ELECTRICAL ENGINEERING, M.S.

The E C E department offers graduate studies leading to a master of science degree. The master's program emphasizes the enhancement of professional knowledge and research techniques.

The typical graduate course load is 8 to 12 credits per semester, which can include research credits. We encourage degree candidates to select major professors and begin research work soon after enrolling, preferably by the beginning of their second semester in residence.

The M.S. degree in Electrical Engineering is awarded for successful completion of any of one of three tracks designated by the E C E department. These tracks for an M.S. degree in Electrical Engineering include preparing a thesis, completing a project report, or a course-only option.

In order to be awarded an M.S. degree in Electrical Engineering, students must adhere to department and Graduate School policies and requirements. Please refer to the Graduate Student Handbook for more information.

There are two named options offered in the Electrical Engineering M.S. in the Department of Electrical and Computer Engineering: Power Engineering (http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-power-engineering-ms/#text) (an online, off-campus program) and Signal Processing and Machine Learning (http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-ms/electrical-engineering-signal-processing-machine-learning-ms/#text) (a 12-month accelerated program that is on campus).

ADMISSIONS

An applicant must have a bachelor’s degree from a regionally accredited U.S. institution or a comparable degree from an international institution. International applicants can find specific information for their country on the Graduate School Admission Requirements (http://grad.wisc.edu/admissions/requirements) page. The department welcomes applications from scientific, engineering, and mathematical disciplines other than E C E.

Admission Requirements:

- A grade point average of 3.0 (4.0 basis) is the minimum requirement for admission consideration. Applicants from an international institution must demonstrate strong academic achievement comparable to a 3.0. The Graduate School will use your institution’s grading scale. Please do not convert your grades to a 4.0 scale.
- A submitted online application is required, consisting of:
  - your resume/CV;
  - a statement of purpose (see the guidelines (https://grad.wisc.edu/apply/prepare) provided by the Graduate School);
  - an uploaded transcript; and
  - payment of the one-time application fee of $75.

- Applicants must also obtain three letters of recommendation for consideration.
- Graduate Record Exam (GRE) general test scores are required for all applicants. Please send your scores electronically via ETS to institution code 1846. UW undergraduate students, specifically those who have a B.S. degree in Electrical Engineering or Computer Engineering, may be exempt from the GRE requirement. Please inquire with the E C E Graduate Admissions Team at ecegradadmission@engr.wisc.edu.
- Applicants whose native language is not English must provide an English proficiency score. There are a few situations in which applicants are exempt from this requirement. Please see the Graduate School’s English Proficiency Requirement (https://grad.wisc.edu/apply/requirements), which also lists the exemptions and required method of delivery.

The application deadline for Fall is December 15 of the year prior to starting the program (ex: December 15, 2018 for Fall 2019). There are no Spring or Summer admission cycles. Only completed applications, including supportive materials, by the application deadline are guaranteed consideration. Please note that it is highly advised to take the GRE and TOEFL/IELTS tests well in advance of the deadline to ensure time for receiving and processing the scores.

If you have any admissions questions, please contact the E C E Graduate Admissions team at ecegradadmission@engr.wisc.edu.

GRADUATE SCHOOL ADMISSIONS

Graduate admissions is a two-step process between academic degree programs and the Graduate School. Applicants must meet requirements of both the program(s) and the Graduate School. Once you have researched the graduate program(s) you are interested in, apply online (https://grad.wisc.edu/admissions).

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 processes related to funding.

PROGRAM RESOURCES

FINANCIAL SUPPORT

Research Assistantships

Students should contact professors in their area of interest. Professors decide whom they will appoint on their research grants.

Teaching Assistantships

Current graduate students may apply to teaching assistantship or hourly grader positions at the E C E TA/grader portal: https://www.aims.wisc.edu/tagrader/Default.aspx Non-native English speakers are required to pass the SPEAK Test http://www/english.wisc.edu/esl/speak.htm at the English as a Second Language Program on campus.
Students wishing to take the SPEAK Test should contact the E C E TA Coordinator via e-mail to register for the exam.

**Project Assistantships**
There are a few project assistant opportunities on campus. Announcements of openings are posted on TA/PA bulletin boards in Engineering Hall and on the UW Job Center Web Page. [www.aims.wisc.edu/tagrader/Default.aspx](http://www.aims.wisc.edu/tagrader/Default.aspx). Current graduate students may apply to teaching assistantship or hourly grader positions at the E C E TA/grader portal: [https://www.jobcenter.wisc.edu/](http://www.jobcenter.wisc.edu/).

