ELECTRICAL ENGINEERING, M.S.

INTRODUCTION TO COE AND ECE
Master’s students in the College of Engineering (COE) are among an elite group of people who have chosen to advance their education at one of the premier engineering colleges in the country. The academic programs in UW–Madison’s College of Engineering are highly ranked, and our faculty are widely recognized as leaders in their fields. Here you will find a community in which you will excel. You will find faculty, staff, and peer students who are supportive and committed to your success. You will find rigorous coursework that will prepare you to achieve your goals. You will experience an environment highly conducive to collaboration—and you will meet faculty with a broad range of research interests and connections both on campus and around the world.

In partnership with our students, it is the mission of the ECE department to:

- Educate and inspire future leaders who contribute to society through the creation, application, and transfer of electrical and computer engineering knowledge.
- Expand knowledge through research into new technologies, design methods, and analysis techniques.
- Serve the state of Wisconsin, our nation, and the world with electrical and computer engineering expertise.

ECE M.S. DEGREE OPTIONS
ECE offers four master’s degree named option programs in the Electrical Engineering M.S.:

- **Research**—traditional two-year master’s program culminating in a thesis or research project
- **Professional**—accelerated, course-based master’s program with the opportunity to choose a specialty area
- **Signal Processing and Machine Learning** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-signal-processing-machine-learning-ms/#text](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-signal-processing-machine-learning-ms/#text))—accelerated, course-based master’s program tailored to the area of signal processing and machine learning
- **Power Engineering** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-power-engineering-ms/#text](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-power-engineering-ms/#text))—online, off-campus program in power engineering designed for working professionals

ADMISSIONS
Students apply to the Master of Science in Electrical Engineering through one of the named options:

- **Research**
- **Professional**
- **Signal Processing and Machine Learning** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-power-engineering-ms/#text](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-power-engineering-ms/#text))

FUNDING

GRADUATE SCHOOL RESOURCES
Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information ([https://grad.wisc.edu/funding](https://grad.wisc.edu/funding)) is available from the Graduate School. Be sure to check with your program for individual policies and processes related to funding.

PROGRAM RESOURCES
Funding information for each named option is available on the corresponding pages:

- **Research**
- **Professional**
- **Signal Processing and Machine Learning** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-signal-processing-machine-learning-ms/#text](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-signal-processing-machine-learning-ms/#text))
- **Power Engineering** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-power-engineering-ms/#fundingtext](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/electrical-engineering-power-engineering-ms/#fundingtext)) (Online)

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS
Review the Graduate School minimum academic progress and degree requirements ([http://guide.wisc.edu/graduate/#policiesandrequirementstext](http://guide.wisc.edu/graduate/#policiesandrequirementstext)), in addition to the program requirements listed below.

MAJOR REQUIREMENTS
Note: The major is currently non-admitting. Students are admitted through one of the named options (sub-majors) below (p. 2).

MODE OF INSTRUCTION

<table>
<thead>
<tr>
<th>Mode of Instruction</th>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
<th>Hybrid</th>
<th>Accelerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Mode of Instruction Definitions

**Evening/Weekend**: These programs are offered in an evening and/or weekend format to accommodate working schedules. Enjoy the advantages of on-campus courses and personal connections, while keeping your day job. For more information about the meeting schedule of a specific program, contact the program.

**Online**: These programs are offered primarily online. Many available online programs can be completed almost entirely online with all online programs offering at least 50 percent or more of the program work online. Some online programs have an on-campus component that is often designed to accommodate working schedules. Take advantage of the convenience of online learning while participating in a rich, interactive learning environment. For more information about the online nature of a specific program, contact the program.
Hybrid: These programs have innovative curricula that combine on-campus and online formats. Most hybrid programs are completed on-campus with a partial or completely online semester. For more information about the hybrid schedule of a specific program, contact the program.

Accelerated: These on-campus programs are offered in an accelerated format that allows you to complete your program in a condensed time-frame. Enjoy the advantages of on-campus courses with minimal disruption to your career. For more information about the accelerated nature of a specific program, contact the program.

