

CALIFORNIA STATE UNIVERSITY, LOS ANGELES
PROGRAM FOR THE BACHELOR OF SCIENCE DEGREE IN NATURAL SCIENCE
Applied Science (Option III)

Student Name: _____
Email address: _____
GE Year / Major Year: _____

CIN: _____
Phone: _____
Advisor: _____

Requirements for this degree

The Bachelor of Science Degree in Natural Science provides broad training across several science disciplines and is offered as three options: Interdisciplinary Science (Option I), Teaching (Option II), and Applied Science (Option III). Natural Science majors choose one option. Majors choosing the Interdisciplinary Science or Teaching option must select an emphasis area in biology, chemistry, geoscience, or physics, and majors choosing the Applied Science option must select an emphasis area in health science, or bridge to clinical laboratory science. The bridge to clinical laboratory science emphasis area prepares students to be eligible to apply for post-baccalaureate training programs in clinical laboratory science and is limited to students who have already completed a medical laboratory technician program of coursework and/or have obtained a medical laboratory technician license in the State of California. Students should speak with a Natural Science adviser before choosing an option.

- In each options students must earn a grade of C or higher in all courses that satisfy the following university, general education or major requirements.
- **Consult with an advisor for the specific number of units required in all areas of the degree including General Education, 40 upper-division unit graduation requirement, and elective units needed to complete the major.**

Option III - Bachelor of Science Degree in Natural Science – Applied Science

The Applied Science Option of the Bachelor of Science degree in Natural Science is designed primarily for preparation for broad careers in science requiring application of a general natural science background to human behavior. Total number of units required for the degree is 120, of which 70-76 units are in the major depending on the emphasis selected. A minimum of 24 additional units of upper division coursework is required in the emphasis area, and two courses must be designated as GE Writing Intensive (WI).

The following worksheets show the major requirements for each of the emphasis areas, and the last page shows the GE and University requirements.

NOTES:

APPLIED SCIENCE MAJOR Requirements – HEALTH SCIENCE EMPHASIS

Requirement	Units	Transfer institution and equivalent course	Or Cal State L.A. course number and title	Term	Grade
CORE (49 units)					
Fundamentals of Biological and Chemical Sciences (33 units)					
BIOL 1100 – Principles of Biology I	5				
BIOL 1200 – Principles of Biology II	5				
BIOL 2010 - Human Anatomy and Physiology I	4				
BIOL 2020 - Human Anatomy and Physiology II	4				
CHEM 1010 - Fundamentals of Chemistry	4				
CHEM 1020 - Fundamentals of Organic Chemistry	4				
CHEM 3000 - Nutritional Aspects of Biochemistry	4				
*MATH 1081 or MATH 1082	3				
Fundamentals of Applied Science and Human Behavior (16 units)					
MICR 2010 - Microbiology for Health Related Sciences	3				
MICR 2020 - Microbiology Laboratory for Health Related Sciences	1				
NATS 4100 - The Nature of Science or NATS 4200 - Cultures of Science or NATS 4540 - Current Topics in Natural Science	3				
NTRS 3170 - Fundamentals for Human Nutrition	3				
PSY 1500 - Introductory Psychology	3				
SOC 2010 - Introduction to Sociology	3				
HEALTH SCIENCES EMPHASIS AREA (21 units)					
<i>Students must choose one emphasis area from health sciences or bridge to clinical laboratory sciences as a focus of study.</i>					
Upper Division Electives (21 units) <i>Select upper division science or career related courses totaling 21 units from list of courses in the catalog. Consulting with an advisor is strongly recommended.</i>					
UD science or career electives					
UD science or career electives					
UD science or career electives					
UD science or career electives					
UD science or career electives					
UD science or career electives					
UD science or career electives					
FREE ELECTIVES (11 units)					
<i>Select lower and/or upper division electives. Completion of additional applied science courses is strongly recommended.</i>					
*MATH 1083 or MATH 1085 (prerequisite for BIOL 1200)	3				
Elective					
Elective					
Elective					
TOTAL SEMESTER UNITS REQUIRED	81				

*MATH 1040 Precalculus (6 units) is equivalent to MATH 1081/1082 plus MATH 1083/1085

