BSCoE in Computer Engineering

Degree Program Description

The computer engineering degree offers a balanced approach to both hardware and software, as well as other areas of engineering. Focused areas of work in additional hardware or software, communications, discrete and integrated electronics, and robotics are offered by the department.

Major Program Requirements

The computer engineering degree offers a balanced approach to both hardware and software, as well as other areas of engineering. Focused areas of work in additional hardware or software, communications, discrete and integrated electronics, and robotics are offered by the department. (Focus areas are not listed on transcripts or diplomas.)

Students must complete all university requirements (http://catalog.missouri.edu/academicdegreerequirements/universityrequirements/), including general education (http://catalog.missouri.edu/academicdegreerequirements/generaleducationrequirements/), and Department Level Requirements (http://catalog.missouri.edu/undergraduategraduate/collegeofengineering/computerengineering/#undergraduatetext), in addition to the degree requirements below.

Major core requirements

<table>
<thead>
<tr>
<th>Constitutional Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select one of the following:</td>
</tr>
<tr>
<td>HIST 1100</td>
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<tr>
<td>HIST 1200</td>
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<td>HIST 1400</td>
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<tr>
<td>HIST 2210</td>
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<td>HIST 2440</td>
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<tr>
<td>HIST 4000</td>
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<td>HIST 4220</td>
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<td>HIST 4230</td>
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<tr>
<td>POL_SC 1100</td>
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<tr>
<td>POL_SC 2100</td>
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<tr>
<td>Humanities/Fine Arts courses</td>
</tr>
<tr>
<td>Social Science/Behavioral Science courses</td>
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</table>

Other major core requirement courses:

- MATH 1500 | Analytic Geometry and Calculus I | 5 |
- MATH 1700 | Calculus II | 5 |
- MATH 2300 | Calculus III | 3 |
- MATH 2320 | Discrete Mathematical Structures | 3 |
- MATH 4100 | Differential Equations | 3 |
- STAT 4710 | Introduction to Mathematical Statistics | 3 |
- PHYSCS 2750 | University Physics I | 5 |
- PHYSCS 2760 | University Physics II | 5 |
- CHEM 1320 | College Chemistry I | 4 |
- ENGLISH 1000 | Exposition and Argumentation | 3 |
- ENGINR 1200 | Statics and Elementary Strength of Materials | 3 |

or ENGINR 2300 | Engineering Thermodynamics | 4 |

or IMSE 2710 | Engineering Economic Analysis | 3 |

ENGINR 1000 | Introduction to Engineering | 1 |
CMP_SC 1050 | Algorithm Design and Programming I | 4 |
CMP_SC 2050 | Algorithm Design and Programming II | 4 |
ECE 2100 | Circuit Theory I | 4 |
ECE 2210 | Introduction to Logic Systems | 3 |
ECE 3280 | Computer Organization and Assembly Language | 3 |
ECE 3810 | Circuit Theory II | 4 |
ECE 3830 | Signals and Linear Systems | 3 |
ECE 3410 | Electronic Circuits and Signals I | 4 |
ECE 3220 | Software Design in C and C++ | 3 |
ECE 4220 | Real Time Embedded Computing | 3 |
ECE 4250 | VHDL and Programmable Logic Devices | 4 |
ECE 4270 | Computer Architecture | 4 |
ECE 3840 | Measurement and Instrumentation | 3 |
ECE 4960W | Senior Capstone Design I - Writing Intensive | 3 |
ECE 4990 | Senior Capstone Design II (Senior Capstone Design II) | 3 |

Electives

- 2000+ ECE or CMP_SC Elective | 6 |
- ECE 4000+ Technical Elective | 6 |
- Any Elective | 1 |

* ENGINR 1000 waiver: Students with 60 or more credits have completed the ENGINR 1000 requirement.

Semester Plan

Below is a sample plan of study, semester by semester. A student’s actual plan may vary based on course choices where options are available.

First Year

<table>
<thead>
<tr>
<th>Fall</th>
<th>CR</th>
<th>Spring</th>
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<tr>
<td>CMP_SC 1050</td>
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<td>ENGLSH 1000</td>
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Second Year

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<tr>
<td>ECE 2100</td>
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<td>MATH 4100</td>
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Third Year

<table>
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<tr>
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<th>Spring</th>
<th>CR</th>
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<tbody>
<tr>
<td>ECE 3220</td>
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<td>ECE 4250</td>
<td>4</td>
</tr>
<tr>
<td>ECE 3410</td>
<td>4</td>
<td>ENGINR 1200, 2300, or IMSE 2710</td>
<td>3</td>
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<tr>
<td>ECE 3830</td>
<td>3</td>
<td>ECE 4220</td>
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</tr>
<tr>
<td>STAT 4710</td>
<td>3</td>
<td>Flexible Technical Elective</td>
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MATH 2320 3 Social/Behavioral Elective 3

Fourth Year

Fall CR Spring CR
ECE 3840 3 ECE 4980 (Senior Capstone Design II) 3
ECE 4270 4 4000+ Technical Elective 3
ECE 4960W 3 Flexible Technical Elective 3
Social/Behavioral Science Elective 3 Humanities/Fine Arts Elective 3

Free Elective 1

Total Credits: 126

Double Major

Electrical Engineering and Computer Engineering

Many students in the EECS department combine the BS in Electrical Engineering with the BS in Computer Engineering in a special 138-credit program. These students receive both the BS EE and BS CoE degrees.

