

Approved Electives for BS-BIOL Degree – 32 units required

At least 20 units of the electives must be Biology courses.

<i>Course Number</i>	<i>Title</i>	<i>Units</i>
BIOL		
396	Honors Thesis <i>(must be enrolled in Honors Program)</i>	1 - 5
398	Coop Education in Biology <i>(maximum of 4 units)</i>	1 - 4
408	Experimental Design & Advanced Biometry	4
412	Human Genetics	4
413	Molecular Diagnostics	4
415	Population Genetics	4
416	Molecular Genetics	4
417	Gene Manipulation	4
418	Evolution	4
420	Global Change	4
422	Vertebrate Structure and Function	5
424	General Embryology	4
425	Plant Anatomy	4
429	Animal Histology	5
430	Plant Physiology I	5
431	Plant Physiology II	4
432	Fundamentals of Toxicology	4
433	Animal Physiology I	4
434	Animal Physiology II	4
435	Neurobiology: Neuroanatomy	4
436	Neurobiology: Neurophysiology	4
437	Advanced Cell Physiology	4
439	Endocrinology	4
440	Taxonomy of Angiosperms	4
444	Drug Discovery & Development*	4
445	Bioscience Companies: From Concept to Market	4
448	Molecular Biology of the Brain	4
449	Neurobiology of Development	4
451	Ornithology	4
454L,P	Special Topics in Biology <i>(maximum of 16 units applied to BS-BIOL)</i>	1 - 4
455	Mammalogy	4
457	Marine Invertebrate Zoology	5
462	Plant Ecology	4
465	Issues in Environmental Biology	4
470	Conservation Biology	4
472	Marine Ecology	4
473	Molecular Ecology	4
476	Physiological Animal Ecology	4
480	Modeling Biological Systems**	4
481	Animal Cell Culture Theory and Technique	4
499	Undergraduate Directed Study <i>(maximum of 4 units)</i>	1 - 4

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<i>Course Number</i>	<i>Title</i>	<i>Units</i>
OTHER COURSES (<i>maximum of 12 units from list below applied to BS-BIOL degree</i>)		
ANTH 460	Human Evolution	4
ANTH 462	Human Ecology and Adaptation	4
BINF 400	Bioinformatics & Computational Biology***	4
BINF 401	Machine Learning Applications in Molecular Life Sciences	2
BINF 402	Phylogenomics	2
BINF 403	Process Estimation and Detection in Cellular Biology	2
BINF 450	Advanced Topics in Bioinformatics and Computational Biology	2
CE 384	Introduction to Environmental Engineering	4
CE 484	Sewerage and Sewage Treatment	4
CHEM 401	Physical Chemistry I	4
CHEM 402	Physical Chemistry II	4
CHEM 403	Physical Chemistry III	4
CHEM 412AB	Physical Chemistry Laboratory (<i>may take one or both labs</i>)	2, 2
CHEM 420	Advanced Organic Chemistry I	4
CHEM 431ABC	Biochemistry (<i>may take one or more of lecture sequence</i>)****	3,3,3
CHEM 432AB	Biochemistry Laboratory (<i>may take one or both labs</i>)	2,2
CHEM 434	Bioinformatics & Computational Biology***	4
CHEM 435	Introduction to Biochemistry****	4
CHEM 438	Bioinorganic and Bioorganic Chemistry	4
CHEM 444	Drug Discovery & Development*	4
CHEM 499	Undergraduate Directed Study*****	1 - 4
CRIM 409	Forensic Sciences	4
CRIM 414	Forensic Biology	4
CRIM 415	Forensic Chemistry	4
CS 460	Artificial Intelligence	4
CS 461	Machine Learning	4
GEOG 407	Biogeography	4
GEOG 410	Applied Climatology	4
GEOG 415	Perspectives on Environment	4
GEOG 448	Medical Geography	4
GEOG 465	Geographic Information Systems (GIS) Applications in Environmental Studies	4
GEOG 466	Remote Sensing	4
GEOG 469	Spatial Analysis and GIS Modeling	4
GEOL 321	Geology of Southern California	4
GEOL 430	Stratigraphy and Sedimentology	4
GEOL 484	Hydrogeology	4
KIN 335	Anatomical Kinesiology	4
KIN 360	Physiology of Exercise and Physical Activity	4
KIN 437	Disease and Plasticity in Neuromuscular Systems	4
KIN 456	Sport and Exercise Ergogenic Aids	4
MATH 474	Theory of Probability	4

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MATH	475	Introduction to Mathematical Statistics	4
MATH	480	Modeling Biological Systems**	4

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OTHER COURSES (maximum of 12 units from list below applied to BS-BIOL degree)			
MATH	484	Graph Theory	4
MGMT	307	Management and Organizational Behavior	4
MGMT	466	Managerial Innovation	4
MGMT	468	Small Business Management	4
MGMT	485	Project Management	4
MICR	300	General Microbiology	5
MICR	301	General Medical Microbiology	4
MICR	302	Pathogenic Bacteriology	5
MICR	304	Immunology and Serology	5
MICR	331	Structure and Function of Bacteria	3
MICR	340	Microbial Genetics	3
MICR	401	Virology	3
MICR	410	Hematology	4
MICR	420	Emerging & Reemerging Infectious Diseases	4
MICR	430	Bacterial Physiology	3
MICR	433	Bacterial Physiology Lab	2
MICR	440	Fungal Pathogenesis	4
MICR	450	Innate Immunity	4
MICR	454L,P	Special Topics in Microbiology (<i>may be repeated once</i>)	1 - 4
MICR	499	Undergraduate Directed Study (<i>max. of 4 units</i>)	1 - 4
NATS	495	Natural Science Field Studies	4
PH	412	Introduction to Epidemiology	4
PHIL	428	Ethics and Genetics	4
PHIL	429	Bioethics	4
PSY	401	Physiological Psychology	4
PSY	424	Cognitive Psychology	4
PSY	425	Sensation & Perception	4

* BIOL 444 is cross-listed as CHEM 444. Students may choose to take course as either BIOL 444 or CHEM 444.

** BIOL 480 is cross-listed as MATH 480. Students may choose to take course as either BIOL 480 or MATH 480.

*** BINF 400 is cross-listed as CHEM 434. Students may choose to take course as either BINF 400 or CHEM 434.

**** Student may take either CHEM 431A or CHEM 435 but NOT BOTH.

***** Students must request (via completion of a form from ADM 146) CR/NC grading for up to 4 units to be used as electives. **Note: CHEM 499 is normally graded ABCDF (traditional grading). Failure to request CR/NC grading will result in the course not being used on the major program.** A maximum of 4 units of any type of 499 courses may be used as upper division electives, but the Department of Biological Sciences only allows you to enroll in 1 or 2 units in a given quarter because you are expected to devote 10 hours/unit/week for a minimum of 10 weeks to the 499 project.

Most of these courses have pre-requisites. For pre-requisites, refer to the University online e-catalog (<http://ecatalog.calstatela.edu/>) and consult with the faculty member teaching the course to determine if

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you may enroll without the pre-requisites. Select your electives based on your interests and career goals.