APPLIED SCIENCE MAJOR Requirements
BRIDGE TO CLINICAL LABORATORY SCIENCE EMPHASIS

Requirement	Units	Transfer institution and equivalent course	Or Cal State L.A. course number and title	Term	Grade
CORE (46 units)					
Fundamentals of Biological and Chemical Sciences (30 units)					
BIOL 1100 – Principles of Biology I	5				
BIOL 1200 – Principles of Biology II	5				
BIOL 2010 - Human Anatomy and Physiology I	4				
BIOL 2020 - Human Anatomy and Physiology II	4				
CHEM 1010 - Fundamentals of Chemistry	4				
CHEM 1020 - Fundamentals of Organic Chemistry	4				
CHEM 3000 - Nutritional Aspects of Biochemistry	4				
*MATH 1081 or MATH 1082	0	*Bridge to CLS students satisfy by taking MATH 1040 (see below)			
Fundamentals of Applied Science and Human Behavior (16 units)					
MICR 2010 - Microbiology for Health Related Sciences	3				
MICR 2020 - Microbiology Laboratory for Health Related Sciences	1				
NATS 4100 - The Nature of Science or NATS 4200 - Cultures of Science or NATS 4540 - Current Topics in Natural Science	3				
NTRS 3170 - Fundamentals for Human Nutrition	3				
PSY 1500 - Introductory Psychology	3				
SOC 2010 - Introduction to Sociology	3				
BRIDGE TO CLINICAL LABORATORY SCIENCE EMPHASIS AREA (30 units)					
<i>Students must choose one emphasis area from bridge to clinical laboratory science or health science as a focus of study.</i>					
Required Courses (15 units)					
BIOL 3000 - Biostatistics	3				
BIOL 3200 - Professional Writing in the Biological Sciences	3				
*MATH 1040 - Precalculus (or MATH 1085)	6				
PHYS 1560 & 1570 - Physics for the Twenty-first Century (or physical science course that includes electricity and light)	3				
Upper Division Electives (15 units) <i>Select upper division electives with advisor approval from the following list of courses:</i>					
BIOL 3400 – Cell Biology and Genetics	3				
BIOL 3401 – Cell and Molecular Lab	2				
BIOL 4120 – Human Genetics	3				
BIOL 4130 – Molecular Diagnostics	3				
BIOL 4160 – Molecular Genetics	3				
BIOL 4170 – Gene Manipulation	3				
MICR 3300 – Microbial Genetics	3				
MICR 3500 – Bacterial Physiology	3				
MICR 3700 – Medical Microbiology	4				
MICR 4600 – Applied and Theoretical Immunology	4				
MICR 4100 – General Virology	3				
MICR 4200 – Emerging and Re-emerging Infectious Diseases	3				
MICR 4220 – Bioterrorism and Biosecurity	3				
MICR 4300 – Hematology	3				
MICR 4400 - Fungal Pathogenesis	3				
FREE ELECTIVES (5 units)					

Select lower and/or upper division electives. Completion of additional bridge to CLS or other applied science courses is strongly recommended.

Elective					
Elective					
TOTAL SEMESTER UNITS REQUIRED	81				

*MATH 1040 Precalculus (6 units) is equivalent to MATH 1081/1082 plus MATH 1083/1085

GENERAL EDUCATION AND UNIVERSITY REQUIREMENTS

GE Block and Area	Units	Transfer institution and equivalent course	Or Cal State L.A. course number and title	Term	Grade
LOWER DIVISION (39 units)					
A. English Language Communication and Critical Thinking (9 units)					
A1 Oral Communication	3				
A2 Written Communication	3				
A3 Critical Thinking and Composition	3				
B. Scientific Inquiry and Quantitative Reasoning (9 units)					
Select three courses from at least two categories		NATS Option III majors satisfy by taking Core requirements for major			
B1 Physical Science with lab	6				
B2 Biological Science with lab					
B3 Interdisciplinary Physical-Biological Science					
B4 Quantitative Reasoning & Mathematical Concepts	3				
C. Arts and Humanities (9 units)					
C1 Arts	3				
C2 Humanities	3				
C AI U.S. History (American Institutions)	3				
D. Social Sciences (9 units)					
D	3				
D	3				
D AI U.S. Constitution and State/Local Govt (American Institutions)	3				
E. Lifelong Learning and Self-Development (3 units)					
IHE (cl)	3				
UPPER DIVISION (9 units) (at least one course designated (cl))					
B Natural Science and Quantitative Reasoning	3				
C Arts and Humanities	3				
D Social Sciences	3				
TOTAL SEMESTER UNITS REQUIRED	48				

Other Requirements	Units	Transfer institution and equivalent course	Or Cal State L.A. course number and title	Term	Grade
Diversity (d) or (re) (two courses, one course must be re)					
Civic Learning (cl) (upper division GE course)					
Writing Intensive (wi) (two courses) (Upper Division electives)					
Graduation Writing Assessment Requirement (GWAR)					