

DEGREE/CERTIFICATE OPTIONS

MAJOR CODE

Certificate of Proficiency

Baja California Studies

02891

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

CERTIFICATE

BAJA CALIFORNIA STUDIES

CERTIFICATE OF PROFICIENCY

CAREER/TECHNICAL (MAJOR CODE: 02891)

Service learning hours that focus on the Baja California region are required in some courses. The hours will be determined by the individual instructor of each course. It is recommended that the student demonstrate an intermediate to high proficiency in the Spanish language, as measured by the Oral Proficiency Interview (OPI) given and evaluated by an OPI certified Southwestern College Spanish instructor.

Program Student Learning Outcome Statement:

- Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to use critical thinking skills and logical reasoning to analyze ideas and themes in literature from Baja California and Mexican-American border regions.
- Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to apply critical thinking skills and the scientific method to assess and evaluate issues relevant to the biology, oceanography and geoscience of southern California and Baja California, Mexico.
- Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to communicate ideas in ways that are considered clear and appropriate by people of that culture.
- Upon successful completion of the Baja California Studies Certificate of Proficiency Program, students will be able to apply literary theory and critical thinking skills to examine various historical, aesthetic, and socialpolitical contexts present in literature of the Mexican-American border region and Baja California.

FALL SEMESTER

COMM 176	Intercultural Communication	3
ENGL 274	Literature of the U.S.–Mexico Borderlands and Baja California	3
BIOL 143	Biology, Oceanography, and Geoscience of Baja California	3

SPRING SEMESTER

BIOL 145	EcoMundo: Ecology and Environmental Science	3
Total units		12

Recommended Electives: COMM 142.

You will have met four GE requirements in Plan AA–AS, Plan CSU, and IGETC Plan at the completion of this certificate.

GENERAL EDUCATION PLAN

AA–AS Plan	CSU Plan	IGETC Plan	
BIOL 143	Group D5	Group D5	Area 4E
BIOL 145	Group B	Group B2	Area 5B
COMM 176	Group D7	Group D7	Area 4G
ENGL 274	Group C2	Group C2	Area 3B

BIOLOGY

SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

DEAN: Michael Odu, Ph.D., Office 215A, 619-482-6344

FACULTY: David Brady, M.S.; Lukas Buehler, Ph.D.; Nira Clark, M.A.; Allison Green Ph.D.; Shaunte Griffith-Jackson, Ph.D.; Charles Hoyt, M.S.; Linda Jones, D.C.; Valerie Pennington, M.S.; Sharon Shapiro, D.P.M.; Margie Stinson, M.S.; John Tolli, Ph.D.

DEPARTMENT CHAIR: Margie Stinson, M.S.

GENERAL DESCRIPTION

Biology is a natural science that focuses on physical and chemical processes in living organisms. This discipline explores how organisms acquire and use energy to maintain homeostasis, how they reproduce, and how they interact with each other and their environment. Biological processes are emphasized as a means of answering these questions. Biologists rely heavily on a chemistry foundation since living organisms are chemical systems.



CAREER OPTIONS

Below is a sample of the career options available for the biology major. A few of these require an associate in science degree, most require a bachelor's degree, and some require a graduate-level degree: agricultural consultant, animal health technician, biotechnology technician, dentist, environmental consultant, field biologist, forester, horticulturist, genetic counselor, bioinformatics specialist, agricultural scientist, environmental health worker, exercise physiologist, high school or college teacher, marine biologist, microbiologist, public health technician, physician, pharmaceutical researcher, research biologist, and veterinarian. In addition, a background in biology may be required for the following: registered nurse, physical therapist, respiratory therapist, dental hygienist, medical technician, physician's assistant, and optometrist.

DEGREE/CERTIFICATE OPTIONS

MAJOR CODE

Associate in Science Degree: Transfer Preparation

Biology

01510

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

ASSOCIATE IN SCIENCE DEGREE

BIOLOGY



ASSOCIATE IN SCIENCE DEGREE TRANSFER PREPARATION* (MAJOR CODE: 01510)

Lower-division requirements are not the same for all universities, and there are differences among the areas of specialization. However, the courses listed below meet the lower-division requirements for most universities offering a bachelor's degree with a major in one of the biological sciences.

Students should start with mathematics and chemistry during the first year, as these are required for other science courses. Some of the courses may be applied toward the general education requirement.

Courses offered in biology, other than those listed below, are intended as general education courses for nonscience majors. They are not the acceptable courses for biology majors. Biology majors will take similar but more intensive courses as part of their upper-division requirements.

Program Student Learning Outcome Statement:

- Upon successful completion of the Biology Program, students will be able to communicate clearly in a way that reflects knowledge and understanding of biological processes and structures.
- Upon successful completion of the Biology Program, students will be able to approach and examine issues related to the biological sciences from an evidence-based perspective and communicate this information in a clear manner.
- Upon successful completion of the Biology Program, students will be able to demonstrate information literacy skills to access, evaluate, and use resources.
- Upon successful completion of the Biology Program, students will be able to use and apply the scientific method to critically evaluate hypotheses.

