

Master's Program Handbook – Software Engineering (MSSWE)

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This document is available online [here](#).



Elmore Family School of Electrical
and Computer Engineering

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1 Introduction

This handbook contains information about the Master's Degree in Software Engineering (MSSWE) program offered by the [Elmore Family School of Electrical and Computer Engineering \(ECE\)](#) at Purdue.

A strength of the academic component of the MSSWE program at Purdue is that each student creates his/her own plan of study ([Section 4](#)), a document that defines the student's academic program. Degree requirements afford flexibility for developing a plan of study that best suits each student's needs and professional objectives. The information in this handbook is intended to assist students in generating a plan of study with proper faculty supervision.

MSSWE Program Learning Outcomes

1. Identify, formulate, and solve complex software engineering problems by applying principles of engineering, science, and mathematics.
2. Develop expertise in machine learning and data science; embedded software, robotics, and controls; systems software; and/or cybersecurity.
3. Recognize and articulate specific software engineering needs with consideration of public health, safety and welfare as well as global, cultural, and social, environmental, and economic factors.
4. Effectively communicate software design and development decisions.
5. Work effectively as a member of a team solving software engineering problems.

2 Degree Details

2.1 Eligibility

A bachelor's degree in computer science or computer engineering preferred. Students with other related undergraduate degrees who have extensive work experience in the field may be admitted if their credentials collectively indicate an ability to succeed in the coursework.

Foundational topics are not taught in the program; students should have a working knowledge of relevant topics, such as algorithms, data structures, microprocessors, operating systems, programming languages, compilers, calculus, linear algebra, discrete mathematics, and probability and statistics.

2.2 Degree Requirements

Total credits needed: 30

- Two core courses:
 - Select one:
 - [ECE 60800, Computational Models and Methods](#) (3 credits)
 - [CS 58000, Algorithm Design, Analysis, and Implementation](#) (3 credits)
 - [ECE 59500, Advanced Software Engineering](#) (3 credits)
- One math course (3 credits): See [Appendix A](#)

- A total of 18 hours of software-related ECE and CS coursework, includes core courses above.

Course recommendations by area of interest are available here: [Sample plans of study, MSSWE.](#)

Core Course Requirement

Students must successfully complete a minimum of **two** core courses as described above. Regional campus courses or transfer courses do not satisfy the core course requirement.

Math Requirement

A minimum of 3 approved math credit hours are required for the MSSWE. See [Appendix A](#) for approved courses that can be used to meet the math requirement.

Research Credit Requirement

Research is not required for this track. Up to three credit hours of [ECE 69600](#) and/or [ECE 69700](#) are allowed on the plan of study.

Summary of Course and Credit-Hour Requirements

Table 2.1 summarizes the preceding course and credit hour requirements for the MSSWE.

Table 2.1: Summary of Course and Credit-Hour Requirements for MSSWE

Required Core Courses (credit hours)	2 (6)
Required Math Credit Hours	3
Allowed ECE 69600/69700 Credit Hours	3
Total Required Graduate-Level Purdue ECE and CS Credit Hours	18
Required Credit Hours on Plan of Study	30

2.3 Other Requirements

Responsible Conduct of Research Course Requirement

All ECE graduate students must satisfactorily complete the Responsible Conduct of Research course as instructed in the ECE online orientation. This is an online course offered through [Collaborative Institutional Training Initiative \(CITI\)](#) at no charge to students.

Written English Requirement

All ECE graduate students must demonstrate acceptable proficiency in written English before admission. Methods that may be used to fulfill the English requirement are detailed in [Appendix B](#).

Undergraduate Credit Hours

Graduate students may take undergraduate courses if space allows, but these may be included on the plan of study only in special situations and if a grade of B- or better is received.

Undergraduate courses on the plan of study must be specifically approved by the student's faculty advisor **and** the ECE Associate Head for Graduate Programs.

