

BIOLOGY: MOLECULAR, CELLULAR, & DEVELOPMENTAL OPTION

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)

either 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)

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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:BIOL3200 + 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 (66 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 3401 Mol. + Cell. Laboratory	(2)		
BIOL 3500* Evolution	(3)		
BIOL 3600* Functional Biology	(3)		
BIOL 3900 Mol. & Cellular Biology I	(3)		
BIOL 4000 Mol. & Cellular Biology II	(3)		
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 (15 units)

Provide course # & units only after enrollment.

Sem./Yr. Grade

Courses with laboratory from approved list (at least 6 units)		
Additional electives (up to 9 units of electives from the 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: MOLECULAR, CELLULAR, & DEVELOPMENTAL OPTION 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	Genetics	(3)		Pre/co-requisite: BIOL 3000.
BIOL 3401	Mol. and Cellular Laboratory	(3)		Pre/co-requisite: BIOL 3400 or CHEM 4310.
BIOL 3500	Evolution	(3)		Prerequisite: BIOL 3400.
BIOL 3600	Functional Biology	(3)		Prerequisite: BIOL 1200 OR CHEM 2300.
BIOL 3900	Molecular & Cellular Biology I	(3)		Prerequisite: BIOL 3000; pre/co-requisites: BIOL 3200, CHEM 2200.
BIOL 4000	Molecular & Cellular Biology II	(3)		Prerequisites: BIOL 3900
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 2201	Organic Chemistry Lab	(1)		Prerequisite: CHEM 1110 with minimum C- grade; pre/co-requisite: CHEM 2200
CHEM 3200	Organic Chemistry II	(4)		Prerequisite: CHEM 2200 with minimum C- grade.
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.

REQUIRED LAB COURSES (min 6 units)				PREREQUISITES & CO-REQUISITES
BIOL 3960	Honors Thesis	(1-3)		Prerequisite: Upper Division standing, 30 units in major, completion of A3, admission to the Biology Honors program.
BIOL 4130	Molecular Diagnostics	(3)		Prerequisite: (BIOL 3400 or MICR 4100 or CHEM 4310), CHEM 4320.
BIOL 4240	General Embryology	(3)		Prerequisite: BIOL 1200 graded C or better.
BIOL 4290	Animal Histology	(4)		Prerequisite: BIOL 1200 graded C or better.
BIOL 4370	Cell Signaling	(3)		Prerequisites: BIOL 3400 or CHEM 4310.
BIOL 4541	Special Activity Topics in Biology	(1-3)		Prerequisite: Upper Division standing, others as needed for specific topic.
BIOL 4810	Animal Cell Culture Theory and Technique	(3)		Prerequisite: BIOL 3400 or MICR 3100 or CHEM 4310 or CHEM 4300
BIOL 4990	Undergraduate Directed Study Chemistry I	(1-3)		Prerequisite: Consent of full-time faculty member in consultation with department chair, grade point average of 2.50 or higher. Project must be approved before registration.
MICR 3100	General Microbiology	(4)		Prerequisite: BIOL 1200, CHEM 1110
MICR 4600	Theoretical and Applied Immunology	(4)		Prerequisite: (MICR/BIOL 3100 or MICR 2010/2020) and (CHEM 2200 and CHEM 2201) OR CHEM 4310, each with a grade C or higher, or instructor consent.

ADDITIONAL ELECTIVES (UP TO 9 UNITS) – SEE APPROVED LIST IN UNIVERSITY CATALOG

**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.**