

2009-11 Cal Poly Catalog

Biological Sciences DepartmentFlowcharts**BS BIOLOGICAL SCIENCES**

- ☐ 60 units upper division ☐ GWR
☐ 2.0 GPA ☐ USCP

* = Required in Major/Support; also satisfies GE

Course sequencing: See flowcharts at csmadvising.calpoly.edu

Note: No major, support or concentration courses may be taken as credit/no credit.

MAJOR COURSES

BIO 160 Diversity & the History of Life	4
BIO 161 Intro to Cell & Molecular Bio (B2&B4)*	4
BIO 162 Intro to Organismal Form & Function.....	5
BIO 263 Introductory Ecology and Evolution	4
BIO 351 Principles of Genetics.....	5
BIO 414 Evolution	4
BIO 461 Senior Project – Research Proposal <i>or</i>	
BIO 462 Senior Project – Research.....	2
¹ <i>Biological Diversity:</i>	4
BIO 328, 415; BOT 313, 323, 433, 437; MCRO	
224, 402; ZOO 321, 322, 323, 329, 335, 336,	
341, 425	
<i>Ecology:</i> BIO 325, BOT 326; MCRO 436.....	4
² <i>Physiology:</i> BIO 361, 434, 435	4
Concentration	39
	79

SUPPORT COURSES

CHEM 127 General Chemistry (B3&B4)*	4
CHEM 128, 129 General Chemistry	4, 4
³ CHEM 312 Survey of Organic Chemistry <i>or</i>	
CHEM 316 Organic Chemistry I	5
MATH 161, 162 Calculus/Life Sciences I, II (B1)*	4, 4
PHYS 121, 122, 123 College Physics I, II, III....	4, 4, 4
STAT 218 Appl Statistics-Life Sciences (B1)*	4
	41

GENERAL EDUCATION (GE)

72 units required, 16 of which are specified in Major/Support.

→See page 50 for complete GE course listing.

→Minimum of 12 units required at the 300 level.

Area A Communication (12 units)

A1 Expository Writing	4
A2 Oral Communication	4
A3 Reasoning, Argumentation, and Writing.....	4

Area B Science and Mathematics (no add'l units req'd)

B1 Mathematics/Statistics * 8 units in Support....	0
B2 Life Science * 4 units in Major.....	0
B3 Physical Science * 4 units in Support	0
B4 One lab taken with either a B2 or B3 course in Major	

Area C Arts and Humanities (20 units)

C1 Literature	4
C2 Philosophy	4
C3 Fine/Performing Arts	4
C4 Upper-division elective	4
Area C elective (Choose one course from C1-C4)	4

Area D/E Society and the Individual (20 units)

D1 The American Experience (40404)	4
D2 Political Economy	4
D3 Comparative Social Institutions	4
D4 Self Development (CSU Area E)	4
D5 Upper-division elective	4

Area F Technology Elective (upper division)(4 units)

56

ELECTIVES	4
	180

⁴ Concentrations (select one)**Anatomy and Physiology Concentration**

BIO 432 Vertebrate/Human Anatomy & Phys I	5
BIO 433 Vertebrate/Human Anatomy & Phys II	5
BIO 452 Cell Biology	4
CHEM 371 Biochemical Principles <i>or</i> CHEM 313	
Survey of Biochemistry and Biotechnology	5
Advisor approved electives.....	20
	39

⁵ Biology Teaching Concentration

BIO 432 Vertebrate/Human Anatomy/Phys I.....	5
BIO 433 Vertebrate/Human Anatomy/Phys II.....	5
BIO 452 Cell Biology	4
BIO/PSC 424 Organizing/Teaching Science	4
MCRO 320 Emerging Infectious Diseases	3
SCM 300 Early Field Experience, Science/Math...	4
SCM 451 Ethics in the Sciences	3
Advisor approved electives.....	11
	39

¹ Students in the Molecular and Cellular Biology concentration should take MCRO 224 to fulfill this requirement.

² Students in the Anatomy and Physiology concentration and in the Biology Teaching concentration should take BIO 361 to fulfill this requirement.

³ Students in the Molecular and Cellular Biology concentration should take CHEM 316 to fulfill this requirement.

⁴ Guidelines are available for advisor approved electives in most concentrations. See your faculty advisor for assistance.

