

## BIOT221 – Biomanufacturing

The course provides a solid foundation in the biomanufacturing process of biopharmaceuticals, including producing them under current Good Manufacturing Practices. Students use bacteria, mammalian and/or yeast cells to produce human proteins using the tools of manufacturing, such as upstream and downstream processing of proteins and quality control of protein production.

*Prerequisite:* BIOT125 (C or better) or permission of the STEM department • *Corequisite:* None  
4 credits

## BIOT275 – Biotechnology Seminar

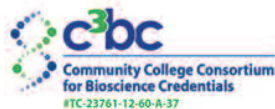
This course is intended to prepare students for careers in Biotechnology. Topics include resume writing, interview skills, and discussion and presentation of scientific data. The course will feature speakers from the biotechnology industry and field trips to biotechnology laboratories.

*Prerequisite:* BIOT125 (C or better) • *Corequisite:* None  
1 credits

Bucks County Community College is committed to providing equal education and employment opportunities. This encompasses persons in legally protected classifications in regard to race, color, national origin, sex, handicap, sexual orientation, age, religion, disabilities, and Vietnam military veterans. The College provides reasonable accommodations for persons with disabilities in accordance with the Americans With Disabilities Act (ADA). Please call the Campus Coordinator for Equal Employment Opportunity in advance to request or clarify accommodations or to address issues concerning equal opportunities at 215-968-8090. The EEO Office is located in Room 130, Tyler Hall.

The Security Information Report required by the College and the University Security Information Act of Pennsylvania and the "Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act" of the Federal Government is available on the web, at the Office of Security and Safety, and at other campus locations.

The biotechnology programs at Bucks are supported by two national grant efforts described below.



The Community College Consortium for Bioscience Credentials, (c3bc). Launched in September 2012, c3bc is a bio manufacturing job training program funded by a 15 million dollar Trade Adjustment Assistance Community College Career Training (TAACCCT) grant from the US Department of Labor and Training Administration. The nationwide consortium consists of 12 community colleges, including Bucks County Community College, as well as industry and Workforce Development Partners.



The NBC2 a National Science Foundation Advanced Technology Education center of excellence focused on educating and training an advanced technological workforce for the rapidly growing biomanufacturing industry. NBC2 consists of six Hubs at community colleges across the nation, including Bucks County Community College. Hubs consist of biomanufacturers and the community colleges, high schools and universities that train biomanufacturing technicians for local industry. The NBC2 website is [www.biomanufacturing.org](http://www.biomanufacturing.org).

To explore career opportunities in biotechnology visit: [biotech-careers.org](http://biotech-careers.org) or [www.biomanufacturing.org/targetjobs.html](http://www.biomanufacturing.org/targetjobs.html)



Visit our website at:

[www.bucks.edu](http://www.bucks.edu)

Science, Technology, Engineering, and Math  
(STEM) Department

215.968.8305  
[science@bucks.edu](mailto:science@bucks.edu)

# Biotechnology



**Bucks County  
Community College**

Newtown • Bristol • Perkasio • Online

*Where to learn. Where to return.*



# Biotechnology

Biotechnology is one of the fastest growing industries in Bucks County and the surrounding tri-state region. The region is home to a number of pharmaceutical and medical and diagnostic testing companies as well as nationally renowned research institutions. As these industries grow, many will be seeking to fill entry level technician positions. In addition, biological technicians have been designated by the Pennsylvania Dept of Workforce Development as one of the state's high priority occupations- job categories that are in demand by employers, have higher skill needs and are most likely to provide family-sustaining wages. Students completing the Associate Degree program in biotechnology will be prepared for employment as skilled technicians in biotechnology, biomanufacturing, pharmaceutical, and academic laboratories.

Graduates of this program are able to:

- operate, calibrate, and maintain standard biotechnology lab equipment.
- perform basic biotechnology processes in a safe and aseptic manner.
- prepare, culture, and maintain cell cultures.
- employ methods to detect, purify, and characterize DNA and protein.
- collect, graph, interpret, and present data.
- write reports, and maintain lab books and equipment logs.

## *Degree Course Requirements*

BIOL121	Biological Principles I	4
BIOL228	Microbiology	4
BIOT105	Introduction to Biotechnology	4
BIOT125	Biotechnology Methods and Techniques	4
BIOT205	Cell and Tissue Culture	4
BIOT 221	Biomanufacturing	4
BIOT275	Biotechnology Seminar	1
CHEM121	Chemistry	4
CISC110	Introduction to Information Systems	3
COMM110	Effective Speaking	3
COMP110	English Composition	3
COMP114	Technical Writing	3
MATH115	Elementary Statistics	3
	Cultural Perspectives	3
INTG285	Integration of Knowledge	3
	Personal Health	2
	Social Perspectives	3
BIOL280	Cooperative Education: Biotechnology	3-4
	OR	
	Science Elective	
	Elective	<u>3-4</u>
	<b>Total Credits</b>	<b>61-63</b>

## *BIOT105 – Introduction to Biotechnology*

This course is an introduction to the field of biotechnology. Topics include recombinant DNA, production of biological molecules, bioprocessing, and current events. Students also review employment and careers in the biotechnology and biopharmaceutical industries. Laboratories include aseptic technique, pipetting and measurement, DNA extraction and restriction digestion, gel electrophoresis, and PCR.

*Prerequisite: None • Corequisite: None*  
4 credits

## *BIOT125 – Biotechnology Methods and Techniques*

This course is an introduction to common practices and methodologies of Biotechnology. Students will get hands-on experience using and maintaining laboratory instruments. Laboratory procedures will include solution preparation, aseptic technique, protein separations and assays, DNA electrophoresis, and Polymerase Chain Reaction (PCR). Lectures will support the laboratory activities.

*Prerequisite: CHEM121 (C or better) •*  
*Corequisite: None*  
4 credits

## *BIOT205 – Cell and Tissue Culture*

This course is an introduction to the theory, standard practices, and methodologies of animal cell culture. Students will get hands-on laboratory experience including sterile technique, media preparation, cell counting, maintenance and storage of cell lines, and scale-up. Lectures will support the laboratory activities.

*Prerequisite: BIOT125 (C or better) and BIOL121 (C or better) • Corequisite: None*  
4 credits