BIOSCIENCE TECHNOLOGY

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pcc.edu/bio

CAREER AND PROGRAM DESCRIPTION

Bioscience Technology refers to the research, development, and manufacturing of products that use the processes, materials, 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 waste. The field is dynamic, with applications that often cut across traditional disciplines. Skilled bioscience technicians with broad-based laboratory training find employment in a variety of settings, working with scientists and engineers at all levels of research, development, manufacturing, testing, and quality assurance. Participants in the bioscience technology (BIT) program find careers at both large and small companies, research institutions, local and state agencies, private service laboratories, and in related industries that support these organizations. Additionally, some BIT graduates choose to continue their education in bioscience through transfer to a 4-year institution.

Course work in the Bioscience Technology program involves four distinct elements:

1. Basic science courses can be taken before or after acceptance into the program and provide the background information that will make technical, hands-on elements of bioscience more understandable.
2. Foundation course work provides a broad base of technical knowledge that prepares individuals for entry-level positions in a variety of Bioscience companies, with emphasis on working in a regulated environment, as well as developing skills in technical communication and job readiness. These foundation courses make up the core of the Bioscience Technician Certificate.
3. Advanced technical courses develop more specific skill sets sought by employers in many research and industry settings. Students may choose some electives from outside of the BIT program for this purpose.
4. Students also have the option to put their skills and knowledge into a working context through a work experience component.

Most students in the bioscience technology program work toward receiving the full AAS degree; however, a certificate and advanced certificate are available. Students must achieve an overall GPA of 2.0 in all required bioscience courses. At times, exceptions can be made for qualified students to take individual BIT courses without applying for and enrolling in a certificate or degree program.

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 121 , Biology (BI 102, BI 112, BI 221Z or equivalent), and Chemistry (CH 103, CH 151 , or CH 221Z and CH 227Z 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 121 , and MTH 95 .
- The Bioscience Technology program is a restricted entry program with limited enrollment. Contact the department for instructions.
- BIT 102, 105 and BIT 107 are open for all PCC students who meet the registration requirements and course prerequisites to enroll. Enrollment in subsequent BIT 109 and higher is limited to BIT majors.

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
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
WR 121	Composition I [2,Z]	4
Basic Science Electives [1]		9
Bioscience Degree Electives [3]		38
General Education: 2 courses [1]		
Biology requirement (choose one): [*, 2]		4-5
BI 112	Cell Biology for Health Occupations	
BI 102	Biology II	
BI 221Z	Principles of Biology: Cells [Z]	
Chemistry requirement (choose one): [*, 2]		5
CH 151	Fundamentals of Chemistry with Lab	
CH 103	Allied Health Chemistry I	
CH 221Z & CH 227Z	General Chemistry I and General Chemistry I Laboratory [Z]	
Computer skills requirement (choose one):		4
BA 169Z	Data Analysis Using Microsoft Excel [1,Z]	
CIS 121	Information Systems and Programming	
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.

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Z This course is part of Oregon Common Course Numbering. The following courses are equivalent:
BA 216A and BA 169Z
BI 211 and BI 221Z
CH 221 and CH 221Z
WR 121 and WR 121Z

Basic Science Electives

Code	Title	Credits
BI 121	Introduction to Human Anatomy & Physiology I	4
BI 221Z	Principles of Biology: Cells	5
BI 222Z	Principles of Biology: Organisms	5
BI 223Z	Principles of Biology: Ecology and Evolution	5
BI 231Z	Human Anatomy and Physiology I	4
BI 225	Human Genetics	3
BI 234	Microbiology *	5
BI 287	Introduction to Immunology	4
CH 221Z & CH 227Z	General Chemistry I and General Chemistry I Laboratory	5
CH 222Z & CH 228Z	General Chemistry II and General Chemistry II Laboratory	5
CH 223Z & CH 229Z	General Chemistry III and General Chemistry III Laboratory	5
MTH 244	Statistics II	4
STAT 243	Elementary Statistics I 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 221Z, BI 222Z, BI 223Z, CH 221Z & CH 227Z, CH 222Z & CH 228Z, and CH 223Z & CH229Z 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. The following courses are equivalent:
BI 211 and BI 221Z
BI 212 and BI 222Z
BI 213 and BI 223Z
BI 231 and BI 231Z
CH 221 and CH 221Z
CH 222 and CH 222Z
CH 223 and CH 223Z
MTH 243, STAT 243, and STAT 243Z

Bioscience Degree Electives[2]

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
WR 227Z	Technical Writing [1]	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
MT 121A	Digital Electronics Intro	2
or MT 121	Digital Systems I	
MT 151	Intro to Hand Tools and Mechanical Assembly	1
MT 155	Mechanical Systems	5

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. 3)

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

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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