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.

Web sites 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

Interim Dean Richard Fielding, M.S., Office 345A, 619-482-6344
Faculty Jonathan Atwater, Ph.D.; Nouna Bakhiet, 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
Certificate of Proficiency	
Step-Up Biotechnology	01513

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

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.

First Semester

MATH 70	Intermediate Algebra II	4

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) **	
	OR	4–5
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	5
	Total units	**31–32**

** 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.

To earn an associate degree, additional general education and graduation requirements must be completed. See page 51.

* Students planning to transfer to a four-year college or university should complete courses specific to the transfer institution of choice. University requirements vary from institution to institution and are subject to change. Therefore, it is important to verify transfer major preparation and general requirements through consultation with a counselor in either the Counseling Center or Transfer Center. **See catalog TRANSFER COURSES INFORMATION section on page 33 for further information.**

CERTIFICATE

Biotechnology

Certificate of Achievement

Career/Technical (Major Code: 01511)

Provides training in the theory and practices of biotechnology, which include introduction to microbiology, cell biology, and molecular biology techniques. Each participant is required to take a qualifying examination prior to certification.

First Semester

MATH 70	Intermediate Algebra II *	4

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)	
	OR	4–5
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	5
	Total units	**31–32**

* Higher-numbered courses are also acceptable: 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.

Step–Up Biotechnology

Certificate of Proficiency

Career/Technical (Major Code: 01513)

Provides students with training for entry-level employment in a biotechnology laboratory in industry or research. Introduces students to laboratory skills utilized by this rapidly expanding field of biology, which has a significant future potential for both improving life and providing a growing source of technical jobs. Exposes students to concepts in biotechnology, which is the science of using and modifying biological materials in order to develop products and organisms for specific uses.

BIOL 75	Introduction to Biotechnology	1.5
BIOL 76	Basic Biotechnology Laboratory Computations	1.5
BIOL 77	Biotechnology Laboratory Skills	3
BIOL 78	Biotechnology Job Success Skills	1.5
	Total units	**7.5**