

# CSE 10-13

Date: \_\_\_\_\_

\_\_\_\_\_  
Last Name

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First Name

Curriculum Worksheet for the Computer Systems Engineering Classes of 2010 through 2013.

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
Fall [17cr]	Spring [15cr]	Fall [17-18cr]	Spring [17-18cr]	Fall [17cr]	Spring [15-16cr]	Fall [14-16cr]	Spring [14-16cr]
ENGIN 112 Intro. to ECE I [3 cr] [Note 1]	ECE 122 Intro. to ECE II (Object-Oriented Programming, Java) [4 cr] [Note 1] or CMPSCI 121	ECE 211 Circuit Analysis I [4 cr]	ECE 212 Circuit Analysis II [4 cr]	ECE 313 Signals & Systems [4 cr]	ECE 314 Intro. Prob. & Random Procs. [4 cr]	ECE 415 Senior Design Project I [2 cr]	ECE 416 Senior Design Project II [2 cr]
ENGLWRIT 112 College Writing [3 cr] [Note 2]	ECE 197SA ECE Systems Appreciation [1 cr] [Highly recommended – see Note 3]	ECE 242 Data Structures & Algorithms (w/ Java) [4 cr]	ECE 232 Hardware Organization & Design [4 cr]	ECE 323 Electronics I [4 cr]	ECE 374 Computer Networks & the Internet [3 cr]	CSE Elective [3 cr] [Note 7]	CSE Elective [3 or 4 cr] [Note 7]
PHYSICS 151 Gen. Physics I - Mechanics [3 cr]	PHYSICS 152 Gen. Physics II – Thermo., E&M. [3 cr]	MATH 331 Differential Equations [3 cr]	MATH 235 Linear Algebra [3 cr]	ECE 353 Computer Systems Lab I [3 cr]	ECE 354 Computer Systems Lab II [4 cr]	CSE Elective [3 or 4 cr] [Note 7]	CSE Elective [3 or 4 cr] [Notes 7]
PHYSICS 153 Gen. Physics I - Mechanics lab [1 cr]	PHYSICS 154 Gen. Physics II – Thermo., E&M. lab [1 cr]	Social World Elec. [3 cr] [Note 2]	MATH 455 Discrete Structures [3 cr] or CMPSCI 250 [Note 6]	ECE 373 Software Intensive Engineering [4 cr]	ECE 303 Junior Seminar [1 cr]	Social World Elec. [3 cr] [Note 2]	Social World Elec. [3 cr] [Note 2]
MATH 131 Calculus I [4 cr]	MATH 132 Calculus II [4 cr]	Thematic Elective 1  See Notes 4 & 5 for details	BIOLOGY 102  See Notes 4 & 5 for details	ENGIN 351 Writing in Engineering [3 cr]			Social World Elec. [3 cr] [Note 2]
Social World Elec. [3 cr] [Note 2]	Social World Elec. [3 cr] [Note 2]	(Take ENGIN 112, Intro. to ECE I, unless it was taken previously. See advisor to adjust schedule. [3cr] [Note 1])				5-yr B.S./M.S. Graduate Course [3 or 4 cr] (Not required for B.S. degree) [Note 8]	5-yr B.S./M.S. Graduate Course [3 or 4 cr] (Not required for B.S. degree) [Note 8]

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

UNIVERSITY OF MASSACHUSETTS AMHERST • DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

[www.ecs.umass.edu/ece/](http://www.ecs.umass.edu/ece/)

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## CSE 10-13

- Notes for the Computer Systems Engineering Curriculum for the Classes of 2010 through 2013 -

The abbreviations "ECE" and "E&C-ENG" are equivalent. They are both abbreviations of "Electrical and Computer Engineering."

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.

Details regarding the ECE Minimum Grade Requirement may be found at <http://ece.umass.edu/ece/undergraduate/mgr-policy>.

### 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 in the CSE and EE programs.\***

In the spring semester, choose one of the following:

CHE 120 (ChE)  
CEE 121 Intro. to Civil & Env. Engin. II  
>> ECE 122 Intro. to ECE II (Object-Oriented Programming)  
(Language: Java) (or CMPSCI 121)  
MIE 123 Intro. to Mech. & Industrial Engin. II  
**Note that ECE 122 (or 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 a Thematic Elective.

### Note 2 • Social World Electives

Take two of the six social world electives in the first year. First year students either take ENGLWRIT 112 and one Social World Elective in the Fall and one Social World Elective in the Spring, or they take two Social World Electives in the Fall and ENGLWRIT 112 in the Spring.

Over the course of the degree program, choose six Social World Electives consisting of:

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

**One of the six Social World electives must carry the G designation and another must carry the U 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 100 (Fall only) or BIOLOGY 102 (Spring only). BIOLOGY 100 is the appropriate choice for students who plan to pursue further studies in Biology, Biochemistry or Bioengineering.

### Note 5 • Thematic Electives

Thematic Elective 1 is required, Thematic Elective 2 & 3 are optional and are meant to allow in-depth study in a field outside of ECE that is relevant to the student's career objectives and interests. There are seven approved thematic elective tracks:

(1) Biology/Biochemistry; (2) Chemistry; (3) Physics; (4) General Science (Biology, Chemistry and Physics) (5) Mathematics (6) Physics / Mathematics (7) Engineering Management (Note: This track is only for students who intend to complete the Engineering Management minor.) The official thematic electives document is posted at <http://ece.umass.edu/ece/flowcharts>.

### Note 6 • Discrete Mathematics

CMPSCI 250, 4 cr., Introduction to Computation is an approved substitute for MATH 455, 3 cr., Introduction to Discrete Structures. Enrollment priority in CMPSCI 250 is given to CMPSCI students.

### Note 7 • CSE Electives

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

CSE Electives, in numerical order:

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 558 - Intro. to VLSI Design (1st sem) 4cr  
ECE 559 - VLSI Design Project (2nd sem)  
ECE 563 - Intro. to Comm. & Signal Processing (1st sem)  
ECE 564 - Communication Systems (2nd sem) 4cr  
ECE 565 - Digital Signal Processing (2nd sem) 4cr  
ECE 568 - Introduction to Computer Architecture (1st sem)  
ECE 570 - System Software Design  
ECE 572 - Optoelectronics (1st sem)  
ECE 580 - Feedback Control Systems (1st sem) 4cr  
Many ECE 597 Special Topics courses are allowed. Please inquire at the ECE Undergraduate Office before enrolling.

*The following CMPSCI course 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 383 - Artificial Intelligence (both sem)  
CMPSCI 401 - Formal Language Theory (2nd sem)  
CMPSCI 410 - Compiler Techniques (1st sem)  
CMPSCI 445 - Information Systems (1st sem)  
CMPSCI 520 - Software Engineering: Synthesis (2nd sem)  
CMPSCI 521 - Software Engineering: Analysis & Eval. (1st sem)  
CMPSCI 530 - Programming Languages (2nd sem)  
CMPSCI 570 - Computer Vision (2nd sem)  
CMPSCI 585 - Natural Language Processing (1st sem)  
CMPSCI 589 - Machine Learning (2nd sem)

### Note 8 • Five-Year B.S./M.S. in Electrical & Computer Engineering

The Department of Electrical and Computer Engineering offers a five-year program through which students can obtain a Bachelor of Science degree in Electrical Engineering 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>.