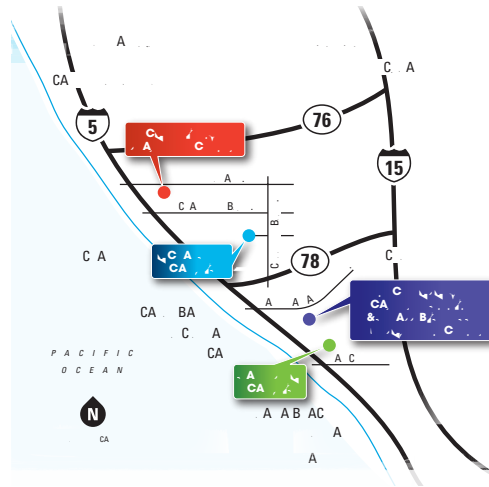


AB B EC G /
B A FAC R G

Biochemistry is a branch of biology that studies the chemical and physical processes that occur in living organisms. It is a multidisciplinary field that combines biology, chemistry, and physics to understand the molecular basis of life. Biochemists study the structure and function of proteins, nucleic acids, and other biomolecules, and how they interact to carry out the processes of life. This field is essential for understanding the molecular basis of disease and for developing new treatments and drugs. Biochemistry is a rapidly growing field with many applications in medicine, agriculture, and industry.

E E A BAC E /
DEG B A FAC R G

The biochemistry program at Miracosta College is designed to provide students with a strong foundation in the principles of biochemistry and to prepare them for careers in the field or for further study in a related discipline.



MIRACOSTA COLLEGE

Biochemistry Program
miracosta.edu/biochem

Barbara Juncosa, Ph.D.

Chair, Department of Biochemistry
bjuncosa@miracosta.edu

For information, contact program coordinator



19-C01-032) and Miracosta College, and
admission to California Community College
District of Southern California. District of Southern
California, and the program is a part of the
California State University system. The program is
designed to provide students with a strong
foundation in the principles of biochemistry and
to prepare them for careers in the field or for
further study in a related discipline. The
program is a part of the California State
University system and is designed to provide
students with a strong foundation in the
principles of biochemistry and to prepare
them for careers in the field or for further
study in a related discipline.



AB RC AC EGE

MiraCulaC... a... a... d... b... c... m... o...
... N... Sa... D... C... c... a... c... m... f...
O... a... d... , Ca... bad, E... c... a... , Cardiff, Ra... c... Sa... aF... , S... a...
B... ac... , D... Ma... a... d Carm... i... Va... .

RC AC EGE G G

R... a... ab... .*

H... i... a... ft... d... fa... c... m... m... b... r...

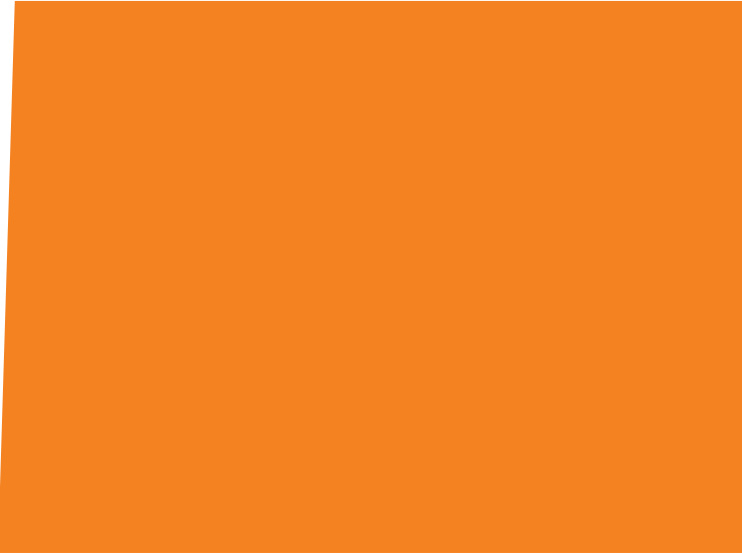
S... ma... o... a... d... r... a... a... s... f... r... m... i... t... o... r...

B... a... f... i... c... a... m... i... t... e... s... a... d... r... o... c... e... r... m... d... i... d... b... a... d... .

S... a... -... f... -... a... r... o... .

F... r... i... t... a... m... i... t... b... o... .

D... r... o... d... r... a... a... a... d... a... c... .



BIO 105	I... S...	B... : B...	3
BTEC 110	B... I...	B...	4
BTEC 120	B... B...	R... P...	3



Courses listed are subject to change. Please check requirements in the current college catalog at [catalog.miracosta.edu /disciplines/bio_echnolog](http://catalog.miracosta.edu/disciplines/bio_echnolog) or speak with a MiraCosta College general counselor.

BIOPROCESS TECHNOLOG

B

BIOPROCESS TECHNOLOGY (BIO 105) 3 credits
This course covers the fundamentals of bioprocess technology, including the design and operation of bioreactors, downstream processing, and the application of biotechnology in various industries. Prerequisites: CHEM 140, ENGL 50I, MATH 64I.

C B I

BIOPROCESS TECHNOLOGY (BIO 105) 3 credits
This course covers the fundamentals of bioprocess technology, including the design and operation of bioreactors, downstream processing, and the application of biotechnology in various industries. Prerequisites: CHEM 140, ENGL 50I, MATH 64I.

