

Santa Clara University

Requirements for the Biology Major

College and University Requirements

Critical Thinking & Writing _____ Ethics _____ Science Technology & Society _____
 Cultures & Ideas _____ Civic Engagement _____ Advanced Writing _____
 Foreign Language _____ Diversity _____ Experiential Learning _____
 Religious Theology & Culture _____ Arts _____ Social Science _____
 Pathways * _____ * Can overlap other core or major requirements

Department Requirements

BIOL: 21, 22, 23, 24 & 25 CHEM: 11, 12, 13, 31 & 32 (CHEM 33 suggested)
 PHYS: 11, 12, 13 (or 31, 32, 33) MATH: 11 & 12 (Math 8 & 13 suggested)

Upper Division Courses: Most Biology majors choose one of the three emphases listed below. Each student is required to take **FIVE** courses within the emphasis. **TWO** additional elective courses may be taken in any area of emphasis. Of the seven total upper division courses, at least FIVE must have a laboratory component. Only one area of emphasis will appear on transcripts. An overall GPA of 2.0 is required in all biology courses.

Alternatively Biology majors may declare that they will follow an *"Integrative Biology"* plan, in which they choose their upper division courses to create a logical and focused plan of study. This course plan must be developed in consultation with their Biology faculty advisor.

Biomedical Sciences	Cellular & Molecular Biology	Ecology & Evolution
103 104 106 108	108 110 113 114 122	131 134 135 136
110 111 112 113	128 136 145 "171 & 189"	142 144 150 151
114 115 116 117	173 174 175 176 177	153 156 157 158
119 120 121 122	178 186 CHEM 141	160 164 165 172
123 124 126 127	CHEM 142	173 178 180
129 145 160		
171 & 189 172 174		
175 178 179		
CHEM 141		

Biology 171 counts as a 3rd religion

Biology 187: Biology of Aging does NOT count toward a major or minor in Biology.

Students are personally responsible for knowing all the academic regulations affecting their program of study and for completing all degree requirements as set forth by the University, their College or School, and academic department (s). Failure to understand these regulations and requirements does not relieve a student of responsibility. (Undergraduate Bulletin)

* Courses 1-21 & 28 satisfy the Natural Science Requirement of the University Core Curriculum.

BIO 2. Human Disease/Human Health	BIO 131. Agroecology L+ L
BIO 3. Fitness Physiology L + L	BIO 134. California Plant Diversity L + L
BIO 4. Light & Life L + L	BIO 135. Biofuels
BIO 5. Endangered Ecosystems L + L	BIO 136. Arctic Biology L + L
BIO 6. The Oceans L + L	BIO 142. Natural History of California ¹ L + L
BIO 15. The Human Embryo L + L	BIO 144. Natural History of Baja L + L
BIO 18. Exploring Biotechnology L + L	BIO 145. Virology
BIO 19. Biology for Teachers L + L	BIO 150. Conservation Biology L + L
BIO 21. Introduction to Physiology	BIO 151. Restoration Ecology L + L
BIO 22. Introduction to Evolution & Ecology	BIO 153. Conservation Science
BIO 23. Investigations in Evolution & Ecology L + L	BIO 156. General Ecology L + L
BIO 24. Introduction to Cellular and Molecular Biology	BIO 157. Environmental Biology in the Tropics ² L + L
BIO 25. Investigations in Cellular & Molecular Biology L + L	BIO 158. Biology of Insects L + L
UPPER DIVISION	BIO 159. Plagues in the Age of Insects
BIO 100. Hot Topics in Biology	BIO 160 Biostatistics L + L
BIO 103. Kinesiology & Biomechanics	BIO 164 Behavioral Ecology
BIO 104. Human Anatomy L + L	BIO 165. Animal Behavior L+ L
BIO 106. Health Consequences of a Western Lifestyle	BIO 171. Ethical Issues in Biotechnology and Genetics ³
BIO 108. Genetics	BIO 172. Evolutionary Genetics of Disease
BIO 110. Genetics L + L	BIO 173. Evolution L + L
BIO 111. Parasitology	BIO 174. Cell Biology L + L
BIO 112. Pathogenic Microbiology L+ L	BIO 175. Molecular Biology L+ L
BIO 113. Microbiology L + L	BIO 176. Biotechnology Lab I: Recombinant DNA L+ L
BIO 114. Immunology L + L	BIO 177. Biotechnology Lab II: Gene Expression L+ L
BIO 115. Human Reproduction & Development L + L	BIO 178. Bioinformatics L + L
BIO 116. Medical Microbiology L&L	BIO 179. Cancer Biology
BIO 117. Epidemiology L + L	BIO 180. Marine Physiological Ecology L+ L
BIO 119. Biology of Stress	BIO 186. Gene Construction & Expression L+L
BIO 120. Animal Physiology L+ L	BIO 187. Biology of Aging
BIO 121. Animal Physiology (no lab)	BIO 189. Topics in Cell and Molecular Biology
BIO 122. Neurobiology L+ L	BIO 191. Project Lab L+ L
BIO 123. Nutrition	BIO 192. Topics in Conservation Biology
BIO 124. Human Physiology L+ L	BIO 198. Internship and Undergraduate Research
BIO 125. Plant Physiology L + L	BIO 199. Directed Reading and Research
BIO 127. Drugs and Toxins in Human Biology	
BIO 128. Plant Development L+ L	
BIO 129. Human Physiology (no lab)	

¹ Requires participation in Spring break field trip.

² Typically only taught during the summer session.

³ BIOL 171 and BIOL 189 must both be taken for BIOL 171 to count toward the 7 upper division biology courses required for the major.

Biotechnology Minor

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Required Courses:

BIOL 21 [] CHEM 11 []
BIOL 24 [] CHEM 12 []
BIOL 25 [] CHEM 13 []
BIOL 175 [] CHEM 31 []
BIOL 171 [] CHEM 32 []
BIOL 189 []

** note BIOL 171 and 189 are taken as a combined course

Advanced Lab Skills (Biotech Capstone) []

One of the following:

BIOL 176, BIOL 177 or CHEM 143

One Elective Course []

BIOL 110, BIOL 113, BIOL 174 or CHEM 141

The Biotechnology Minor can be completed with a 400 hour internship pre-approved by the Director of the Biotechnology Minor. []

OR

The Biotechnology Minor can be completed without the internship by taking these two courses:

BIOL 178 [] (Bioinformatics)
BIOL 185 [] (Business of Biotech)