

Electrical Engineering Advising Guide

Version 1.1

The degree requirements for Electrical Engineering are detailed in the Academic Catalog which is available here: <https://catalog.union.edu/>. You can also find archived copies of the catalog at this location.

In the following pages, we have provided

- a check-sheet for the degree requirements
- a flowchart showing the prerequisite structure of the curriculum
- a course planning guide which shows when courses are offered
- a sample student schedule

Please see the catalog listings or the ECBE website for a list of upcoming courses offered.

Version History

Date	Version	Changes
02/10/2020	1.0	Initial Version
04/30/2020	1.1	Changed ECE350 Prereq to ECE241

Electrical Engineering -- 40 Course Credits**Core Math and Science****Sequence Option One**

Course Name	Term Taken
MTH 110 - Calculus 1: Differential Calculus	
MTH 112 - Calculus 2: Integral Calculus	
MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory	
MTH 117 - Calculus 4: Integral Vector Calculus	
PHY 120 - Matter in Motion	
PHY 121 - Principles of Electromagnetics	

Sequence Option Two

Course Name	Term Taken
MTH 113 - Accelerated Single-Variable Calculus	
MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory	
MTH 117 - Calculus 4: Integral Vector Calculus	
PHY 120 - Matter in Motion	
PHY 121 - Principles of Electromagnetics	

Sequence Option Three

Course Name	Term Taken
MTH 113 - Accelerated Single-Variable Calculus	
IMP 120 - Integrated Math/Physics (2 Credits)	
IMP 121 - Integrated Math/Physics (2 Credits)	

Other calculus sequences are possible depending upon a student's background.

Additional Math and Science Requirements

Course Name	Term Taken
MTH 130 - Ordinary Differential Equations OR MTH 234 - Differential Equations	
One Science elective numbered 100 or higher (Recommended: CHM 101, PHY122, PHY123)	
One Math or Science elective numbered 100 or higher	

Engineering and Computer Science

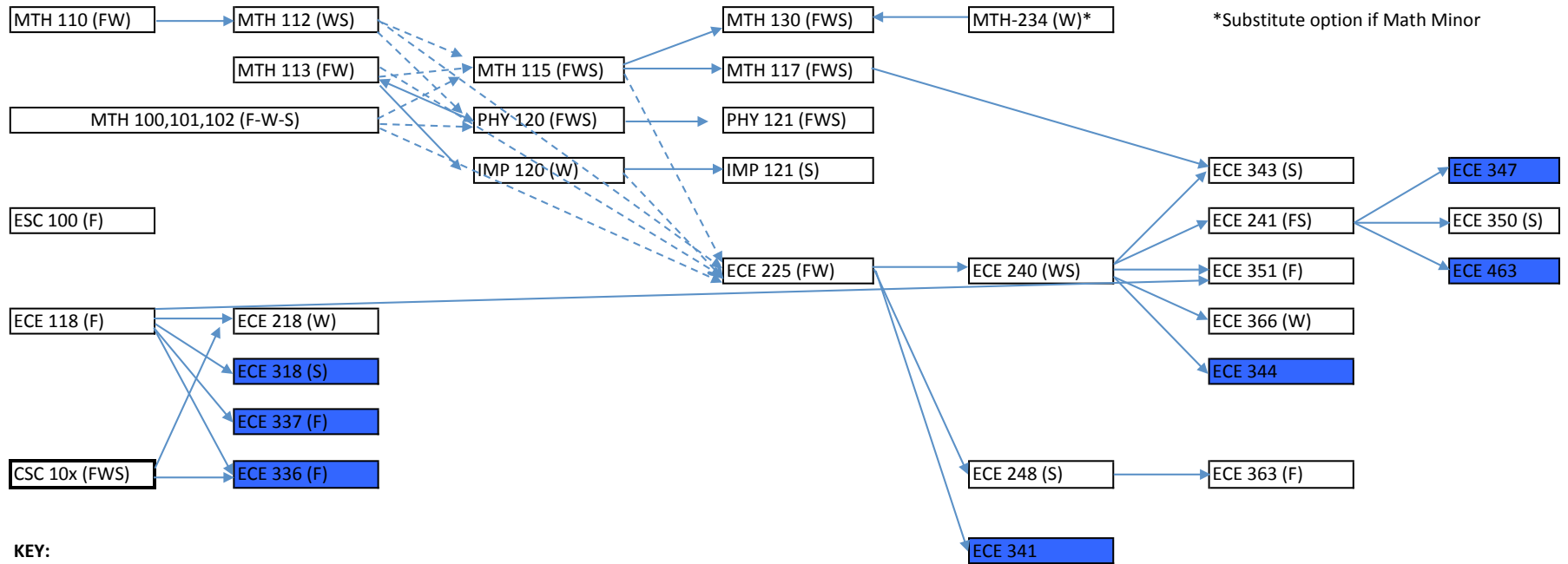
Course Name	Term Taken
ESC 100 - Exploring Engineering	
CSC 10x - Introduction to Computer Science (choose a course from CSC103-107)	

