

Biology (Course 7)

Department of Biology

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 5.601/5.602, and 7.03 or 7.05 in the Departmental Program]	2
Laboratory Requirement (12 units) [can be satisfied by 7.002 and 7.003[J] 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
7.002 Fundamentals of Experimental Molecular Biology	6
7.003[J] Applied Molecular Biology Laboratory (CI-M)	12
7.03 Genetics	12
5.12 Organic Chemistry I	12
7.05 General Biochemistry or 5.07[J] Introduction to Biological Chemistry	12
7.06 Cell Biology	12
5.601 & 5.602 Thermodynamics I and Thermodynamics II and Kinetics ¹ or 20.110[J] Thermodynamics of Biomolecular Systems	12
Biology Capstone Subject	
7.19 Communication in Experimental Biology (CI-M)	12
Restricted Electives	
Select three undergraduate-level 12-unit subjects from the list of restricted electives below. ²	36
Units in Major	126
Unrestricted Electives	90
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 the combination of 5.601 Thermodynamics I and 5.602 Thermodynamics II and Kinetics or 20.110[J] to fulfill this component of the program, but it will also accept 2.005 Thermal-Fluids Engineering I, 8.044 Statistical Physics I, or 10.213 Chemical and Biological Engineering Thermodynamics.² Graduate-level subjects may not be used as restricted electives.**Restricted Electives**

7.08[J] Fundamentals of Chemical Biology	12
7.093 Modern Biostatistics & 7.094 and Modern Computational Biology	12
7.20[J] Human Physiology	12
7.21 Microbial Physiology	12
7.23[J] Immunology	12
7.24 Advanced Concepts in Immunology	12
7.26 Molecular Basis of Infectious Disease	12
7.27 Principles of Human Disease and Aging	12
7.28 Molecular Biology	12
7.29[J] Cellular and Molecular Neurobiology	12
7.30[J] Fundamentals of Ecology	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
7.35 Human Genetics and Genomics	12
7.371 Biological and Engineering Principles Underlying Novel Biotherapeutics	12
7.45 The Hallmarks of Cancer	12
7.46 Building with Cells	12
7.49[J] Developmental Neurobiology	12
9.17 Systems Neuroscience Laboratory (CI-M) ¹	12
9.26[J] Principles and Applications of Genetic Engineering for Biotechnology and Neuroscience	12
6.C01 Modeling with Machine Learning: from Algorithms to Applications & 7.C01 and Machine Learning in Molecular and Cellular Biology ²	12

¹ Subject has prerequisites that are outside of the program.² Students must complete 6.C01 & 7.C01 simultaneously in order to receive credit.**Communication-Intensive Subjects in the Major**

7.003[J] Applied Molecular Biology Laboratory (CI-M)	12
7.19 Communication in Experimental Biology (CI-M)	12