# Curriculum Worksheet for the Computer Systems Engineering Classes of 2014 through 2017

<table>
<thead>
<tr>
<th></th>
<th>FIRST YEAR</th>
<th>SECOND YEAR</th>
<th>THIRD YEAR</th>
<th>FOURTH YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fall [15cr]</strong></td>
<td>ENGIN 112 Intro. to ECE</td>
<td>CMPSCI 121 Intro. Problem</td>
<td>ECE 211 Circuit Analysis I</td>
<td>ECE 314 Intro. Prob. &amp;</td>
</tr>
<tr>
<td></td>
<td>[3 cr] [Note 1]</td>
<td>Solving w/Comp (Java)</td>
<td>[4 cr]</td>
<td>Systems &amp; Random Procs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECE 212 Circuit Analysis II</td>
<td>[4 cr]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECE 313 Signals &amp; Systems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[4 cr]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECE 323 Electronics I [4 cr]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECE 374 Computer Networks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&amp; the Internet [3 cr]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fall [18-19cr]</strong></td>
<td>MATH 131 Calculus I [4 cr]</td>
<td>MATH 132 Calculus II [4 cr]</td>
<td>MATH 235 Linear Algebra [3 cr]</td>
<td>ECE Elective [3 or 4 cr]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECE 353 Computer Systems Lab I</td>
<td>[Note 6]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[3 cr]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ECE 354 Computer Systems Lab II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[4 cr]</td>
<td></td>
</tr>
<tr>
<td><strong>Spring [19cr]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fall [15cr]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Spring [15cr]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fall [12-14cr]</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>**Spring [13-15cr]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</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 October 2013
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 (http://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.

**Note 1**

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

**ENGIN 112 is a required course for all CSE and EE majors.***

In the Spring semester, choose one of the following:

- CHE 120: Fundamentals (of Chemical Engineering)
- CEE 121: Intro. to Civil & Environmental Engineering II
- CMPSCI 121: Intro. Prob. Solving w/Comp. (Language: Java)
- MIE 123: Intro. to Mechanical & Industrial Engineering II

**Note that CMPSCI 121 is required for CSE and EE majors. It is a prerequisite for ECE 242.**

* A student who is admitted to CSE or EE after meeting the first-year admission requirements but has taken ENGIN 110, 111 or 113 instead of ENGIN 112 in the first year must take ENGIN 112 in the Fall semester of the second year. (This will require either the Thematic Elective or the Social World Elective to be postponed.) A student who earns a C or better in ENGIN 112 after earning a C or better in ENGIN 110, 111 or 113 will be allowed to count ENGIN 110, 111 or 113 as the Thematic Elective.

**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.

**Note 3 • ECE 197SA • ECE Systems Appreciation**

It is highly recommended and expected that all ECE first-year students will enroll in ECE 197SA • ECE Systems Appreciation, Spring Semester, 1 cr. This optional course focuses on the basic functionality of example ECE systems and explores the technological and scientific principles on which they are based. The goal is to provide a deeper understanding of the operation of these systems and to spark interest in some of the more advanced topics in ECE.

**Note 4 • Biology**

CSE and EE students must take 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.

**Note 5 • Thematic Elective**

A Thematic Elective is required. 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 is posted on the department website http://ece.umass.edu/, under “Undergraduate Students” >> “Thematic Electives”.

**Note 6 • CSE Electives**

Choose four CSE electives. The electives must include at least two 500-level courses (or above) that may not be used to fill 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 (1st 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 (2nd sem)
- ECE 584: Microwave Engineering I (1st sem) 4 cr

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

The following CMPSCI courses are approved as CSE electives but enrollment in them is not guaranteed. Enrollment 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 (both sem)
- CMPSCI 401: Formal Language Theory (1st sem)
- CMPSCI 403: Introduction to Robotics (2nd sem)
- CMPSCI 410: Compiler Techniques (2nd sem)
- CMPSCI 445: Information Systems (both sem)
- CMPSCI 446: Search Engines (1st sem)
- CMPSCI 473: Introduction to Computer Graphics (1st sem)
- CMPSCI 474: Image Synthesis (1st sem)
- CMPSCI 503: Embedded Computer Systems (1st sem)
- CMPSCI 513: Logic in Computer Science (1st sem)
- CMPSCI 520: Software Engin: Synthesis and Development (1st sem)
- CMPSCI 521: Software Engin: Analysis and Evaluation (2nd sem)
- CMPSCI 529: Software Engin: Project Management (both sem)

**Note 7 • 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.

Updated October 2013