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.

The vision of the ECE department is to improve the world through global leadership in electrical and computer engineering research, education, technology transfer, and service to society.

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 that lead to the M.S. Electrical Engineering degree:

• 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.
• Machine Learning and Signal Processing—accelerated, course-based master’s program tailored to the area of machine learning and signal processing.
• Power Engineering (http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms/#text) (Online)

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/) is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

PROGRAM RESOURCES

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

• Research
• Professional
• Machine Learning and Signal Processing
• Power Engineering (http://guide.wisc.edu/graduate/electrical-computer-engineering/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), in addition to the program requirements listed below.

MAJOR REQUIREMENTS

CURRICULAR REQUIREMENTS

<table>
<thead>
<tr>
<th>Requirements Detail</th>
<th>Minimum Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Requirement</td>
<td>30 credits</td>
</tr>
<tr>
<td>Minimum Residence Credit Requirement</td>
<td>See Named Options for policy information.</td>
</tr>
<tr>
<td>Minimum Graduate Coursework Requirement</td>
<td>See Named Options for policy information.</td>
</tr>
<tr>
<td>Overall Graduate GPA Requirement</td>
<td>3.00 GPA required.</td>
</tr>
</tbody>
</table>
Other Grade  See Named Options for policy information.
Requirements
Assessments  See Named Options for policy information.
and
Examinations
Language  See Named Options for policy information.
Requirements

**NAMED OPTIONS**

A named option is a formally documented sub-major within an academic major program. Named options appear on the transcript with degree conferral. Students pursuing the Master of Science in Electrical Engineering must select one of the following named options:

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- **ELECTRICAL ENGINEERING: MACHINE LEARNING AND SIGNAL PROCESSING, M.S.** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-machine-learning-signal-processing-ms/](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-machine-learning-signal-processing-ms/))
- **ELECTRICAL ENGINEERING: POWER ENGINEERING, M.S.** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-power-engineering-ms/](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-power-engineering-ms/))
- **ELECTRICAL ENGINEERING: PROFESSIONAL, M.S.** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-professional-ms/](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-professional-ms/))
- **ELECTRICAL ENGINEERING: RESEARCH, M.S.** ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-research-ms/](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-research-ms/))

**POLICIES**

Students should refer to one of the named options for specific policy information:

- Electrical Engineering: Power Engineering, M.S. ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-power-engineering-ms/](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-power-engineering-ms/))
- Electrical Engineering: Professional, M.S. ([http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-professional-ms/](http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-professional-ms/))

**PROFESSIONAL DEVELOPMENT**

**GRADUATE SCHOOL RESOURCES**

Take advantage of the Graduate School’s professional development resources ([https://grad.wisc.edu/pd/](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 Graduate School’s professional development resources ([https://grad.wisc.edu/professional-development/](https://grad.wisc.edu/professional-development/)). Engineering Career Services (ECS) ([http://ecs.wisc.edu/](http://ecs.wisc.edu/)) hosts multiple career fairs each semester where students can directly interact with prospective employers, schedule interviews, and find internships and full-time jobs. ECS also maintains job listings and hosts a variety of professional development workshops each semester. The ECE Department provides unique opportunities throughout the year for students to attend and participate in various lectures, workshops, and trainings. The ECE Graduate Student Association (GSA) organizes professional development opportunities for fellow students. Students are made aware of events and opportunities via email and other 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**

Susan Hagness (Chair)
David T. Anderson
Nader Behdad
John Booske
Dan Botez
Azadeh Davoodi
John A. Gubner (Associate Chair for Operations)
William N. Hitchon
Yu Hen Hu
Thomas Jahns
Hongrui Jiang
Irena Knezevic
Bernard Lesieutre (Associate Chair for Undergraduate Studies)*
Mikko Lipasti
Zhenqiang Ma
Luke J. Mawst
Robert Nowak
Parameswaran Ramanathan
William A. Sethares
Daniel van der Weide
Barry Van Veen (Associate Chair for Graduate and Online Studies)
Giri Venkataramanan
Amy E. Wendt

ASSOCIATE PROFESSORS
Mikhail Kats
Daniel Ludois
Paul H. Milenkovic
Umit Ogras
Bulent Sarlioglu
Zongfu Yu

ASSISTANT PROFESSORS
Joseph Andrews
Kassem Fawaz
Dominic Gross
Younghyun Kim
Bhuvana Krishnaswamy
Kangwook Lee
Chu Ma
Matthew Malloy (adjunct)
Dimitris Papailiopoulos
Line Roald
Joshua San Miguel
Eric Severson
Andreas Velten
Ramya Korlakai Vinayak
Ying Wang

FACULTY ASSOCIATES
Mark C. Allie
Eduardo Arvelo
Steven Fredette
Eric Hoffman
Joe Krachey
Srdjan Milicic
Pia Strampp (associate lecturer)

*For scholarship information, please contact Professor Lesieutre.

See also Electrical and Computer Engineering Faculty Directory (https://directory.engr.wisc.edu/ece/faculty/).