Biotechnology Laboratory Technician
Associate in Applied Science

Academic Plan Code - **4101017029**

Description:
The Biotechnology Laboratory Technician AAS program provides the basic knowledge and laboratory skills needed to prepare for entry level jobs in university, government, pharmaceutical or industrial biotechnology laboratories. Graduates of the program will be able to seek employment in biotechnology laboratories such as biomanufacturing, quality control, quality assurance, research and development, and regulatory bioscience. The program has been designed to develop skills in basic analysis of biological molecules (DNA and proteins), use of bioreactors, recombinant DNA technology, generation of cell cultures, immunological method applications, regulatory compliance (GMPs and GLPs), accurate documentation, and laboratory safety skills. The Basic Biotechnician certificate introduces hands-on laboratory training needed for entry-level employment in a biotechnological laboratory. The Advanced Biotechnician certificate provides practical laboratory skills to supplement theoretical knowledge to improve employability in the biotechnology industry. Some courses are dual credit and college credit can be earned while students are enrolled in secondary school..

Course	Course Descriptions	Credit Hours
	General Education Core	
	Heritage/Humanities/Foreign Language	3
	Behavioral Science/Social Interaction	3
	Science with Laboratory[1]	4-5
	Computer Literacy[2]	0-3
MAT 110	Applied Mathematics or higher (excluding MAT 120)	3
ENG 101	Writing I	3
	Subtotal General Education Hours	**16-20**
[1] May not count general education course as one of the technical courses. [2] Computer literacy must be demonstrated either by competency exam or by successfully completing a computer literacy course.		
	Required Technical Core Courses	
BTN 101	Introduction to Biotechnology	1
BTN 110	Nucleic Acid Methods	4
BTN 201	Biotechnology Techniques I	4
BTN 202	Biotechnology Techniques II	4
BTN 210	Cell Culture and Function	4
BTN 220	Immunological Methods	4
	Subtotal Technical Core Hours	**21**
	Required Technical Elective Courses **Must choose one of either COE, BIO, CHE, or EST**	
COE 199	Cooperative Education OR	1-3
BIO 295	Independent Investigation in Biology OR	(1-3)
BIO 299	Selected Topics in Biology OR	(1-3)
CHE 295	Selected Topics in Chemistry Laboratory OR	(1-3)
CHE 299	Laboratory Research in Chemistry OR	(1-3)
EST 299	Selected Topics in Environmental Science Technology	(1-3)
	Subtotal Technical Elective Hours	**1 – 3**
	Technical Support Courses **Must choose at least 15 hours of technical support courses**	
BIO 112	Introduction to Biology	3
BIO 113	Introduction to Biology Lab	1
BIO 120	Human Ecology	3
BIO 121	Introduction to Ecology Laboratory	1
BIO 135	Basic Anatomy and Physiology with Laboratory	4
BIO 137	Human Anatomy and Physiology I	4
BIO 139	Human Anatomy and Physiology II	4
BIO 150	Principles of Biology I	3
BIO 151	Principles of Biology Laboratory I	2
BIO 152	Principles of Biology II	3
BIO 153	Principles of Biology Laboratory II	2
BIO 209	Introductory Microbiology Laboratory	2
BIO 226	Principles of Microbiology	3
CHE 120	The Joy of Chemistry	3
CHE 125	The Joy of Chemistry Lab	1
CHE 140	Introductory General Chemistry	3
CHE 145	Introductory General Chemistry Laboratory	1
CHE 170	General College Chemistry I	3
CHE 175	General College Chemistry Laboratory I	1
CHE 180	General College Chemistry II	3
CHE 183	General College Chemistry II Workshop	1
CHE 185	General College Chemistry Laboratory II	1
CHE 220	Analytical Chemistry	5
CHE 270	Organic Chemistry I	3
CHE 275	Organic Chemistry Laboratory I	2
CHE 280	Organic Chemistry II	3
CHE 285	Organic Chemistry Laboratory II	2
EST 150	Introductory Ecology	4
EST 160	Hydrological Geology	3
EST 220	Pollution of Aquatic Ecosystems	3
EST 230	Aquatic Chemistry Laboratory	2
EST 240	Sources and Effects of Air Pollution	4
EST 260	Environmental Analysis Laboratory	2
EST 270	Environmental Law and Regulation	3
MAT 109	College Algebra	3
MAT 111	Contemporary Mathematics	3
MAT 113	Calculus I	4
MAT 114	Calculus II	4
MAT 123	Elemental Calculus and its Applications	3
MAT 155	Trigonometry	3
MAT 201	Math for Elementary Teachers	3
MAT 213	Calculus III	4
MAT 214	Calculus IV	3
PHL 110	Bioethics	3
PHY 151	Introductory Physics I	3
PHY 152	Introductory Physics II	3
PHY 161	Introductory Physics Lab I	1
PHY 162	Introductory Physics Lab II	1

(Courses are listed by category and not necessarily in the order to be taken)

PHY 172	Physics for Health Sciences	2
PHY 201	College Physics I	4
PHY 202	College Physics I Laboratory	1
PHY 203	College Physics II	4
PHY 204	College Physics II Laboratory	1
PHY 231	General University Physics I	4
PHY 232	General University Physics II	4
PHY 241	General University Physics I Laboratory	1
PHY 242	General University Physics II Laboratory	1
STA 200	Statistics	3
STA 291	Statistical Methods	3
	or any course approved by the program coordinator	
	Subtotal Technical Support Hours	**53-59**
	Electives	**7**
	Total Credit Hours	**60-66**

Basic Biotechnician Certificate

Academic Plan Code - 4101013020

Course	Course Description	Credit Hours
	General Education	
BTN 101	Introduction to Biotechnology	1
BTN 201	Biotechnology Techniques I	4
BTN 202	Biotechnology Techniques II	4
MAT 110	Applied Mathematics or higher (excluding MAT 120)	3
	Science[1]	4-5
	Total Credit Hours	**16-17**

[1] One semester of college biology with lab, or college chemistry with lab, or course approved by the program coordinator

Advanced Biotechnician Certificate

Academic Plan Code -4101013030

Course	Course Description	Credit Hours
	General Education	
BTN 101	Introduction to Biotechnology	1
BTN 110	Nucleic Acid Methods	4
BTN 201	Biotechnology Techniques I	4
BTN 202	Biotechnology Techniques II	4
BTN 210	Cell Culture and Function OR	4
BTN 220	Immunological Methods OR	(4)
	Any course approved by coordinator	(4-5)
COE 199	Cooperative Education OR	1-3
BIO 295	Independent Investigation in Biology OR	(1-3)
BIO 299	Selected Topics in Biology OR	(1-3)
CHE 295	Selected Topics in Chemistry Laboratory OR	(1-3)
CHE 299	Laboratory Research in Chemistry OR	(1-3)
EST 299	Selected Topics in Environmental Science Technology	(1-3)
	Science[1]	4-5
	Total Credit Hours	**18-21**

Note: Prerequisites for the Advanced Biotechnician Certificate

- At least one semester of college level chemistry
- At least one semester of college level biology
- Or consent of program coordinator

Recommended Prerequisites for the Advanced Biotechnician Certificate

- Earned Associates Degree or higher in a science discipline
- Microbiology with laboratory
- Genetics within the past 10 years