Transferring into the MSSWE Program

Students from other programs, including the Purdue MSECE, may request to transfer into the MSSWE program by following the procedures outlined by the ECE Graduate Office.

Students must complete at least 15 credits of coursework on the MSSWE plan of study while enrolled in the MSSWE program.

3 Minimum Academic Standards

MSSWE students are subject to both ECE academic standards and University academic standards.

Additionally, all students are expected to abide by the [Purdue Honor Pledge](#).

3.1 ECE Academic Standards

As a Master's student in ECE, you are expected to maintain the following standards throughout your academic program:

- Maintain a plan-of-study (POS) grade point average (GPA), based on your currently approved plan of study, of at least 3.00 out of 4.00, with no grade of less than C– on the POS.
- Meet the written English proficiency requirement ([Appendix B](#)) within the first two semesters of your academic program.
- Make continuous and significant progress each semester toward completion of your degree requirements.
- Complete all degree requirements and graduate within three years after entering the ECE graduate program (except for online students, who have up to six years to complete the program).

ECE academic probation: You will be placed on ECE academic probation if you complete any semester or summer session with a deficiency in any of the above standards. Should you remain on ECE academic probation at the end of the succeeding semester or summer session, you may be prohibited from registering for further graduate study. Students concerned about their academic progress should schedule an appointment with the ECE Graduate Programs Director or Master's Program Manager.

Plan of study GPA: As noted above, the cumulative plan-of-study GPA is calculated using the courses on your plan of study. However, transfer courses and graduate-level courses taken while an undergraduate student are not included in the computation. In the case of a deficiency in the cumulative plan-of-study GPA, courses may be repeated. If a course is repeated, only the most recent grade received will be used in computing the index, even if it is a lower grade.

Grades of D or F: University requirements state that no grade of D or F is allowed in a course on the plan of study. Any plan of study course in which a grade of D or F is received must be repeated and completed successfully; it cannot be dropped from the plan of study.

3.2 University Academic Standards

Academic Notice

A student at Purdue University shall be placed on university [academic notice](#) if his/her fall or spring semester or cumulative GPA at the end of any fall or spring semester is less than a 2.0.

A student on academic notice shall be removed from that standing at the end of the first subsequent fall or spring semester in which he/she achieves semester and cumulative GPAs equal to or greater than 2.0.

Any grade change due to a reporting error will result in a recalculation of the GPA and determination of academic standing.

Academic standing will not be assessed in summer sessions.

Dropping of Students for Academic Deficiency

A student on academic notice shall be dropped from the University at the close of any fall or spring semester in which his/her semester and cumulative GPA is less than a 2.0.

Any grade change due to a reporting error will result in a recalculation of the GPA and determination of drop status.

Readmission

A graduate student who is academically dropped from the University for the first time is not eligible to enroll for at least one fall or spring semester. A graduate student who is academically dropped for the second time is not eligible to enroll for at least one year.

A graduate student dropped by this rule must apply for readmission to the Elmore Family School of Electrical and Computer Engineering or another Purdue graduate program to which they want to apply. The normal application fee would apply. Readmission is not guaranteed, but any student who gains readmission is readmitted on probation and is subject to stipulations in effect as a condition of readmission.

4 Master's Degree Plan of Study

All MSSWE students must file a plan of study (POS):

- Full-time students: POS is due before the end of the first semester.
- Part-time: POS is due around the time the student has completed nine credit hours.

This helps to ensure a logical curriculum early in the program, sets a clear pathway toward completion of the student's degree, and helps the school plan and monitor the overall ECE graduate program. For this reason, registration for subsequent semesters is not permitted until the plan of study has been filed.

If necessary, changes can be made to the plan of study later, subject to the restrictions below.

The plan must be appropriate to meet the needs of the student's chosen field as determined by the faculty advisor and must be approved the ECE Associate Head of Graduate and Professional Programs and the Office of the Vice Provost for Graduate Studies (graduate school).

