

# EE 2021-26

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

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

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

## Curriculum Worksheet for the Electrical Engineering Classes of 2021 through 2026

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
Fall [16 or 19cr]	Spring [16 or 19cr]	Fall [19cr]	Spring [16cr]	Fall [14cr]	Spring [15-17cr]	Fall [13-15cr]	Spring [13-15cr]
<a href="#">ENGIN 112</a> Intro. to ECE [3 cr] [Notes 1 & 2]	<a href="#">ECE 122</a> Intro. Programming for ECE [4 cr]	<a href="#">ECE 201</a> * Analytical Tools for ECE [4 cr] [Note 4]	<a href="#">ECE 213</a> Continuous-Time Signals & Systems [4 cr][Note 4]	<a href="#">ECE 310</a> Circuits & Electronics II [4 cr]	<a href="#">EE</a> <a href="#">Elective</a> [3 or 4 cr] [Notes 5 & 6]	<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 202</a> Computational Tools for ECE [3 cr]	<a href="#">ECE 214</a> Probability & Statistics [4 cr] [Note 4]	<a href="#">ECE 315</a> ‡ Signal Processing Methods [3 cr]	<a href="#">EE</a> <a href="#">Elective</a> [3 or 4 cr] [Notes 5 & 6]	<a href="#">EE</a> <a href="#">Elective</a> [3 or 4 cr] [Notes 5 & 6]	<a href="#">EE</a> <a href="#">Elective</a> [3 or 4 cr] [Notes 5 & 6]
<a href="#">MATH 131</a> Calculus I [4 cr]	<a href="#">MATH 132</a> Calculus II [4 cr]	<a href="#">ECE 210</a> Circuits & Electronics I [4 cr]	<a href="#">ECE 231</a> Intro. to Embedded Systems [4 cr]	<a href="#">ECE 333</a> Fields & Waves I [3 cr]	<a href="#">ECE 304</a> Junior Design Project [2 cr]	<a href="#">EE</a> <a href="#">Elective</a> [3 or 4 cr] [Notes 5 & 6]	<a href="#">EE</a> <a href="#">Elective</a> [3 or 4 cr] [Notes 5 & 6]
<a href="#">Social World Elective</a> [4 cr, DU or DG] [Note 3]	<a href="#">ECE 124</a> Intro. Digital & Computer Systems [4 cr]	<a href="#">MATH 233</a> Multivariate Calculus [4 cr]	<a href="#">ECE 244</a> Modern Physics and Materials for EE [4 cr]	<a href="#">ECE 344</a> Fundamentals of Semiconductor Devices [3 cr]	<a href="#">ENGIN 351</a> Writing in Engineering [3 cr]	<a href="#">Social World Elective</a> [4 cr] [Note 3]	<a href="#">Social World Elective</a> [4 cr] [Note 3]
<a href="#">ENGLWRIT 112</a> College Writing [3 cr] [take Fall or Spring of 1st year] [Note 2]		<a href="#">Social World Elective</a> [4 cr] [Note 3]		<a href="#">ECE 303</a> Junior Seminar [1 cr]	<a href="#">Biological Sciences Elective</a> [4 cr] [Note 7]		
FYS 191ENG First-Year Seminar in Engineering [1 cr]	* Substitute three courses for ECE 201 (e.g., for math minor);  1. <a href="#">MATH 235</a> Linear Algebra [4 cr]	2. <a href="#">MATH 331</a> Differential Equations [3 cr]  3. <a href="#">ECE 296C</a> Complex Numbers [1 cr]	All three courses must be completed before attempting either ECE 213 or ECE 214 (or both).	‡ <a href="#">Commonwealth Honors College</a> (CHC) and <a href="#">Departmental Honors</a> (DH) students should enroll in ECE H315 in the fall.		<a href="#">5-yr B.S. / M.S.</a> Graduate Course [3 or 4 cr] (Cannot be used for B.S. degree) [Note 8]	<a href="#">5-yr B.S. / M.S.</a> 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/>

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## EE 2021–26

— Notes for the Electrical Engineering Curriculum for those entering the EE major in Summer 2018 or later —

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.

Consult SPIRE (<https://spire.umass.edu>) for course descriptions and course requisites. It is the student’s responsibility to drop any course for which they do not have all of the published requisites.

### Note 1 • ENGIN 112, Intro. to ECE

In the Fall semester, choose one of the following:

- ENGIN 100: Intro. to Engineering
- 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 114: Intro. to Biomedical Engineering

ENGIN 112 is strongly recommended for CompE and EE majors.

### Note 2 • ECE 197DP

In the Fall semester, students looking for a hands-on experience may choose to take a 1-credit “Design Project” add-on to ENGIN 112. Students taking ECE 197DP will need to postpone ENGLWRIT 112 until the spring.

### Note 3 • 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 Global diversity (e.g., AL DG) and one course focusing on United States diversity (e.g., HS DU). 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. Choose DU or DG in the fall semester of your first year, if you don’t already have credit for one.

All first-semester engineering students are required to enroll in a First-Year or Transfer Seminar, e.g., FYS 191ENG or ENGIN 291T.

### Note 4 • ECE 201, Analytical Tools for ECE

Students may substitute MATH 235, Linear Algebra, and MATH 331, Differential Equations, for ECE 201. A 1-credit Independent Study (ECE 296C) covering Complex Numbers is needed to fulfill the graduation requirement for ECE 201. All three courses need to be completed before taking ECE 213 and/or ECE 214.

### Note 5 • EE Electives

Choose six EE Electives, including 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 241: Advanced Programming (1st sem)  
ECE 311: Intermediate Electronics (2nd sem)  
ECE 322: Systems Programming (1st sem)  
ECE 325: Computer Networking (2nd sem)  
ECE 331: Hardware Organization & Digital Design (1st sem)  
ECE 332: Embedded Systems Lab (2nd sem)  
ECE 334: Fields and Waves II (2nd sem)  
ECE 341: Algorithms for Computer Engineering (2nd sem)  
ECE 371: Intro. to Security Engineering (2nd sem) 4 cr  
ECE 510: Foundations of Computer Engineering (1st sem)  
ECE 544: Trustworthy Computing (1st sem)  
ECE 547: Security Engineering (1st sem)  
ECE 558: VLSI Design Principles (1st sem) 4 cr  
ECE 559: VLSI Design Project (2nd sem)  
ECE 564: Communication Systems (2nd sem)  
ECE 565: Digital Signal Processing (1st sem)  
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 (2nd sem)  
ECE 575: Intro. to Analog IC Design (1st sem)  
ECE 580: Feedback Control Systems (1st sem)  
ECE 584: Microwave Engineering I (1st sem) 4 cr  
ECE 585: Microwave Engineering II (2nd sem)

Other approved electives might not be shown. 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.

Consult SPIRE to check course offerings and availability.

### Note 6 • Alternative Electives

To propose a different course to satisfy the EE 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 • Biological Sciences Elective

The Biological Sciences Elective can be fulfilled with any course that satisfies the University’s Biological Science (BS) General Education requirement. (This is different for CompE majors.)

### 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 Engineering as well as a Master of Science (M.S.) in Electrical and Computer Engineering within a five-year time frame. You may “double-count” two 500- or 600-level electives, then complete two more that are later transferred into the M.S. program, provided at least one of the four is 600-level. More information is posted at:

<http://ece.umass.edu/ece/five-year-program>.