CHEMISTRY AND BIOLOGY (COURSE 5-7)

Chemistry and Biology (http://catalog.mit.edu/interdisciplinary/undergraduate-programs/degrees/chemistry-biology)

Bachelor of Science in Chemistry and Biology

General Institute Requirements (GIRs)
The General Institute Requirements include a Communication Requirement that is integrated into both the HASS Requirement and the requirements of each major; see details below.

Summary of Subject Requirements

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humanities, Arts, and Social Sciences (HASS) Requirement; at least two of these subjects must be designated as communication-intensive (CI-H) to fulfill the Communication Requirement.</td>
<td>8</td>
</tr>
<tr>
<td>Restricted Electives in Science and Technology (REST) Requirement [can be satisfied by 5.12 or 5.60 and 7.03 in the Departmental Program]</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory Requirement (12 units) [can be satisfied by 7.02[J] or the combination of 5.351, 5.352, and 5.363 or 7.102 in the Departmental Program]</td>
<td>1</td>
</tr>
<tr>
<td>Total GIR Subjects Required for SB Degree</td>
<td>17</td>
</tr>
</tbody>
</table>

Physical Education Requirement
Swimming requirement, plus four physical education courses for eight points.

Departmental Program
Choose at least two subjects in the major that are designated as communication-intensive (CI-M) to fulfill the Communication Requirement.

Required Subjects

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.03 Principles of Inorganic Chemistry I</td>
</tr>
<tr>
<td>5.12 Organic Chemistry I</td>
</tr>
<tr>
<td>5.13 Organic Chemistry II</td>
</tr>
<tr>
<td>5.60 Thermodynamics and Kinetics</td>
</tr>
<tr>
<td>7.03 Genetics</td>
</tr>
<tr>
<td>7.06 Cell Biology</td>
</tr>
<tr>
<td>5.07[J] Biological Chemistry I</td>
</tr>
<tr>
<td>or 7.05 General Biochemistry</td>
</tr>
</tbody>
</table>

Restricted Electives

Select two of the following:

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.04 Principles of Inorganic Chemistry II</td>
</tr>
<tr>
<td>5.08[J] Biological Chemistry II</td>
</tr>
<tr>
<td>5.43 Advanced Organic Chemistry</td>
</tr>
</tbody>
</table>

Departmental Laboratory Requirement
Select 49-61 units from one of the three departmental laboratory tracks

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>49-61</td>
</tr>
</tbody>
</table>

Unrestricted Electives

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>48-59</td>
</tr>
</tbody>
</table>

Total Units Beyond the GIRs Required for SB Degree

<table>
<thead>
<tr>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>180-181</td>
</tr>
</tbody>
</table>

The units for any subject that counts as one of the 17 GIR subjects cannot also be counted as units required beyond the GIRs.

1 Subject has prerequisites that are outside of the program.
### Departmental Laboratory Track 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.351</td>
<td>Fundamentals of Spectroscopy</td>
<td>4</td>
</tr>
<tr>
<td>5.352</td>
<td>Synthesis of Coordination Compounds and Kinetics</td>
<td>5</td>
</tr>
<tr>
<td>5.363</td>
<td>Organic Structure Determination</td>
<td>4</td>
</tr>
<tr>
<td>5.382</td>
<td>Time- and Frequency-resolved Spectroscopy of Photosynthesis (CI-M)</td>
<td>5</td>
</tr>
<tr>
<td>7.02[J]</td>
<td>Introduction to Experimental Biology and Communication (CI-M)</td>
<td>18</td>
</tr>
</tbody>
</table>

Select four of the following: 16

- 5.353 Macromolecular Prodrugs
- 5.371 Continuous Flow Chemistry: Sustainable Conversion of Reclaimed Vegetable Oil into Biodiesel
- 5.372 Chemistry of Renewable Energy
- 5.373 Dinitrogen Cleavage
- 5.381 Quantum Dots
- 5.383 Fast-flow Peptide and Protein Synthesis

Total Units: 49

### Departmental Laboratory Track 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.351</td>
<td>Fundamentals of Spectroscopy</td>
<td>4</td>
</tr>
<tr>
<td>5.352</td>
<td>Synthesis of Coordination Compounds and Kinetics</td>
<td>5</td>
</tr>
<tr>
<td>5.363</td>
<td>Organic Structure Determination</td>
<td>4</td>
</tr>
<tr>
<td>7.02[J]</td>
<td>Introduction to Experimental Biology and Communication (CI-M)</td>
<td>18</td>
</tr>
<tr>
<td>7.18</td>
<td>Topics in Experimental Biology (CI-M)</td>
<td>30</td>
</tr>
</tbody>
</table>

Total Units: 61

*Requires selection of 5.61 as a restricted elective.*