# Engineering Education Systems and Design

2022-2023 Ph.D. Program Student Handbook

**The Polytechnic School**

**engineering.asu.edu/eesd**

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## I. Engineering Education Systems and Design PhD Program Description

The Engineering Education Systems and Design (EESD) PhD program was established in Fall 2016. This program is housed directly within The Polytechnic School (TPS), one of seven schools in the Ira A. Fulton Schools of Engineering. Program faculty and core courses are located on the ASU Polytechnic Campus, one of five ASU campuses. The program prepares all students to conduct engineering education research related to their scholarly interests using a systems and design approach. Students who enroll in the program

**"There was no other place for me to pursue my ideas other than ASU."**
**Dr. Hadi Ali, '21**

have a background in engineering or a related field, passion for developing skills as engineering education researchers, and commitment to contributing to the engineering education community. Learning is driven by engagement with faculty and peers through coursework, research, and programmatic events. Coursework provides students with opportunities to learn and apply understandings of the engineering education system, theoretical frameworks, research methodologies, existing inequities, and innovation. Research allows students to contribute to existing programs at ASU, while also developing new research directions. Programmatic events are designed to foster a vibrant community of scholars. Students who complete the program will be equipped as exemplary scholars and leaders to take on a variety of roles across a range of educational settings (e.g., higher education, science centers, government agencies, museums, policy setting institutions, and industry). Visit our program website to learn about our current students, alumni, and other affiliates.

## II. Objectives of this Handbook

This handbook has been developed for current and prospective students of the Engineering Education Systems and Design (EESD) PhD Program within TPS. The objective of this handbook is to provide program specific and general university information to assist students in navigating admissions, program requirements, policies, and procedures. This handbook is designed to be complementary to the ASU Graduate Education Policies and Procedures Handbook. It is highly recommended that students obtain and familiarize themselves with this additional handbook.

## III. Justice, Equity, Diversity, and Inclusion Statement

The EESD PhD Program aims to be an exemplary representation of the ASU charter, which states:

*"ASU is a comprehensive public research university, measured not by whom it excludes, but by whom it includes and how they succeed; advancing research and discovery of public value; and assuming fundamental responsibility for the economic, social, cultural and overall health of the communities it serves."*

The call is clear and present at ASU for every member of our community to do their part in fostering a culture and climate of inclusive excellence that contributes meaningfully to lasting equity for all. Our program fully accepts the charge to challenge injustices and social inequities as members of the broader ASU community. We aim to uphold and value student and faculty diversity of all kinds. These values are an integral part of our standing as a program and institution.

The EESD PhD program welcomes all students regardless of race/ethnicity, gender identity, gender expressions, sexual orientation, socio-economic status, age, visible or hidden limitations, religion, regional background, veteran status, citizenship, nationality, or any other diverse identities. We aim to foster the intersectional perspectives that are born out of backgrounds and identities that allow us to contribute toward and create a culture of inclusive excellence.

## IV. Admission Requirements

### Eligibility

All applicants must have a Bachelor's degree in engineering (or a closely related field) with a preferable GPA of 3.00 (scale of 4.00 = A) or greater for the last 60 hours of the degree program. Applicants demonstrating excellent performance during their Bachelor's degree program can be admitted without a Master's degree. Preferred admission is given to students with an engineering (or closely related field) Master's degree, in which the student demonstrated a preferable GPA of 3.00 cumulative (scale of 4.00 = A) or greater.

**"ASU's EESD program is the place where I started my research dream."**
**Dr. Wen Huang, '20**

### Application Process

Graduate admissions at ASU begins with the online Graduate Education application. The application requires the submission of the following:

1. Curriculum Vita or Resume (see Creating a CV for Grad School for guidance)
2. Statement of Purpose (see Writing Your Statement of Purpose for guidance): Submit a statement of no more than 1000 words that includes the following information:
   - motivation(s) for pursuing a PhD in the field of engineering education
   - personal goal(s) associated with pursing a PhD at this time in your career
   - reason(s) for considering the ASU EESD program as the right place for you to pursue your PhD
   - (Optional): Applicants can opt to note ASU EESD faculty (see current endorsed list of faculty) they've spoken to or are interested in working with if they were to matriculate at ASU.
3. Writing Sample: Find and read a conference proceeding that connects to your own personal interests from last year's American Society for Engineering Education Annual Conference and Exposition. Submit a statement of no more than 1000 words that includes the following information:
   - citation information
     - Example: Lee, E., Brunhaver, S. R., & Bekki, J. M. (2020). Developing an instrument to measure online engineering undergraduate students' learning experiences and intentions to persist. American Society for Engineering Education Virtual Conference & Exposition.
   - reason(s) for selecting this particular paper
   - aspects about the paper/article that you found compelling

- connection(s) to your current research interests and/or long-term career goals
4. Official transcripts from each college or university attended
5. Two letters of recommendation
6. *Non-native English Speakers ONLY*: Proof of English proficiency (see [Graduate Admission Services website](#) for options)

There is a one-time fee associated with submitting your application; $70 for those who are a US Citizen, US Permanent Resident, In Application for Permanent Residency, or DACA; $115 for international students on any non-immigrant visa type studying in the US (e.g., F-1, H-1B, H-4, etc.). Potential fee waivers will be determined by the TPS Graduate Program Chairs Committee during the Fall semester. Additional costs may be incurred when obtaining prior institutional transcripts.

### Application Deadlines

Applications will be accepted and reviewed on a rolling basis beginning at the priority deadlines. The Fall semester priority application deadline is December 15th of the same year. The Spring semester priority application deadline is September 1st of the preceding year. Students may only be admitted during the Fall or Spring semester.

## V. Degree Requirements

### Fundamental Requirement of the PhD Degree

The PhD degree is the highest academic credential conferred by the university. Attainment of a PhD requires that a student demonstrate the capacity to produce and sustain original independent research in their chosen field. Research should be validated through publication in reputable peer reviewed publication venues. Two sites providing lists of publications venues can be found on the [Research in Engineering Education Network](#) or the [Engineering Education Community Resource](#).

### Interactive Plan of Study (iPOS)

All ASU PhD students are required to file an iPOS (see [Your Plan of Study](#) and samples provided in this handbook's Appendix for guidance) though [My ASU](#) (see [Guide to My ASU](#)) before the end of the first semester of enrollment in the EESD program. A minimum of 84 semester credit hours are required for the PhD degree. These credits are distributed as follows (details provided in the following subsections):

**"Every experience in the EESD program was learning that prepared me as an educator and researcher in engineering education."**

**Dr. Eunsil Lee '20**

- ***Required core coursework (21 credit hours)*:** Seven core courses (EGR 535, 565, 572, 574, 576, 671, and 673)
- ***Electives and Research (18 credit hours)***

- o *Elective Coursework (6 credit hours)*: Two selected courses that should directly support the student's research area and should be approved by the student's chair/co-chairs. All electives must be 500 level or above.
  - o *Research (12 credit hours)*: Credits (EGR 792) associated with funded, independent, or dissertation research.
- *Other requirements (3 credit hours)*
  - o *Seminar (3 credit hours)*: Credits (EGR 594) associated with EESD Seminar
- *Culminating Experience (12 credit hours)*
  - o *Dissertation (12 credit hours)*: Credits (EGR 799) associated with dissertation research.
- *Master's Degree (or equivalent) (30 credit hours)*: Credits for coursework either previously earned as a Master's degree in engineering or a closely related field or additional coursework completed at ASU in engineering or a closely related field.