Faculty advisor: For MSSWE students, the faculty advisor listed on the plan of study will be the ECE Associate Head of Teaching and Learning.

4.1 Preparing Your Plan of Study

Suggested steps in preparing your plan of study are as follows:

1. Review the following:
 - [MSSWE degree requirements](#) in this handbook; also see [Subsection 4.3](#) if undergraduate, transfer, or excess course credit will be included on the plan of study.
 - [Course lists](#)
 - [Sample plans of study](#)
2. Use the online Electronic Plan of Study program in myPurdue to compose a draft of your plan of study. See the MSSWE Student Guide website for a link to plan-of-study instructions. Additional helpful information for filling out the plan of study can be found in [Appendix C](#).
3. Submit your final plan electronically. Your plan of study will be automatically routed to the ECE Graduate Office for initial screening before being sent to the faculty advisor, the ECE Associate Head of Graduate and Professional Programs, and the graduate school for approvals. If your plan fails to gain any of the required approvals, the reason for the rejection will be explained in an e-mail message. You can then make any required changes and submit the revised plan for approval.

You may check on the status of the approval process at any stage. You will be sent an e-mail message when approval has been obtained from the graduate school. The required approvals usually take several weeks.

4.2 Changing Your Plan of Study

As a student's program progresses, there may arise conditions that necessitate a change in the plan of study. Such changes, when based upon sound academic reasons, are encouraged. Some regulations have been found necessary to prevent abuses of this privilege. Specifically, a course may not be removed from the plan of study once a grade of D or lower has been received in a course.

Use the Electronic Plan of Study program in myPurdue to submit a request to change your plan of study. Any change faculty advisor and the ECE Associate Head of Graduate and Professional Programs.

If the ECE requirements for the MSSWE degree program are modified, there is no need for students to revise their previously approved plans of study to conform to the new rules. All approved plans of study remain valid. Students have the option to change their plan of study to conform to the new rules but are not required to do so.

4.3 Undergraduate, Transfer, and Excess Course Credits

Undergraduate Credits

Only preapproved undergraduate credits may be included on a plan of study; see Section 2.3 (Undergraduate Credit Hours).

Transfer Credits

A maximum of six graduate-level credit hours earned at regional campuses of Purdue University or at an ABET-accredited university may be applied toward the MSSWE and entered on the Master's plan of study. However, regional campus courses or transfer courses may not be used to satisfy the core course requirement.

All courses transferred:

- Must be relevant graduate-level courses.
- Must have been completed with a grade of B- or better.
- Must not have been used to earn another degree.

Grades from transfer courses are not included in computing the grade point average.

Excess Course Credits

Up to twelve credit hours of graduate-level courses taken at the West Lafayette (WL) campus of Purdue before a student was admitted to the ECE Master's program may be applied toward the MSSWE and entered on the Master's plan of study. Allowed courses include those taken:

- As excess undergraduate-degree credit.
- In non-degree status.
- While seeking a degree in another Purdue department or school, if you subsequently request to transfer to ECE.
- While seeking a degree in another Purdue department or school, if you subsequently request dual-degree status in ECE.

- For dual-degree students seeking a PhD in another Purdue department or school and a Master's degree in ECE, the ECE Master's degree plan of study may not contain any courses offered by or dual-listed with the student's other department or school.
- Students working toward two Master's degrees at Purdue may double-count up to 12 credit hours on their plans of study.

Special Approval Requirements

Without exception, all transfer and excess course credits used on the Master's plan of study must be specially approved by the faculty advisor and by the ECE Associate Head of Graduate and Professional Programs.

Steps to follow in requesting approval to include such credits on the Master's plan of study are:

- a) Add the course to your plan of study.
- b) If a transfer course or a non-ECE course taken at Purdue, show a copy of the catalog description of the course and provide the catalog description to the ECE Graduate Office.

