

BRYN MAWR

Columbia University Combined Plan Program in Engineering Pre-Engineering Curriculum Guide

This guide shows the courses required by Columbia University, and the equivalent Bryn Mawr courses, that a Bryn Mawr student must take before matriculating into the 3-2 Combined Plan Program in Engineering. The first table indicates prerequisite ("foundation") courses needed for all majors. Additional prerequisite courses for specific majors at Columbia are shown in the second table and below it. Students having any questions about these courses should contact the Combined Plan liaison at Bryn Mawr.

Foundation Courses Required of All Majors

Prerequisite Columbia Courses	Bryn Mawr Equivalents
Calculus I, II, III, IV (MATH V1101, V1102, V1201, V1202)	MATH 101, 102, 201; PHYS 306 recommended
Differential Equations (MATH E1210)	MATH 210
Mechanics & Thermodynamics (PHYS C1401) Electricity, Magnetism & Optics (PHYS C1402)	PHYS 122, 201
General Chemistry I (C1403)	CHEM 103
Chemistry or Physics Lab	PHYS 122 Lab <i>or</i> CHEM 103 Lab
Computer Science and Programming (COMS W1003, W1004, W1005, or W1007)	CMSC 100 and 206 <i>or</i> CMSC H105 at Haverford
Principles of Economics (ECON W1105)	ECON 105
University Writing (ENGL C1010)	Emily Balch Seminar
At least 27 nontechnical credits (including Economics and Writing)	At least 7 nontechnical courses (including Economics and Balch seminar)

Major-Specific Prerequisite Courses

Columbia Courses	Bryn Mawr Equivalents	Required for
Ordinary Differential Equations (MATH E2030)	MATH 210	Applied Math/Physics, Engineering Mechanics, Materials Science & Eng.
Intro to Applied Mathematics: Ordinary Differential Equations & Linear Algebra (APMA E2101)	MATH 210 and 203	Biomedical Eng., Chemical Eng., Civil Eng., Computer Eng., Earth & Environmental Eng., Electrical Eng., Mechanical Eng.
Linear Algebra (MATH V2010) <i>and</i> Probability & Stats (SIEO W3600)	MATH 203 MATH H203	IEOR*
Physics Lab (PHYS C1493, C1494)	Labs associated with PHYS 101/122, 102	Applied Math/Physics, Chemical Eng., Eng. Mechanics, IEOR*, Materials Science & Eng., Mechanical Eng.
Classical and Quantum Waves (PHYS C1403)	PHYS 214	Applied Math/Physics, Biomedical Eng., Electrical Eng., Materials Science & Eng., Mechanical Eng.
General Chemistry II with lab (CHEM C1404, C1500)	CHEM 104 with lab	Biomed Eng., Chemical Eng., Earth & Environmental Eng., Materials Science & Eng.
Organic Chemistry I with lab (CHEM C3443, C3543)	CHEM 211 with lab	Chemical Eng.
Introduction to Biology I & II (BIOL 2005, 2006)	BIO 110 and <i>either</i> BIO 201 <i>or</i> BIO 255	Biomedical Eng.
Earth: Origin, Evolution, Processes Future (EESC V1011) <i>or</i> Advanced General Geology (EESC W4001)	GEOL 101 <i>or</i> GEOL 204	Civil Eng.
Data Structures & Algorithms (COMS W3134)	CMSC 206	Computer Science
Discrete Mathematics (COMS W3203)	CMSC 231	Computer Eng., Computer Science

* Industrial Engineering, Engineering Management Systems, or Operations Research

Other special requirements:

- Biomedical Eng.: Python programming language *required*
- Civil Eng.: MATLAB programming language preferred
- Computer Eng. & Computer Science: JAVA programming language *required*
- Earth & Environmental Eng.: equivalents of *either* Organic Chemistry I, *or* Classical & Quantum Waves, *or* Introduction to Molecular & Cellular Biology *required*.
- Electrical Eng.: sufficient knowledge of computer programming required to be able to take Data Structures at Columbia.