Electrical Engineering Core

Course Name	Term Taken
ECE 101 - The Joy of Electronics	
ECE 118 - Introduction to Computer and Logic Design	
ECE 218 - Embedded Microcontroller Projects	
ECE 225 - Electric Circuits	
ECE 240 - Circuits and Systems [WAC]	
ECE 241 - Discrete Systems [WAC]	
ECE 248 - Introduction to Semiconductor Devices and Circuits	
ECE 343 - Introduction to Electromagnetic Engineering	
ECE 350 - Communication Systems	
ECE 351 - Probability and Digital Communications	
ECE 363 - Analysis and Design of Electronic Circuits	
ECE 366 - Control Systems	

Electrical Engineering Electives	
Three additional ECE courses numbered 300 or higher. Students may also enroll in graduate engineering courses offered through Clarkson Graduate School, Capital Region Campus. Students should consult with their advisors	
Course Name	Term Taken
ECE 3xx	
ECE 3xx	
ECE 3xx	
Capstone Design	
Course Name	Term Taken
ECE 497 - Electrical and Computer Engineering Capstone Design Project 1 (1/2 Credit)	
ECE 498 - Electrical and Computer Engineering Capstone Design Project 2 (1/2 Credit) [WAC]	
ECE 499 - Electrical and Computer Engineering Capstone Design Project 3	
Common Curriculum Courses	
A full description of Common Curriculum Requirements is available here: https://www.union.edu/files/general-education/201807/genedadvising170.pdf	
Course Name	Term Taken
SCLB, QMR, SET - these requirements are fulfilled automatically through courses in the major	
FYP - First Year Preceptorial	
SRS - Sophomore Research Seminar	
SOCS - Social Science (ANT/ECO/HST/PSC/PSY/SOC):	
HUM - Humanities (ATH/AVA/CLS/EGL/MLL/PHL):	
HUL - Humanities Literature:	
LCC - Linguistic and Cultural Competency (†):	
LCC - Linguistic and Cultural Competency (†):	
<i>† may be fulfilled by Study Abroad OR 2 LCC courses OR a sequence of 2 courses in the same language designated as LCC (note that the first course listed in any language (e.g., FRN 100, SPN 100, LAT 101, GRK 101 etc.) does not carry LCC credit)</i>	
Free Electives	
Course Name	Term Taken
5 Writing Across the Curriculum (WAC) Courses [Drawn from Courses Above]	
Course Name	Term Taken
ECE 240 - Circuits and Systems	
ECE 241 - Discrete Systems	
ECE 498 - Electrical and Computer Engineering Capstone Design Project 2	
WAC from outside Engineering & Computer Science -	
Electives: Electives should be chosen in consultation with the student's advisor to meet the Common Curriculum requirements and enhance educational objectives. These elective courses, in addition to the five electives in math, science and electrical and computer engineering, can be customized to complete a double-major or one/or more minors.	
Requirements for Honors: In addition to meeting all of the general college requirements for honors, candidates for honors in electrical engineering must present their senior project at the Steinmetz Symposium.	

Prerequisites for Specific Required Courses in the Electrical Engineering Curriculum



*Substitute option if Math Minor

KEY:

Prerequisite

Can be a co-requisite

Choice of pre-requisites

Blue - indicates some ECE elective course options

For electives (science, math, or technical), see on-line catalog for prerequisites

Union College EE Course Planning Guide Class 2024

Bold indicates offered in this term ONLY!!!

Freshman Year	Fall Term	Winter Term	Spring Term
Year:	ESC100+L	PHY120+L	PHY121+L
	MTH110	MTH112	MTH115
	FYP		
		ECE101	
	CSC103-108+L		
Sophomore Year	Fall Term	Winter Term	Spring Term
Year:	ECE118+L	ECE218+L	ECE248+L
	ECE225+L		
		ECE240+L	
	SRS		
	MTH130		
	SCI Elective		
Junior Year	Fall Term	Winter Term	Spring Term
Year:	ECE241+L		ECE241+L
	ECE351	ECE366+L	ECE343
			ECE350+L
			ECE497
	MTH117		
	MTH/SCI Elective		
ECE Electives (ECE >3xx)			
Senior Year	Fall Term	Winter Term	Spring Term
Year:	ECE498	ECE499	
	ECE363+L		
	ECE Electives (ECE >3xx)		

Union College EE Sample Schedule

Your Schedule may differ substantially

First Year	Fall Term	Winter Term	Spring Term
Courses: 10	ESC100+L	MTH112	MTH115
	MTH110	PHY120+L	PHY121+L
	FYP	ECE101	CSC10x+L
		SOCS	
Sophomore Year	Fall Term	Winter Term	Spring Term
Courses: 10	ECE118+L	ECE218+L	ECE248+L
	ECE225+L	ECE240+L	ECE241+L
	MTH/SCI Elective	MTH130	HUL
		SRS	
Junior Year	Fall Term	Winter Term	Spring Term
Courses: 10	ELECTIVE	SCI Elective	ECE497
	LCC	ECE366+L	ECE343
	LCC	ECE Elective	ECE350+L
	ELECTIVE		MTH117
Senior Year	Fall Term	Winter Term	Spring Term
Courses: 10	ECE363+L	ECE499	ECE Elective
	ECE351	ECE Elective	ELECTIVE
	ECE498	ELECTIVE	ELECTIVE
	HUM		

TERM ABROAD OPTION

Indicates offered in this
term ONLY