If you are transferring a course from another university, the ECE Graduate Office will also require an original transcript showing the grade earned and a statement from an official at the university where the course was taken certifying that the course was not used to fulfill requirements for any other degree.

5 Course Registration

5.1 First-Semester Registration

Incoming ECE graduate students must complete the online ECE orientation to obtain their registration PIN. General guidance on selecting courses is included in the orientation; students can also reach out to faculty members in their area to seek guidance on selecting courses.

Registration instructions: Detailed registration instructions are available in the [MSSWE Student Guide](#).

Confirming enrollment: Each semester, you must confirm your enrollment in myPurdue. If you do not confirm your enrollment, your registration will be cancelled, and you will need to register again. You might have to pay fees in advance of re-registering and may also be required to have signatures of instructors to re-enter your registration

5.2 Subsequent Semester Registrations

We encourage you to select your courses and to register as early as possible, since decisions to cancel low-enrollment courses may affect your course options.

Fall registration: Advanced registration for the Fall semester and Summer session begins around March 15 and ends respectively on the second Monday of Fall classes and the Friday before Summer session begins.

Spring registration: Registration for the Spring semester begins around October 15 and ends on the second Monday of Spring classes.

All current ECE graduate students must register and pay their tuition and fees during the registration period. Note that late registration incurs a substantial penalty fee.

Candidate Survey: If this is your final semester, complete the Candidate Survey you receive by email to be registered as a candidate. If you are not certain that you will finish your degree requirements, you are still advised to register as a candidate.

If you are not on the candidates' list, you will not graduate, even if you have completed all requirements.

After you have registered, check myPurdue to verify that your registration is correct. Report any errors to the ECE Graduate Office.

5.3 Academic Loads

To qualify for full-time student status in a Fall or Spring semester, you must satisfy one of the following criteria:

- Be registered for a minimum of 8 credit hours.
- Hold a research or teaching assistantship (1/4 time or greater) and be registered for at least 6 credit hours.

All international students must be full-time to maintain their visa status; direct questions to [Purdue ISS](#).

ECE teaching assistants (TAs) may register for a maximum of 9 credit hours of non-thesis coursework.

As previously noted, the requirement for the MSSWE is 30 academic credit hours. International students registered for six credits and who hold an assistantship are considered full-time for visa purposes only.

5.4 Dropping and Adding Courses

To drop or add a course, see the instructions in the [MSSWE Student Guide](#).

Subsequently, be sure to confirm that a dropped or added course has been officially recorded by checking your registration in myPurdue.

Dropped courses and grades:

- Courses dropped during the first two weeks of classes will not appear on your permanent record.
- Courses dropped after Week 2 will be recorded as a “W” grade on your permanent record.
 - A “W” simply records the fact that the student withdrew after the second week of the semester.

“W” grades are recorded on your permanent record. More information on Purdue grading systems is available here: [Grading Systems](#)

Adding Courses

Courses added during weeks 2 through 4 require the approval and signature of the instructor and personnel in the ECE Graduate Office.

Courses may be added during weeks 5 through 9, but only under extraordinary circumstances. Courses added after the fourth week require the approval and signature of the instructor and the ECE Associate Head of Graduate and Professional Programs and the head of the department where the course is offered for non-ECE courses.

Short courses: Courses that run less than 16 weeks have different drop/add deadlines. See the [schedule](#) of drop/add dates for these courses or contact the ECE Graduate Office for assistance.

6 Continuation for the ECE PhD

To continue graduate work toward a doctorate degree after completion of the Master's degree, a student must be admitted to the ECE PhD program.

Admission is based on evaluation of the student's potential for success at the PhD level. The GPA of a typical successful applicant is 3.6 or higher.

Application forms for admission to the PhD program are available in the ECE Graduate Office and should be filed at the beginning of the final semester of the student's Master's program.