## Required Core Coursework

The core curriculum for the EESD degree consists of 21 credits that are intended to expose students to fundamental topics in engineering education through hands-on opportunities. This includes two project courses that provide students with explicit opportunities to apply what has been learned in their core courses.

- *EGR 535: Innovation and Design of Engineering Academic Settings (IDEAS)*
  Innovation plays an important role in the evolution of the field of engineering education. This course explores innovation processes in a variety of contexts, including (but not limited to) engineering education research and methods, theory, dissemination, teaching, and training within formal and informal academic settings.
- *EGR 565: Qualitative Methods for Engineering Education Research*
  This course provides a deep, empirical exposure to interpretive research methods in engineering education research.
- *EGR 572: Quantitative Methods for Engineering Education Research*
  This course is an introduction to the specific quantitative analysis techniques used in the field of engineering education, with special focus on instrument design, ANOVA, and multiple regression. Prior coursework or experience with basic statistical techniques is necessary to be successful in this course.
- *EGR 574: Engineering Education Systems in Context*
  This course provides a systems understanding of current trends in engineering education research to engage engineering education research graduate students with the latest developments in the field in which they will situate their research projects.
- *EGR 576: From Then Until Now: Examining Inequities in STEM*
  This course recognizes that educators have a responsibility to provide a quality experience for students who enroll in their classes. Quality is framed by class features, including teaching strategies, grading systems, assignments, and embedded technologies used in the class. The choices educators make for their class greatly effects how well students ultimately learn the class content. This course provides an opportunity to learn how to assess the choices we make as educators by learning about pedagogical strategies, in-class assessment, and learning theories. Students engaging in this course will learn how to bring research-to-practice from the perspective of course design and testing.
- *EGR 671: Applications of Qualitative Methods for Engineering Education Research*

This course provides a deep, situated exposure to making and handling data in qualitative engineering education research projects.

- ***EGR 673: Applications of Quantitative Methods for Engineering Education Research***
  This course involves the application of quantitative analysis techniques to an engineering education research project with specific focus on data collection, instrument development, and ANOVA/regression analysis techniques.

Note: All core courses are offered every year except EGR 535. This course is purposefully offered every other Spring (even years) to facilitate cross cohort interaction and community building. Completion of this course is therefore not considered when determining a student's 24-month window to defend their comprehensive exam following the completion of the remaining five core courses.

**Elective Coursework**

Students are required to complete at least 6 hours of additional, elective coursework. These courses should be chosen in consultation with the student's chair/co-chairs. ASU is a large university with expert faculty in a wide variety of disciplines. EESD students are strongly encouraged to look broadly across ASU to identify courses that best support their interests and research development. Some suggested programs to explore, include:

- CDE: Child Development
- COE: College of Education
- DCI: Curriculum and Instruction
- ECD: Early Childhood Education
- EDA: Education Administration & Supervision
- EDP: Educational Psychology
- EDT: Educational Technology
- EED: Elementary Education
- EGR: Engineering
- EPA: Education Policy Analysis
- ENT: Entrepreneurship
- FSE: Fulton Schools of Engineering
- HED: Higher & Postsecondary Education
- HSE: Human Systems Engineering
- HSD: Human & Social Dimensions of Science & Technology
- GRD: Graduate Education
- LSE: Learning Sciences
- PSY: Psychology

EESD also offers electives on occasion. These courses will be listed as EGR 598. Regularly taught elective courses can eventually be given a permanent number. EESD currently has one permanent elective.

- ***EGR 575: Mixed Methods for Engineering Education Research***
  This course addresses the theory and practice of mixing inquiry methodologies in engineering education research.

Students interested may also request elective credits be fulfilled through an independent study.

- ***EGR 590: Reading and Conference***
  Students interested in undertaking an independent study under the guidance of a faculty member may enroll in EGR 590 credits. The Individualized Study Form should be completed and submitted to TPS Graduate Advising Office for processing.

## Seminar, Research and Dissertation

EGR 594, EGR 792 and EGR 799 are required courses that do not follow the norms of a traditional course. This section describes the appropriate use and time of enrollment for each of these options.

- ***EGR 594: EESD Seminar***
  This single credit seminar course is designed to be a platform for community building and intellectual discussion. Students are required to earn three EGR 594 credits before completing their degree. A single credit is earned by successfully attending this course during a given offering (Fall ONLY). Students cannot enroll in more than 1 credit of EGR 594 for a given semester. Failure to regularly attend the seminar will result in no credit earned. Internal and external scholars will be invited to present their ongoing research as part of the seminar. Advanced EESD students are encouraged to use the seminar as a forum to present and receive feedback on their dissertation research.

- ***EGR 792: Research***
  Students are required to enroll in a minimum of 12 credit hours of EGR 792 prior to graduation (Note: It is perfectly acceptable to enroll in more than 12 credit hours over the course of the degree). EGR 792 does not include formal class meetings. Grades in EGR 792 are assigned as either "Y" (Satisfactory) or "Z" (In Progress) (see Grades and Grading Policies for further information). Appropriate enrollment in EGR 792 fall into two cases:
  1. *Students funded as Graduate Research Assistants (GRAs)*: All GRAs are required to be enroll in 12 credit hours during the semester of their GRA appointment. EGR 792 should be used to "fill in" additional credit hours up to the required 12 credit hours. For example, a student funded as a GRA is enrolled in 6 credit hours of formal coursework. This student should enroll in 6 credit hours of EGR 792 (6 + 6 = 12). (Note: Students enrolled in 12 credit hours of formal coursework do not need to enroll in any EGR 572 credits). Enrollment requires that the student select an instructor. The chosen instructor of record should be the faculty supervisor for the GRA position (Note: this may or may not be the student's dissertation chair/co-chair).
  2. *Students conducting independent research:* Students may enroll in as many credits of EGR 792 as they like independent of funding if they plan to use a significant portion of their time conducting research during that semester. Enrollment will still require that the student select an instructor. The chosen instructor of record should be the faculty member supporting the research project with which the student is engaged (Note: This may or may not be the student's dissertation chair/co-chair).

- ***EGR 799: Dissertation***
  Students are required to enroll in 12 credit hours of EGR 799 prior to graduation. EGR 799 does not include formal class meetings. Students may enroll in these credits once they've completed or are in the semester they intend to complete their required core coursework, elective coursework, research credits, and comprehensive exam. Note: This does not include EGR 594: EESD Seminar. Enrollment may begin during the semester in which the comprehensive exam is scheduled. Dissertation Chair approval must be received when enrolling in these credits prior to completion of the comprehensive exam. These credit hours can be distributed as desired across multiple semesters or during a single semester. Enrollment requires that the student select an instructor. The instructor of record should be the dissertation chair or one of the two dissertation co-chairs. Students should not enroll in

more than 12 credit hours of 799 during their degree program. Additional research dedicated toward the dissertation should be directed toward additional credit hours of EGR 792. Grades in EGR 799 are assigned as either "Y" (Satisfactory) or "Z" (In Progress) (see Grades and Grading Policies for further information).

**Master's Degree (or equivalent)**

All students are required to earn a Master's degree or complete an equivalent number of credits (30) in engineering or a related field. Students entering the program with a previously awarded Master's degree in engineering or a related field can apply this degree to their iPOS to satisfy this requirement. These credits are exempt from transfer credit requirements up to 30 credits. Students admitted to the program with an accelerated Master's degree or without a Master's degree will be required to complete additional coursework. The filing of the PhD iPOS will be completed after successful completion of MS.

