education: http://www.asee.org/