

# ELECTRICAL AND COMPUTER ENGINEERING: RESEARCH, M.S.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (<http://guide.wisc.edu/graduate/#policiesandrequirements>), in addition to the program requirements listed below.

### NAMED OPTION REQUIREMENTS MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	No

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW–Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

#### Requirement Detail

Minimum Credit Requirement

Minimum Residence Credit Requirement

Minimum Graduate Coursework Requirement 15 credits must be graduate-level coursework. Details can be found in the Graduate School's Minimum Graduate Coursework (50%) policy (<https://policy.wisc.edu/library/UW-1244>).

Overall	3.00 GPA required.
Graduate GPA Requirement	This program follows the Graduate School's GPA Requirement policy ( <a href="https://policy.wisc.edu/library/UW-1203">https://policy.wisc.edu/library/UW-1203</a> ).
Other Grade Requirements	1. A grade of B or better in any course is acceptable. 2. A grade of BC in an E C E course is acceptable, provided the total cumulative GPA for E C E courses is greater than or equal to 3.00. 3. A grade of BC or C in a non-E C E course is acceptable only if approved by the Graduate Committee.
Assessments and Examinations	Students must complete either a thesis or project. Details about these two paths can be found below.
Language Requirements	Non-native speakers of English who enroll in the M.S. program must take the ESLAT test on arrival at the university and then take any recommended courses based on the exam results. In addition, if a student's advisor believes that his or her technical writing ability needs improvement, the student may be required to undertake remedial work.

### REQUIRED COURSES

#### Degree Credit Requirement:

UW-Madison Graduate School policy (<https://grad.wisc.edu/documents/minimum-graduate-degree-credit-requirement/>) states that the M.S. degree requires at least 30 credits of courses (numbered 300 or above, no audits or pass-fail) completed as a graduate student at UW-Madison.

The E C E department requires 30 credits for an M.S. degree and does not count E C E courses numbered 300-399 toward M.S. or Ph.D. requirements.

#### Research Option MS Degree Paths

Students must choose one of two distinct paths of study in order to fulfill the requirements for the E C E M.S. research option degree: Thesis or Project.

#### Thesis Path

To fulfill the requirements of the Thesis Path, the student must earn 30 graduate credits, attained with acceptable grades as defined on the Policies tab. Of these 30 credits, at least 15 must be in E C E Courses numbered 400 or higher, and at least 15 must be in courses numbered 700 or higher. Only graduate courses, namely those courses listed or approved for listing in the Graduate School Bulletin are applicable for graduate credit, with the exceptions that courses numbered 300-399 in E C E and E C E 702 Graduate Cooperative Education Program are not acceptable. E C E 890 Pre-Dissertator's Research and E C E 990 Dissertator's Research are not applicable to the M.S. degree.

Of the 30 credits, a minimum of 3 and a maximum of 9 credits must be in E C E 790 Master's Research. These E C E 790 credits are applicable toward both the 15 E C E credit requirement and the courses numbered 700+ requirement. The combined number of credits in E C E 790, E C E 699 Advanced Independent Study, and E C E 999 Advanced Independent Study applied toward the degree may not exceed 9.

At the conclusion of the research program, a thesis must be prepared. If the thesis is formally defended, then a thesis committee must consist of at least 3 members, 2 of whom must be graduate faculty or former graduate faculty up to one year after resignation or retirement. If there is no formal

defense, the thesis only needs to be approved by the student's graduate faculty advisor.

If depositing through Memorial Library, the thesis must: 1) conform to Graduate School and library formats (<https://grad.wisc.edu/current-students/masters-guide/#what-you-need-to-do>), and 2) be filed with the Memorial Library where it is cataloged and stacked for future reference (if required by the master's thesis committee). If submitting to Minds@UW, an electronic copy must be sent to the E C E Graduate Student Services Coordinator, who will deposit it into Minds@UW, Department of Electrical and Computer Engineering Thesis Collection. The Minds@UW system (<https://minds.wisc.edu/>) will provide a permanent URL, safe long-term archiving and is indexed by Google, Google Scholar and other specialty academic search engines.

At the conclusion of the thesis, all grades of P (Progress) and I (Incomplete) in E C E 790 Master's Research are changed to either S (Satisfactory) or U (Unsatisfactory) by the advisor. In the final semester, the student is required to check in with the E C E Graduate Student Services Coordinator to start the degree warrant process by the announced deadline.

### **Project Plan**

The Project Plan consists of the same credit and course requirements as the Thesis Plan. Under this plan, the student must perform a research project in consultation with a faculty advisor. At the conclusion of the project, a report is prepared. The research project is generally more limited in scope than a thesis and typically is not awarded as many credits. The report need not conform to Graduate School and library formats, but it must be typewritten. The student's advisor must approve the report. No library or Minds@UW copy is required, but a copy may be requested by the faculty. In the final semester, the student is required to check in with the E C E Graduate Student Services Coordinator to start the degree warrant process by the announced deadline

### **Seminar Requirement (E C E 610)**

All on-campus E C E graduate students must register for E C E 610 Seminar in Electrical and Computer Engineering during their first Fall semester of graduate studies. MS-degree seeking students must take 1 credit of E C E 610 in the Fall semester of which they are entering the program. Students with a course conflict with E C E 610 can defer taking the seminar by one year provided their faculty advisor agrees.

The purpose of E C E 610 is to prepare students for success in graduate school and expose them to areas within E C E as well as related fields outside of E C E, such as biotechnology, physics, computer science, mathematics, or business. Electrical and Computer Engineering is very interdisciplinary in nature, and so it is important that students be aware of advanced research and development in areas other than their own.