⁵ To meet credentialing requirements, it is recommended that students take KINE 250 ~~or KINE 255~~ to fulfill GE D4, and SCM 330 to fulfill GE Area F. 6/23/09.

Ecology Concentration

<i>Ecology of the Individual (select 1 course)</i>	4-5
BIO 434, BIO 435, ZOO 437	
<i>Population Ecology (select 1 course)</i>	3-4
BIO 401, BIO 439, BIO 444	
<i>Community Ecology (select 1 course)</i>	4-5
BIO 325, BIO 328, BOT 326, BOT 433, MCRO 436	
<i>Global Ecology (select 1 course)</i>	4
BIO 415, GEOG 250, GEOG 333, UNIV 350	
<i>Methodology (select 3 courses)</i>	10-12
BIO/CHEM 375, BIO 419, BIO 443, LA/NR 318, STAT 313, STAT 419	
Advisor approved electives	<u>14-9</u>
	39

Field and Wildlife Biology Concentration

BOT 313 Taxonomy of Vascular Plants	4
BOT 433 Field Botany	4
ZOO 321 Mammalogy	4
ZOO 323 Ornithology	4
ZOO 341 Herpetology.....	4
Emphasis Area (select one).....	19
<i>Field Biology Emphasis</i>	
ZOO 335 General Entomology (4)	
ZOO 437 Animal Behavior (4)	
BIO 439/ZOO 322 (4)	
Advisor approved electives (7)	
¹ <i>Wildlife Biology Emphasis</i>	
BIO 327 Wildlife Biology Methods (5)	
BIO 427 Wildlife Management (4)	
BIO 444 Population Ecology (3) <i>or</i>	
BIO 401 Conservation Biology (4)	
Advisor approved electives (6-7)	
	<u>39</u>

General Biology Concentration

BIO 452 Cell Biology	4
CHEM 313 Survey of Biochem and Biotech	5
<i>Anatomy/Physiology</i>	4
BIO 432, BIO 433, BIO 434, BIO 435, BOT 335, MCRO 424, ZOO 422	
<i>Botany</i>	4
BOT 313, BOT 323, BOT 335, BOT 433, BOT 437	
<i>Microbiology</i>	3-5
BIO 426, MCRO 224, MCRO 225, MCRO 320, MCRO 342, MCRO 402, MCRO 421, MCRO 433, MCRO 436, ZOO 428	
<i>Zoology</i>	4
BIO 328, ZOO 321, ZOO 322, ZOO 323, ZOO 329, ZOO 335, ZOO 336, ZOO 341, ZOO 425	
Advisor approved electives	<u>15-13</u>
	39

Marine Biology and Fisheries Concentration

BIO 328 Marine Biology	5
BIO/CHEM 375 Molecular Biology Laboratory	3
BOT 437 Phycology	4
STAT 313 Applied Experimental Design and Regression Models	4
ZOO 322 Ichthyology	4
ZOO 336 Invertebrate Zoology	4
Advisor approved electives.....	<u>15</u>
	39

Molecular and Cellular Biology Concentration

BIO/CHEM 375 Molecular Biology Laboratory	3
BIO 452 Cell Biology	4
CHEM 317 Organic Chemistry II.....	5
CHEM 371 Biochemistry.....	5
CHEM 372 Metabolism.....	4
CHEM 474 Protein Techniques Laboratory <i>or</i> BIO/CHEM 476 Gene Expression Laboratory	2
Choose 8 units from the following.....	8
BIO 405, BIO/CHEM 441, BIO/CHEM 476 <i>or</i> CHEM 474, BOT 450, BIO 426, MCRO 402, MCRO 433, SCM 201	
Advisor approved electives.....	<u>8</u>
	39

Systematics and Biodiversity Concentration

BIO 443 Molecular Ecology & Systematics.....	4
BIO/CHEM 375 Molecular Biology Laboratory	3
BIO 415 Biogeography	4
BIO/CHEM 441 Bioinformatics Applications.....	4
STAT 313 Applied Experimental Design and Regression Models	4
STAT 419 Applied Multivariate Statistics.....	4
Advisor approved biological diversity electives.....	16
(see list under Major Courses)	
	<u>39</u>

¹ Students seeking Wildlife Biologist Certification should see faculty advisor for assistance.