

# Biotechnology

## Biotechnology (BTEC) Classes

### BTEC105G : Introduction to Biotechnology

This course is designed to introduce students to the tools and applications of genetic engineering, as well as the ethical issues that these technologies raise. No prior experience is assumed. Students will acquire basic laboratory skills in such areas as solution preparation but will also have a chance to experiment with techniques such as DNA isolation, DNA manipulation, and molecular cloning. Students will gain an understanding of how the biotechnology industry operates and will also learn about options for careers and further education in biotechnology.

**Credits** 4

**Theory Hours** 3

**Lab Hours** 3

**Semester Offered**

Spring semester

### BTEC205G : Bioethics

Biotechnology is any technique that uses living organisms (or parts of organisms) to make or modify products to improve plants and animals or to develop microorganisms for specific uses. This course will address the sociological, ethical, and legal issues arising from biotechnology. This new field is known as bioethics. During the first four weeks of the course, students will develop a tool kit based on sociological, ethical, and legal thought. During the remainder of the course, students will read bioethical cases, analyze them as to their social, ethical, and legal implications, and argue their opinions as they apply these tools to answer bioethical questions.

**Credits** 3

**Theory Hours** 3

**Lab Hours** 0

**Semester Offered**

Fall/Spring semesters

### BTEC210G : Biotechnology Research

The first of two experiential, cornerstone courses in Biotechnology. The course begins by introducing the student to the field of biotechnology, the role of the technician in biotechnology, and GLP or good laboratory practices. The remainder of the course is a hands-on exposure to biotechnology research tools and protocols used for DNA isolation, gene mapping, DNA fingerprinting, gene cloning, gene expression regulation, protein identification, mRNA isolation, cDNA synthesis from mRNA, the production of gene libraries, and gene sequencing. A two-hour-per-week lecture provides the knowledge base of biotechnology research.

**Credits** 4

**Theory Hours** 2

**Lab Hours** 6

**Prerequisites**

[BTEC105G](#), [BIOL108G](#) (or [BIOL210G](#)), [CHEM115G](#) (or [CHEM110G](#)), and [MATH145G](#)/[MATH147G](#) or [MATH150G](#)/152G or higher. Exceptions by permission of department chair only

**Semester Offered**

Fall semester

## BTEC220G : Biomanufacturing

The second of two experiential, cornerstone courses in Biotechnology. The course begins by introducing the student to the proteins and companies of biotechnology and to cGMP or current good manufacturing practices. In the remainder of the course, students use mammalian cells to produce a human protein using tools and manufacturing standard operating procedures of biotechnology, including upstream and downstream processing of proteins and quality control of protein production. A two-hour-per-week lecture provides the knowledge base of biotechnology manufacturing.

**Credits** 4

**Theory Hours** 2

**Lab Hours** 6

**Prerequisites**

C- or better in [BTEC210G](#). Exceptions by permission of department chair only

**Semester Offered**

Fall/Spring semesters

## BTEC223G : Biotechnology Externship

This optional externship, consisting of 144 hours of experience in an area of biotechnology, is extended to students who want more exposure to biotechnology before seeking employment. Arrangements are made on an individual basis.

**Credits** 3

**Theory Hours** 0

**Lab Hours** 9

**Prerequisite Courses**

[BTEC210G](#): Biotechnology Research

[BTEC220G](#): Biomanufacturing

## BTEC224G : Biotechnology Externship II

This optional externship, consisting of 192 hours of experience in an area of biotechnology, is extended to students who want more exposure to biotechnology before seeking employment. Arrangements are made on an individual basis.

**Credits** 4

**Theory Hours** 0

**Lab Hours** 12

**Prerequisites**

[BTEC210G](#) and [BTEC220G](#); or permission of instructor