

# BACHELOR OF SCIENCE IN BIOLOGY (IMPACTED)

## Option in Biology Education Major Requirements Worksheet 2016-2017 Catalog

Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

**NOTE:** This checklist is not intended to replace advising from the major department. Students should consult with the major advisor to determine the appropriate sequence of courses. This checklist is to inform students of major requirements and course prerequisites only. CSULB Enrollment Services prepares the Academic Requirements Report, which is the official graduation verification. **Pre-Biology majors must complete their GE Foundation courses, and the highlighted areas below all with a "C" or better and a cumulative GPA of 2.5, by 60 units to be considered for the major.**

### Degree Progress

Pre-Biology majors must complete CHEM 111A, BIOL 211, and MATH 119A (or 122) within one and a half calendar years of declaring the pre-major. Some students may need to take courses during Summer Session to meet these requirements. Students who have not met the requirements by the required semester must either declare another major or meet with an Academic Advisor to determine if the student's performance in the courses merits an additional semester to complete.

ALL Biology Department courses require a "C" or better on prerequisites.

Semester	Grade	Course #	Course Title	Prerequisites
		BIOL 211	Intro. to Evolution and Diversity (4)	<i>Pre/Corequisite:</i> CHEM 111A
		BIOL 212	Intro. to Cell and Molecular Biology (4)	BIOL 211 and CHEM 111A; <i>Pre/Corequisite:</i> CHEM 111B
		BIOL 213	Intro. to Ecology and Physiology (4)	BIOL 211, 212 and CHEM 111B
		ASTR 100	Astronomy (3)	<i>Corequisite:</i> One course from GE Category B2
		BIOL 260	Biostatistics (3)	BIOL 211 or BIOL 207 or MICR 200; MATH 111 or 113 or 119A or 122
		CHEM 111A	General Chemistry (5)*	A passing score on the CPT; <i>Corequisite:</i> MATH 109 or higher
		CHEM 111B	General Chemistry (5)	CHEM 111A and MATH 113 or 115 or 119A or 122

### Choose ONE of the following groups:

Semester	Grade	Course #	Course Title	Prerequisites
		GEOL 102	General Geology (3) <b>AND</b>	<i>Pre/Corequisite:</i> A course that fulfills A1 GE*
		GEOL 104	Geology Laboratory (1)	<i>Pre/Corequisite:</i> A course that fulfills A1 GE* and GEOL 102

**OR**

Semester	Grade	Course #	Course Title	Prerequisites
		GEOL 106	Earth Science for Teachers (4)	<i>Pre/Corequisite:</i> A course that fulfills A1 GE*

### Choose ONE of the following courses:

Semester	Grade	Course #	Course Title	Prerequisites
		MATH 119A	Survey of Calculus I (3) <b>OR</b>	MDPT placement* or MATH 113
		MATH 122	Calculus I (4)	MDPT placement* or MATH 111 and 113

### Choose ONE of the following courses:

Semester	Grade	Course #	Course Title	Prerequisites
		BIOL 201	General Microbiology for Health Professionals (4) <b>OR</b>	CHEM 111A or 140 and GE Foundation requirements
		BIOL 311	General Microbiology (4)	BIOL 211, 212; CHEM 111B

### Choose ONE of the following courses:

Semester	Grade	Course #	Course Title	Prerequisites
		PHYS 100A	General Physics (4) <b>OR</b>	MATH 109 or 113 or 119A or 122
		PHYS 151	Mechanics and Heat (4)	<i>Pre/Corequisite:</i> MATH 122

Choose ONE of the following courses:

Semester	Grade	Course #	Course Title	Prerequisites
		PHYS 100B	General Physics (4) <b>OR</b>	PHYS 100A
		PHYS 152	Electricity and Magnetism (4)	PHYS 151; <i>Pre/Corequisite</i> : MATH 123

Choose ONE of the following groups:

Semester	Grade	Course #	Course Title	Prerequisites
		CHEM 227	Fundamentals of Organic Chemistry (3)	CHEM 111A; CHEM 111B recommended ( <i>formerly CHEM 327</i> )

**OR**

Semester	Grade	Course #	Course Title	Prerequisites
		CHEM 220A	Organic Chemistry I (3)	CHEM 111B. <i>Corequisite</i> : CHEM 223A
		CHEM 220B	Organic Chemistry II (3)	CHEM 220A <i>Corequisite</i> : CHEM 223B or 320L
		CHEM 223A	Organic Chemistry Laboratory I (1)*	<i>Corequisite</i> : CHEM 220A
		CHEM 223B	Organic Chemistry Laboratory II (1)*	CHEM 220A and 223A. <i>Corequisite</i> : CHEM 220B

## UPPER DIVISION COURSES (See major faculty advisor)

Take ALL of the following courses:

Semester	Grade	Course #	Course Title	Prerequisites
		SCED 404	The Nature of Science and Scientific Reasoning for Teachers (3)	At least three-fourths of the credential specialization courses for Single Subject Teaching Credential in science and consent of instructor. (SP term only)
		BIOL 312	Evolutionary Biology (3)	BIOL 211, 212, 213, 260
		BIOL 340	Molecular Cell Biology (3)	BIOL 211, 212
		BIOL 350	General Ecology (3)*	BIOL 211, 212, 213, 260; MATH 119A or 122.
		BIOL 370	General Genetics (4)	BIOL 211, 212, <i>and</i> either BIOL 260 <i>or</i> CHEM 251
		BIOL 480	Seminars (1)	Consent of the department. Undergraduates must have filed for graduation and be in their last semester.

Choose ONE of the following courses in plant diversity:

Semester	Grade	Course #	Course Title	Prerequisites
Spring		BIOL 427	Vascular Plant Systematics (4) <b>OR</b>	BIOL 312 <i>or</i> 370. <b>Spring Only.</b>
Fall		BIOL 439	Plant Morphology (4)	BIOL 312 <i>or</i> 370. <b>Fall Only</b>

Choose ONE of the following courses in animal diversity:

Semester	Grade	Course #	Course Title	Prerequisites
		BIOL 313	Invertebrate Zoology (4) <b>OR</b>	BIOL 211, 212, 213 and instructor consent
		BIOL 316	General Entomology (4) <b>OR</b>	BIOL 211, 212, 213
		BIOL 324	Vertebrate Zoology (4)	BIOL 211, 212, 213

Choose ONE of the following courses in physiology:

Semester	Grade	Course #	Course Title	Prerequisites
		BIOL 345	Comparative Animal Physiology (3) <b>OR</b>	BIOL 211, 212, 213
Spring		BIOL 447	Molecular Plant Physiology (3)	BIOL 340 <i>and</i> 370. <b>Spring Only</b>

The remaining biological sciences course (3 units) should be chosen in consultation with an advisor; BIOL 495/MICR 495 is highly recommended. Either CHEM 441A, 441B or 448 will count toward this additional required course. With prior permission of the advisor for this option, students may use a total of 3 units of any combination of BIOL/MICR 495 (2 units max) and/or BIOL/MICR 496 (3 units max) as an elective. BIOL 300, 301, 304, 305, and NSCI 492 do not meet any specific or elective requirements for this major.

Although SCED 403 and EDSS 300C are not required in the major, the credential does require these courses. Students may want to take some or all of them prior to graduation.

\*See exception or clarification in the catalog