P P I

BIOPROCESS TECHNOLOGY (BIO 105) 3 credits
This course covers the fundamentals of bioprocess technology, including the design and operation of bioreactors, downstream processing, and the application of biotechnology in various industries. Prerequisites: CHEM 140, ENGL 50I, MATH 64I.

ENGL 50I C C

MATH 64I

MATH 64I A

CHEM 140 G C

(BIO 105)

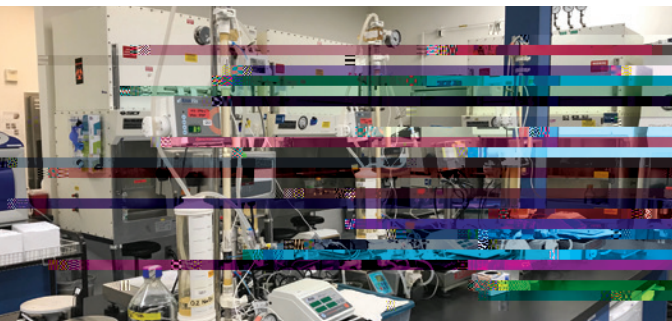
See list of certificate coursework on reverse side.

Cell Biology

BTEC 110	Cell Biology	4
BTEC 120	Cell Biology and Microbiology	3
BTEC 211	Cell Biology and Microbiology	1
BTEC 221	Cell Biology and Microbiology	1.5
BTEC 222	Cell Biology and Microbiology	1.5
BTEC 210	Cell Biology and Microbiology	1
BTEC 292	Cell Biology and Microbiology	
BTEC 299	Cell Biology and Microbiology	

12

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Courses listed are subject to change. Please check requirements in the current college catalog at catalog.miracosta.edu/disciplines/bio_echnolog or speak with a MiraCosta College general counselor.

RESEARCH & DEVELOPMENT



& D

The Research & Development Department is responsible for the development of new products and services. This includes the identification of new market opportunities, the design and development of new products, and the testing and evaluation of new products. The department also oversees the development of new manufacturing processes and the implementation of new technologies. The Research & Development Department is a key driver of innovation and growth for the company.

BDC BTC

The M.C.C. Certificate in Research & Development is a two-year program that provides students with the knowledge and skills necessary to succeed in the field of research and development. The program includes coursework in research methods, product development, and project management. Students also gain hands-on experience through internships and practical projects.

See list of certificate coursework on reverse side.



Course Catalog & Degree Programs

BIO 105	Introduction to Biology: Basic Principles	3
BIO 204	Environmental Biology: Basic Principles, Conservation, and Management	4
BIO 204H	Environmental Biology: Basic Principles, Conservation, and Management (Honors)	4
BTEC 110	Business Information Systems	4
BTEC 120	Business Research and Planning	3
BTEC 180	Business Law	4
MATH 150	Calculus: Applications and Graphical Analysis	5
MATH 150H	Calculus: Applications and Graphical Analysis (Honors)	5
BTEC 210	Database Administration	1
CHEM 150	General Chemistry I: Fundamentals and Laboratory	5
CHEM 150H	General Chemistry I: Fundamentals and Laboratory (Honors)	5
CHEM 151	General Chemistry II: Fundamentals and Laboratory	5
CHEM 151H	General Chemistry II: Fundamentals and Laboratory (Honors)	5
ENGL 100	College Composition: Writing and Research	5

College of Arts and Sciences



BIO 105	Introduction to Biology: Biology for Scientists	3
BTEC 110	Business Introduction: Business Fundamentals	4
BTEC 120	Business Research: Principles of Business Research	3
BTEC 180	Business Law (Introduction)	4
BTEC 210	Digital Analytics and E-commerce	1
BTEC 211	International Work: Research and E-commerce	1
BTEC 221		



BACHELOR'S DEGREE IN BIOMANUFACTURING

Bachelor's Degree

To be eligible for admission to the Bachelor's Degree in Biomanufacturing, students must have completed the following courses with a grade of C or better:

Admission & Enrollment Requirements

To be eligible for admission to BS Biomanufacturing, students must have completed the following courses with a grade of C or better:

Enrollment Requirements

- A. Overall GPA: 2.0
- B. C.I. BTEC 110

- BTEC 120
- BTEC 210
- BTEC 211
- CHEM 150/150H
- CHEM 151/151H

C. C.I. Core (4.0 credits)

- ENGL 100
- Science (BTEC 180, 181, 182)

Q. [View the degree audit tool](#) to determine if you are on track to complete the degree.



4-

Topic	Year 1		Year 2		Year 3		Year 4	
English/ Communication	Area 1A: ENGL 100 (4U)	Area 1B (3-4U)		Area 1C (3U)				
Math	MATH 64 (4U)*	BTEC 180 (4U)						
Sciences (Prep for major and GE-Area 5)	BIO 105 (3U) CHEM 140 (4U)		CHEM 150 (5U)	CHEM 151 (5U)				
Major Courses		BTEC 110 (4U)	BTEC 120 (3U) BTEC 210 (1U)	BTEC 211 (1U) BTEC 221# (1.5U) BTEC 222# (1.5U) 200-level BTEC elective courses (2U)	BTEC 300 (3U) BTEC 360 (3U))			
		One course (3U)	One course (3U)					
Social & Behavioral Sciences GE-Area 4		One course (3U)	One course (3U)	One course (3U)				
Upper-Division GE					BIO 340 (3U)	BUS 302 (3U)	PHIL 302# (3U)	
Electives								