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

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

<table>
<thead>
<tr>
<th>Columbia Courses</th>
<th>Bryn Mawr Equivalents</th>
<th>Required for</th>
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</thead>
<tbody>
<tr>
<td>Linear Algebra (MATH V2010) and Probability &amp; Stats (SIEO W3600)</td>
<td>MATH 203 and MATH H203</td>
<td>IEsOR*</td>
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<tr>
<td>General Chemistry II with lab (CHEM C1404, C1500)</td>
<td>CHEM 104 with lab</td>
<td>Biomedical Eng., Chemical Eng., Earth &amp; Environmental Eng., Materials Science &amp; Eng.</td>
</tr>
<tr>
<td>Organic Chemistry I with lab (CHEM C3443, C3543)</td>
<td>CHEM 211 with lab</td>
<td>Chemical Eng.</td>
</tr>
<tr>
<td>Introduction to Biology I &amp; II (BIOL 2005, 2006)</td>
<td>BIO 110 and either BIO 201 or BIO 255</td>
<td>Biomedical Eng.</td>
</tr>
<tr>
<td>Earth: Origin, Evolution, Processes Future (EESC V1011) or Advanced General Geology (EESC W4001)</td>
<td>GEOL 101 or GEOL 204</td>
<td>Civil Eng.</td>
</tr>
<tr>
<td>Data Structures &amp; Algorithms (COMS W3134)</td>
<td>CMSC 206</td>
<td>Computer Science</td>
</tr>
<tr>
<td>Discrete Mathematics (COMS W3203)</td>
<td>CMSC 231</td>
<td>Computer Eng., Computer Science</td>
</tr>
</tbody>
</table>

* 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.