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>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science Requirement</td>
<td>6</td>
</tr>
<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 (<a href="http://catalog.mit.edu/search/?P=5.12">http://catalog.mit.edu/search/?P=5.12</a>) and 7.03 (<a href="http://catalog.mit.edu/search/?P=7.03">http://catalog.mit.edu/search/?P=7.03</a>) in the Departmental Program]</td>
<td>2</td>
</tr>
<tr>
<td>Laboratory Requirement (12 units) [can be satisfied by 7.003 (<a href="http://catalog.mit.edu/search/?P=7.003">http://catalog.mit.edu/search/?P=7.003</a>) or the combination of 5.351 (<a href="http://catalog.mit.edu/search/?P=5.351">http://catalog.mit.edu/search/?P=5.351</a>), 5.352 (<a href="http://catalog.mit.edu/search/?P=5.352">http://catalog.mit.edu/search/?P=5.352</a>), and 5.353 (<a href="http://catalog.mit.edu/search/?P=5.353">http://catalog.mit.edu/search/?P=5.353</a>) 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>
<th>Required Subjects</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>5.03 (<a href="http://catalog.mit.edu/search/?P=5.03">http://catalog.mit.edu/search/?P=5.03</a>) Principles of Inorganic Chemistry I</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>5.07(] (<a href="http://catalog.mit.edu/search/?P=5.07">http://catalog.mit.edu/search/?P=5.07</a>) Biological Chemistry I</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>5.08][ (<a href="http://catalog.mit.edu/search/?P=5.08">http://catalog.mit.edu/search/?P=5.08</a>) General Biochemistry</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>5.12 (<a href="http://catalog.mit.edu/search/?P=5.12">http://catalog.mit.edu/search/?P=5.12</a>) Organic Chemistry I</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>5.601 (<a href="http://catalog.mit.edu/search/?P=5.601">http://catalog.mit.edu/search/?P=5.601</a>) Thermodynamics I</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>5.611 (<a href="http://catalog.mit.edu/search/?P=5.611">http://catalog.mit.edu/search/?P=5.611</a>) Introduction to Spectroscopy</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>7.03 (<a href="http://catalog.mit.edu/search/?P=7.03">http://catalog.mit.edu/search/?P=7.03</a>) Genetics</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>7.06 (<a href="http://catalog.mit.edu/search/?P=7.06">http://catalog.mit.edu/search/?P=7.06</a>) Cell Biology</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>5.351 (<a href="http://catalog.mit.edu/search/?P=5.351">http://catalog.mit.edu/search/?P=5.351</a>) Fundamentals of Spectroscopy</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5.352 (<a href="http://catalog.mit.edu/search/?P=5.352">http://catalog.mit.edu/search/?P=5.352</a>) Synthesis of Coordination Compounds and Kinetics (CI-M)</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>5.353 (<a href="http://catalog.mit.edu/search/?P=5.353">http://catalog.mit.edu/search/?P=5.353</a>) Macromolecular Prodrugs</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following options:

Option 1

| 9-12 | 5.361 (http://catalog.mit.edu/search/?P=5.361) Expression and Puriﬁcation of Enzyme Mutants | 9-12 |

or 7.05 General Biochemistry

5.08][ Biological Chemistry II

5.12 Organic Chemistry I

5.13 Organic Chemistry II

5.601 Thermodynamics I

5.611 Introduction to Spectroscopy

7.03 Genetics

7.06 Cell Biology

5.351 Fundamentals of Spectroscopy

5.352 Synthesis of Coordination Compounds and Kinetics (CI-M)

5.353 Macromolecular Prodrugs

7.002 Fundamentals of Experimental Molecular Biology

5.361 Expression and Puriﬁcation of Enzyme Mutants
5.362 (http://catalog.mit.edu/search/?P=5.362) Kinetics of Enzyme Inhibition (CI-M)

7.003 (http://catalog.mit.edu/search/?P=7.003) Molecular Biology Laboratory (CI-M)

