April 30, 2020

Computer Engineering Advising Guide Version 1.2

The degree requirements for Computer Engineering are detailed in the Academic Catalog which is available here: <u>https://catalog.union.edu/</u>. 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	
11/13/2019	1.0	Initial Version
02/10/2020	1.1	Changed STA103 -> STA104 on Charlisheet
		Checksheet
04/30/2020	1.2	MTH197 in Fall & MTH197/199 are
		strictly prerequisites for CSC151

Computer Engineering -- 40 Course Credits Required

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	
PHY 120 - Matter in Motion	
PHY 121 - Principles of Electromagnetics	
Sequence Option Two	1
Course Name	Term Taken
MTH 113 - Accelerated Single-Variable Calculus	
MTH 115 - Calculus 3: Differential Vector Calculus and Matrix Theory	
PHY 120 - Matter in Motion	
PHY 121 - Principles of Electromagnetics	
Sequence Ontion Three	
Course Name	Torm Takon
MTH 112 A conferenced Single Variable Calculus	
IMP 120 Integrated Math/Dhysics (2 gradits)	
IMP 120 - Integrated Math/Physics (2 credits)	
The rest of the second	
Other calculus sequences are possible depending upon a student s background.	
Additional Math and Science Requirements	I
Course Name	Term Taken
MTH 130 - Ordinary Differential Equations OR MTH 234 - Differential Equations	
MTH 197 - Discrete Mathematics for Computer Science OR MTH 199 - Introduction to Logic and Set Theory	
One Math Elective from: STA104, MTH117, MTH127, MTH140, STA164, STA264	
M1H221*, M1H235*, M1H238*, M1H340* (* requires M1H199 as a prerequisite)	
Che Science elective numbered 100 of higher (Recommended, CHM 101, PH 1122, PH 1123)	
Engineering and Computer Science	
	Term Taken
ESC 100 - Exploring Engineering	
CSC 10x - Introduction to Computer Science (choose a course from CSC103-107)	
Computer Engineering Core	1
Course Name	Term Taken
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 318 - Digital Design [WAC]	
ECE 336 - Computer Network Protocols OR ECE 337 - Data Communications and Networks	
ECE 351 - Probability and Digital Communications	
CSC 120 - Programming on Purpose	
CSC 151 - Data Structures	
CSC 250 - Algorithm Design and Analysis OR CSC 260 - Large-Scale Software Development	
CSC 270 - Computer Organization	
CSC 333 - Introduction to Parallel Computing OR CSC 335 - Operating Systems OR	
CSC 375 - Compiler Design OR ECE366 - Control Systems	

Computer Engineering Electives				
3 additional CSC or ECE courses numbered 300 or higher. Students may also enroll in graduate engineering cour Clarkson Graduate School, Capital Region Campus. Students should consult with their advisors	rses offered through			
Course Name	Term Taken			
ECE 3xx OR CSC 3xx				
ECE 3xx OR CSC 3xx				
ECE 3xx OR CSC 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 designat first course listed in any language (e.g., FRN 100, SPN 100, LAT 101, GRK 101 etc.) does not carry LCC credit)</i>	ed as LCC (note that the			
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 318 - Digital Design				
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 requireme educational objectives. These elective courses can be customized to complete a double-major or one/or more mine	nts and enhance			

Requirements for Honors: In addition to meeting all of the general college requirements for honors, candidates for honors in computer engineering must present their senior project at the Steinmetz Symposium.



Prerequisites for Specific Required Courses in the Computer Engineering Curriculum

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

Union College CpE Course Planning Guide

Course History / Plan						
Freshman Year	Fall Term	Winter Term	Spring Term			
Year:	ESC 100+L	PHY 120+L	PHY 121+L			
	MTH 110	MTH 112	MTH 115			
	FY	Р				
	CSC 10x+L					
	SCI Elective					
Sophomore Year	Fall Term	Winter Term	Spring Term			
Year:	ECE 118+L	ECE 218+L				
	ECE 2	25+L				
		ECE 240+L				
	SRS					
	MTH 130					
	MTH 197 (fall) or MTH 199 (any term)					
	CSC 120+L					
	CSC 151					
Junior Year	Fall Term	Winter Term	Spring Term			
Year:	ECE 351	[CSC 260]	[CSC 250]			
		CSC 270	ECE 248+L			
		[ECE 366+L]	[CSC 333/335/375]			
			ECE 497 (1/2)			
		ECE/CSC Elective (>300)				
Senior Year	Fall Term	Winter Term	Spring Term			
Year:	ECE 241+L	ECE 499	ECE 241+L			
			ECE 318+L			
	[ECE 336/337]					
	ECE 498 (1/2)					
	ECE/CSC Electives (>300)					
	MTH Elective					

This guide assumes starting in MTH110

Indicates offered in this term ONLY

[]: Take either CSC250 (S) or CSC260 (W); ECE336 or ECE337; and any one from ECE366 (W), CSC333/335/375. Check the course offerings schedule

Union College CpE Sample Schedule

Your Schedule may differ substantially

Freshman Year	Fall Term	Winter Term	Spring Term	
Courses:	ESC 100+L	PHY 120+L	PHY 121+L	
10	MTH 110	MTH 112	MTH 115	
	FYP	SCI elective	CSC 103-108+L	
		HÚL		
Sophomore Year	Fall Term	Winter Term	Spring Term	
Courses:	ECE 118+L	CSC 151	HUM	
10	CSC 120+L	ECE 225+L	ECE 240+L	
	MTH 199	ECE 218+L	MTH 130	
	SRS			
Junior Year	Fall Term	Winter Term	Spring Term	
Courses:	[TERM ABROAD]	[CSC 260]	ELECTIVE	
10.5	LCC	CSC 270	[CSC 335]	
	LCC	SOC	ECE 248+L	
	ELECTIVE	ECE/CSC elective	ECE497 (1/2)	
Senior Year	Fall Term	Winter Term	Spring Term	
Courses:	ECE 241+L	ECE 499	ECE 318+L	
9.5	[ECE 336]	ECE/CSC elective	ECE/CSC elective	
	ECE 351	Math elective	ELECTIVE	
	ECE 498 (1/2)			

TERM ABROAD OPTION

Indicates offered in this term ONLY

[]: Take either CSC250 (S) or CSC260 (W); ECE336 or ECE337; and any one from ECE366 (W), CSC333/335/375. Check the course offerings schedule