*Additional Coursework for Students with an Accelerated Master's Degree:* Students admitted to the EESD program with an accelerated Master's degree in engineering or a closely related field (e.g., 4+1 programs) will be required to complete additional coursework determined on a program-by-program basis. Students should contact the EESD graduate advisor (polygrad@asu.edu or 480-727-4723) to determine the number of credit hours from their Master's degree that can be applied to the EESD PhD. For example, a student receiving 18 credit hours from their accelerated Master's degree will then be required to take an additional 12 credit hours of coursework to meet the 30 credit hours required to graduate from the EESD program. Students will work with their chair/co-chairs to select appropriate additional courses to fulfill these credit hours.

*Additional Coursework for Students without a Master's Degree:* Students admitted to the EESD program without a Master's degree in an engineering or closely related field must take 30 equivalent credit hours. This can be accomplished using two possible pathways: 1) concurrent enrollment in an ASU Master's degree program, or 2) complete 30 credit hours that align with the following requirements:

- *18 credit hours (minimum) in a particular engineering discipline*: Students will work with their chair/co-chairs to ensure that the selected courses are related to each other and provide depth in a particular engineering discipline.
- *9 credits hours (maximum) in support of the student's EESD research area*: Chosen courses should provide added depth in topic areas related to the student's planned dissertation.

Students may pursue concurrent degrees provided the degree programs are graduate level and in different academic areas (Note: Students cannot earn an EESD Master's In Passing to satisfy this requirement). Students interested in concurrent enrollment must apply for admission to their Master's program of choice following admission to the EESD program. A student must be admitted and receive written approval from the EESD Program Chair, the Program Chair for the chosen Master's degree program, and the Graduate College. A maximum of 6 credits of EESD coursework can be applied to a concurrent Master's degree if approved by the chosen program. Application of EESD course credits to a Master's degree will require additional electives be completed to satisfy the 84 total credits needed to complete the EESD Ph.D. degree. For example, a student approved by a Master's degree program to apply 3 EESD course credits to a concurrently enrolled Master's degree would be required to complete an additional 3 elective course credits.

Students are encouraged to review content on concurrent enrollment in the ASU Graduate Education Policies and Procedures Handbook and to meet and work with the TPS Graduate Advising Office to review options.

*Additional Transfer Credit:* Additional graduate-level courses not applied to an earned Master's and taken prior to admission can be included on the iPOS. These courses must have been completed within three years of the semester and year of admission to the program, be graduate level with a grade of 'B' or better, and be relevant to the EESD PhD program. All transfer credits are subject to approval by the academic unit and the Dean of the Graduate College. See the ASU Graduate Policies and Procedures for more information on receiving credit for previously awarded credits.

**Optional Coursework and/or Professional Development**

Students may take additional coursework beyond the required 84 credit hours for graduation or participate in professional development. These opportunities at ASU do not apply towards degree completion. These include, but are not limited to:

- ***EGR 580: Practicum***
  All *students funded as Teaching Assistants (TAs)* are required to enroll in 12 credit hours during the semester of their TA appointment. EGR 580 should be used to "fill in" additional credit hours up to the required 12 credit hours. For example, a student funded as a TA is enrolled in 9 credit hours of formal coursework. This student should enroll in 3 credit hours of EGR 580 (9 + 3 = 12). (Note: Students enrolled in 12 credit hours of formal coursework do not need to enroll in any EGR 580 credits). Enrollment requires that the student select an instructor. The chosen instructor of record should be the EESD Program Chair and not the instructor of the course assigned to the TA. Grades in EGR 580 are assigned as either "Y" (Satisfactory) or "Z" (In Progress) (see Grades and Grading Policies for further information).

- ***EGR 784: Teaching Internship***
  The EESD program does not require an official teaching practicum to graduate. Students interested in gaining teaching experience beyond a teaching assistantship may enroll in EGR 784. This 1 credit hour course does not have formal class meetings. Students interested in enrolling in this credit must identify an instructor willing to have the student serve as a co-instructor for their course. (Note: This can be an undergraduate or graduate course taught by an EESD faculty member). Enrollment requires that the student obtain instructor approval, which will then be approved by the EESD program chair. The chosen instructor should be the instructor of record for the course and can be any faculty associated with the program. Grades in EGR 784 are assigned as either "Y" (Satisfactory) or "Z" (In Progress) (see Grades and Grading Policies for further information).

- ***DCI 791: Academic Writing***
  Students looking to learn how or to improve their ability to write should consider this course offered during the Spring semesters through the Mary Lou Fulton Teacher's College.

- ***Preparing Future Faculty and Scholars PFx Program***
  The PFx Program is an optional professional development program offered by the ASU Graduate College. The program aims to help graduate students explore careers in and

outside of academia, build career readiness confidence, consider the value and future of higher education, and critically engage with an interdisciplinary group of peers and mentors. This optional professional development program includes seminars, workshop, events, and other opportunities.

- *Summer Graduate Writing Camps*
  The Summer Graduate Writing Camps are optional professional development programs offered by the ASU University Academic Success Programs (UASP). These camps are specifically geared toward supporting graduate student writing and statistics.
    - Success in Graduate Writing Camp is designed for newly enrolled students
    - Dissertation Writing Camp is dedicated toward students currently writing prospectuses, dissertations, and applied projects.

- *Center for the Integration of Research Teaching and Learning (CIRTL) Credentials*
  ASU is a member of the CIRTL Network. All members of the ASU Community are welcome to participate in ASU/CIRTL offerings. Students have the opportunity to become certified by CIRTL at three levels:
    - Associate – demonstrates awareness of CIRTL principles through certain benchmarks
    - Practitioner – completes a Teaching-As-Research (TAR) project
    - Scholar – disseminates original scholarship about teaching.
  For more information, the ASU CIRTL site supported by the ASU Graduate College.

**PhD Degree Process Outline**

The PhD in EESD will be awarded to candidates that complete the curriculum and demonstrate the capacity to produce independent scholarship that advance the field of engineering education. This process varies between three to five years for full-time students. Details of these milestones are discussed later in this document. The basic outline is as follows:

1. Complete core curriculum (see *Section V*)
2. Selection of Dissertation Chair/Co-Chair (see *Section VI* – Selecting Chair/Co-Chairs)
    - March 15th for full-time students beginning in the Fall Semester
    - September 15th for full-time students beginning in the Spring Semester
3. Submit iPOS (see *Section V*)
4. Complete additional coursework (see *Section V*)
5. Establish a supervisory committee (see *Section VI*)
6. Pass the comprehensive exam / advance to candidacy (see *Section VII*)
7. Complete all credits listed on iPOS
8. Write and successfully defend the dissertation work (see *Section IX*)
9. Submit at least one manuscript from dissertation work to a peer reviewed journal (*see Section VIII*)

**Sample iPOS**

Sample iPOS can be found in the Appendix of this handbook. Tables 1-3 provide example iPOS for students entering the program with a Master's degree in engineering or a closely related field, while Table 4 & 5 provide example iPOS for students entering the program without a Master's

degree in engineering or a closely related field. The examples are intended to illustrate different pathways but are not exhaustive.

## VI. PhD Supervisory Committee

Students are responsible for identifying their chair/co-chairs. The EESD PhD supervisory committee must consist of at least three members, including the chair/co-chairs. All committee members must be endorsed to serve as chair, co-chair, or committee member for the EESD program by the graduate college (see current endorsed list of faculty). The Executive Committee for the EESD PhD Program approves all endorsed faculty. ASU faculty looking to become endorsed for the EESD program can apply by submitting the Nomination to join PhD Graduate Faculty form.

