

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
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
5.12 Organic Chemistry I	12
5.60 Thermodynamics and Kinetics ¹ 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. ²

<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)	

Units in Major	120-132
Unrestricted Electives	84-96
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.

¹ 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.

² 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

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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 ¹	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]	Molecular and Engineering Aspects of Biotechnology	12
or 7.371	Biological and Engineering Principles Underlying Novel Biotherapeutics	
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 ²	12

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