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## Biotechnology Laboratory Technician (AAS degree) Pathway

Semester 1			
	COURSE	CREDITS	OBSERVATIONS
FALL	College Algebra (MAT 110)	5	GET
	Freshman Rhetoric & Composition I (RHT 101)	3	GET
	Principles of Biology 1 (BIS 150)	4	GET
	Fundamentals of Chemistry (CHM 110)	4	GET
	<b>Total Credits</b>	<b>16</b>	
Semester 2			
SPRING	Introduction to Biotechnology (SAT 170)	3	CT
	Principles of Microbiology (BIS 222)	4	T
	Cell and Molecular Biology (BOT 200)*	3	CT
	Elementary Organic Chemistry (CHM 132)	5	GE
	<b>Total Credits</b>	<b>15</b>	
Semester 3			
FALL	Elementary Statistics (MAT 170)	4	GET
	Freshman Rhetoric and Composition II (RHT 102)	3	GET
	GLP/GMP in Biotechnology (BOT 110)*	1	CT
	Introduction to Biochemistry (BOT 210)*	3	CT • Corequisite with BOT 230
	Biotechnology Laboratory Techniques I (BOT 230)*	4	CT
	<b>Total Credits</b>	<b>15</b>	
Semester 4			
SPRING	Ethics (PHL 103)	3	GET
	Introduction to Sociology (SOC 100)	3	GET
	Introduction to Computer Science (CIS 101)	3	GET
	Cell and Tissue Culture (BOT 220)*	3	CT • Corequisite with BOT 240
	Biotechnology Laboratory Techniques II (BOT 240)*	4	CT
	<b>Total Credits</b>	<b>16</b>	
<b>Total Degree Credits</b>		<b>62</b>	

GET = General Education, Transferable • T = Transferable • CT = Career and Tech Education

\* New course developed for the Biotechnology Laboratory Technician AAS degree.

# Biotechnology Laboratory Technician (AAS degree)

Description of Biology Courses in this curriculum (42% of the BLT curriculum)

## Principles of Biology I (BIS 150)

Basic concepts in biology for science majors are covered.

**Credits: 4 • Lecture: 3 hours • Laboratory: 3 hours • IAI: L1 910L, BIO 910**

## Principles of Microbiology (BIS 222)

The course Principles of Microbiology Investigates the major groups of microorganisms with special emphasis on morphology, physiology, pathogenicity and their impact in the natural world. With integration of laboratory practice the student will learn to identify microorganisms present in an unknown sample.

**Credit: 4 • Lecture: 3 hours • Laboratory: 2 hours • IAI: L1 903L**

## Good Laboratory Practices/Good Manufacturing Practices in Biotechnology (BOT 110)\*

GLP/GMP in Biotechnology covers the current Food and Drug Administration (FDA) Good Laboratory Practices (GLPs) and Good Manufacturing Practices (GMP) guidelines. Emphasizes the management of manufacturing and quality control of drugs and medical devices as well as the regulations in place for conducting non-clinical studies.

**Credits: 1 • Lecture: 15 hours**

## Cell and Molecular Biology (BOT 200)\*

Cellular and molecular biology focuses on nucleic acids and proteins and the roles that each of these molecules play in cellular physiology. An emphasis on the molecular mechanisms of DNA replication, DNA repair, gene expression, membrane transport, cell communication and cell division. Cell culture techniques, stem cells and cancer will also be covered.

**Credits: 3 • Lecture: 3 hours**

## Introduction to Biochemistry (BOT 210)\*

Introduction to Biochemistry explores the fundamentals of biological chemistry including structures of amino acids, proteins, nucleotides, nucleic acids, lipids, and carbohydrates. Emphasizes the relationship between structure and function. Investigates kinetics and mechanism of enzymatic reactions, central metabolic pathways, and biochemical genetics.

**Credits: 3 • Lecture: 3 hours**

## Cell and Tissue Culture (BOT 220)\*

An introduction to animal and plant cell cultures. Standard practices and methodologies for primary and continuous cultures will be emphasized. Topics covered include aseptic technique, media preparation, cell culture evaluation as well as maintenance and storage of cell lines.

**Credits: 3 • Lecture: 3 hours**

## Biotechnology Laboratory Techniques 1 (DNA techniques) (BOT 230)\*

The field of biotechnology, laboratory techniques, applications, and bioethical considerations. Includes the metric system, solutions, spectrophotometry, bacteria culturing, deoxyribonucleic acid (DNA) structure, DNA recombinant techniques, gel electrophoresis, plasmid transformation and purification, DNA quantitation, polymerase chain reaction, DNA sequencing, and DNA microarray.

**Credits: 4 • Lecture: 2 hours • Laboratory: 4 hours**

## Biotechnology Laboratory Techniques 2 (Protein techniques and Biofuels) (BOT 240)\*

Expands on the field of biotechnology, laboratory techniques, applications, and bioethical considerations. Includes protein structure, protein applications, enzymes, protein quantitation, size exclusion chromatography, protein expression and purification, protein electrophoresis, bioinformatics, immunity and immunological applications, immunodiffusion, enzyme-linked immunosorbent Assay (ELISA), western blotting, and biofuels.

**Credits: 4 • Lecture: 2 hours • Laboratory: 4 hours**

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