Biological Sciences, B.S.

The Biological Sciences major presents a unified, in-depth study of modern biology. The Biological Sciences Core is a five-quarter series of courses ranging from ecology and evolutionary biology, to genetics, biochemistry, and molecular biology. Important laboratory techniques and methodology are presented in upper-division laboratories. Advanced elective courses provide an opportunity to continue to diversify students' exposure to the biological sciences or to gain a much more in-depth study of a particular area of the biological sciences.

NOTE: Biological Sciences majors who successfully complete all change of major requirements may elect to apply to one of the following: Biochemistry and Molecular Biology, Developmental and Cell Biology, Exercise Sciences, Genetics, Human Biology, Microbiology and Immunology, or Neurobiology. Students may apply directly to the Biology/Education major or the Ecology and Evolutionary Biology major when they apply for admission to UCI. Contact the Biological Sciences Student Affairs Office for more information.

In the event that the number of students who elect Biological Sciences as a major exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements.

Freshmen: Preference will be given to those who rank the highest using the selection criteria as stated in the Undergraduate Admissions section (http://catalogue.uci.edu/informationforprospectivestudents/undergraduateadmissions/) of this *Catalogue*.

Transfer students: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete one year of general chemistry with laboratory with grades of C or better; one year of organic chemistry with laboratory with grades of C or better; one year of biology courses equivalent to BIO SCI 93, BIO SCI 94 at UCI with a grade of C or better in each course; and have a cumulative GPA of 3.0 or higher.

No student may enter as a double major, but Biological Sciences students interested in other areas may apply to become double majors after the first quarter, if the second school or program approves. A strong academic performance in the second area is requisite for acceptance as a double major.

All students must meet the University Requirements (http://catalogue.uci.edu/informationforadmittedstudents/requirementsforabachelorsdegree/).

All students must meet the School Requirements (http://catalogue.uci.edu/charliedunlopschoolofbiologicalsciences/#schoolrequirementstext).

Major Requirements

A. Required Major Courses:	
Select three of the following:	
BIO SCI D103	Cell Biology
BIO SCI D104	Developmental Biology
BIO SCI D105	Cell, Developmental, and Molecular Biology of Plants
BIO SCI E106	Processes in Ecology and Evolution
BIO SCI E109	Human Physiology
BIO SCI N110	Neurobiology and Behavior
B. Upper-Division Laboratories:	
Select two of the following:	
BIO SCI D111L	Developmental and Cell Biology Laboratory
BIO SCI E106L	Habitats and Organisms
BIO SCI E112L	Physiology Laboratory
BIO SCI E115L	Evolution Laboratory
BIO SCI E131L	Image Analysis in Biological Research
BIO SCI E140L	Evolution and the Environment Laboratory
BIO SCI E160L	Biology of Birds Lab
BIO SCI E166L	Field Biology
BIO SCI E179L	Field Freshwater Ecology
BIO SCI E186L	Population and Community Ecology Lab
BIO SCI M114L	Biochemistry Laboratory
BIO SCI M116L	Molecular Biology Laboratory
BIO SCI M118L	Experimental Microbiology Laboratory
BIO SCI M121L	Advanced Immunology Laboratory
BIO SCI N113L	Neurobiology Laboratory

BIO SCI N123L	Human Neuroimaging Lab
One laboratory can be satisfied with completion of Excellence in Research in the Biological Sciences.	
C. Upper-Division Biology Electives:	
Select four upper-division, four-unit courses from the following:	
BIO SCI D103–D190, E106–E190, M114–M190, N110–N190 (excluding BIO SCI N120A-BIO SCI N120B-BIO SCI N120C) [1]	
CHEM 132A	Chemical Thermodynamics, Kinetics, and Dynamics
CHEM 132B	Quantum Principles, Spectroscopy, and Bonding
CHEM 132C	Molecular Structure and Elementary Statistical Mechanics
PHRMSCI 170A	Molecular Pharmacology I
PHRMSCI 170B	Molecular Pharmacology II
PHRMSCI 171	Physical Biochemistry
PHRMSCI 173	Pharmacotherapy
PHRMSCI 174	Biopharmaceutics and Nanomedicine
PHRMSCI 177	Medicinal Chemistry
Psychology/Biological Sciences double majors may use PSYCH 112A-PSYCH 112C to partially satisfy the Upper-Division Biology Elective Requirement.	
NOTE: Double majors within the School of Biological Sciences or with Public Health Sciences, Biomedical Engineering: Premedical, Nursing Science, or Pharmaceutical Sciences are not permitted.	

