

Biomanufacturing (Certificate) (For Post- Baccalaureate Students)

The Certificate in Biomanufacturing provides graduates with the knowledge base and hands-on skills that will prepare them to quickly contribute to a cGMP biomanufacturing operation in significant ways and should reduce the time needed for on-the-job training in those operations.

Program Coordinator

Pa Nhia Moore

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Admissions Requirements

Contact the Program Coordinator.

Plan of Study and Registration Information

Contact the Program Coordinator.

Academic Structure

Term Effective: 1/2009
Plan Code: 32BTECCTU
CIP Code: 26.1201
Description: Undergraduate Certificate in Biomanufacturing
Offered: On-campus format

Plan Requirements

Prerequisite: In order to enroll in the first course in the program, applicants must have earned a bachelor's level degree, and have completed CH 223 Organic Chemistry II (or equivalent) and BIO 183 Introductory Biology: Cellular and Molecular Biology. Interested graduates should contact the BTEC's manager of student programs.

Credits earned toward a bachelor's degree will not count for credit in the post-baccalaureate certificate.

Requirements for the Post-Baccalaureate Undergraduate Certificate in Biomanufacturing include a minimum of **13 credit** hours as specified below. All courses must be completed with a grade of 'C-' or higher:

Code	Title	Hours	Counts towards
Required Courses:			
BEC 425	Molecular Biology for Biomanufacturing	6	
or BEC 445	Cell Line Development for Biomanufacturing		

BEC 330 Principles and Applications of Bioseparations

BEC/CHE 463 Fermentation of Recombinant Microorganisms

Biomanufacturing Specialization: 4

Select one specialization area:

Upstream Operations:

BEC 426 & BEC 480 Upstream Biomanufacturing Laboratory and cGMP Fermentation Operations

Downstream Operations:

BEC 436 & BEC 485 Introduction to Downstream Process Development and cGMP Downstream Operations

Elective Courses: 3

Select three credits of the following:

Any 4** or 5** Level BEC Course

BEC/BBS 426 Upstream Biomanufacturing Laboratory

BEC 436 Introduction to Downstream Process Development

BEC 445 Cell Line Development for Biomanufacturing

BEC/CHE 448 Bioreactor Design

BEC/CHE 462 Fundamentals of Bio-Nanotechnology

BEC 475 Global Regulatory Affairs for Medical Products

BEC 480 cGMP Fermentation Operations

BEC/BME 483 Tissue Engineering Technologies

BEC 485 cGMP Downstream Operations

BEC/CHE 488 Animal Cell Culture Engineering

2 Biomanufacturing (Certificate) (For Post-Baccalaureate Students)

BEC 495	Special Topics in Biomanufacturing
BCH 351	General Biochemistry
	or BCH 451 Principles of Biochemistry
BIT 410	Manipulation of Recombinant DNA
BIT 466	Animal Cell Culture Techniques
GN 311	Principles of Genetics
MB 455	Microbial Biotechnology
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Total Hours	13