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  Subjects  
Science Requirement  6  
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.  8  
Restricted Electives in Science and Technology (REST) Requirement [can be satisfied by 5.12 and 7.03 in the Departmental Program]  2  
Laboratory Requirement (12 units) [can be satisfied by 7.003[J] or the combination of 5.351, 5.352, and 5.353 in the Departmental Program]  1  
Total GIR Subjects Required for SB Degree  17  

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  Units  
5.03 Principles of Inorganic Chemistry I  12  
5.07[J] Introduction to Biological Chemistry  12  
or 7.05 General Biochemistry  
5.08[J] Fundamentals of Chemical Biology  12  
5.12 Organic Chemistry I  12  
5.13 Organic Chemistry II  12  
5.601 Thermodynamics I  6  
5.611 Introduction to Spectroscopy  6  
7.03 Genetics  12  
7.06 Cell Biology  12  
Departmental Laboratory Requirement  5.351 Fundamentals of Spectroscopy  4  

5.352 Synthesis of Coordination Compounds and Kinetics (CI-M)  5  
5.353 Macromolecular Prodrugs  4  
7.002 Fundamentals of Experimental Molecular Biology  6  

Select one of the following options:  9-12  
Option 1  
5.361 Expression and Purification of Enzyme Mutants  
5.362 Kinetics of Enzyme Inhibition (CI-M)  
Option 2  
7.003[J] Applied Molecular Biology Laboratory (CI-M)  

Restricted Electives  
Select 30 units of the following:  30  
5.04 Principles of Inorganic Chemistry II  
5.363 Organic Structure Determination  
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  
5.382 Fast- and Frequency-resolved Spectroscopy of Photosynthesis  
5.383 Fast-flow Peptide and Protein Synthesis  
5.39 Research and Communication in Chemistry  
5.43 Advanced Organic Chemistry  
5.602 Thermodynamics II and Kinetics  
5.612 Electronic Structure of Molecules  
5.62 Physical Chemistry  
7.093 Modern Biostatistics  
7.094 Modern Computational Biology  
7.19 Communication in Experimental Biology (CI-M)  
7.20[J] Human Physiology  
7.21 Microbial Physiology  
7.23[J] Immunology  
7.26 Molecular Basis of Infectious Disease  
7.27 Principles of Human Disease and Aging  
7.28 Molecular Biology  
7.29[J] Cellular and Molecular Neurobiology  
7.31 Current Topics in Mammalian Biology: Medical Implications
7.32 Systems Biology


7.371 Biological and Engineering Principles Underlying Novel Biotherapeutics

7.45 The Hallmarks of Cancer

7.46 Building with Cells

7.49[J] Developmental Neurobiology

<table>
<thead>
<tr>
<th>Unrestricted Electives</th>
<th>59-62</th>
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<tr>
<td>Units in Major</td>
<td>154-157</td>
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<td>Units in Major That Also Satisfy the GIRs</td>
<td>(36)</td>
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<td>Total Units Beyond the GIRs Required for SB Degree</td>
<td>180</td>
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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.