<table>
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<tr>
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<th>FIRST YEAR</th>
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<th>SECOND YEAR</th>
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<th>THIRD YEAR</th>
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<th>FOURTH YEAR</th>
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<tr>
<td>ENGIN 112</td>
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<td>ECE 211</td>
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<td>ECE 313</td>
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<td>[Note 1]</td>
<td></td>
<td>ECE 212</td>
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<td>ECE 314</td>
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<td>PHYSICS 151</td>
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<td>PHYSICS 152</td>
<td></td>
<td></td>
<td>Hardware Organization &amp; Design</td>
<td>[4 cr]</td>
<td>Computer Networks &amp; the Internet</td>
<td>[3 cr]</td>
<td></td>
<td>[3 or 4 cr]</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Linear Algebra</td>
<td>[3 cr]</td>
<td>Computer Systems Lab I</td>
<td>[3 cr]</td>
<td></td>
<td>[3 or 4 cr]</td>
</tr>
<tr>
<td>MATH 131</td>
<td></td>
<td></td>
<td>MATH 331</td>
<td></td>
<td>ECE 355</td>
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<tr>
<td>Calculus I</td>
<td>[4 cr]</td>
<td></td>
<td>Differential Equations</td>
<td>[3 cr]</td>
<td>Computer Systems Lab II</td>
<td>[4 cr]</td>
<td></td>
<td>[3 or 4 cr]</td>
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<td>MATH 235</td>
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<td>ECE 354</td>
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<tr>
<td>Calculus II</td>
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<td>Linear Algebra</td>
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<td>[4 cr]</td>
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<tr>
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<td>[4 cr]</td>
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<td>ECE 355</td>
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<td>Social World</td>
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<td>ECE 250</td>
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<td>Social World</td>
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<tr>
<td>Elective</td>
<td>[4 cr]</td>
<td></td>
<td>Intro., Computaton</td>
<td>[4 cr]</td>
<td>Elective</td>
<td>[4 cr]</td>
<td></td>
<td>[3 or 4 cr]</td>
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<td>ENGLWRIT 112</td>
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<td>CMPSCI 250</td>
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<td>ECE 303</td>
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<td>CMPSCI 250</td>
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<td>ECE 303</td>
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<td>Social World</td>
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<tr>
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<td></td>
<td>Software Intensive Engineering</td>
<td>[4 cr]</td>
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<td>Elective</td>
<td>[4 cr]</td>
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<tr>
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<td></td>
<td>BIOLOGY 110</td>
<td></td>
<td>ENGIN 351</td>
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<td>Social World</td>
<td>[4 cr]</td>
</tr>
<tr>
<td>(Take ECE 221, Digital Systems, unless ENGIN 112 was taken in Fall 2014 or earlier. [4 cr] [Note 4])</td>
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<td></td>
<td></td>
<td></td>
<td>5-yr B.S. / M.S. Graduate Course</td>
<td>[3 or 4 cr]</td>
<td>5-yr B.S. / M.S. Graduate Course</td>
<td>[3 or 4 cr]</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(Cannot be used for B.S. degree)</td>
<td>[Note 7]</td>
<td>(Cannot be used for B.S. degree)</td>
<td>[Note 7]</td>
<td></td>
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</tr>
</tbody>
</table>

The curriculum notes can be found on the reverse side of this worksheet.

UNIVERSITY OF MASSACHUSETTS AMHERST • DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

http://ece.umass.edu/

Updated March 2015
The abbreviations “ECE” and “E&C-ENG” are equivalent. They are both abbreviations of “Electrical and Computer Engineering”. “ECE” tends to be used in departmental publications and “E&C-ENG” is used on SPIRE and on official schedules and transcripts.

It is important that the Undergraduate Catalog posted on SPIRE (https://spire.umass.edu) be consulted for course descriptions and course requisites. It is the student’s responsibility to refrain from enrolling in any course for which she or he does not have all of the published requisites.

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**Note 1 • ENGIN 112, Intro. to ECE**

In the Fall semester, choose one of the following:

- ENGIN 110: Intro. to Chemical Engineering I
- ENGIN 111: Intro. to Civil & Environmental Engineering I
- ENGIN 112: Intro. to Electrical & Computer Engineering I
- ENGIN 113: Intro. to Mechanical & Industrial Engineering I

A grade of C or better in one of the ENGIN 11x courses is required for all engineering majors. ENGIN 112 is strongly recommended for CSE and EE majors.

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**Note 2 • Social World Electives**

Choose four Social World electives (four credits each) consisting of:

1. One Literature or Art elective: AL or AT
2. One Historical Studies elective: HS
3. One Social and Behavioral elective: SB
4. One more elective: AL, AT, SB, I or SI

One of the four Social World electives must carry the G (Global diversity) designation, and another must carry the U (U.S. diversity) designation.

