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: eecs.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://eecs.oregonstate.edu/).

Major Code: 3110

MEng

<table>
<thead>
<tr>
<th>Code</th>
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<tr>
<td>Required Core 1,2</td>
<td>Select 3 courses from the following:</td>
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<tr>
<td>ECE 520</td>
<td>ANALOG CMOS INTEGRATED CIRCUITS</td>
<td>11-12</td>
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<td>ECE 530</td>
<td>CONTEMPORARY ENERGY APPLICATIONS</td>
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<tr>
<td>ECE 550</td>
<td>LINEAR SYSTEMS</td>
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<tr>
<td>ECE 560</td>
<td>STOCHASTIC SIGNALS AND SYSTEMS</td>
<td></td>
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<td>ECE 570</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
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<tr>
<td>ECE 580</td>
<td>NETWORK THEORY</td>
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<tr>
<td>ECE 590</td>
<td>ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS</td>
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<tr>
<td>ECE 614</td>
<td>SEMICONDUCTORS</td>
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Engineering Electives
Graduate standalone credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee 20

Other Electives
Courses chosen by the student which may include up to 6 credits from the following: 6-10

<table>
<thead>
<tr>
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<tr>
<td>ECE 501</td>
<td>RESEARCH</td>
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<td>ECE 505</td>
<td>READING AND CONFERENCE</td>
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Total Hours 45

MS (Thesis)

<table>
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<td>Select 3 courses from the following:</td>
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<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
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<tr>
<td>ECE 580</td>
<td>NETWORK THEORY</td>
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<td>ECE 590</td>
<td>ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS</td>
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<td>ECE 614</td>
<td>SEMICONDUCTORS</td>
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Engineering Electives
Graduate standalone credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee 15

Other Electives
Courses chosen by the student which may include up to 6 credits from the following: 6-10

<table>
<thead>
<tr>
<th>Code</th>
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<td>ECE 505</td>
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Thesis
ECE 503 | ECE MS THESIS                    | 9-12    |

Total Hours 45

MS (Project)

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<td>ANALOG CMOS INTEGRATED CIRCUITS</td>
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<td>CONTEMPORARY ENERGY APPLICATIONS</td>
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<td>ECE 550</td>
<td>LINEAR SYSTEMS</td>
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<td>ECE 560</td>
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<tr>
<td>ECE 614</td>
<td>SEMICONDUCTORS</td>
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Engineering Electives
Graduate standalone credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee 15

Other Electives
Courses chosen by the student which may include up to 6 credits from the following: 12-13

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<tr>
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<td>ECE 505</td>
<td>READING AND CONFERENCE</td>
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Project
ECE 506 | PROJECTS                   | 6       |

Total Hours 45

PhD

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<td>ECE 530</td>
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<td>LINEAR SYSTEMS</td>
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<td>STOCHASTIC SIGNALS AND SYSTEMS</td>
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<td>ECE 570</td>
<td>HIGH PERFORMANCE COMPUTER ARCHITECTURE</td>
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<tr>
<td>ECE 580</td>
<td>NETWORK THEORY</td>
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Total Hours 45
Electrical and Computer Engineering Graduate Major (MENG, MS, PhD)

ECE 590  ANALYTICAL TECHNIQUES IN ELECTROMAGNETIC FIELDS
ECE 614  SEMICONDUCTORS

Engineering Electives
Graduate credits offered by the Electrical and Computer Engineering program, or other technical courses approved by the program committee 36

Other Electives
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

Thesis
ECE 603  ECE PHD THESIS 30-60

Total Hours 108

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:

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

1 An average GPA of at least 3.00 must be achieved over these three courses
2 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
3 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