Engineering at Union – The First Year

All of the engineering majors require 40 courses for graduation, so we recommend that students take 10 courses per year. If you have AP credits, we still recommend taking 10 courses the first year. You will need to officially declare a specific engineering major (Biomedical Engineering (BME), Computer (CpE), Electrical (EE) or Mechanical (ME)) by the 6th week of the **Spring** term. The following table summarizes the courses that should be taken the first year. It shows the 4th course in the Winter, but this could be taken in the Spring term if desired.

FALL TERM	WINTER TERM	SPRING TERM
Math	Math	Math
ESC100	PHY120	PHY121
Fall Option	Winter Option 1	Spring Option
	Winter Option 2	

Mathematics and Physics

Most students will take five courses of math and physics, and the particular courses will depend on your math placement exam results. If you place high enough to start in MTH 113 or MTH 115, you will have an additional elective or two your first year, which some students use to take advanced math courses. Below are five possible lists of Mathematics and Physics courses that you could take during your first year:

a) MTH 100, 101, 102, PHY 120
b) MTH 110, 112, 115, PHY 120, 121
c) MTH 113 (or AP credits for MTH 110, 112), IMP 120, 121 (4 course credits, same material as MTH 115, 117, PHY 120, 121)
d) MTH 113, 115, PHY 120, 121 (and possibly MTH 117)
e) MTH 115, PHY 120, 121 (and possibly MTH 117, 130)

Option Courses

1) First Year Preceptorial (FYP)
This is required for all Union students as part of the General Education program and most engineering students take it in the Fall.

2) Chemistry (CHM101 or CHM110)
This is required for ME and BME students. ME students should take it in their first year. BME students take it in their first or second year. It can count as the science elective in EE and CpE (Note that this requirement may be fulfilled by any course at level 100 or higher in Chemistry, Physics, Astronomy, Biology, Geology or ENS100 Introduction to Environmental Science). The Chemistry department requires that you take an on-line placement examination to be placed in one of the introductory courses.

3) Computer Science (CSC 103, 104, 105, 106, 107 or 108)
CpE students must take this course in their first year. EE students must take it before the Winter term of their sophomore year so should try to take it in their first year if possible. BME & ME majors are required to take one of these courses and are encouraged to take it during their first year.

4) Biology (BIO 104)
BIO 104 is required only for BME majors and counts for the required science elective in EE and CpE (Note that this requirement may be fulfilled by any course at level 100 or higher in Chemistry, Physics, Astronomy, Biology, Geology or ENS100 Introduction to Environmental Science).

5) Engineering (BME 101, ECE 101, MER 101)
ECE 101 (The Joy of Electronics) is required for EE majors in the first year. It is offered in the Winter and Spring terms. MER 101 (Engineering Graphics) is required by ME, is offered Winter and Spring and should be taken in the

first year. BME majors are required to take BME 101 (Graphics and Image Processing for Biomedical Systems) in the Spring term of their first year.

6) Mathematics
MTH 197 or 199 is required for CpE students. MTH 197 is appropriate as a first year course.

7) Common Curriculum options
Additional options should be chosen to satisfy the Common Curriculum requirements. Consult with your advisor to select courses that will support your academic goals such as study abroad, a double major, or a minor.

To plan your options, refer to the table below to see when course options are offered.

Fall	Winter	Spring
First Year Preceptorial	First Year Preceptorial	
CHM 101 Introductory Chemistry I	CHM 101 Introductory Chemistry I	CHM 101 Introductory Chemistry I
CHM 110 Introductory Chemistry: Accelerated		
CSC 10x Introduction to Computer Science	CSC 10x Introduction to Computer Science	CSC 10x Introduction to Computer Science
BIO 104 Cellular Foundations of Life	BIO 104 Cellular Foundations of Life	BIO 104 Cellular Foundations of Life
MTH 100 Calculus with Pre-calc	MTH 101 Calculus with Pre-calc	MTH 102 Calculus with Pre-calc
MTH 110 Calculus I - Differential	MTH 110 Calculus I - Differential	
MTH 113 AP Calculus	MTH 112 Calculus II - Integral	MTH 112 Calculus II - Integral
MTH 115 Calculus III	MTH 115 Calculus III	MTH 115 Calculus III
MTH 117 Calculus IV	MTH 117 Calculus IV	MTH 117 Calculus IV
MTH 197 Discrete Mathematics for Computer Science		
PHY 120 Matter in Motion	PHY 120 Matter in Motion	PHY 120 Matter in Motion
PHY 121 Principles of Electromagnetics	PHY 121 Principles of Electromagnetics	PHY 121 Principles of Electromagnetics
	IMP 120 Integrated Math/Physics (2 course credits)	IMP 121 Integrated Math/Physics (2 course credits)
	MER 101 Engineering Graphics	MER 101 Engineering Graphics
	ECE 101 Joy of Electronics	ECE 101 Joy of Electronics
		BME 101 Graphics and Image Processing for Biomedical Engineering