A PhD supervisory committee can have at most one committee member external to ASU. Non-ASU faculty looking to become endorsed for the EESD program can apply for a 5-year Program Approval or Individual Committee Request. A brief justification for the request must be provided.

Students should consult with their chair/co-chairs to establish their committee. The basic responsibilities of the supervisory committee include: providing guidance for the student's research program, contributing to the administration and evaluation of the comprehensive exam, and contributing to the administration and evaluation of the dissertation defense.

**Selecting Chair/Co-Chairs**

The dissertation chair/co-chairs play a central role in a student's maturation into an independent scholar. This relationship is critical to successful completion of the program. All EESD students have the option of selecting a single chair or two co-chairs. The individual student's preferences and research plans will dictate whether one chair or two co-chairs is more appropriate for the anticipated dissertation work. (Note: Choosing to have co-chairs means that both faculty members serve in the same capacity as equal chairs rather than one faculty serving as chair and the other as co-chair.)

**"Through the EESD program, I was able to connect with outstanding faculty that are passionate about improving engineering education."**

**Dr. Mark Huerta, '19**

Full time students who begin in the Fall semester are responsible for selecting their dissertation chair/co-chairs by March 15th in their first year of the program. Full time students who begin in the Spring semester are responsible for selecting their chair/co-chairs by September 15th of their first year in the program. Students are strongly encouraged to talk to students currently in the program and to initiate conversations with faculty about their research interests, work styles, and expectations for advisees during their first semester of enrollment in the EESD program. A student and their chair/co-chairs must formally agree to this relationship, which is formalized through the submission of the iPOS.

**Responsibilities and Rights of all Students**

Students are responsible for the following once the chair/co-chairs have been established:

- discussing iPOS with the chair/co-chairs

- completing courses and other requirements in the degree program
- making independent progress on defining the dissertation topic
- making regular progress on the dissertation
- regularly consulting with committee members on program progress
- collaborating with the chair/co-chairs during the annual formative evaluation
- seeking opportunities for funding (if applicable)

All students have the right to discontinue working with one (or both) of their chairs/co-chairs and to identify new chair/co-chairs with whom they would like to work if the relationship(s) do not work as anticipated. The recommended course of action in such cases is to discuss the situation with the EESD Program Chair, who will work with the student to facilitate the transition.

## Responsibilities and Rights of all Chair/Co-Chairs

A faculty member who agrees to chair/co-chair an EESD student immediately assumes responsibility for overseeing that student's progress. Aspects of this responsibility may include, but are not limited to:

- guiding the scholarly development of the student
- guiding the professional development of the student
- assisting the student in the identification of funding opportunities
- providing guidance on and approving the iPOS
- providing guidance on committee member selection
- collaborating with students during the annual formative evaluation
- providing detailed, regular feedback and input on dissertation work
- serving as a reference for letters of recommendation
- making introductions to colleagues in professional networks
- communicating effectively and frequently with the student's co-chair (if applicable)
- coordinating with committee members during the comprehensive exam and dissertation defense
- assessing the comprehensive exam and dissertation
- bringing required paperwork from the graduate college to the comprehensive exam and dissertation defense
- recording and sharing with the student any revisions required at the completion of the comprehensive exam and dissertation defense

All chair/co-chairs have the right to discontinue working with a student if the relationship does not work as anticipated. The recommended course of action in such cases is to discuss the situation with the EESD Program Chair, who will work with the student to facilitate the transition.

## Responsibilities and Rights of all Committee Members

A faculty member who agrees to serve on the committee of an EESD student assumes a supportive role in overseeing the student's progress. Responsibilities of committee members may include, but are not limited to:

- reviewing the comprehensive exam and dissertation
- advising on dissertation work
- providing approval on key milestones (e.g., comprehensive exam and dissertation)

- providing feedback to chair/co-chairs for the annual formative evaluation
- submitting questions to the chair/co-chairs in support of the student's comprehensive exam

All committee members have the right to discontinue working with a student if the relationship does not work as anticipated. The recommended course of action in such cases is to discuss the situation with student's chair/co-chairs, who will work with the student to facilitate the transition.

## VII. Comprehensive Examination

All EESD students are required to complete the comprehensive exam to advance to candidacy. Students become eligible to take this exam when the following conditions have been met:

1. completion (or final semester of completion) of all required coursework, including elective coursework, but excluding EESD seminar, research, and dissertation credit hours
2. completion of a Master's degree or equivalent credits
3. submission and approval of an iPOS
4. identification of dissertation committee
5. agreement by the student and their chair/co-chairs that the student is far enough along in their research progress

Students must pass the comprehensive exam within 24 months of completing their core coursework. Those unable to meet this deadline will be put on probation and given one additional semester to pass the exam. The exam is administered and evaluated by the supervisory committee. Students should consult with their chair/co-chairs to determine when they are ready to prepare the materials that are required to initiate the exam. It is expected that students have identified research questions, situated their work within existing literature, and have determined their research methods for their dissertation prior to initiating the comprehensive exam.

The exam process typically takes a minimum of four weeks involving the following tasks:

1. ***Student submits preliminary materials to their chair/co-chairs:*** Preliminary materials for the exam are comprised of a written document containing at least the following pieces of information:
    a. Description of the rationale
        - what are the research questions to be answered?
        - why is this an interesting problem to be researched?
        - what have others done to research this and/or similar topics?
    b. Description of the research methods
        - research design
        - participants
        - data collection procedures
        - anticipated data analysis methods
    c. Plan for completion of the dissertation
        - estimated timeline for key milestones
        - ideas for professional development/plans to learn more
    This document is intentionally not intended be a lengthy prospectus document.
2. ***Chair/co-chairs review preliminary materials:*** Review of the materials is done to determine if the student is ready for the exam to begin. A student may be required to submit updated preliminary materials if their initial submission is not deemed suitable.

3. ***Student and chair/co-chairs determine a timeline for the exam***: The exam officially begins once the preliminary materials have been finalized. The student will meet with their chair/co-chairs to determine an approximate timeline for the remaining milestones. This timeline should be one in which the student has the ability to commit a significant amount of effort to the exam, i.e., not during a time already anticipated to be particularly busy or stressful. This should include scheduling a date and time (approx. 2-3 hours) for the exam defense where all committee members are available either physically or virtually. The EESD Program Chair should be notified by the chair/co-chairs when a student is undertaking the comprehensive exam. The Comprehensive Examination Results form will be sent as a follow-up to the chair/co-chairs.

4. ***Chair/co-chairs distribute the preliminary materials to the remaining supervisory committee members***: All committee members are required to review the preliminary materials prior to the student's oral defense. Committee members are typically given a minimum of 1 week to review the materials.

5. ***Supervisory committee members submit potential exam questions to the chair/co-chairs***: Each member should send possible exam questions (minimum of one) to the chair/co-chairs. Exam questions can be on any topic that the committee member deems relevant. All questions should help the student refine their dissertation research plans. Response requirements (e.g., length, formatting, etc.) should be noted when submitting questions.

6. ***Chair/co-chairs finalize the exam questions and distribute to the student***: The chair/co-chairs will review all exam questions submitted by the supervisory committee members and determine the total number of questions that will require a response. The number of questions will vary depending on the questions submitted by each committee member.

7. ***Student submits their response to the final exam questions:*** Students are typically given 2-6 weeks to submit written responses to each of the final exam questions. The exact duration will be determined by the chair/co-chairs in consultation with the student.