**Fellowships**
Information concerning fellowships is sent to graduate students through email from the department, faculty, and/or the Graduate School.

**Grader Positions**
Current graduate students may apply to teaching assistantship or hourly grader positions at the E C E TA/grader portal: [https://www.aims.wisc.edu/tagrader/Default.aspx](http://www.aims.wisc.edu/tagrader/Default.aspx).

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**REQUIREMENTS**

**MAJOR REQUIREMENTS**

**MODE OF INSTRUCTION**

<table>
<thead>
<tr>
<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>
</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.

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**CURRICULAR REQUIREMENTS**

**Minimum Credit Requirement**

<table>
<thead>
<tr>
<th>Minimum</th>
<th>30 credits</th>
</tr>
</thead>
</table>

| Minimum Residence Credit Requirement | 16 credits |

**Minimum Graduate Coursework Requirement**

| Minimum Graduate Coursework Credit Requirement | 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. |

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**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**

**MODE OF INSTRUCTION**

<table>
<thead>
<tr>
<th>Face to Face</th>
<th>Evening/Weekend</th>
<th>Online</th>
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<tr>
<td>Yes</td>
<td>No</td>
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<td>No</td>
</tr>
</tbody>
</table>

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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.

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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

Minimum Credit Requirement

Minimum Residence Credit Requirement

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.

Overall Graduate GPA Requirement

3.00 GPA required.

Other Grade Requirements

1. A grade of B or better in any graduate course is acceptable. A grade of S in E C E 790 Master’s Research or Thesis, E C E 890 Pre-Dissertator’s Research and E C E 990 Research or Thesis is acceptable.

2. A grade of BC in an E C E course is acceptable, provided the total cumulative GPA for graduate E C E courses is greater than or equal to 3.00.

3. A grade of C or lower in an E C E course is not acceptable.

4. A grade of BC or lower in an independent study course (E C E 699 Advanced Independent Study or E C E 999 Advanced Independent Study) or a grade of U in Research or Thesis (E C E 790, E C E 890 or E C E 990) is not acceptable.

5. A grade of BC or C in a non-E C E course is acceptable only if approved by the Graduate Committee.

6. If students are unable to complete coursework by the end of the term, an instructor may enter a temporary grade of I for incomplete. If students have not resolved all Incompletes by the end of the next fall or spring term in which they are enrolled, they are considered in bad standing by the Graduate School; however, the instructor may impose an earlier deadline. If not resolved within this time period, the grade is considered unsatisfactory and will remain an "I" unless changed to a final grade by the instructor. An unresolved I grade lapses to a grade of PI after five years. Students may be placed on probation or suspended from the Graduate School for failing to complete the work and receive a final grade in a timely fashion. Outstanding Incompletes must be resolved before a degree is granted.

4. A grade of BC or lower in an independent study course (E C E 699 Advanced Independent Study or E C E 999 Advanced Independent Study) or a grade of U in Research or Thesis is acceptable.

5. A grade of BC or lower in an independent study course (E C E 699 Advanced Independent Study or E C E 999 Advanced Independent Study) or a grade of U in Research or Thesis is acceptable.

5. A grade of BC or lower in an independent study course (E C E 699 Advanced Independent Study or E C E 999 Advanced Independent Study) or a grade of U in Research or Thesis is acceptable.

Assessments and Examinations

A thesis, a project, or a specified course sequence must be completed, depending upon which degree plan the student follows.

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

Students may select one of three tracks for completing the degree: Thesis, Project, and Course. Students in the Thesis and Project tracks have the same required coursework:

- At least 15 must be in E C E Courses 400-level 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 300-level E C E courses and E C E 702 are not acceptable. E C E 890 and E C E 990 Research or Thesis 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. These E C E 790 credits are applicable toward both the 15 E C E credit requirement and the 700-level requirement. The combined number of credits in E C E 790, E C E 699, and E C E 999 applied toward the degree may not exceed 9.

Students in the Course track have the following required coursework:
• At least 15 credits must be in E C E courses 400-level or higher, at least 15 credits must be in courses numbered 700 or higher, AND at least 9 credits must be in E C E courses numbered 700 or higher.
• At most, 6 credits may be in E C E 699 or E C E 999. E C E 702, E C E 790, E C E 890, and E C E 990 are not counted as part of these 30 credits.

