BIOTECHNOLOGY

Program Purpose: Students who complete a biotechnology course will be able to understand and explain the operations that take place in an industrial biotechnology setting, perform many of these operations, and assess and critique the extent to which they are meeting or exceeding the standards appropriate to these activities.

Biotechnology is a rapidly growing industry with projections for continued growth and exciting opportunities for employment. The Biotechnology program is one of several in the State with a comprehensive curriculum in biomanufacturing. This program is designed in consultation with members of local industry (Baxter Healthcare Corporation, AMGEN Corporation, and others) to provide the essential technical experiences and training needed for this thriving field. The curriculum balances basic science courses with practical laboratory applications.

BIOT M02A Environmental Control and Process Support 2 Units
Same-As: BIOL M12A
In-Class Hours: 17.5 lecture, 52.5 laboratory
Provides skills training in manufacturing of biopharmaceuticals and medical devices. Presents an overview of the manufacturing process and introduces environmental control and process support with a focus on Good Laboratory Practices (GLP)/Good Manufacturing Practices (GMP), clean room procedure, monitoring techniques, and required documentation.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

BIOT M02B Manufacturing: Quality Control and Validation 2 Units
Same-As: BIOL M12B
In-Class Hours: 17.5 lecture, 52.5 laboratory
C-ID: BIOT 210X
Provides skills training in industrial biotechnology with emphasis on manufacturing of pharmaceuticals and medical devices. Introduces validation and quality control. Reviews manufacturing process, including formulation, lyophilization, packaging and filling. Focuses on validation, systems evaluations, testing and reporting.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

BIOT M02C Manufacturing: Cell Culture and Microbial Fermentation 3 Units
Same-As: BIOL M12C
In-Class Hours: 17.5 lecture, 105 laboratory
C-ID: BIOT 230X
Provides skills training in industrial biotechnology with emphasis on manufacturing pharmaceuticals. Introduces cell culture and microbial fermentation. Focuses on bacterial techniques, microbial assessment, mammalian cell culture, bioreactor fermentation, and media preparation. Compares small and large industrial scale cell culture.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

BIOT M02D Bioprocessing: Recovery and Purification 2 Units
Same-As: BIOL M12D
In-Class Hours: 17.5 lecture, 52.5 laboratory
C-ID: BIOT 220BX
Provides skills training in industrial biotechnology with emphasis on manufacturing pharmaceuticals. Introduces bioprocessing, recovery, and purification techniques. Focuses on protein separation and purification, chromatography, large-scale recovery, and identification of assays. Reviews skills necessary for a successful job search in the field of biotechnology.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

BIOT M02E Business & Government Regulation 2 Units
Same-As: BIOL M12E
In-Class Hours: 35 lecture
Provides skills training in industrial biotechnology with emphasis on manufacturing pharmaceuticals. Examines manufacturing from the perspective of company operations involved with the drug or medical device development process. Focuses on business practices and governmental regulations.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

BIOT M10 Introduction to Biotechnology and Molecular Biology 4 Units
Same-As: BIOL M13
In-Class Hours: 52.5 lecture, 52.5 laboratory
C-ID: BIOT 150BX
Examines the role of molecular biology in the manufacturing of commercial pharmaceutical and agricultural products. Introduces basic biotechnology laboratory skills, including documentation, safety, and solution and buffer preparation. Develops student proficiency in aseptic techniques, spectrophotometry, molecular biology techniques, and electrophoresis.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU, UC
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

BIOT M50A Bridge to Biotechnology 0.5 Units
Same-As: BIOL M50A
In-Class Hours: 26.25 laboratory
Develops practical, hands-on experience with laboratory techniques used in the field of biotechnology. Applies specific techniques that vary depending on the current state of technology. Provides a bridge for entry-level and high school students who are interested in exploring the field of biotechnology.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: None

BIOT M80 Internship in Biotechnology 1-4 Units
In-Class Hours: 60-240 unpaid cooperative, 75-300 paid cooperative
Prerequisites: Completion of or concurrent enrollment in one course in the discipline and instructor approval. Course Credit Limitation: To take this course, contact the Career Transfer Center. Requires orientation session. Students receive one unit of credit for each 60 hours unpaid or 75 hours paid work. May enroll in up to 4 units a semester with a maximum of 16 total units of any type of work experience
Provides on-the-job learning to develop effective work habits, attitudes, and career awareness in paid or unpaid internships that are related to the discipline. Involves the development and documentation of learning objectives and the completion of an internship paper, presentation, or project. Includes both workplace supervisor and faculty adviser feedback and/or written evaluations.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Repeatable for Credit: Course may be taken up to 3 times for credit.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

- Biotechnology, Associate in Science (http://catalog.vcccd.edu/moorpark/programs-courses/biotechnology/biotechnology-as/)
- Biomedical Device Manufacturing, Certificate of Achievement (http://catalog.vcccd.edu/moorpark/programs-courses/biotechnology/biomedical-device-manufacturing-coa/)
- Biotechnology Manufacturing Operator, Certificate of Achievement (http://catalog.vcccd.edu/moorpark/programs-courses/biotechnology/biotechnology-manufacturing-operator-coa/)
- Biotechnology, Certificate of Achievement (http://catalog.vcccd.edu/moorpark/programs-courses/biotechnology/biotechnology-coa/)

Dean

Carol Higashida, Phone (805) 378-1459

Faculty

Subhash Karkare

Counselors

Daniel Aguilar, Eddie Beltran, Chuck Brinkman, Pablo Diaz, Jodi Dickey, Ashley Lajoie, Trulie Thompson, Samantha Zaldivar