8. ***Student presents an oral exam defense:*** The student will meet with their supervisory committee for a 2-3 hour oral exam defense. This defense should take place within 2 weeks of submitting the written responses to the exam questions. The oral exam defense is a private event attended only by the student and their committee members. Students will give an approximately 30-minute long presentation providing a detailed plan for the research that will be conducted in order to complete the dissertation. The presentation should not reiterate what was submitted in the preliminary materials or exam question responses. The student should highlight in the presentation how this plan has been informed/updated based on responses to the exam questions. Committee members will ask the student questions about their submitted exam question responses and/or the oral presentation of planned research following the presentation. This portion of the exam continues until all committee members have asked their questions. The conclusion of the oral exam defense marks the completion of the exam.

Committee members will select one of three possible outcomes for the comprehensive exam:

1. pass
2. pass with minor revisions
3. pass with major revisions
4. fail

Students receiving a 'pass' have no additional work to do. Students receiving a 'pass with minor revisions' or 'pass with major revisions' will be given a timeline to resubmit their written materials. Required revisions will be documented by the chair/co-chairs. All committee members will review the revised document to evaluate whether the revised document sufficiently addresses the noted concerns. Students will officially pass the exam if the document is acceptable to all committee members. Students will be dismissed from the program if the document is deemed unacceptable to all committee members. Students receiving a 'fail' will also receive an immediate dismissal from the program.

Passing this examination advances a student to candidacy. The chair/co-chairs are responsible for bringing the Comprehensive Examination Results form to the exam. This document captures the exam result and documents revisions as specified by the committee. The form should be submitted to the EESD Program Chair and TPS Graduate Advising Office for processing following the exam.

## VIII. Publications

All EESD PhD students are expected to contribute to the greater community of scholars prior to graduation through publication of research. Students are highly encouraged to attend and submit their work for publication in conference proceedings during the course of their program with no set expectation for number of proceedings (visit the Engineering Education Community Resource for a non-exhaustive list of potential conferences).

All students, regardless of dissertation format (see *Section IX*), must submit at least **one** manuscript based on the dissertation research to a relevant and impactful peer reviewed journal (see Research in Engineering Education Network site for a non-exhaustive list of engineering education-specific journals). The manuscript need not be published before graduation. Evidence of this submission should be provided to the EESD Program Chair prior to the dissertation defense.

## IX. Dissertation

All ASU doctoral student dissertations must follow the ASU Graduate College Format Manual formatting guidelines. A Format Wizard is available to assist students in this process. Students should use American Psychological Association (APA) 7th edition guidelines (see Purdue OWL for further assistance) for writing style, references and citations, and reporting outcomes.

The EESD PhD Program allows dissertations to take one of two formats (deviations are acceptable if approved by the student's chair/co-chairs):

1. *Traditional format*: Introduction, Literature Review, Methods, Results, Discussion, and Conclusions
2. *Three Journal Article format*: Introduction, three published/in press/under review articles, and Conclusions.

The choice between the two options should be discussed between the student and their chair/co-chairs to ensure the format aligns appropriately with the student's identified career pathway.

**Dissertation Defense**

The oral defense of the dissertation is a public presentation that is administered and evaluated by the supervisory committee. Students are responsible for working with their chair/co-chairs and committee members to schedule the defense in accordance with all necessary Graduation Deadlines and Requirements established by the ASU Graduate College. This includes:

- applying for graduation via MyASU (go to the "Graduation" tab)
- identifying a suitable oral defense date with your committee
- reserving an on-campus room for the oral defense
- scheduling the oral defense of the dissertation with the ASU Graduate College via the iPOS system (go to the "Defense" tab and select "Schedule my defense") (See the 10-Day Working Calendar to identify permissible defense dates)
- submitting a complete, formatted draft dissertation for format approval to the ASU Graduate College at least 10 calendar days before the defense (upload the document to your iPOS via MyASU)
- holding an oral defense of the dissertation once receiving approval from the academic unit through the iPOS approval system (Note: all supervisory committee members must be present)
- submitting the Survey of Earned Doctorates
- submitting the final version of the dissertation to UMI/ProQuest

The dissertation must be delivered to all members of the supervisory committee at least 10 working days prior to the oral defense. The format of the oral defense will be established by the supervisory committee subject to the constraint that the defense includes both a public forum followed by a closed session limited to the supervisory committee. Corresponding evidence should be submitted to the EESD Program Chair.

The dissertation defense is an opportunity for the candidate to present their research to the academy and to offer the community an opportunity to evaluate and comment on both the quality of the research and the qualifications of the candidate. The supervisory committee will meet in closed session following the defense to further discuss the performance and qualifications of the candidate. Each member will cast their vote on whether or not the candidate has passed the exam. Passing the exam requires that the chair/co-chairs and a majority of the supervisory committee vote in the affirmative. The possible outcomes of the defense are:

1. pass
2. pass with minor revisions
3. pass with major revisions
4. fail

The committee will discuss the results of their decision with the candidate, including all subsequent steps. The chair/co-chairs will submit individual Pass/Fail decisions through the iPOS system. Students receiving some form of "pass" will officially earn their PhD once the final dissertation with required revisions is submitted, and their chair/co-chairs approve in the iPOS system. Students may then register for graduate commencement via MyASU. Students who receive a 'fail' following their dissertation defense will be dismissed from the program.

## X. Student Funding

There are a variety of mechanisms through which students can obtain financial support during their PhD studies, including graduate student appointments, internal fellowships, external fellowships, and scholarships. Students may be financially supported through different types of funding during the course of their PhD program. Lists of potential funding opportunities have been made by the ASU Graduate College, Ira A. Fulton Schools of Engineering and The Polytechnic School. These resources include travel funding opportunities.

> **"Never have I felt more supported in my academic pursuits than during my time as a student of the EESD program at ASU."**
> **Dr. Michael Sheppard, '20**

**Research Assistantship (RA) and Hourly Research Positions**

The primary responsibility of an RA is in a research-related capacity. There are two types of research positions available to students (visit the Ira A. Fulton Schools of Engineering Research and Teaching Assistantships page for a non-exhaustive list of posted opportunities). Students funded RA positions typically receive a bi-weekly stipend as well as full (or partial) tuition and health benefits. The majority of positions are classified as either 50% full time equivalent (FTE) or 25% FTE (Note: Students may not work more than 20 hours per week during the Fall and Spring semesters, but can increase to 40 hours during the Summer). Students receiving a 50% FTE position are considered full-time and are expected to work a minimum of 20 hours/week (based on a 40-hour work week where the remaining 20 hours are dedicated to schoolwork). Students receiving a 25% FTE position are considered half-time and expected to work a minimum of 10 hours/week. RA positions may be for a single semester or full academic year and are renewable based on a principle investigator (PI)/Co-PI's interest and availability of funding. Students receiving a 50% RA position also receive 100% tuition and health insurance (Note: health insurance is not included for family members). Students receiving a 25% RA position will have out-of-state tuition waived or receive 50% in-state tuition, but no insurance benefits.

Hourly research positions are paid on an hourly basis and do not include tuition or health insurance benefits. Students can be hired for a maximum of 20 hours per week either through one or multiple positions. Students receiving a 50% RA position cannot additionally take on an hourly research position. These positions can be terminated at any time.

The responsibilities for either type of research position are essentially the same. Students work to support the research agenda established by the PI/Co-PI on the funded project. Specific requirements of an RA or hourly research position can vary depending on the project, but typically involve the following:

- making progress on research tasks (e.g., literature reviews, data collection, completing CITI program training, Institutional Review Board (IRB) submissions, data analysis, writing, etc.) in concert with guidelines specified by the project's PI/Co-PI
- preparing for and attending research group (and individual) meetings
- meeting research deadlines or communicating the reasons for deadlines that will not be met
- working with project team members to seek out publication and presentation opportunities

All students funded as an RA in the Ira A. Fulton Schools of Engineering must be enrolled in 12 credit hours (see *Section IV – EGR 792: Research*). Students working in hourly research positions are not required to enroll in a minimum number of credit hours.

