ELECTRICAL AND COMPUTER ENGINEERING: MACHINE LEARNING AND SIGNAL PROCESSING, 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
Yes	No	No	No	Yes

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 30 credits Credit Requirement Minimum 23 credits Residence Credit Requirement

Minimum	15 credits must be graduate-level coursework. Refer to
Graduate	the Graduate School: Minimum Graduate Coursework
Coursework	(50%) Requirement policy: https://policy.wisc.edu/library/
Requirement	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	1. A grade of B or better in any graduate course is
Requirements	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 BC or C in a non-E C E course is acceptable
	only if approved by the Graduate Committee.

Assessments A specified course sequence must be completed. and

Examinations

Language Non-native speakers of English who enroll in the MS Requirements 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

Code	Title	Credits
Required Seminar:		1
E C E 610	Seminar in Electrical and Computer Engineering ¹	
Hands-on project re	equirement. Choose one: ²	1-5
E C E 697	Capstone Project in Machine Learning and Signal Processing	
E C E 702	Graduate Cooperative Education Program	
At least one course	in Machine Learning:	3
E C E/COMP SCI/ M E 532	Matrix Methods in Machine Learning	
E C E/COMP SCI/ M E 539	Introduction to Artificial Neural Networks	
E C E/ COMP SCI 561	Probability and Information Theory in Machine Learning	
E C E/ COMP SCI 760	Machine Learning	
E C E/ COMP SCI 761	Mathematical Foundations of Machine Learning	
E C E/COMP SCI/ STAT 861	Theoretical Foundations of Machine Learning	
At least one course	in Signal Processing:	3
E C E 431	Digital Signal Processing	
E C E/ COMP SCI 533	Image Processing	
E C E 734	VLSI Array Structures for Digital Signal Processing	

1

	E C E 735	Signal Synthesis and Recovery Techniques				
	E C E 738	Advanced Digital Image Processing				
At	least 15 credits fr	om the following:	15			
	E C E 431	Digital Signal Processing				
	E C E 436	Communication Systems I				
	E C E 437	Communication Systems II				
	E C E/COMP SCI/ I SY E 524	Introduction to Optimization				
	E C E/COMP SCI/ M E 532	Matrix Methods in Machine Learning				
	E C E/ COMP SCI 533	Image Processing				
	E C E/COMP SCI/ M E 539	Introduction to Artificial Neural Networks				
	E C E/ COMP SCI 561	Probability and Information Theory in Machine Learning				
	ECE/ISYE 570	Ethics of Data for Engineers				
	E C E 601	Special Topics in Electrical and Computer Engineering (as approved by faculty advisor)				
	E C E 717	Linear Systems				
	E C E 719	Optimal Systems				
	E C E 729	Information Theory				
	E C E 730	Probability and Random Processes				
	E C E 734	VLSI Array Structures for Digital Signal Processing				
	E C E 735	Signal Synthesis and Recovery Techniques				
	E C E 736	Wireless Communications				
	E C E 738	Advanced Digital Image Processing				
	E C E/ COMP SCI 760	Machine Learning				
	E C E/ COMP SCI 761	Mathematical Foundations of Machine Learning				
	E C E/ COMP SCI 766	Computer Vision				
	E C E 817	Nonlinear Systems				
	E C E 830	Estimation and Decision Theory				
	E C E/COMP SCI/ STAT 861	Theoretical Foundations of Machine Learning				
	E C E 901	Special Topics in Electrical and Computer Engineering (as approved by faculty advisor, max of 3 credits)				
Ac	Iditional courses f	from the previous list, or up to	0-9			
9 0	9 credits of relevant coursework numbered 300					
or fə	or above in other departments with approval from faculty advisor ³					
. a	Typically in COMP SCI, MATH, STAT, or E P D					
	Up to 3 credits of independent study (such as F C F 699					
	or equivalent in other department)					

Total Credits

30

¹ All on-campus E C E graduate students must register for 1 credit of E C E 610 during their first semester of graduate studies. ² These courses are taken in Summer.

³ Please keep written communication (emails are acceptable) of approvals from your faculty advisor.

The following courses are not allowed: E C E 611 Introduction to Doctoral Research in Electrical & Computer Engineering or E C E 790 Master's Research, E C E 890 Pre-Dissertator's Research, E C E 990 Dissertator's Research.

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval. Students in this program cannot enroll concurrently in other undergraduate or graduate degree programs.