Option 2

5.363 (http://catalog.mit.edu/search/?P=5.363) Organic Structure Determination


5.373 (http://catalog.mit.edu/search/?P=5.373) Dinitrogen Cleavage

5.381 (http://catalog.mit.edu/search/?P=5.381) Quantum Dots

5.382 (http://catalog.mit.edu/search/?P=5.382) Time- and Frequency-resolved Spectroscopy of Photosynthesis


5.43 (http://catalog.mit.edu/search/?P=5.43) Advanced Organic Chemistry

5.602 (http://catalog.mit.edu/search/?P=5.602) Thermodynamics II and Kinetics

5.612 (http://catalog.mit.edu/search/?P=5.612) Electronic Structure of Molecules

5.62 (http://catalog.mit.edu/search/?P=5.62) Physical Chemistry

7.09 (http://catalog.mit.edu/search/?P=7.09) Quantitative and Computational Biology (CI-M)


7.21 (http://catalog.mit.edu/search/?P=7.21) Microbial Physiology

7.23 (http://catalog.mit.edu/search/?P=7.23) Immunology

7.26 (http://catalog.mit.edu/search/?P=7.26) Molecular Basis of Infectious Disease

7.27 (http://catalog.mit.edu/search/?P=7.27) Principles of Human Disease and Aging

7.28 (http://catalog.mit.edu/search/?P=7.28) Molecular Biology

7.29 (http://catalog.mit.edu/search/?P=7.29) Cellular and Molecular Neurobiology


Restricted Electives

Select 30 units of the following: 30

5.04 (http://catalog.mit.edu/search/?P=5.04) Principles of Inorganic Chemistry II

5.362 (http://catalog.mit.edu/search/?P=5.362) Kinetics of Enzyme Inhibition (CI-M)

5.363 (http://catalog.mit.edu/search/?P=5.363) Organic Structure Determination


5.373 (http://catalog.mit.edu/search/?P=5.373) Dinitrogen Cleavage

5.381 (http://catalog.mit.edu/search/?P=5.381) Quantum Dots

5.382 (http://catalog.mit.edu/search/?P=5.382) Time- and Frequency-resolved Spectroscopy of Photosynthesis


5.43 (http://catalog.mit.edu/search/?P=5.43) Advanced Organic Chemistry

5.602 (http://catalog.mit.edu/search/?P=5.602) Thermodynamics II and Kinetics

5.612 (http://catalog.mit.edu/search/?P=5.612) Electronic Structure of Molecules

5.62 (http://catalog.mit.edu/search/?P=5.62) Physical Chemistry

7.09 (http://catalog.mit.edu/search/?P=7.09) Quantitative and Computational Biology (CI-M)


7.21 (http://catalog.mit.edu/search/?P=7.21) Microbial Physiology

7.23 (http://catalog.mit.edu/search/?P=7.23) Immunology

7.26 (http://catalog.mit.edu/search/?P=7.26) Molecular Basis of Infectious Disease

7.27 (http://catalog.mit.edu/search/?P=7.27) Principles of Human Disease and Aging

7.28 (http://catalog.mit.edu/search/?P=7.28) Molecular Biology

7.29 (http://catalog.mit.edu/search/?P=7.29) Cellular and Molecular Neurobiology

Current Topics in Mammalian Biology: Medical Implications
7.31 (http://catalog.mit.edu/search/?P=7)

Systems Biology
7.32 (http://catalog.mit.edu/search/?P=7)

Evolutionary Biology: Concepts, Models and Computation
7.33 (http://catalog.mit.edu/search/?P=7)

Biological and Engineering Principles Underlying Novel Biotherapeutics
7.37 (http://catalog.mit.edu/search/?P=7)

The Hallmarks of Cancer
7.45 (http://catalog.mit.edu/search/?P=7)

Building with Cells
7.46 (http://catalog.mit.edu/search/?P=7)

Developmental Neurobiology
7.49 (http://catalog.mit.edu/search/?P=7)

Unrestricted Electives 59-62
Units in Major 154-157
Units in Major That Also Satisfy the GIRs (36)
Total Units Beyond the GIRs Required for SB Degree 180

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

Subject has prerequisites that are outside of the program.