FIRST SEMESTER

CHEM 200	General Chemistry I **	5
MATH 121	Applied Calculus I ***	3

SECOND SEMESTER

BIOL 210	General Zoology	4
CHEM 210	General Chemistry II **	5
MATH 122	Applied Calculus II ***	3

THIRD SEMESTER

BIOL 211	Introduction to Cell and Molecular Biology	4
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FOURTH SEMESTER

BIOL 212	Biology of Plants	4
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Total units **28**

To earn an associate degree, additional general education and graduation requirements must be completed. See page 64.

- * Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice (e.g. UCSD molecular biology B.S., requires the MATH 250 sequence instead of MATH 121 and MATH 122). University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general education requirements through consultation with a counselor in either the Counseling Center or Transfer Center. See catalog TRANSFER COURSES INFORMATION section on page 45 for further information.

- ** If you do not meet the prerequisites for CHEM 200, take CHEM 170 in your first semester, then CHEM 200 in the second semester, and CHEM 210 in the third semester.



*** Students who plan to pursue a graduate degree in medicine or veterinary studies at a four-year college or university are advised to substitute MATH 250, 251, and 252 for MATH 121 and 122.

TO TRANSFER TO UCSD AND SDSU:

Beginning in Fall 2000 all students majoring in biology who wish to transfer to UCSD or SDSU must have satisfied all biology pre-major requirements prior to admission to the biology major. In the event that a transfer student has been unable to complete all required courses prior to enrolling at UCSD, he/she will be allowed a maximum of three quarters at UCSD to complete any remaining required pre-major coursework. For more information see <http://www.biology.ucsd.edu/sa/ugadmission.html>

Note: Two calculus-based physics course sequences are now available for biology majors. Sequence one—PHYS 170, 172, and 174. Sequence two—PHYS 270, 272, and 274. Check with your transfer institution for specific requirements.

Websites for biology majors:

SDSU: <http://www.sci.sdsu.edu>

UCSD: <http://www.biology.ucsd.edu>

CSU, San Marcos: <http://www.csusm.edu/biology>

Articulation: <http://www.assist.org>

BIOTECHNOLOGY

SCHOOL OF MATHEMATICS, SCIENCE, AND ENGINEERING

DEAN: Michael Odu, Ph.D., Office 215A, 619-482-6344

FACULTY: Lukas Buehler, Ph.D.

DEPARTMENT CHAIR: Margie Stinson, M.S.

GENERAL DESCRIPTION

Biotechnology is a rapidly expanding field of biology that has significant future potential for both improving life and providing a growing source of technical jobs. Biotechnology is the science of using and modifying biological materials in order to develop products and organisms for specific uses. The biotechnology laboratory technician works in a research or industry laboratory.

CAREER OPTIONS

Below is a sample of the career options available for the biotechnology major. Most of these require a certificate or an associate in science degree and are career options at an entry-level technician position in the following areas, which include but are not limited to the biotechnology industry: food, oil, genomics, pharmaceutical industry, forensic science, agriculture, anthropology, NASA projects, and basic research in academic or nonprofit institutions.

DEGREE/CERTIFICATE OPTIONS

MAJOR CODE

Associate in Science Degree: Transfer Preparation

Biotechnology 01512

Certificate of Achievement

Biotechnology 01511

Consult with a counselor to develop a Student Education Plan (SEP), which lists the courses necessary to achieve your academic goal.

ASSOCIATE IN SCIENCE DEGREE

BIOTECHNOLOGY



ASSOCIATE IN SCIENCE DEGREE

TRANSFER PREPARATION * (MAJOR CODE: 01512)

The associate in science degree augments student transfer preparation and qualifies students for entry-level positions in biotechnology research laboratories.

Program Student Learning Outcome Statement:

- Demonstrate skills, based on biotechnology industry requirements, necessary to successfully apply, interview and perform in biotechnology research internships and/or professional jobs.

FIRST SEMESTER

MATH 70	Intermediate Algebra II	4
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SECOND SEMESTER

BIOL 100	Principles of Biology **	3
BIOL 101	Principles of Biology Laboratory **	1
BIOL 205	DNA Science I	2
BIOL 229	Introduction to Biological Research I	3
CHEM 170	Preparation for General Chemistry (4) **	4-5
	OR	
CHEM 200	General Chemistry I (5) **	

THIRD SEMESTER

BIOL 206	DNA Science II	2
BIOL 211	Introduction to Cell and Molecular Biology	4
BIOL 230	Introduction to Biological Research II	3
BIOL 265	General Microbiology	4

Total units 30-31

** Transfer students should substitute higher-level courses required for their major (e.g.: BIOL 210 can replace BIOL 100/101; CHEM 170 or 200 can be replaced by higher-numbered chemistry courses; and MATH 70 can be replaced by higher-numbered math courses.