Electrical and Computer Engineering courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>E C E 401</td>
<td>Electro-Acoustical Engineering</td>
<td>3</td>
</tr>
<tr>
<td>E C E 411</td>
<td>Introduction to Electric Drive Systems</td>
<td>3</td>
</tr>
<tr>
<td>E C E 412</td>
<td>Power Electronic Circuits</td>
<td>3</td>
</tr>
<tr>
<td>E C E 420</td>
<td>Electromagnetic Wave Transmission</td>
<td>3</td>
</tr>
<tr>
<td>E C E 427</td>
<td>Digital Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>E C E 431</td>
<td>Digital Signal Processing</td>
<td>3</td>
</tr>
<tr>
<td>E C E 432</td>
<td>Digital Signal Processing Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>E C E 434</td>
<td>Photonics</td>
<td>3</td>
</tr>
<tr>
<td>E C E/COMP SCI/ MATH 435</td>
<td>Introduction to Cryptography</td>
<td>3</td>
</tr>
<tr>
<td>E C E 436</td>
<td>Communication Systems I</td>
<td>3</td>
</tr>
<tr>
<td>E C E 437</td>
<td>Communication Systems II</td>
<td>3</td>
</tr>
<tr>
<td>E C E/M E 439</td>
<td>Introduction to Robotics</td>
<td>3</td>
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<td>E C E 440</td>
<td>Electromagnetic Fields and Waves</td>
<td>3</td>
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<td>E C E 445</td>
<td>Semiconductor Physics and Devices</td>
<td>3</td>
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<td>E C E 447</td>
<td>Applied Communications Systems</td>
<td>3</td>
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<tr>
<td>E C E 453</td>
<td>Embedded Microprocessor System Design</td>
<td>4</td>
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<td>E C E 454</td>
<td>Mobile Computing Laboratory</td>
<td>4</td>
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<tr>
<td>E C E/B M E 461</td>
<td>Mathematical and Computer Modeling of Physiological Systems</td>
<td>3</td>
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<td>E C E/B M E 462</td>
<td>Medical Instrumentation</td>
<td>3</td>
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<td>E C E/B M E 463</td>
<td>Computers in Medicine</td>
<td>3</td>
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<td>E C E 466</td>
<td>Electronics of Solids</td>
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<tr>
<td>E C E 489</td>
<td>Honors in Research</td>
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<td>E C E 491</td>
<td>Senior Design Project</td>
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<tr>
<td>E C E 504</td>
<td>Electric Machine &amp; Drive System Laboratory</td>
<td>2-3</td>
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<tr>
<td>E C E/COMP SCI 506</td>
<td>Software Engineering</td>
<td>3</td>
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<tr>
<td>E C E 511</td>
<td>Theory and Control of Synchronous Machines</td>
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<td>E C E 512</td>
<td>Power Electronics Laboratory</td>
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<td>E C E/COMP SCI/ I SY E 524</td>
<td>Introduction to Optimization</td>
<td>3</td>
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<tr>
<td>E C E/N E/ PHYSICS 525</td>
<td>Introduction to Plasmas</td>
<td>3</td>
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<tr>
<td>E C E/N E/ PHYSICS 527</td>
<td>Plasma Confinement and Heating</td>
<td>3</td>
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<tr>
<td>E C E/N E 528</td>
<td>Plasma Processing and Technology</td>
<td>3</td>
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<tr>
<td>E C E/COMP SCI 533</td>
<td>Image Processing</td>
<td>3</td>
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<td>E C E/COMP SCI/ M E 532</td>
<td>Matrix Methods in Machine Learning</td>
<td>3</td>
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<td>E C E 536</td>
<td>Integrated Optics and Optoelectronics</td>
<td>3</td>
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<td>E C E 537</td>
<td>Communication Networks</td>
<td>3</td>
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<tr>
<td>E C E/COMP SCI/ M E 539</td>
<td>Introduction to Artificial Neural Network and Fuzzy Systems</td>
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<tr>
<td>E C E 541</td>
<td>Analog MOS Integrated Circuit Design</td>
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<tr>
<td>E C E 542</td>
<td>Introduction to Microelectromechanical Systems</td>
<td>3</td>
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<td>E C E/CBE/ M S &amp; E 544</td>
<td>Processing of Electronic Materials</td>
<td>3</td>
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<tr>
<td>E C E 545</td>
<td>Advanced Microwave Measurements for Communications</td>
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<tr>
<td>E C E/PHYSICS 546</td>
<td>Lasers</td>
<td>2-3</td>
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<td>E C E 547</td>
<td>Advanced Communications Circuit Design</td>
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<td>E C E 548</td>
<td>Integrated Circuit Design</td>
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<td>E C E 549</td>
<td>Integrated Circuit Fabrication Laboratory</td>
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<td>E C E 551</td>
<td>Digital System Design and Synthesis</td>
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<tr>
<td>E C E/COMP SCI 552</td>
<td>Introduction to Computer Architecture</td>
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<td>E C E 553</td>
<td>Testing and Testable Design of Digital Systems</td>
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<td>E C E 554</td>
<td>Digital Engineering Laboratory</td>
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<td>E C E 555</td>
<td>Digital Circuits and Components</td>
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<td>E C E 556</td>
<td>Design Automation of Digital Systems</td>
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<td>E C E/M E 577</td>
<td>Automatic Controls Laboratory</td>
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<td>E C E 600</td>
<td>Seminar in Electrical and Computer Engineering</td>
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<td>E C E 601</td>
<td>Special Topics in Electrical and Computer Engineering</td>
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<td>E C E 610</td>
<td>Seminar in Electrical and Computer Engineering</td>
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<td>E C E 611</td>
<td>Introduction to Doctoral Research in Electrical &amp; Computer Engineering</td>
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<td>E C E 630</td>
<td>All of Signal Processing</td>
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<td>E C E/MATH 641</td>
<td>Introduction to Error-Correcting Codes</td>
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<td>E C E 699</td>
<td>Advanced Independent Study</td>
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<td>E C E/COMP SCI 707</td>
<td>Mobile and Wireless Networking</td>
<td>3</td>
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<td>E C E 711</td>
<td>Dynamics and Control of AC Drives</td>
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<td>E C E 712</td>
<td>Solid State Power Conversion</td>
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<td>E C E 713</td>
<td>Electromagnetic Design of AC Machines</td>
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<td>E C E 714</td>
<td>Utility Application of Power Electronics</td>
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<td>E C E 717</td>
<td>Linear Systems</td>
<td>3</td>
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<td>E C E 719</td>
<td>Optimal Systems</td>
<td>3</td>
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<tr>
<td>E C E 723</td>
<td>On-Line Control of Power Systems</td>
<td>3</td>
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<tr>
<td>E C E/N E/ PHYSICS 724</td>
<td>Waves and Instabilities in Plasmas</td>
<td>3</td>
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</tbody>
</table>
### Course Track 1

