Revised Mar. 2020; effective for students entering Fall 2020 or later

BIOLOGY: Ecology, Evolution, and the Environment

Bachelor of Science Degree Requirements – 120 units

Cal State LA | Department of Biological Sciences | 323.343.2050 | Office: BIOS 143

Name:	Career Goal:	Date:
CIN:	GE Catalog (Sem./Yr.):	Major Catalog (Sem./Yr.):
Phone:	Student Signature:	
Email:	Advisor Signature:	

GENERAL EDUCATION REQUIREMENTS (48 units)

A: Communication and Critical Thinking (9 units)

	[T] or Sem./Yr.	Grade
A1: Oral Communication		
A2: Written Communication		
A3: Critical Thinking & Composition		

Minimum of C grade required for all courses in Block A. [T]=transfer work.

American Institutions (6 units)

US History		
US Constitution/California State & Local Government*		

**transfer students or students applying AP credit who have completed the US Constitution but not the State & Local Gov. requirement may take POLS 2000*

B: Natural Sciences and Mathematics (9 units)

CHEM 1100 or PHYS 1100 + BIOL 1100 + MATH 2045 satisfy Blocks B1 + B2 + B4

B1: Physical (with lab)	CHEM 1100 or PHYS 1100	
B2: Biological (with lab)	BIOL 1100	
B3: Interdisciplinary (with lab)		
*B4: Quantitative Reasoning & Mathematical Concepts	MATH 2045	

* *Minimum of C grade required*

C: Arts & Humanities (6 units)

C1: Arts		
C2: Humanities		

D: Social Sciences (6 units; *from 2 different disciplines*)

E: Lifelong Understanding (3 units)

NSS 1001 fulfills lower-division CL & both block E and IHE requirements

Upper Division GE Courses

(9 units; *1 course must include CL designation*)

Natural Sciences & Quant. Reasoning		
Arts & Humanities		
Social Science		

Courses listed or cross-listed with major cannot be taken to satisfy UD GE requirements.

UNIVERSITY REQUIREMENTS (15 units;

***can be fulfilled with courses from Blocks C, D, E or Upper Division GE*)**

(wi) Writing Intensive: BIOL 3200 + 1 course		
(CL) Civic Learning/Community Engagement		
(IHE) Intro to Higher Ed. + Civic Learning		
(re) Race/Ethnicity focus		
(d) Diversity focus [or take second (re)]		

MAJOR REQUIREMENTS (81 units)

Required Courses (62 units)

		[T] or Sem./Yr.	Grade
BIOL 1100* Cellular Basis of Life	(5)		
BIOL 1200* Diversity of Life	(5)		
BIOL 3000* Biostatistics	(4)		
BIOL 3200* Professional Writing in the Life Sciences (wi)	(3)		
BIOL 3400* Principles of Genetics	(3)		
BIOL 3500* Evolution	(3)		
BIOL 3600* Functional Biology	(3)		
BIOL 3800 Ecology	(3)		
BIOL 3801 Field Ecology	(1)		
CHEM 1100 General Chemistry I	(5)		
CHEM 1110 General Chemistry II	(5)		
CHEM 2200 Organic Chemistry I**	(4)		
CHEM 2201 Organic Chemistry Lab**	(1)		
CHEM 3200 Organic Chemistry II**	(4)		
MATH 2045 Calculus for the Life Sciences	(5)		
PHYS 1100 Physics A	(4)		
PHYS 1200 Physics B	(4)		

***Minimum grade of C or higher required**

****or one year of organic chemistry with at least one term of lab from an accredited 2- year or 4-year college or university; NOTE: BIOL AP score of 4 or 5 fulfills BIOL 1100 requirement. Submit all AP scores to ADM 409.**

[T] = transfer work

Upper Division Electives (19 units)

Provide course # & units only after enrollment.

	Sem./Yr.	Grade
Organismal Electives with Laboratory (3-4 units)		
Ecology Electives (3-4 units)		
Quantitative/Computational Electives (3 units)		
Additional electives (6-8 units of electives from approved list)		

Please check when completed when applying for graduation.

Overall GPA ≥ 2.000:
CSULA GPA ≥ 2.000:
Major GPA ≥ 2.000:
UD units ≥ 40:
Units completed at CSULA ≥ 30:
UD units completed at CSULA ≥ 24:
Units in major completed at CSULA ≥ 12:
Units in GE completed at CSULA ≥ 9:
Total units completed ≥ 120:

BIOLOGY: Ecology, Evolution, and the Environment

PREREQUISITES & CO-REQUISITES FOR REQUIRED COURSES

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REQUIRED COURSES				PREREQUISITES & CO-REQUISITES
BIOL	1100	Cellular Basis of Life	(5)	**Co-requisite:** MATH 1081 or MATH 1040 or equivalent.
BIOL	1200	Diversity of Life	(5)	**Prerequisite:** BIOL 1100 with grade of C or better; **co-requisite:** MATH 1085 or MATH 1083 or MATH 1040 or equivalent.
BIOL	3000	Biostatistics	(4)	**Prerequisites:** Grade of C or better in BIOL 1200; MATH 1085 or MATH 1083 or MATH 1040 or equivalent.
BIOL	3200	Professional Writing for the Life Sciences	(3)	**Prerequisite:** ENG 1050 or equivalent; **co-requisite:** BIOL 3000.
BIOL	3400	Principles of Genetics	(3)	**Pre/co-requisite:** BIOL 3000.
BIOL	3500	Evolution	(3)	**Prerequisite:** BIOL 3400.
BIOL	3600	Functional Biology	(3)	**Prerequisite:** BIOL 1200, CHEM 2300
BIOL	3800	Ecology	(3)	**Prerequisites:** BIOL 1200, BIOL 3000.
BIOL	3900	Molecular & Cellular Biology I	(3)	**Prerequisite:** BIOL 3000; **pre/co-requisites:** BIOL 3200, CHEM 2200.
MICR	3100	General Microbiology	(4)	**Prerequisites:** BIOL 1200, CHEM 1110.
CHEM	1100	General Chemistry I	(5)	**Prerequisite:** Completion of GE B4, or on Math Placement Category I or II (GE Math supported instruction is not required).
CHEM	1110	General Chemistry II	(5)	**Prerequisite:** CHEM 1100 with minimum C- grade.
CHEM	2200	Organic Chemistry I	(4)	**Prerequisite:** CHEM 1110 or 1 year of General Chemistry with minimum C- grade.
CHEM	3200	Organic Chemistry II	(4)	**Prerequisite:** CHEM 2200 with minimum C- grade.
CHEM	2201	Organic Chemistry Lab	(1)	**Prerequisite:** CHEM 1110 with minimum C- grade; **pre/co-requisite:** CHEM 2200
MATH	2045	Calculus for the Life Sciences	(5)	**Prerequisite:** MATH 1085 or MATH 1083 or MATH 1040 with a minimum grade of C or satisfactory score on placement examination.
PHYS	1100	Physics A	(4)	**Prerequisites**: Knowledge of elementary algebra and trigonometry.
PHYS	1200	Physics B	(4)	**Prerequisite:** PHYS 1100.

PREREQUISITES ARE COURSES THAT YOU MUST PASS PRIOR TO TAKING THE INDICATED COURSE.
CO-REQUISITES ARE COURSES THAT YOU SHOULD TAKE TOGETHER IN SAME SEMESTER.

ELECTIVE COURSES			PREREQUISITES & CO-REQUISITES
ORGANISMAL ELECTIVES WITH LABORATORY (3-4 UNITS)			
BIOL 4300	Fundamental Research in Plant Physiology	(4)	**Prerequisite:** BIOL 1200, with grade of C or higher, CHEM 1100
BIOL 4400	Plant Systematics	(3)	**Prerequisite:** BIOL 1200, with grade of C or higher
BIOL 4510	Ornithology	(3)	**Prerequisite:** BIOL 1200, with grade of C or higher
BIOL 4530	Ichthyology	(3)	**Prerequisite:** BIOL 3000, with grade of C or higher
BIOL 4560	Comparative Vertebrate Anatomy	(4)	**Prerequisite:** BIOL 2600
BIOL 4570	Marine Invertebrate Zoology	(4)	**Prerequisite:** BIOL 1200, with grade of C or higher
BIOL 4540	Special Lecture Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
BIOL 4541	Special Activity Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
MICR 3100	General Microbiology	(4)	**Prerequisite:** BIOL 1200, CHEM 1100
ECOLOGY ELECTIVES (3-4 UNITS)			
BIOL 4620	Plant Ecology	(4)	**Prerequisite:** BIOL 3200 and BIOL 3600 or instructor consent
BIOL 4700	Conservation Biology	(3)	**Prerequisite:** BIOL 3800
BIOL 4720	Marine Ecology	(3)	**Prerequisite:** BIOL 3800
BIOL 4740	Ecosystems of California	(4)	**Prerequisite:** BIOL 3800, BIOL 3801
BIOL 4540	Special Lecture Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
BIOL 4541	Special Lecture Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
MICR 3900	Applied and Environmental Microbiology	(3)	**Prerequisite:** MICR 3100 with grade of C or higher
EVOLUTION ELECTIVES (2-3 UNITS)			
BIOL 4150	Population Genetics	(3)	**Prerequisite:** BIOL 3400
BIOL 4180	Advanced Evolutionary Biology	(3)	**Prerequisite:** BIOL 3800 with grade of C or higher
BIOL 4540	Special Lecture Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
BIOL 4541	Special Activity Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
QUANTITATIVE/COMPUTATIONAL ELECTIVES (3 UNITS)			
BIOL 4080	Experimental Design and Advanced Biostatistics	(3)	**Prerequisite:** BIOL 3000
BIOL 4800	Modeling Biological Systems	(3)	**Prerequisite:** MATH 2045, or MATH 2150 and MATH 2550, with grade of C or higher
BIOL 4540	Special Lecture Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
BIOL 4541	Special Activity Topics in Biology (with advisor approval)	(1-3)	**Prerequisite:** Upper division standing, others as needed for specific topic
PHYS 3200	Physics Computing	(3)	**Prerequisite:** PHYS 1100 or 2100; MATH 2040 or 2110
GEOG 4660	Remote Sensing	(3)	**Prerequisite:** GEOG 2680 and GEOG 3690
GEOG 4690	Spatial Analysis and GIS Modeling	(3)	**Prerequisite:** GEOG 2680 and GEOG 3690
ADDITIONAL ELECTIVES (6-8 UNITS) – SEE APPROVED LIST IN UNIVERSITY CATALOG			

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