Major Program Requirements

Constitutional Elective
Select one of the following:
HIST 1100 Survey of American History to 1865 3
HIST 1200 Survey of American History Since 1865 3
HIST 1400 American History 5
HIST 2210 Twentieth Century America 3
HIST 2440 History of Missouri 3
HIST 4000 Age of Jefferson 3
HIST 4220 U.S. Society Between the Wars 3
HIST 4230 Our Times: United States Since 1945 3
POLL 1100 American Government 3
POLL 2100 State Government 3
Humanities/Fine Arts courses 9
Social Science/Behavioral Science courses 3

Select two of the following:
ENGINR 1200 Statics and Elementary Strength of Materials 3
ENGINR 2300 Engineering Thermodynamics 3
IMSE 2710 Engineering Economic Analysis 3

Other major core requirement courses:
MATH 1500 Analytic Geometry and Calculus I 5
MATH 1700 Calculus II 5
MATH 2300 Calculus III 3
MATH 2320 Discrete Mathematical Structures 3
MATH 4100 Differential Equations 3
STAT 4710 Introduction to Mathematical Statistics 3
PHYSICS 2750 University Physics I 5
PHYSICS 2760 University Physics II 5
CHEM 3320 College Chemistry I 4
ENGLISH 1000 Exposition and Argumentation 3
ECONOM 1014 Principles of Microeconomics 3

or ECONOM 1015 Principles of Macroeconomics

CMP SC 1050 Algorithm Design and Programming I 4
CMP SC 2050 Algorithm Design and Programming II 4
ECE 1000 Introduction to Electrical and Computer Engineering 2
ECE 2210 Introduction to Logic Systems 3
ECE 2100 Circuit Theory I 4
ECE 3210 Microprocessor Engineering for Electrical Engineers 4
ECE 3810 Circuit Theory II 4
ECE 3220 Software Design in C and C++ 3
ECE 3830 Signals and Linear Systems 3
ECE 3510 Electromagnetic Fields 3
ECE 3410 Electronic Circuits and Signals I 4
ECE 3610 Semiconductors and Devices 3
ECE 4220 Real Time Embedded Computing 3
ECE 4250 VHDL and Programmable Logic Devices 4
ECE 4270 Computer Architecture 4
ECE 3840 Measurement and Instrumentation 3
ECE 4960W Senior Capstone Design I - Writing Intensive 3
ECE 4980 Senior Capstone Design II 3

Electives
2000+ ECE or CMP SC Elective 9
ECE 4000+ Technical Elective 6
ECE 4000-level Senior Lecture/Lab 4
Any Elective 1

Below is a sample plan of study, semester by semester. A student's actual plan may vary based on course choices where options are available.

First Year

Fall CR Spring CR
CMP SC 1050 4 ECE 2210 3
CHEM 1320 4 CMP SC 2050 4
MATH 1500 5 MATH 1700 5
ENGINR 1000 1 ENGLISH 1000 3
Constitutional Requirement 3

Second Year

Fall CR Spring CR
ECE 2100 4 ECE 3810 4
ECE 3210 4 MATH 4100 3
MATH 2300 3 PHYSICS 2760 5
PHYSICS 2750 5 Humanities/Fine Arts Elective 3

Third Year

Fall CR Spring CR
ECE 3410 4 ECE 3610 3
ECE 3220 3 ECE 4250 4
ECE 3510 3 MATH 2320 3
ECE 3830 3 ECE 4000+ Technical Elective 3
STAT 4710 3 Flexible Technical Elective 3

16 16
### Fourth Year

<table>
<thead>
<tr>
<th>Course Details</th>
<th>Fall CR</th>
<th>Spring CR</th>
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<tbody>
<tr>
<td>ECE 4220</td>
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<td>ECE 3840</td>
</tr>
<tr>
<td>ECE 4270</td>
<td>4</td>
<td>ECE 4960W</td>
</tr>
<tr>
<td>ENGINR 1200, 2300, or IMSE 2710</td>
<td>3</td>
<td>ENGINR 1200, 2300, or IMSE 2710</td>
</tr>
<tr>
<td>Flexible Technical Elective</td>
<td>3</td>
<td>ECE 4000+ Technical Elective</td>
</tr>
<tr>
<td>Social/Behavioral Science</td>
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<td>Humanities/Fine Arts Elective</td>
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</table>

| Total Credits: | 16 | 15 |

### Fifth Year

<table>
<thead>
<tr>
<th>Course Details</th>
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<tbody>
<tr>
<td>ECE 4980 (Senior Capstone Design II)</td>
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</tr>
<tr>
<td>ECE 4000-level Senior Lecture/ Lab</td>
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<td>Flexible Technical Elective</td>
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<tr>
<td>Humanities/Fine Arts Elective</td>
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<tr>
<td>Economics Elective</td>
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</table>

| Total Credits: | 16 |

Total Credits: 142