- **ECE/N E/PHYSICS 725** Plasma Kinetic Theory and Radiation Processes 3
- **ECE/N E/PHYSICS 726** Plasma Magnetohydrodynamics 3
- **ECE 729** Theory of Information Processing and Transmission 3
- **ECE 730** Modern Probability Theory and Stochastic Processes 3
- **ECE 731** Advanced Power System Analysis 3
- **ECE 734** VLSI Array Structures for Digital Signal Processing 3
- **ECE 735** Signal Synthesis and Recovery Techniques 3
- **ECE 736** Wireless Communications 3
- **ECE 738** Advanced Digital Image Processing 3
- **ECE/M E 739** Advanced Robotics 3
- **ECE 740** Electromagnetic Theory 3
- **ECE 741** Semiconductor Diode Lasers and other Optoelectronic Devices 3
- **ECE 742** Computational Methods in Electromagnetics 3
- **ECE 743** High-Power Diode Lasers and Amplifiers 3
- **ECE 744** Theory of Microwave Circuits and Devices 3
- **ECE 745** Solid State Electronics 3
- **ECE/PHYSICS 746** Quantum Electronics 3
- **ECE/PHYSICS 748** Linear Waves 3
- **ECE/N E/PHYSICS 749** Coherent Generation and Particle Beams 3
- **ECE/COMP SCI 750** Real-time Computing Systems 3
- **ECE 751** Embedded Computing Systems 3
- **ECE/COMP SCI 752** Advanced Computer Architecture I 3
- **ECE 753** Fault-Tolerant Computing 3
- **ECE/COMP SCI 755** VLSI Systems Design 3
- **ECE/COMP SCI 756** Computer-Aided Design for VLSI 3
- **ECE/COMP SCI 757** Advanced Computer Architecture II 3
- **ECE/COMP SCI/ EMA/E P/M E 759** Applications in Engineering 3
- **ECE/COMP SCI 761** Mathematical Foundations of Machine Learning 3
- **ECE/B M E 762** Biomedical Instrumentation 3
- **ECE/B M E 763** Projects in Computers in Medicine 3
- **ECE/CBE/MATH 777** Nonlinear Dynamics, Bifurcations and Chaos 3
- **ECE 790** Master’s Research or Thesis 1-9
- **ECE 817** Nonlinear Systems 3
- **ECE 821** Optimal Control and Variational Methods 3
- **ECE 830** Estimation and Decision Theory 3
- **ECE 841** Electromagnetic Radiation and Transmission 3
- **ECE/MATH 842** Topics in Applied Algebra 3
- **ECE 845** Transport in Semiconductor Devices 3
- **ECE/PHYSICS 848** Nonlinear Waves 3
- **ECE/COMP SCI/STAT 861** Theoretical Foundations of Machine Learning 3
- **ECE 901** Special Topics in Electrical and Computer Engineering 1-3
- **ECE/N E/PHYSICS 922** Seminar in Plasma Physics 1
- **ECE 999** Advanced Independent Study 1-3