7 Petitions to the Graduate Committee

All graduate students have the right to petition for exceptions to any existing rule if they feel that the circumstances are sufficiently unusual to warrant special consideration.

The first step is to request an appointment with the ECE Associate Head of Graduate and Professional Programs to see if a resolution can be found at that level. If not, the student may file a petition with the ECE Graduate Committee. The petition is to be delivered in writing to the Chair of the Graduate Committee and is to contain the approval (or disapproval) of each member of the student's advisory committee or faculty advisor.

Appendix A: Mathematics Requirement

The following courses have been approved for meeting the mathematics requirement.

Mathematics Courses

- Any 500- and 600-level math courses (MA), except seminar courses and teacher training courses

Statistics Courses

- Any 500- and 600-level statistics courses (STAT), except seminar courses

Computer Science Courses

- CS 51400, Numerical Analysis
- CS 51500, Numerical Linear Algebra
- CS 52000, Computational Methods in Analysis
- CS 61400, Numerical Solution of Ordinary Differential Equations
- CS 61500, Numerical Solution of Partial Differential Equations

Physics Courses

- Phys 60000, Methods of Theoretical Physics I
- Phys 60100, Methods of Theoretical Physics II

Note: Faculty-initiated requests for changes or exceptions to the above will be considered by the Graduate Committee after approval by the appropriate area. Student-initiated requests must follow the same procedure, with the additional first step of approval by the student's major professor.

Appendix B: English Requirement

Any one of the following methods may be used to fulfill the English requirement:

- Score a four or higher on the GRE Writing Assessment.
- Score 22 or higher on the Writing section of the Internet-Based TOEFL (iBT).
- Score 6 or higher on the Writing section of the IELTS.
- Pass [ENGL 62100, Written Communication for International Graduate Students](#), offered at Purdue University, with a grade of Pass (“P”).
- Successfully completed a one-semester-long composition course equivalent to ENGL 62100 or ENGL 10600 or 10800 from an English-medium university with a grade of B or better.
 - The ECE Graduate Office may require you to provide a course description or additional information about the course.

Appendix C: Completing the Master's Plan of Study

The information provided below may be helpful when filling out your plan of study in myPurdue. See the [MSSWE Student Guide](#) for a link to step-by-step plan-of-study instructions.

Research area: The space for indicating the research area may be filled in with a word or words describing your area of interest, such as “Embedded Systems” or “Cybersecurity.” This is optional, and you may choose to leave it blank.

Concentration: Students in the MSSWE program do not have a concentration.

Courses/grades not included: Do not include any of the following on the plan of study:

- Courses used to fulfill the departmental English requirement.
- Courses with Pass/No pass grades.

Adding courses: For each course, use the appropriate link in the plan of study generator:

- Current or past Purdue courses.
- Transfer/undergraduate excess courses. See [Subsection 4.3, Excess Course Credits](#).
- Future Purdue courses.

Math courses: See the degree requirements in [Section 2](#). Indicate these as related area courses on your plan of study. For a list of approved courses, see [Appendix A](#).

Course titles: Be sure that course titles on the plan of study match those on your transcripts, especially on experimental courses (ECE 59500 and ECE 69500), Advanced ECE Projects (ECE 69600), and Directed Reading in ECE (ECE 69700).

Courses offered by more than one department: Courses that are offered by more than one department must appear with the number and title under which they were taken.

B or better: Do not mark that a “B” or better is required for any course on your plan of study. This is not a requirement for you for any course.

Transfer credits: Courses transferred from other schools should be listed on the plan of study with the same title and number as on the transcript from the school at which they were taken. Do not use the equivalent number from a Purdue course.

Faculty advisor: Plans of study for MSSWE students will be signed by the ECE Associate Head of Teaching and Learning.

Draft review: Submit the plan of study as a “draft” for review by the ECE graduate office staff. Once approved as a draft, we will instruct you to submit the plan of study as “final.”