

## BIOLOGY (COURSE 7-A)

Department of Biology (<http://catalog.mit.edu/schools/science/biology/#undergraduatetext>)

### Bachelor of Science in 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 from among 5.12 or 5.60 and 7.03 or 7.05 in the Departmental Program]	2
Laboratory Requirement (12 units) [can be satisfied by 7.02]] or 20.109 in the Departmental Program]	1
<b>Total GIR Subjects Required for SB Degree</b>	<b>17</b>

#### 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
5.12 Organic Chemistry I	12
5.60 Thermodynamics and Kinetics <sup>1</sup> or 20.110]] Thermodynamics of Biomolecular Systems	12
7.03 Genetics	12
7.05 General Biochemistry or 5.07]] Biological Chemistry I	12
7.06 Cell Biology	12
<i>Select one of the following:</i>	15-18
7.02]] Introduction to Experimental Biology and Communication (CI-M)	
20.109 Laboratory Fundamentals in Biological Engineering (CI-M)	

#### Restricted Electives

Select three undergraduate-level 12-unit subjects offered by the Department of Biology for which 7.03 and/or 7.05 are prerequisites. <sup>2</sup> 36

<i>Select one of the following CI-Ms:</i>		9-18
3.014	Materials Laboratory (CI-M)	
5.383 & 5.382	Fast-flow Peptide and Protein Synthesis and Time- and Frequency-resolved Spectroscopy of Photosynthesis (CI-M)	
6.021]]	Cellular Neurophysiology and Computing (CI-M)	
7.19	Communication in Experimental Biology (CI-M)	
8.13	Experimental Physics I (CI-M)	
9.12	Experimental Molecular Neurobiology (CI-M)	
9.17	Systems Neuroscience Laboratory (CI-M)	
9.28	Current Topics in Developmental Neurobiology (CI-M)	
10.26	Chemical Engineering Projects Laboratory (CI-M)	
10.27	Energy Engineering Projects Laboratory (CI-M)	
10.28	Chemical-Biological Engineering Laboratory (CI-M)	
10.29	Biological Engineering Projects Laboratory (CI-M)	
20.380	Biological Engineering Design (CI-M)	

<b>Units in Major</b>	120-132
<b>Unrestricted Electives</b>	84-96
Units in Major That Also Satisfy the GIRs	(36)
<b>Total Units Beyond the GIRs Required for SB Degree</b>	<b>180</b>

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

<sup>1</sup> The department recommends 5.60 or 20.110]] to fulfill this component of the program, but it will also accept 2.005, 3.012, 8.044, or 10.213.

<sup>2</sup> Exceptions: The combination of 7.30A]] and 7.30B]] is eligible as a restricted elective; 9.15 is eligible as a restricted elective; 7.19 cannot be used as a restricted elective. Graduate-level subjects may not be used as restricted electives.

#### Restricted Electives

7.08]]	Biological Chemistry II	12
7.09	Quantitative and Computational Biology	12
7.20]]	Human Physiology	12
7.21	Microbial Physiology	12

**BIOLOGY (COURSE 7-A)**

7.22	Developmental Biology	12
7.23	Immunology	12
7.26	Molecular Basis of Infectious Disease	12
7.27	Principles of Human Disease	12
7.28	Molecular Biology	12
7.29[J]	Cellular and Molecular Neurobiology	12
7.30A[J] & 7.30B[J]	Fundamentals of Ecology I and Fundamentals of Ecology II <sup>1</sup>	12
7.31	Current Topics in Mammalian Biology: Medical Implications	12
7.32	Systems Biology	12
7.33[J]	Evolutionary Biology: Concepts, Models and Computation	12
7.37[J] or 7.371	Molecular and Engineering Aspects of Biotechnology Biological and Engineering Principles Underlying Novel Biotherapeutics	12
7.41	Principles of Chemical Biology	12
7.45	The Hallmarks of Cancer	12
7.49[J]	Developmental Neurobiology	12
9.15	Neural Circuits, Neuromodulatory, and Neuroendocrine Systems <sup>2</sup>	12

<sup>1</sup> *The combination of 7.30A[J] Fundamentals of Ecology I and 7.30B[J] Fundamentals of Ecology II counts as one Biology restricted elective.*