

# CSE 2020

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

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

\_\_\_\_\_  
First Name

## Curriculum Worksheet for the Computer Systems Engineering Class of 2020

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
Fall [18-19cr]	Spring [15-16cr]	Fall [18-19cr]	Spring [18-19cr]	Fall [15cr]	Spring [15cr]	Fall [13-15cr]	Spring [13-15cr]
<a href="#">ENGIN 112</a> Intro. to ECE [3 cr] [Note 1]	<a href="#">ECE 122</a> Intro. Programming for ECE [4 cr]	<a href="#">ECE 211</a> Circuit Analysis I [4 cr]	<a href="#">ECE 212</a> Circuit Analysis II [4 cr]	<a href="#">ECE 313</a> Signals & Systems [4 cr]	<a href="#">ECE 314</a> Intro. Prob. & Random Procs. [4 cr]	<a href="#">ECE 415</a> Senior Design Project I [3 cr] (GenEd-IE)	<a href="#">ECE 416</a> Senior Design Project II [3 cr]
<a href="#">PHYSICS 151</a> Gen. Physics I – Mechanics [4 cr]	<a href="#">PHYSICS 152</a> Gen. Physics II – Thermo., E&M [4 cr]	<a href="#">ECE 221</a> Intro. Digital & Computer Systems [4 cr]	<a href="#">ECE 232</a> Hardware Organization & Design [4 cr]	<a href="#">ECE 323</a> Electronics I [4 cr]	<a href="#">ECE 374</a> Computer Networks & the Internet [3 cr]	<a href="#">CSE Elective</a> [3 or 4 cr] [Notes 6 & 7]	<a href="#">CSE Elective</a> [3 or 4 cr] [Notes 6 & 7]
<a href="#">MATH 131</a> Calculus I [4 cr]	<a href="#">MATH 132</a> Calculus II [4 cr]	<a href="#">ECE 242</a> Data Structures & Algorithms (w/Java) [4 cr]	<a href="#">MATH 235</a> Linear Algebra [3 cr]	<a href="#">ECE 353</a> Computer Systems Lab I [3 cr]	<a href="#">ECE 354</a> Computer Systems Lab II [4 cr]	<a href="#">CSE Elective</a> [3 or 4 cr] [Notes 6 & 7]	<a href="#">CSE Elective</a> [3 or 4 cr] [Notes 6 & 7]
<a href="#">Social World Elective</a> [4 cr] [Note 2]	<a href="#">Biological Sciences Elective</a> [3 or 4 cr] [Note 4]	<a href="#">MATH 331</a> Differential Equations [3 cr]	<a href="#">COMPSCI 250</a> Intro. to Computaton [4 cr]	<a href="#">ECE 373</a> Software Intensive Engineering [4 cr]	<a href="#">ECE 303</a> Junior Seminar [1 cr]	<a href="#">Social World Elective</a> [4 cr] [Note 2]	<a href="#">Social World Elective</a> [4 cr] [Note 2]
<a href="#">ENGLWRIT 112</a> College Writing [3 cr]		<a href="#">Social World Elective</a> [4 cr] [Note 2]	<a href="#">Science Elective</a> [3 or 4 cr] [Notes 5 & 6]		<a href="#">ENGIN 351</a> Writing in Engineering [3 cr]		
<a href="#">ENGIN 191</a> Freshman Seminar [1 cr] [Note 3]						5-yr B.S. / M.S. Graduate Course [3 or 4 cr] (Cannot be used for B.S. degree) [Note 8]	5-yr B.S. / M.S. Graduate Course [3 or 4 cr] (Cannot be used 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

<http://ece.umass.edu/>

Updated July 2016

## CSE 2020

— Notes for the Computer Systems Engineering Curriculum for the class of 2020 —

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 drop any course for which she or he does not have all of the published requisites.

### 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.

### Note 2 • Social World Electives / Diversity Requirements

Choose four Social World Electives (**four** credits each) consisting of:

1. One Literature or Arts 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

Also, choose two courses to meet the Social & Cultural Diversity requirement: one course focusing on United States diversity (U, ALU, ATU, HSU, IU, SBG, or SIU) and one course focusing on Global diversity (G, ALG, ATG, HSG, IG, SBG, or SIG). Most students satisfy the Diversity requirement with two of their four Social World electives. In other words, with careful planning, four courses may be used to satisfy all six graduation requirements

### Note 3 • Freshman Seminar

All engineering students are required to enroll in a 1-credit Freshman Seminar in their first semester.

### Note 4 • Biological Sciences Elective

The Biological Sciences Elective can be fulfilled with any course that satisfies the University’s Biological Sciences (BS) General Education requirement.

### Note 5 • Science Elective

The Science Elective is required for all CSE and EE majors. There are currently five approved courses, as listed below.

- BIO 110: Intro. Biology for Science Majors (2nd sem) 4 cr
- BIO 151: Intro. Biology I (both sem) 4 cr
- CHEM 111: Gen. Chemistry for Science Majors (both sem) 4 cr
- CHEM 121H: Hon. Gen. Chem. for Science Maj. (1st sem) 4 cr
- PHYSICS 287: Physics III – Waves & Thermo. (1st sem) 3 cr

### Note 6 • Alternative Electives

To propose a different course to satisfy either the Science Elective or CSE Elective, fill out the Alternative Elective Request Form, and take it to the Undergraduate Programs Office. The form is online at: <http://ece.umass.edu/undergraduate-students/forms-documents>.

### Note 7 • CSE Electives

Choose four CSE Electives. The electives must include at least two 500-level courses (or above) that may **not** be used to satisfy the requirements for any other major. Each is 3 credits unless otherwise indicated.

- ECE 324: Electronics II (2nd sem)
- ECE 333: Fields and Waves I (2nd sem) 4 cr
- ECE 344: Semiconductor Devices and Materials (1st sem) 4 cr
- 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 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. Note that instructor permission is required to enroll in any 600-level course.

The following courses are approved as CSE electives, but enrollment in them is not guaranteed. Priority is given to COMPSCI majors and minors. To request an override into one of these courses, follow the posted instructions at <https://www.cs.umass.edu/ugrad-education/overrides>. This page includes a link to the appropriate online Override Request Form, which changes each semester.

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

Consult SPIRE to check course offerings and availability.

### Note 8 • 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>.