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**Note 3 • Thematic Elective**

A Thematic Elective is required for all CSE and EE majors. There are four approved Thematic Elective subject areas: (1) Biology and Chemistry; (2) Physics and Astronomy; (3) Mathematics; and (4) Engineering Management. (Note: This fourth track is only for students who intend to complete the Engineering Management minor.) The official Thematic Electives Document can be viewed and/or downloaded at http://ece.umass.edu/undergraduate-students/forms-documents.

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**Note 4 • ECE 221, Digital Systems**

Starting in Fall 2015, ENGIN 112 will no longer focus on digital design. As such, the course will no longer serve as the prerequisite for ECE 232 (Hardware Organization & Design). Instead, the new prerequisite for ECE 232 will be ECE 221, Intro to Digital and Computer Systems (or simply, Digital Systems). Thus, students who have not earned a C or better in ENGIN 112 in Fall 2014 or earlier are advised to enroll in ECE 221 as soon as possible.

In order to keep the academic load below 20 credits, a student enrolling in ECE 221 might need to postpone either the Thematic Elective or the Social World Elective.

Students who have earned a grade of C or better in ENGIN 110, 111 or 113 before Fall 2015 are allowed to use the ENGIN 11x course to fulfill the Thematic Elective.

Students who have not earned a grade of C or better in ENGIN 110, 111, 112, or 113 are advised to enroll in both ENGIN 112 and ECE 221 as soon as possible.

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**Note 5 • Biology**

CSE and EE students must pass either BIOLOGY 110 or BIOLOGY 151. BIOLOGY 151 is the appropriate choice for students who plan to pursue further studies in Biology, Biochemistry, or Bioengineering. Students may not use BIOLOGY 110 or BIOLOGY 151 to fulfill their Thematic elective.

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**Note 5 • CSE Electives**

Choose four CSE electives. The electives must include at least two 500-level courses (or above) that may not be used to fulfill the requirements for any other major.

- ECE 324: Electronics II (2nd sem)
- ECE 333: Fields and Waves I (2nd sem) 4 cr
- ECE 344: Semiconductor Devices and Materials (1st sem)
- ECE 544: Trustworthy Computing (1st sem)
- ECE 558: Intro. to VLSI Design (1st sem) 4 cr
- ECE 559: VLSI Design Project (2nd sem)
- ECE 563: Intro. to Comm. & Signal Processing (1st sem)
- ECE 564: Communication Systems (2nd sem) 4 cr
- ECE 565: Digital Signal Processing (2nd sem) 4 cr
- ECE 568: Introduction to Computer Architecture (1st sem)
- ECE 570: System Software Design (2nd sem)
- ECE 571: Microelectronic Fabrication (2nd sem) 4 cr
- ECE 572: Optoelectronics (1st sem)
- ECE 575: Intro. to Analog IC Design (1st sem)
- ECE 580: Feedback Control Systems (1st sem) 4 cr
- ECE 581: Digital Control of Feedback Systems (TBD)
- ECE 584: Microwave Engineering I (1st sem) 4 cr
- ECE 585: Microwave Engineering II (2nd sem)

All ECE 597 Special Topics courses and all 600-level ECE courses (except ECE 696) are allowed as well.

The following courses are approved as CSE electives, but enrollment in them is not guaranteed. Priority is given to CMPSCI students.

- CMPSCI 311: Introduction to Algorithms (both sem) 4 cr
- CMPSCI 377: Operating Systems (1st sem) 4 cr
- CMPSCI 383: Artificial Intelligence (1st sem)
- CMPSCI 403: Introduction to Robotics (1st sem)
- CMPSCI 410: Compiler Techniques (1st sem)
- CMPSCI 445: Information Systems (2nd sem)
- CMPSCI 446: Search Engines (2nd sem)
- CMPSCI 474: Image Synthesis (2nd sem)
- CMPSCI 501: Formal Language Theory (2nd sem)
- CMPSCI 513: Logic in Computer Science (2nd sem)
- CMPSCI 520: Software Engin: Synthesis and Development (2nd sem)
- CMPSCI 521: Software Engin: Analysis and Evaluation (1st sem)
- CMPSCI 529: Software Engin: Project Management (both sem)
- CMPSCI 585: Introduction to Natural Language Processing (1st sem)

Consult SPIRE to check course offerings and availability.

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**Note 6 • Five-Year B.S. / M.S. in ECE**

The Department of Electrical and Computer Engineering offers a five-year program through which students can obtain a Bachelor of Science degree in Electrical or Computer Systems Engineering as well as a Master of Science degree in Electrical and Computer Engineering within a five-year time frame. During the senior year, two graduate-level courses are taken that are later transferred into the M.S. program. More information is posted at http://ece.umass.edu/ece/five-year-program.