# ELECTRICAL AND COMPUTER ENGINEERING: POWER ENGINEERING, MS

## 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.

# NAMED OPTION REQUIREMENTS MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
No	No	Yes	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	30 credits
Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	15 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: https://policy.wisc.edu/library/ UW-1244 (https://policy.wisc.edu/library/UW-1244/).

Overall	3.00 GPA required.
Graduate	Refer to the Graduate School: Grade Point Average
GPA	(GPA) Requirement policy: https://policy.wisc.edu/library/
Requirement	UW-1203 (https://policy.wisc.edu/library/UW-1203/).
Other Grade	In order for courses to count toward your master's degree,

Requirements students must satisfy the following grade and GPA requirements:

E C E Courses

- Grades of B or better are always acceptable.
- BC grades are acceptable if the cumulative GPA for graduate E C E classroom courses is equal to or greater than 3.0.
- Grades of C or lower are not acceptable.

Non-E C E Courses

- Grades of B or better are always acceptable.
- BC and C grades are acceptable if approved by the E C E Graduate Committee by way of an appeal.
- Any grade lower than a C is not acceptable.

Research and Independent Study Credits

- S grades are acceptable, while U grades are not.
- If it is letter-graded, only grades of B or better are acceptable.

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

Language n/a Requirements

### **REQUIRED COURSES**

Of the 30 credits required, a minimum of 21 credits must be Electrical and Computer Engineering (E C E (http://guide.wisc.edu/courses/e\_c\_e/)) courses numbered 400 and above. Of those 21 credits, at least 15 must come from the Power Engineering Course Options below, including at least 3 credits from courses numbered 500-599, and 6 credits from courses numbered 700 or above.

#### **Course Path**

A maximum of 3 credits in E C E 699 Advanced Independent Study and 3 credits in E C E 999 Advanced Independent Study are allowed. E C E 790 Master's Research or similar research courses may not be used to satisfy the 30-credit requirement.

#### **Thesis or Project Path**

Students must identify a faculty research advisor and complete a thesis or project paper under their direction. A minimum of 3 credits must be in E C E 790 Master's Research, and no more than 9 credits from any combination of E C E 699 Advanced Independent Study E C E 790 Master's Research or E C E 999 Advanced Independent Study may apply. A minimum of 15 credits of courses numbered 700 or above are required.

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#### **Power Engineering Course Options** Title Code

Choose at least 15 credits from the following courses, including at least 3 credits from courses numbered 500-599, and 6 credits from courses numbered 700 or above.

E C E 411	Introduction to Electric Drive Systems <sup>1</sup>	3
E C E 412	Power Electronic Circuits <sup>1</sup>	3
E C E 427	Electric Power Systems	3
E C E/M E 441	Kinematics, Dynamics, and Control of Robotic Manipulators	3
M E 446	Introduction to Feedback Control <sup>1</sup>	3
M E 447	Computer Control of Machines and Processes	3
E C E 504	Electric Machine & Drive System Laboratory	3
E C E 511	Theory and Control of Synchronous Machines	3
E C E 512	Power Electronics Laboratory	3
E C E/COMP SCI/ M E 532	Matrix Methods in Machine Learning	3
E C E 711	Dynamics and Control of AC Drives <sup>1</sup>	3
E C E 712	Solid State Power Conversion <sup>1</sup>	3
E C E 713	Electromagnetic Design of AC Machines	3
E C E 714	Utility Application of Power Electronics	3
M E 746	Dynamics of Controlled Systems	3
or E C E/M E 732	Dynamics of Controlled Systems	
M E 747	Advanced Computer Control of Machines and Processes	3
or E C E/M E 733	Advanced Computer Control of Machines and Processes	
E C E/COMP SCI/ E M A/E P/M E 759	High Performance Computing for Applications in Engineering	3
E C E 901	Special Topics in Electrical and Computer Engineering	1-3
<b>Research and Indep</b>	endent Study Courses	
Course Path students credits each of E C E take E C E 790.	may complete a maximum of 3 699 and E C E 999. They may not	

Students in this program cannot enroll concurrently in other undergraduate or graduate degree programs.

Credits

or E C E/M E 733	Advanced Computer Control of Machines and Processes	
E C E/COMP SCI/ E M A/E P/M E 759	High Performance Computing for Applications in Engineering	3
E C E 901	Special Topics in Electrical and Computer Engineering	1-3
<b>Research and Indep</b>	endent Study Courses	
Course Path students credits each of E C E take E C E 790.	s may complete a maximum of 3 699 and E C E 999. They may not	
Thesis/Project Path s credits of E C E 790 a combination of E C E	tudents must take a minimum of 3 and no more than 9 credits from any 699, E C E 790, or E C E 999.	
E C E 699	Advanced Independent Study	1-6
E C E 790	Master's Research	3-9
E C E 999	Advanced Independent Study	1-3

 $^{1\,}$  These courses may be completed via the Capstone Certificate in Power Conversion and Control (https://guide.wisc.edu/nondegree/capstone/ power-conversion-control-capstone-certificate/).

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval.