

BIOSCIENCE TECHNOLOGY

pcc.edu/bio

CAREER AND PROGRAM DESCRIPTION

Bioscience Technology refers to the research, development, and manufacturing of products which use the processes, products or principles of living organisms to solve problems. The applications of bioscience range from developing and manufacturing better ways to diagnose and treat disease, to improving the production of plant crops, and even using microorganisms to clean up toxic wastes. The field is dynamic, employing applications and innovations that in many cases cut across traditional disciplines. Skilled technicians with broad-based laboratory training find employment in a variety of settings, working with scientists at all levels in research, development, manufacturing, testing, and quality control and assurance. Technicians are needed in both large and small companies, research institutions, at local and state agencies, in private service laboratories and in some related industries.

Course work in the Bioscience program involves four distinct elements. Basic science courses provide the background information so that technical elements can be more completely understood. The foundation course work provides a broad base of technical knowledge that prepares individuals for entry-level positions in a variety of Bioscience companies, and includes emphasis on working in a regulated environment, as well as developing skill in technical communication and job readiness. The core of these foundation courses make up the Bioscience Technician Certificate. The advanced technical courses develop more specific skill sets, and provide for development of the fundamental skills in this more advanced context. Students may choose some electives from outside of the BIT program, in order to increase the breadth of training or focus on a specific sector of the bioscience industry. Students have the option to put their skills and knowledge into a working context through a work experience component. Certificate students must achieve an overall GPA of 2.0 in all required bioscience courses.

DEGREES AND CERTIFICATES OFFERED

ASSOCIATE OF APPLIED SCIENCE DEGREE

Bioscience Technology

LESS THAN ONE-YEAR: CAREER PATHWAY CERTIFICATE

Bioscience Technician
Advanced Bioscience Technologist

Academic Prerequisites

- AAS Bioscience Technology: Completion of MTH 95, WR 121Z, Biology (BI 112 or BI 211 or equivalent), and Chemistry (CH 151 or CH 221 or equivalent), each with a grade of "C" or "P" or better
- Bioscience Technician Certificate: Placement into IRW 115 or (WR 115 and RD 115) and MTH 95.
- Advanced Bioscience Technologist Certificate: Placement into WR 121Z, and MTH 95.
- The Bioscience Technology program is a restricted entry program with limited enrollment. Contact the department for instructions.

Academic Requirements

- Students must achieve an overall GPA of 2.0 in order to earn the certificate.

Non-Academic Prerequisites

- None

Non-Academic Requirements

- None

BIOSCIENCE TECHNOLOGY AAS DEGREE

Minimum 90 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. Some courses specified within the program may be used as General Education. In addition to required courses in the program of study, students must satisfy MTH 58/65 competency. A Cooperative Education experience is not required, however, it is strongly encouraged. Students should consult with program advisors for course planning.

Bioscience Technology Degree Courses

Code	Title	Credits
BA 216A or CIS 121	Data Analytics with Excel and Tableau ¹ Information Systems and Programming	4
BI 112 or BI 211	Cell Biology for Health Occupations ^{*, 2} Principles of Biology I	5
BIT 102	Current Topics in Bioscience Technology	2
BIT 105	Safety in the Bioscience Workplace	2
BIT 107	Bioscience Lab Math	2
BIT 109	Basic Laboratory Techniques and Instruments	5
BIT 125	Quality Systems in Bioscience Technology	2
BIT 126	Applied Quality Practice	3
BIT 181	Exploring Bioscience	3
CH 151 or CH 221	Preparatory Chemistry ^{*, 2} General Chemistry I	5
WR 121	Composition I (WR121=WR121Z) ^{2,Z}	4
Basic Science Electives ¹		9
Bioscience Degree Electives ³		38
General Education: 2 courses ¹		
Total Credits		90

* Could be used as General Education.

¹ General Education courses & additional foundation coursework can be completed before or during enrollment in BIT courses.

² Prerequisite coursework (required before enrollment in BIT 105 or higher).

³ Bioscience Degree Elective coursework requires a minimum of 20 credits in courses with a BIT prefix.

Z This course is part of Oregon Common Course Numbering. WR 121 and WR 121Z are equivalent.

