

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:

- MTH 105, 112, 115, PHY 120, 121
- MTH 110, 112, 115, PHY 120, 121
- MTH 113 (or AP credits for MTH 110, 112), IMP 120, 121 (4 course credits, same material as MTH 115, 117, PHY 120, 121)
- MTH 113, 115, PHY 120, 121 (and possibly MTH 117)
- MTH 115, PHY 120, 121 (and possibly MTH 117, 130)

Option Courses

1) First Year Inquiry (FYI)

This is required for all Union students as part of the General Education program.

2) Chemistry

CHM 101 or an equivalent is required by ME and BME. ME students should take it in their first year. The Chemistry department requires that you take an on-line placement examination to be placed in one of the introductory courses.

3) Computer Science

All engineering majors must take one of the following introductory CSC courses: CSC 103, 104, 105, 106, 107 or 108. CpE and EE students should take this course in their first year; BME and ME students may be able to complete this in their first year but typically take it later in their curricula.

4) Biology

BIO 104 is required for BME majors.

5) Engineering

ECE 101 (The Joy of Electronics) is required for EE majors in the first year. It is offered in the Spring term. MER 101 (Engineering Graphics) is required by ME; it is offered in 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.

6) Mathematics

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

7) General Education options

Additional options should be chosen to satisfy the [General Education](#) 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 Inquiry	First Year Inquiry	
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 105 Differential Calculus with Pre-calc	MTH 105 Differential Calculus with Pre-calc	
MTH 110 Calculus I - Differential	MTH 110 Calculus I - Differential	
	MTH 112 Calculus II - Integral	MTH 112 Calculus II - Integral
MTH 113 AP Calculus		
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
		BME 101 Graphics and Image Processing for Biomedical Engineering

- Detailed advising guides for the BME, CpE and EE majors as well as sample schedules are available here: https://www.union.edu/ecbe/ecbe_advising
- A mechanical engineering degree planner is located at the ME [courses and requirements](#) website (major tab).