CURRICULAR REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Credit Requirement</td>
<td>30 credits</td>
</tr>
<tr>
<td>Minimum Residence Credit Requirement</td>
<td>16 credits</td>
</tr>
<tr>
<td>Minimum Graduate Coursework Requirement</td>
<td>Half of degree coursework must be completed graduate-level coursework; courses with the Graduate Level Coursework attribute are identified and searchable in the university's Course Guide.</td>
</tr>
<tr>
<td>Overall Graduate GPA Requirement</td>
<td>3.00 GPA required.</td>
</tr>
<tr>
<td>Other Grade Requirements</td>
<td>See individual named option page in Guide for more information on grade requirements.</td>
</tr>
<tr>
<td>Assessments and Examinations Requirements</td>
<td>See individual named option page in Guide for more information on assessment and examination requirements.</td>
</tr>
<tr>
<td>Language Requirements</td>
<td>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.</td>
</tr>
</tbody>
</table>

REQUIRED COURSES

Select a named option (p. 2) for courses required.

NAMED OPTIONS (SUB-MAJORS)

A named option is a formally documented sub-major within an academic major program. Named options appear on the transcript with degree conferral.

View as list

View as grid

- ELECTRICAL ENGINEERING: PROFESSIONAL, M.S. (HTTP://GUIDE.WISC.EDU/GRADUATE/ELECTRICAL-COMPUTER-ENGINEERING/ELECTRICAL-ENGINEERING-MS/ELECTRICAL-ENGINEERING-PROFESSIONAL-MS)

POLICIES

GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (https://grad.wisc.edu/acadpolicy) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

MAJOR-SPECIFIC POLICIES

GRADUATE PROGRAM HANDBOOK

The Graduate Program Handbook (https://www.engr.wisc.edu/department/electrical-computer-engineering/academics/ece-graduate-student-handbooks) is the repository for all of the program’s policies and requirements.

PRIOR COURSEWORK

Graduate Work from Other Institutions

With program approval, students are allowed to count graduate coursework from other institutions toward the minimum graduate degree credit requirement and the minimum graduate coursework (50%) requirement. No credits from other institutions can be counted toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission to a master's degree is not allowed to satisfy requirements.

UW–Madison Undergraduate ¹

With program approval, up to 7 credits from UW–Madison numbered 400 or above can be counted toward the minimum graduate degree credit requirement. Up to 7 credits of ECE courses numbered 700 or above can be counted toward the
minimum graduate coursework (50%) requirement. No credits can be counted toward the minimum graduate residence credit requirement.

With program approval, students may count up to 7 credits of undergraduate coursework from a bachelor of science degree in Electrical Engineering, Computer Engineering, Electrical and Computer Engineering, Electrical Engineering and Computer Science, or Computer Science from an ABET-accredited program at other institutions (not UW-Madison) toward fulfillment of minimum degree requirements.

Courses numbered 300 or above may be counted towards the minimum graduate degree credit requirement and courses numbered 700 or above may be counted towards the minimum graduate coursework (50%) requirement. No credits from other institutions can be counted toward the minimum graduate residence credit requirement. Coursework earned five or more years prior to admission is not allowed to satisfy requirements.

The department also accepts undergraduate credit from non-UW ABET-accredited institutions. See policy language above for details.

**UW–Madison University Special**

With program approval, students are allowed to count up to 9 credits of coursework numbered 400 or above taken as a UW–Madison University Special student toward the minimum graduate residence credit requirement, and the minimum graduate degree credit requirement. Courses numbered 700 or above taken as a UW–Madison Special student toward the minimum graduate coursework (50%) requirement. Coursework earned five or more years prior to admission is not allowed to satisfy requirements.

**PROBATION**

Students must be in good academic standing with the Graduate School, their program, and their advisor. The Graduate School regularly reviews the record of any student who received grades of BC, C, D, F, or I in graduate-level courses (300 or above), or grades of U in research and thesis. This review could result in academic probation with a hold on future enrollment, and the student may be suspended from graduate studies.