Basic Science Electives

Code	Title	Credits
BI 121	Introduction to Human Anatomy & Physiology I	4
BI 211	Principles of Biology I ^{*1}	5
BI 212	Principles of Biology II ^{*1}	5
BI 213	Principles of Biology III ^{*1}	5
BI 222	Human Genetics	3
BI 231	Human Anatomy & Physiology I	4
BI 234	Microbiology [*]	5
BI 287	Introduction to Immunology	4

CH 211	Introduction to Biochemistry *	4
CH 221	General Chemistry I ^{*1}	5
CH 222	General Chemistry II ^{*1}	5
CH 223	General Chemistry III ^{*1}	5
MTH 244	Statistics II	4
STAT 243	Elementary Statistics I (MTH/ STAT243=STAT243Z) ^Z	4

*
Could be used as General Education.

1
Students who are interested in transferring to PSU for a BS degree in Biology will need to complete BI 211, BI 212, BI 213, CH 221, CH 222, and CH 223 in order to be eligible for placement in upper-division Biology and Chemistry courses at PSU.

Z
This course is part of Oregon Common Course Numbering. MTH 243, STAT 243, and STAT 243Z are equivalent.

Bioscience Degree Electives²

Code	Title	Credits
Elective BIT Coursework (at least 20 credits required in BIT)		
BIT 201	Immunochemical Methods	5
BIT 203	Recombinant DNA	5
BIT 205	Bioseparations	5
BIT 207	Cell Culture	5
BIT 215	Protein Purification	5
BIT 223	Advanced DNA Techniques	5
BIT 280A	Bioscience Technology Work Experience	4-8
Elective Coursework in other departments		
BA 255	Project Management Essentials	4
Computer Skills Electives (recommended for students interested in careers in bioinformatics and related fields)		
CIS 121	Information Systems and Programming	4
CIS 122	Introduction to Programming Logic	4
CIS 125D	Database Application Development I	4
CIS 133Y	Python Programming I	4
CIS 233Y	Python Programming II	4
CIS 277A	Data Analytics	4
CIS 277S	Introduction to Data Science	4
Mechanical Skills Electives (recommended for students interested in careers in biomanufacturing and related fields)		
MT 108	Statistics for Process Control	2
MT 111A	DC and AC Electronics Intro	4
or MT 111	Electronic Circuits & Devices I	
MT 121A	Digital Electronics Intro	2
or MT 121	Digital Systems I	
MT 131	Introduction to Programmable Logic Controllers	3
MT 151	Intro to Hand Tools and Mechanical Assembly	1
MT 155	Mechanical Systems	5
WR 227	Technical Writing (WR227=WR227Z) ^Z	4

2
20 must be BIT.

Z
This course is part of Oregon Common Course Numbering. WR 227 and WR 227Z are equivalent.

LESS THAN ONE-YEAR: CAREER PATHWAY CERTIFICATE

Advanced Bioscience Technologist (p. 2)
Bioscience Technician (p. 2)

ADVANCED BIOSCIENCE TECHNOLOGIST CAREER PATHWAY CERTIFICATE

Minimum 29 credits. Students must meet all certificate requirements. The Advanced Bioscience Technologist certificate is a Career Pathway. All courses are contained in the Bioscience Technology AAS Degree.

Advanced Bioscience Technologist Certificate Courses

Code	Title	Credits
BIT 102	Current Topics in Bioscience Technology	2
BIT 105	Safety in the Bioscience Workplace	2
BIT 107	Bioscience Lab Math	2
BIT 109	Basic Laboratory Techniques and Instruments	5
BIT 125	Quality Systems in Bioscience Technology	2
BIT 126	Applied Quality Practice	3
BIT 181	Exploring Bioscience	3
Advanced Bioscience Technology Electives		10
Total Credits		29

Advanced Bioscience Technologist Electives

Code	Title	Credits
BIT 201	Immunochemical Methods	5
BIT 203	Recombinant DNA	5
BIT 205	Bioseparations	5
BIT 207	Cell Culture	5
BIT 215	Protein Purification	5
BIT 223	Advanced DNA Techniques	5

BIOSCIENCE TECHNICIAN CAREER PATHWAY CERTIFICATE

Minimum 19 credits. Students must also meet certificate requirements. The Biotechnician certificate is a Career Pathway. All courses are contained in the Bioscience Technology AAS Degree.

Bioscience Technician Certificate Courses

Code	Title	Credits
BIT 102	Current Topics in Bioscience Technology	2
BIT 105	Safety in the Bioscience Workplace	2
BIT 107	Bioscience Lab Math	2
BIT 109	Basic Laboratory Techniques and Instruments	5
BIT 125	Quality Systems in Bioscience Technology	2
BIT 126	Applied Quality Practice	3
BIT 181	Exploring Bioscience	3
Total Credits		19