**Teaching Assistantship (TA)**

The primary responsibility of a TA is in an instructional capacity. Students funded with TA positions typically receive a bi-weekly stipend as well as full (or partial) tuition and health benefits. TA positions are typically 50% FTE or 25% FTE and offered on a semester-by-semester basis. Positions are renewable based on the availability of funding, the need for TAs, and past performance as a TA. TA positions are awarded from TPS and are not determined by individual faculty members affiliated with the EESD Program. Postings for positions will be emailed to students each semester. All students in the Ira A. Fulton Schools of Engineering must be enrolled in 12 credit hours if they are funded as a TA (see *Section IV – EGR 580: Practicum*). International students are required to demonstrate English language proficiency before gaining eligibility to be a TA. The International Teaching Assistant (ITA) Program assists students in fulfilling the English language requirement through one of four ways:

1. SPEAK test (must be completed through ASU Global Launch)
2. IELTS test
3. TOEFL iBT
4. ITA Teacher Training course (semester long offering at ASU)

**Graduate Services Assistantship (GSA)**

The primary responsibility of a GSA is to perform tasks within a specified unit in order to gain working knowledge and develop career-specific skills. Students funded with GSA positions receive a stipend for the period identified and are not eligible to receive tuition or health insurance.

**Graduate Internship (GI)**

Students can identify graduate internships with external companies or organizations throughout their graduate studies. The primary responsibility of a GI is to gain working knowledge and develop career-specific skills appropriate to the student's area of study. Students in these positions are not eligible to receive tuition or health insurance.

**Scholarships and Fellowships**

Scholarships or fellowships provide financial support to graduate students without any associating teaching or research responsibilities. This source of funding is typically awarded from a competitive applicant pool on the basis of merit. A non-exhaustive list of opportunities can be found on the ASU Graduate College, Ira A. Fulton Schools of Engineering and The Polytechnic School websites. Prospective American Indian/Native, African American/Black, and Hispanic American/Latino are highly encouraged to explore the GEM Fellowship Program. Prospective and current Mexican students are highly encouraged to explore the CONACYT Fellowship Program. All students interested in scholarships and fellowships should work with their chair/co-chairs to identify appropriate opportunities.

**Travel Grants**

Travel grants are available through ASU's Graduate College and the Graduate Professional Student Association (GPSA) to support individual student travel to conferences, trainings, workshops, and other activities related to your program of study or professional development.

Funds may also become available to support travel directly from TPS; opportunities will be emailed to currently enrolled students. Please contact the EESD Program Chair for additional information.

**TPS Awards**

TPS award programs are regularly offered but are subject to change based on available funding. Information on TPS award programs will be distributed by the EESD Program Chair as they become available. The following describes two example programs offered in 2021-2022.

***Dissertation Research Expense Award:*** The dissertation research expense award is designed to support PhD students' dissertation research, including publication fees, transcription costs, incentives for research participants, travel to present research, or additional funding for a student who does not have GRA, TA, GSA, or hourly funding. These awards will not typically exceed $1,000 per award (except when needed for a stipend) and are limited to funds provided by the Graduate College via Academic Year Block Grants. Those receiving an award will be expected to provide a one-page report demonstrating how funding was used, what deliverables resulted (e.g., conference papers, journal papers, interviews completed, survey responses, etc.), and how funding assisted personal dissertation research goals. This report should be submitted by June 30 of the year that the award was received. The TPS Graduate Advising Office will send details around the application procedures for this award each semester.

***TPS Doctoral Student Milestone Awards:*** TPS celebrates doctoral student achievements by providing financial awards in recognition of the following three significant milestones achieved **beginning July 1, 2020** (accomplishments that took place before July 1, 2020 are not eligible):

1. acceptance of a peer reviewed journal paper with the PhD student as an author:  $500
2. advancement to candidacy through passing of the comprehensive exam:  $750
3. passing the dissertation defense:  $1000

These awards are limited to available funds and may only be claimed by students enrolled in TPS programs, including EESD.  Students are eligible to receive each award a maximum of one time during their doctoral studies. Students interested in receiving one or multiple awards should submit the TPS PhD Milestone Award form, which includes uploading evidence of the milestone achievement. This should be a copy of the article itself as well as a letter/email from the editor of the journal clearly stating that the paper has been accepted and providing the full author list (including the student name) or a copy of the final, signed exam/defense form indicating a passing outcome (Note: the comprehensive exam and dissertation defense are considered passed when there are no further revisions required). All submissions will be verified. Students will receive a letter and funds within a month of submission.

**Funding ≠ Dissertation**

We explicitly note here that the source of financial support and the selection of the student's dissertation topic are by definition independent of one another. All students have the autonomy to choose whether or not their dissertation and chair/co-chairs align with work they are conducting as an RA or hourly research position. Students are not in any way required to align these two aspects of their studies. This does not preclude students from publishing papers and conference proceedings based on work completed during the course of a research position, whether or not the work aligns with their dissertation topic.

## XI. Grades, Academic Performance Standards, and Enrollment Constraints

Students enrolled in the EESD PhD program must meet all university requirements in addition to the specific program requirements described in this handbook. The ASU Graduate Policies and Procedures apply to all graduate students at ASU. Meeting both the University and TPS academic performance requirements requires that all PhD students achieve a cumulative grade point average of 3.00 or better (scale is 4.00 = "A") in three different grade point average (GPA) calculations:

1. GPA in all courses numbered 500 or higher that appear on the transcript, except those that were listed as deficiencies in the original letter of admission
2. GPA in all coursework that appears on the approved program of study
3. GPA in all post-Master's coursework taken at ASU

Courses with grades of "D" (1.00) and "E" (0.00) cannot appear on the iPOS, but will be included when calculating the Graduate GPA. Courses with a "W" (Withdrawal) or an "I" (Incomplete) grade cannot appear on the iPOS and may be considered lack of satisfactory progress if there is more than one occurrence during the student's graduate program of study.

Students will be placed on probation if they fail to meet all of the GPA requirements, fail to make satisfactory progress toward completion of their dissertation, or receive a grade of "D" (1.00) or "E" (1.00) in any course. Students placed on academic probation will receive a letter from TPS explaining the reasons for the probationary status, required actions to return to good status, and consequences if those conditions are not met.

A student will be recommended for withdrawal from the program if they fail to meet the probationary standards outlined in their probationary letter. The student will receive a letter from TPS explaining reasons for the withdrawal recommendation. The student will have 10 calendar days from the date of the letter to appeal the decision to the TPS Graduate Affairs committee. A student receiving a favorable outcome from their appeal will be required to sign an agreement acknowledging the recommendations of the committee and the consequences if the probationary standards are not met. Student's receiving a decision not in their favor will receive a recommendation to be withdrawn from the program by the TPS Graduate Affairs Committee. This recommendation must be approved by the TPS Director and the Dean of the ASU Graduate College.

**Annual Formative Evaluation**

Each EESD student is required to collaboratively complete the EESD Annual Student Formative Evaluation form with their chair/co-chairs following the Spring semester and prior to the start of the Fall semester (exclusions may apply to students beginning the program in Spring or graduating in Summer). The intent of this evaluation is to provide a documented checkpoint between students and chair/co-chairs. The nature of this evaluation is formative and does not influence a student's standing in the program.