The Graduate School may also put students on probation for incompletes not cleared within one term. All incomplete grades must be resolved before a degree is granted.

The status of a student can be one of three options:

1. Good standing (progressing according to standards; any funding guarantee remains in place).
2. Probation (not progressing according to standards but permitted to enroll; loss of funding guarantee; specific plan with dates and deadlines in place in regard to removal of probationary status).
3. Unsatisfactory progress (not progressing according to standards; not permitted to enroll, dismissal, leave of absence or change of advisor or program).

A semester GPA below 3.0 will result in the student being placed on academic probation. If a semester GPA of 3.0 is not attained during the subsequent semester of full time) the student may be dismissed from the program or allowed to continue for 1 additional semester based on advisor appeal to the Graduate School.

**ADVISOR / COMMITTEE**

New students in the SPML, Professional, and Power Engineering named options are assigned an advisor by the program. New students in the Research named option must declare an advisor by the end of the second week of classes in the first semester.

**CREDITS PER TERM ALLOWED**

15 credits

**TIME CONSTRAINTS**

Master’s degree students who have been absent for five or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

**OTHER**

Funding is not guaranteed and applicants should be prepared to fund their degree. The department awards a limited number of research assistantships, teaching assistantships, project assistantships, and fellowships each year to students in the Research named option. Students in the online Power Engineering program, the accelerated Signal Processing and Machine Learning program, and the accelerated Professional program are not permitted to accept assistantships.

**PROFESSIONAL DEVELOPMENT**

**GRADUATE SCHOOL RESOURCES**

Take advantage of the Graduate School’s professional development resources (https://grad.wisc.edu/pd) to build skills, thrive academically, and launch your career.

**DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING RESOURCES**

UW-Madison, the College of Engineering, and ECE have an abundance of professional development opportunities for students to take advantage of in order to better prepare themselves for internships and job positions during and following their education. First of all, the ECE Department strongly encourages students to utilize the UW-Madison Graduate School’s professional development resources (https://grad.wisc.edu/professional-development). Additionally, ECE provides unique opportunities throughout the year for students to attend and participate in various lectures, workshops, and trainings. The ECE Graduate Student Association (GSA) also organizes professional development opportunities for fellow students. Students are made aware of events and opportunities via email and other media communications.

**LEARNING OUTCOMES**

1. Demonstrate a strong understanding of mathematical, scientific, and engineering principles in the field.
2. Demonstrate an ability to formulate, analyze, and independently solve advanced engineering problems.
3. Apply the relevant scientific and technological advancements, techniques, and engineering tools to address these problems.
4. Recognize and apply principles of ethical and professional conduct.

PEOPLE

PROFESSORS, ASSISTANT PROFESSORS, AND ASSOCIATE PROFESSORS

Anderson, David T. (https://directory.engr.wisc.edu/ece/Faculty/Anderson_David)
Behdad, Nader (https://directory.engr.wisc.edu/ece/Faculty/Behdad_Nader)
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Venkataramanan, Giri (https://directory.engr.wisc.edu/ece/Faculty/Venkataramanan_Giri)
Wendt, Amy E. (https://directory.engr.wisc.edu/ece/Faculty/Wendt_Amy)
Yu, Zongfu (https://directory.engr.wisc.edu/ece/Faculty/Yu_Zongfu)

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Armstrong, Carter
Blasko, Vladimir

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Milicic, Srdjan (https://directory.engr.wisc.edu/ece/Faculty/Milicic_Srdjan)

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Brar, Victor (Physics)
Gupta, Mohit (Computer Sciences)
Hernando, Diego (Radiology)
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(Mechanical Sciences)
(Mechanical Sciences)
(Mechanical Sciences)
(Mechanical Sciences)
Varghese, Tomy (https://directory.engr.wisc.edu/bme/Faculty/Varghese_Tomy) (Medical Physics)

**STAFF**

For a listing of current staff members in the Department of Electrical and Computer Engineering, please visit the ECE website (https://directory.engr.wisc.edu/ece/staff).