

# ELECTRICAL AND COMPUTER ENGINEERING GRADUATE MAJOR (MENG, MS, PHD)

## Graduate Areas of Concentration

*Analog and mixed signal; artificial intelligence and machine learning; communications and signal processing; computer systems; energy systems; materials and devices; RF/microwaves/optoelectronics*

The School of Electrical and Computer Engineering offers graduate programs leading to MEng, MS, and PhD degrees focusing on the major areas listed below. The MS and MEng programs provide advanced instruction beyond the undergraduate degree. They prepare students for careers in which a higher level of experience is required. The MEng degree is a course work-only degree with no required thesis or project report. The PhD program prepares students for work in government or industry research laboratories or careers at universities. Students are encouraged to develop programs of study in close cooperation with the faculty members in their areas of interest.

Graduate work is supported by the school's well-equipped laboratory facilities. Opportunities exist for graduate students to participate in many research projects sponsored by private industry and government agencies.

For more information, contact the EECS Graduate Program Coordinator, School of Electrical Engineering and Computer Science, OSU, Corvallis, OR 97331-5501; 541-737-3617; email: [eeecs.gradinfo@oregonstate.edu](mailto:eeecs.gradinfo@oregonstate.edu)

Additional information concerning courses, advising procedures, faculty, and many other aspects of the school may be found on the school's website (<http://eeecs.oregonstate.edu/>).

**Major Code: 3110**

## MEng

Code	Title	Credits
<b>Required Core</b> <sup>1,2</sup>		
Select 3 courses from the following:		11-12
ECE 520	ANALOG CMOS INTEGRATED CIRCUITS	
ECE 530	CONTEMPORARY ENERGY APPLICATIONS	
ECE 550	LINEAR SYSTEMS	
ECE 560	STOCHASTIC SIGNALS AND SYSTEMS	
ECE 570	HIGH PERFORMANCE COMPUTER ARCHITECTURE	
ECE 580	NETWORK THEORY	
ECE 590	ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS	
ECE 614	SEMICONDUCTORS	
<b>Engineering Electives</b>		
Graduate standalone credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee		20
<b>Other Electives</b>		
Courses chosen by the student which may include up to 6 credits from the following:		11-14
ECE 501	RESEARCH	
ECE 505	READING AND CONFERENCE	
<b>Total Hours</b>		<b>45</b>

## MS (Thesis)

Code	Title	Credits
<b>Required Core</b> <sup>1,3</sup>		
Select 3 courses from the following:		11-12
ECE 520	ANALOG CMOS INTEGRATED CIRCUITS	
ECE 530	CONTEMPORARY ENERGY APPLICATIONS	
ECE 550	LINEAR SYSTEMS	
ECE 560	STOCHASTIC SIGNALS AND SYSTEMS	
ECE 570	HIGH PERFORMANCE COMPUTER ARCHITECTURE	
ECE 580	NETWORK THEORY	
ECE 590	ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS	
ECE 614	SEMICONDUCTORS	
<b>Engineering Electives</b>		
Graduate standalone credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee		15
<b>Other Electives</b>		
Courses chosen by the student which may include up to 6 credits from the following:		6-10
ECE 501	RESEARCH	
ECE 505	READING AND CONFERENCE	
<b>Thesis</b>		
ECE 503	ECE MS THESIS	9-12
<b>Total Hours</b>		<b>45</b>

## MS (Project)

Code	Title	Credits
<b>Required Core</b> <sup>1,3</sup>		
Select 3 courses from the following:		11-12
ECE 520	ANALOG CMOS INTEGRATED CIRCUITS	
ECE 530	CONTEMPORARY ENERGY APPLICATIONS	
ECE 550	LINEAR SYSTEMS	
ECE 560	STOCHASTIC SIGNALS AND SYSTEMS	
ECE 570	HIGH PERFORMANCE COMPUTER ARCHITECTURE	
ECE 580	NETWORK THEORY	
ECE 590	ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS	
ECE 614	SEMICONDUCTORS	
<b>Engineering Electives</b>		
Graduate standalone credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee		15
<b>Other Electives</b>		
Courses chosen by the student which may include up to 6 credits from the following:		12-13
ECE 501	RESEARCH	
ECE 505	READING AND CONFERENCE	
<b>Project</b>		
ECE 506	PROJECTS	6
<b>Total Hours</b>		<b>45</b>

## PhD

Code	Title	Credits
<b>Required Core</b> <sup>1,3</sup>		
Select 3 courses from the following:		11-12
ECE 520	ANALOG CMOS INTEGRATED CIRCUITS	
ECE 530	CONTEMPORARY ENERGY APPLICATIONS	
ECE 550	LINEAR SYSTEMS	
ECE 560	STOCHASTIC SIGNALS AND SYSTEMS	
ECE 570	HIGH PERFORMANCE COMPUTER ARCHITECTURE	
ECE 580	NETWORK THEORY	

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ECE 590	ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS	
ECE 614	SEMICONDUCTORS	
<b>Engineering Electives</b>		
Graduate credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee		36
<b>Other Electives</b>		
Courses chosen by the student which may include up to 15 credits from the following:		0-25
ECE 601	RESEARCH	
ECE 605	READING AND CONFERENCE	
<b>Thesis</b>		
ECE 603	ECE PhD THESIS	30-60
<b>Total Hours</b>		<b>108</b>

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3 terms of ECE 507-001 (EECS Colloquium) with a minimum P grade in the first year of study. This seminar cannot be used toward the program of study

**Major Code: 3110**

**Prerequisite and Corequisite Coursework for Non-engineering Undergraduates**

MEng or MS students without undergraduate degrees in Electrical Engineering or Electrical and Computer Engineering must complete 1 course from at least four of the following topic areas:

Code	Title	Credits
<i>Topic Area 1</i>		
ECE 390	ELECTRIC AND MAGNETIC FIELDS	4
ECE 590	ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS	4
<i>Topic Area 2</i>		
ECE 322	ELECTRONICS I	3
ECE 422	CMOS INTEGRATED CIRCUITS I	4
ECE 520	ANALOG CMOS INTEGRATED CIRCUITS	4
<i>Topic Area 3</i>		
ECE 323	ELECTRONICS II	3
ECE 423	CMOS INTEGRATED CIRCUITS II	4
<i>Topic Area 4</i>		
ECE 351	SIGNALS AND SYSTEMS I	3
ECE 451	SYSTEMS DYNAMICS AND CONTROL	4
ECE 461	INTRODUCTION TO ANALOG AND DIGITAL COMMUNICATIONS	4
ECE 550	LINEAR SYSTEMS	4
<i>Topic Area 5</i>		
ECE 352	SIGNALS AND SYSTEMS II	3
ECE 462	DIGITAL COMMUNICATIONS AND CHANNEL CODING	4
ECE 464	DIGITAL SIGNAL PROCESSING	4
ECE 560	STOCHASTIC SIGNALS AND SYSTEMS	4
<i>Topic Area 6</i>		
ECE 375	COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE PROGRAMMING	4
ECE 471	ENERGY-EFFICIENT VLSI DESIGN	4
ECE 472	COMPUTER ARCHITECTURE	4
ECE 473	MICROCONTROLLER SYSTEM DESIGN	4
ECE 570	HIGH PERFORMANCE COMPUTER ARCHITECTURE	4

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An average GPA of at least 3.00 must be achieved over these three courses

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1 term of ECE 507-001 (EECS Colloquium) with a minimum P grade in the first year of study. This seminar cannot be used toward the program of study