The EESD Program Chair will remind all students and faculty to complete this form. The form is available via the EESD Annual Formative Evaluation Canvas site. Activities include:

1. Students complete the STUDENT parts of this form and submit to their chair/co-chairs along with an updated CV.
2. Chairs/co-chairs review student responses and complete the CHAIR/CO-CHAIRS parts of this form.

3. Chairs/Co-Chairs and students schedule a time to meet and discuss their individual responses.
4. All parties sign and date the completed form following the meeting.
5. Students submit the completed form via the EESD Formative Evaluation Canvas site for archiving.

**Policy on Maximum Course Load**

Registration in nine credits is considered a full-time load for graduate students at ASU. Graduate students in the Ira A. Fulton Schools of Engineering are restricted to a maximum of 12 credits per semester. An override request can be made with approval from the student's chair/co-chairs and the EESD Program Chair. Students must be enrolled in 12 credit hours if they are funded as a TA or RA. Exceptions to register for more than 12 credits requires approval by the EESD Program Chair.

**Continuous Enrollment Requirement**

Students admitted to the EESD PhD Program must continuously enroll in at least one credit hour during each Fall and Spring semester. Summer registration is required for students taking examinations, completing culminating experiences, defending dissertations, or graduating from the degree program in that semester. This credit must appear on the iPOS or must be an appropriate graduate-level course (e.g. EGR 595, Continuing Registration). Courses with grades of "W" (Withdrawal) and "X" (Audit) are not considered valid registration for continuous enrollment purposes.

Students planning to discontinue enrollment for a semester or more must request approval for a leave of absence. The ASU Graduate College allows for a leave of absence for a maximum of two semesters during a student's entire program. Students who wish to utilize this policy must submit a Request to Maintain Continuous Enrollment to TPS Graduate Advising Office through their iPOS for review and approval. This request must be approved by the EESD Program Chair and by the Graduate College. All requests must be submitted and approved before the start of the semester of the anticipated absence.

An approved leave of absence will enable students to re-enter their program without reapplying to the university and the graduate program. Students who do not enroll for a Fall or Spring semester without an approved Request to Maintain Continuous Enrollment are considered withdrawn from the university under the assumption that they have decided to discontinue their program. A student removed for this reason may reapply for admission to resume their degree program. A student with an approved Request to Maintain Continuous Enrollment is not required to pay tuition and/or fees during the time of leave, but in turn is not permitted to place any demands on university faculty or use any university resources. See the ASU Graduate Policies and Procedures for more information.

**Time Limit for Degree Completion**

All ASU doctoral students must complete all work within a 10-year period, which begins with the semester and year of admission. The supervisory committee and the Dean of the Graduate College must approve any exceptions. See the ASU Graduate Policies and Procedures for more information.

**Master's in Passing (MIP)**

The MIP option is strictly provided for students who ultimately will not complete their doctorate. Students cannot directly apply for admission into the MIP degree program. Students opting to receive a MIP in lieu of their doctorate must complete the requisite coursework and culminating experience (30 credits). Required coursework includes all core EESD courses (21 credits) plus three elective courses (9 credits), which can include EGR 594 (seminar) and EGR 792 (research) credits. The culminating experience will be a portfolio (0 credits). Portfolios must be submitted to the Graduate Program Chair within the appropriate submission window (Table 4).

Table 5: MIP Submission deadlines.

| Graduation Semester | Submission Window | Resubmission (if required) |
|---|---|---|
| Spring | March 1 - 30 | Before April 30 |
| Summer | June 1 - 30 | Before August 7 |
| Fall | October 1 - 30 | Before December 7 |

The portfolio must elucidate the quality of the education that the student has received over the course of their graduate studies. The purpose of the portfolio is to demonstrate a mastery of engineering education research and practice through a compilation of work that the student has completed. All portfolios must describe a minimum of three notable activities or academic accomplishments (e.g., projects, conference presentations, publications, etc.) that illustrate the evolution and advancement of social science expertise and mastery of the field of engineering education achieved by the student. The portfolio is a professional document that is written in APA style and will be reviewed and evaluated for technical content and quality of presentation.

## XII. Advising

TPS Graduate Advising Office is responsible for advising all graduate students with respect to progress toward the degree, program, school, college and university policies and procedures. Use the following links to schedule an advising appointment or to determine the current EESD advisor. Questions involving details of academic content in courses, professional practice, and research can be discussed with a student's chair/co-chairs or the EESD Program Chair.

## XIII. Professionalism and Honor Code

The highest standards of academic integrity and compliance are expected of all graduate students. Students are expected to obtain, read, and follow academic integrity policies at the program, college, and university level, including the University Student Code of Conduct (ABOR 5-308), Ira A. Fulton Schools of Engineering Honor Code, and ASU Academic Integrity Policy. Failure of any graduate student to uphold these standards will result in serious consequences, including suspension or expulsion from the university and/or other sanctions as specified in the academic integrity policies.

## XIV. University Resources

There are a number of support services for students available at ASU. A non-exhaustive list is provided in the following bullets:

- [Admitted Graduate Student Next Steps](#)
- [Counseling Services](#)
- [Graduate and Professional Student Association (GPSA)](#)
- [Graduate College](#)
- [Health Services](#)
- [International Student Services](#)
- [University Technology Office](#)
- [Student Accessibility and Inclusive Learning Services](#)
- [Student Business Services](#)
- [Students with Families](#)
- [Council of Religious Advisors](#)
- [Student Housing Options](#)
- [Student ID Card (Sun Card)](#)
- [Student Organizations](#)
- [University Academic Success Programs](#) (including [Graduate Academic Support Center](#))
- [University Parking and Transit](#) (including information on the [ASU Gold Shuttle](#) with service between the Polytechnic and Tempe campuses)
- [Veterans Center](#)
- [Aurora – Beyond the Professoriate's Professional Development](#)
- [FSE Learning and Teaching Hub](#)
- [Center for Integration of Research, Teaching, and Learning (CIRTL)](#)
- [SOLS Teaching Innovation Center](#)

## XV. EESD Program Steering Faculty

The EESD Program Steering Faculty are faculty who regularly teach EESD courses and determine program policies. The steering faculty are listed below. A full list of faculty associated with the EESD program is available on the [EESD website](#), including short bios and contact information. Additional information – biography, research, teaching, public work, and industry experience – can be found through the [ASU Directory isearch](#).

- Mayra Artiles Fonseca, Assistant Professor
- Jennifer Bekki, Associate Professor
- Samantha Brunhaver, Assistant Professor
- Adam Carberry, Associate Professor, EESD Program Chair
- Brooke Coley, Assistant Professor
- Shawn Jordan, Associate Professor,
- Nadia Kellam, Associate Professor
- Ann McKenna, Professor, Vice Dean of Strategic Advancement
- Kurt Patterson, Professor, TPS Director
- Li Tan, Assistant Professor
- Dina Verdin, Assistant Professor