### Electrical Engineering, M.S.

#### ECE 610 Seminar in Electrical and Computer Engineering seminar requirement

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

The purpose of ECE 610 is to expose students in their first semester of graduate school to various areas within ECE and to areas outside of ECE to which ECE has or could have connections, e.g., biotechnology, physics, mathematics, business, software. Electrical and Computer Engineering is very interdisciplinary in nature, and so it is important that students be aware of state-of-the-art research in areas other than their own.

#### Thesis Track 1

The **thesis track** consists of 30 semester hours of graduate credits and approval of a master's thesis based on independent research. Of these 30 credits, at least 15 must be in ECE courses 400 level 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 300-level ECE courses and ECE 702 are not acceptable. ECE 890 and ECE 990 are not applicable to the M.S. degree.

The combined number of credits in ECE 790, ECE 699, and ECE 999 Advanced Independent Study applied toward the degree may not exceed 9.

#### Project Track 1

The **project track** consists of 30 semester hours of graduate credits and approval of a limited scope project with a prepared report. Of these 30 credits, at least 15 must be in ECE courses 400 level 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 300-level ECE courses and ECE 702 are not acceptable. ECE 890 and ECE 990 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 ECE 790 Master’s Research or Thesis. These ECE 790 credits are applicable toward both the 15 ECE credit requirement and the 700-level requirement. The combined number of credits in ECE 790, ECE 699, and ECE 999 Advanced Independent Study applied toward the degree may not exceed 9.

#### Course Track 1

The **course track** consists of 30 semester hours of coursework. Of these, at least 15 credits must be in ECE courses 400 level or higher, at least 15...
credits must be in courses number 700 or higher, AND at least 9 credits must be in E C E courses numbered 700 or higher. At most, 6 credits may be in E C E 699 or E C E 999. E C E 702, E C E 790, E C E 890 and E C E 990 are not counted as part of these 30 credits. No thesis or project is required.

Footnotes
1. These tracks are internal to the program and represent different pathways a student can follow to earn this degree. Track names do not appear in the Graduate School admissions application, and they will not appear on the transcript.

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 conferred.

- Electrical Engineering: Power Engineering, M.S. (http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-power-engineering-ms)
- Electrical Engineering: Signal Processing and Machine Learning, M.S. (http://guide.wisc.edu/graduate/electrical-computer-engineering/electrical-engineering-signal-processing-machine-learning-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
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 E C E 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 to a master's degree is not allowed to satisfy requirements.

1. 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 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. All applications are automatically considered for department funding. 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.

LEARNING OUTCOMES
1. Demonstrate a strong understanding of mathematical, scientific, and engineering principles in the field.
2. Demonstrate an ability to formulate, analyze, and solve advanced engineering problems.
3. Demonstrate creative, independent problem solving skills.
4. Apply the latest scientific and technological advancements, advanced techniques, and modern engineering tools to these problems.
5. Recognize and apply principles of ethical and professional conduct.

PEOPLE
Faculty: Professors Booske (chair), Gubner (vice-chair), Anderson, Barmish, Behdad, Boston, Botez, Davoodi, DeMarco, Farrell, Fawaz, Hagness, Hitchen, Hu, Jahns, Jiang, Jog, Kats, Kim, Knezevic, Lesieutre, Lessard, Li, Lipasti, Ludois, Ma, Mawst, Milenkovic, Nowak, Papailiopoulos, Ramanathan, Roald, San Miguel, Sayeed, Sethares, Severson, Shohet, van der Weide, Van Veen, Velten, Venkataramanan, Wendt, Willett, Yu