# Macromolecular Science and Engineering

## Dual Degree Program Course Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Semester Credit Hours</th>
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</thead>
<tbody>
<tr>
<td>CHEM 105</td>
<td>Principles of Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 106</td>
<td>Principles of Chemistry II</td>
<td>3</td>
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<tr>
<td>CHEM 113</td>
<td>Principles of Chemistry Lab</td>
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<tr>
<td>ENGR 131</td>
<td>Elementary Computer Programming (JAVA)</td>
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</tr>
<tr>
<td>MATH 121</td>
<td>Calculus for Science and Engineering I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 122</td>
<td>Calculus for Science and Engineering II</td>
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<tr>
<td>MATH 223</td>
<td>Calculus for Science and Engineering III</td>
<td>3</td>
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<tr>
<td>MATH 224</td>
<td>Elementary Differential Equations</td>
<td>3</td>
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<tr>
<td>PHYS 121</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 122</td>
<td>General Physics II</td>
<td>4</td>
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<tr>
<td></td>
<td>Humanities and Social Science</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>(including college level writing proficiency)</td>
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<tr>
<td></td>
<td>Physical Education (2 semesters)</td>
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<td><strong>Total</strong></td>
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# Sample Course Sequence for Macromolecular Science and Engineering

## Fall Year 1

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Course Number</th>
<th>Course Title</th>
<th>Hours per Week</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMAC</td>
<td>270</td>
<td>Introduction to Polymer Science</td>
<td>3</td>
<td>3</td>
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<tr>
<td>CHEM</td>
<td>223</td>
<td>Organic Chemistry I</td>
<td>3</td>
<td>3</td>
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<tr>
<td>ENGR</td>
<td>200</td>
<td>Statics and Strength of Materials</td>
<td>3</td>
<td>3</td>
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<tr>
<td>ENGL</td>
<td>398N</td>
<td>Professional Communication</td>
<td>3</td>
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<td>Technical Elective</td>
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## Spring Year 1

<table>
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<tr>
<th>Subject Code</th>
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<th>Course Title</th>
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<tbody>
<tr>
<td>EMAC</td>
<td>276</td>
<td>Polymer Properties and Design</td>
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<tr>
<td>ENGR</td>
<td>225</td>
<td>Thermo, Fluid Dynamics, Heat &amp; Mass Transfer</td>
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<tr>
<td>CHEM</td>
<td>224</td>
<td>Organic Chemistry II</td>
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<tr>
<td>ENGR</td>
<td>210</td>
<td>Introduction to Circuits and Instrumentation</td>
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<tr>
<td>CHEM</td>
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<td>Laboratory Methods and Techniques I</td>
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<td></td>
<td>(or) CHEM 290 Lab Methods for Engineers</td>
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<td>3 (5)</td>
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## Fall Year 2

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<tbody>
<tr>
<td>EMAC</td>
<td>370</td>
<td>Polymer Chemistry and Industry</td>
<td>3</td>
<td>3</td>
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<tr>
<td>EMAC</td>
<td>355</td>
<td>Polymer Analysis Laboratory</td>
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<td>EMAC</td>
<td>351</td>
<td>Physical Chemistry for Engineers</td>
<td>3</td>
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<tr>
<td>EMAC</td>
<td>377</td>
<td>Polymer Processing</td>
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<td>Technical Elective</td>
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## Spring Year 2

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Course Number</th>
<th>Course Title</th>
<th>Hours per Week</th>
<th>Semester Credit Hours</th>
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<tbody>
<tr>
<td>EMAC</td>
<td>378</td>
<td>Polymer Production and Technology</td>
<td>3</td>
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<tr>
<td>EMAC</td>
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<td>Polymer Processing Laboratory</td>
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<td>EMAC</td>
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<td>Senior Project</td>
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**Please Note:** The course sequence serves as an example of the classes necessary to complete the Dual Degree Program. Courses and the semesters taken will be based on the student’s transfer credit and discussion with the Case Western Reserve University faculty advisor.