## Appendix: Sample iPOS

Table 1: Sample iPOS, entering the program with a Master's (Fall start, 3-year graduation)

| Course Number | Course Title |
|---|---|
| **First Semester** | |
| EGR 574 | Engineering Education Systems in Context |
| EGR 572 | Quantitative Methods for Engineering Education Research |
| EGR 565 | Qualitative Methods for Engineering Education Research |
| EGR 594# | EESD Seminar |
| EGR 792* | Research (2 credit hours) |
| **Second Semester** | |
| EGR 535+ | Innovation and Design of Academic Settings (IDEAS) |
| EGR 576 | From Then Until Now: Examining Inequities in STEM |
| EGR 673 | Applications of Quantitative Methods for Engineering Education Research |
| EGR 792 | Research (3 credit hours) |
| **Third Semester** | |
| EGR 671 | Applications of Qualitative Methods for Engineering Education Research |
| Elective | TBD |
| EGR 594 | EESD Seminar |
| EGR 792 | Research (5 credit hours) |
| **Fourth Semester** | |
| Elective | TBD |
| EGR 792 | Research (2 credit hours) |
| **Fifth Semester** | |
| EGR 594 | EESD Seminar |
| EGR 799 | Dissertation/Thesis (3 credit hours) |
| **Sixth Semester** | |
| EGR 799 | Dissertation/Thesis (9 credit hours) |

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# EGR 594 is a 1-credit course that must be taken 3 times (Fall offerings ONLY).
* Students funded as a GRA must enroll in 12 credits during the semester using EGR 792 to fill open credits.
+ Offered every other Spring (even years)

Table 2: Sample iPOS, entering the program with a Master's (Spring start, 3-year graduation)

| Course Number | Course Title |
|---|---|
| **First Semester** | |
| EGR 535[+] | Innovation and Design of Academic Settings (IDEAS) |
| EGR 576 | From Then Until Now: Examining Inequities in STEM |
| Elective | TBD |
| **Second Semester** | |
| EGR 574 | Engineering Education Systems in Context |
| EGR 572 | Quantitative Methods for Engineering Education Research |
| EGR 565 | Qualitative Methods for Engineering Education Research |
| EGR 594[#] | EESD Seminar |
| EGR 792[*] | Research (2 credit hours) |
| **Third Semester** | |
| EGR 673 | Applications of Quantitative Methods for Engineering Education Research |
| Elective | TBD |
| EGR 792 | Research (6 credit hours) |
| **Fourth Semester** | |
| EGR 671 | Applications of Qualitative Methods for Engineering Education Research |
| EGR 594 | EESD Seminar |
| EGR 792 | Research (4 credit hours) |
| **Fifth Semester** | |
| EGR 799 | Dissertation/Thesis (6 credit hours) |
| **Sixth Semester** | |
| EGR 594 | EESD Seminar |
| EGR 799 | Dissertation/Thesis (6 credit hours) |

Table 3: Sample iPOS, entering the program with a Master's (Fall start, 4-year graduation)

| Course Number | Course Title |
|---|---|
| **First Semester** | |
| EGR 574 | Engineering Education Systems in Context |
| EGR 572 | Quantitative Methods for Engineering Education Research |
| EGR 565 | Qualitative Methods for Engineering Education Research |
| EGR 594[#] | EESD Seminar |
| EGR 792[*] | Research (2 credit hours) |
| **Second Semester** | |
| EGR 535[+] | Innovation and Design of Academic Settings (IDEAS) |
| EGR 576 | From Then Until Now: Examining Inequities in STEM |
| EGR 673 | Applications of Quantitative Methods for Engineering Education Research |
| **Third Semester** | |
| EGR 671 | Applications of Qualitative Methods for Engineering Education Research |
| Elective | TBD |
| EGR 792 | Research (2 credit hours) |
| EGR 594 | EESD Seminar |
| **Fourth Semester** | |
| Elective | TBD |
| EGR 792 | Research (4 credit hours) |
| **Fifth Semester** | |
| EGR 792 | Research (4 credit hours) |
| EGR 594 | EESD Seminar |
| **Sixth Semester** | |
| EGR 799 | Dissertation/Thesis (6 credit hours) |
| **Seventh Semester** | |
| EGR 799 | Dissertation/Thesis (3 credit hours) |
| **Eight Semester** | |
| EGR 799 | Dissertation/Thesis (3 credit hours) |

Table 4: Sample iPOS, entering the program without a Master's (Fall start, concurrent Master's, 3.5-year graduation)
Example denotes courses taken during two Summer Sessions.

| Course Number | Course Title |
|---|---|
| **First Semester** | |
| EGR 572 | Quantitative Methods for Engineering Education Research |
| EGR 565 | Qualitative Methods for Engineering Education Research |
| MS Course[!] | TBD |
| EGR 594[#] | EESD Seminar |
| EGR 792[*] | Research (2 credit hours) |
| **Second Semester** | |
| EGR 576 | From Then Until Now: Examining Inequities in STEM |
| EGR 673 | Applications of Quantitative Methods for Engineering Education Research |
| MS Course | TBD |
| EGR 792 | Research (3 credit hours) |
| **Summer Session** | |
| MS Course | TBD |
| MS Course | TBD |
| **Third Semester** | |
| EGR 574 | Engineering Education Systems in Context |
| EGR 671 | Applications of Qualitative Methods for Engineering Education Research |
| MS Course | TBD |
| EGR 792 | Research (2 credit hours) |
| EGR 594 | EESD Seminar |
| **Fourth Semester** | |
| EGR 535[+] | Innovation and Design of Academic Settings (IDEAS) |
| MS Course | TBD |
| MS Course | TBD |
| EGR 792 | Research (3 credit hours) |
| **Summer Session** | |
| MS Course | TBD |
| MS Course | TBD |
| **Fifth Semester** | |
| MS Course/Elective[⊥] | TBD |
| MS Course/Elective | TBD |
| Elective | TBD |
| EGR 792 | Research (2 credit hours) |
| EGR 594 | EESD Seminar |
| **Sixth Semester** | |
| EGR 799 | Dissertation/Thesis (6 credit hours) |
| **Seventh Semester** | |
| EGR 799 | Dissertation/Thesis (6 credit hours) |

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[!] Please meet with the EESD academic advisor to create a degree plan.
[⊥] Master's degree requirements and credits may vary with the possibility of up to 6 credits of shared EESD courses.

Table 5: Sample iPOS (Fall start, concurrent Master's, 4-year graduation)
Example denotes 6 EESD credits used for Master's degree (or equivalent); no courses taken during Summer Sessions

| Course Number | Course Title |
| --- | --- |
| **First Semester** | |
| EGR 572 | Quantitative Methods for Engineering Education Research |
| EGR 565 | Qualitative Methods for Engineering Education Research |
| EGR 574 | Engineering Education Systems in Context |
| EGR 594[#] | EESD Seminar |
| EGR 792[*] | Research (2 credit hours) |
| **Second Semester** | |
| EGR 576 | From Then Until Now: Examining Inequities in STEM |
| EGR 673 | Applications of Quantitative Methods for Engineering Education Research |
| MS Course[!] | TBD |
| EGR 792 | Research (3 credit hours) |
| **Third Semester** | |
| EGR 671 | Applications of Qualitative Methods for Engineering Education Research |
| MS Course | TBD |
| MS Course | TBD |
| EGR 792 | Research (2 credit hours) |
| EGR 594 | EESD Seminar |
| **Fourth Semester** | |
| EGR 535[+] | Innovation and Design of Academic Settings (IDEAS) |
| MS Course | TBD |
| MS Course | TBD |
| EGR 792 | Research (3 credit hours) |
| **Fifth Semester** | |
| MS Course | TBD |
| MS Course | TBD |
| EGR 792 | Research (2 credit hours) |
| EGR 594 | EESD Seminar |
| **Sixth Semester** | |
| MS Course/Elective | TBD |
| MS Course/Elective | TBD |
| MS Course/Elective | TBD |
| **Seventh Semester** | |
| Elective | TBD |
| Elective | TBD |
| EGR 799 | Dissertation/Thesis (3 credit hours) |
| **Eight Semester** | |
| EGR 799 | Dissertation/Thesis (9 credit hours) |