[1] BIO SCI D103, BIO SCI D104, BIO SCI D105, BIO SCI E106, BIO SCI E109, BIO SCI N110 may not be used to satisfy more than one requirement.

Concentration in Biological Sciences Education

The optional concentration in Biological Sciences Education requires seven courses:

BIO SCI 14	California Teach 1: Introduction to Science and Mathematics Teaching
BIO SCI 101	California Teach 2: Middle School Science and Mathematics Teaching
EARTHSS 1	Introduction to Earth System Science
EARTHSS 7	Physical Geology
PHYSICS 20A	Introduction to Astronomy
PHYSICS 20B	Cosmology: Humanity's Place in the Universe
Select one of the following:	
EDUC 108	Adolescent Development and Education
EDUC 124	Multicultural Education in K-12 Schools
EDUC 128	Exceptional Learners
EDUC 131	Educational Technology
EDUC 173	Cognition and Learning in Educational Settings

The requirements for a general Biological Sciences B.S. degree for students in this concentration will be reduced by one upper-division laboratory course (major requirement B) and two upper-division biology electives (major requirement C). Students pursuing other majors within the School of Biological Sciences will need specific departmental approval for the reduction of degree requirements when completing this concentration.

Planning a Program of Study

Since biological sciences courses are built upon a base of the physical sciences, it is very important for students to take their required physical sciences early, particularly general and organic chemistry. Students who have not completed high school chemistry are well advised to complete a preparatory chemistry course before entering UCI. The academic program shown below is only a suggested program. Students should consult the Biological Sciences Student Affairs Office for individual academic planning.

Freshmen will normally take HUMAN 1A and HUMAN 1AS or other general education courses, CHEM 1A, BIO SCI 93, BIO SCI 93L, and a freshman seminar (BIO SCI 2A) during the fall quarter. Students will then continue with BIO SCI 94, BIO SCI 94L, complete their general chemistry requirement, and continue with Humanities or lower-division writing during the remaining winter and spring quarters.

Sophomores begin organic chemistry (CHEM 51A) and continue the Biological Sciences Core with BIO SCI 97, BIO SCI 98, BIO SCI 99. Sophomores often begin taking courses in other disciplines to meet the UCI general education requirement and fulfill their mathematics requirement if they have not done so as freshmen.

During their junior year, most majors continue with the Biological Sciences electives and take physics. Students who intend to double major in Chemistry will be required to take PHYSICS 7C-PHYSICS 7D-PHYSICS 7E in place of PHYSICS 3A-PHYSICS 3B-PHYSICS 3C. Juniors may complete their general education requirements and usually start their research and their upper-division biology laboratory courses.

Finally, during their senior year, students continue their research and complete their remaining major requirements.

Students in the Biological Sciences major are required to make progress toward their degree, and their progress will be monitored. If normal academic progress toward the degree in Biological Sciences is not being met, students will be subject to academic notice.

Sample Program — Biological Sciences

Freshman		
Fall	**Winter**	**Spring**
BIO SCI 93	BIO SCI 94	CHEM 1C- 1LC
BIO SCI 93L	BIO SCI 94L	STATS 7 or 8 (or Math 5A or General Education)
CHEM 1A	CHEM 1B	Lower-Division Writing[1]
BIO SCI 2A	Lower-Division Writing[1]	
General Education	General Education	
Sophomore		
Fall	**Winter**	**Spring**
BIO SCI 97	BIO SCI 98	BIO SCI 99
CHEM 51A	CHEM 51B- 51LB	CHEM 51C- 51LC
CHEM 1LD	MATH 5B (or General Education)	General Education
MATH 5A or 5B		
Junior		
Fall	**Winter**	**Spring**
Required Major course	Required Major course	Required Major course
PHYSICS 3A	PHYSICS 3B- 3LB	PHYSICS 3C- 3LC
Elective/Research	Elective/Research	Bio. Sci. elective
BIO SCI 100		Elective/Research
Senior		
Fall	**Winter**	**Spring**
Bio. Sci. elective	Bio. Sci. elective	Bio. Sci. elective
Bio. Sci. U-D Lab	Bio. Sci. U-D Lab	Bio. Sci. U-D Lab (optional)
Elective	Research	Research
	Electives	Electives

1 Students have the option of taking HUMAN 1AS, HUMAN 1BS, HUMAN 1CS or WRITING 40, WRITING 50, WRITING 60 in order to fulfill the lower-division writing requirement.

- Biological Sciences, M.S.
- Biological Sciences, Minor
- Biological Sciences, Ph.D.
- Biology/Education, B.S.
- Biotechnology Management, M.S.
- Exercise Sciences, B.S.
- Human Biology, B.S.