

BIOPROCESSING TECHNOLOGY

 Frederick Community College



Program Contact:

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Bioprocessing Technology

*Biological technicians help biological and medical scientists conduct laboratory tests and experiments. They typically work in laboratories, and are responsible for doing scientific tests, experiments, and analyses. They use traditional laboratory instruments, advanced robotics, and automated equipment to conduct experiments. They use specialized computer software to collect, analyze, and model experimental data.**

The Program

The Biotechnology program is designed to prepare students for entry-level technician positions in biomedical, research, and industrial laboratory areas. The Biotechnology industry is rapidly growing in Frederick, Virginia, DC and globally. Rapid expansion and growth of the local biotechnology industry is fueling the demand for qualified process operators, providing employment opportunities in a field that offers employer-supported career development and continued education possibilities.

FCC's Bioprocessing Technology program prepares individuals for employment in the local biotech industry. The program emphasizes science, communication and critical-thinking skills, manufacturing technologies and laboratory environmental health and safety.

Students work in small collaborative groups to apply current manufacturing techniques, while using problem-solving and critical-thinking skills. Students learn industry-specific skills required in Bioprocessing Technology jobs, such as how to:

- Perform upstream bioprocessing techniques to culture cells and microorganisms to create a bulk bio-product for research and industry
- Perform downstream bioprocessing techniques to separate and refine bulk bio-products into a suitable form for end use in industry
- Manufacture assays for diagnostic testing for research
- Implement cell culture, fermentation, separation, purification and sterilization techniques in a laboratory setting, and
- Understand and apply basic laboratory skills, documentation practices and aseptic techniques to monitor production, maintain workplace safety and prevent contamination of bio-products

A.A.S. Degree (Career)

Prepares individuals to work as entry level research technicians, biomedical, research, biopharm, and other biotechnology industries. Students will combine molecular laboratory science, communication skills, manufacturing technologies and safe practices in the course of study. Students will develop a strong basic science foundation with a sound understanding of the major technologies employed in the industry. They will also develop collaborative and disciplined work ethics while consistently practicing problem-solving skills. Upon successful completion of the program, individuals will possess the necessary skills to qualify for employment in a variety of biotechnology industries.

Certificate (Career)

Prepares individuals to work as process operators in biological products manufacturing facilities. Students will combine basic science and communication skills, manufacturing technologies and good manufacturing practices in the course of study. Students will develop a strong basic science foundation with a sound understanding of the major technologies employed in the industry. They will also develop collaborative and disciplined work ethics while consistently practicing problem-solving skills. Upon successful completion of the program, individuals will possess the necessary skills to qualify for employment in a variety of biotechnology industries.



Letter of Recognition (Career)

Provides an introductory level of training to prepare individuals to work as process operators in biological products manufacturing. Students will be introduced to concepts related to bioprocessing technology, and will learn basic laboratory skills, workplace safety and general regulations that apply to the bioprocessing industry.

Growth Potential & Estimated Salaries*

The median annual wage for biological technicians was \$41,290 in May 2014. Employment of biological technicians is projected to grow 5 percent from 2014 to 2024. Continued growth in biotechnology and medical research is expected to increase demand for these workers.

*Source: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-17 Edition, Biological Technicians

For more information about our graduation rates, the median debt of students who completed the program, and other important information, please visit our website at www.frederick.edu/gainfulemployment.

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Transfer Note

FCC has articulation agreements with the following institutions for students graduating with an A.A.S. in Bioprocessing Technology and who are looking for transfer opportunities. For more information, contact the Counseling & Advising Office at 301.846.2471.

- Hood College—B.A. Biology
- Stevenson University—B.S. Biotechnology
- University of Maryland University College—B.T.P.S. Biotechnology, B.S. Laboratory Management

Financial Assistance

FCC provides a tuition payment plan for students who wish to spread payment over several months. Scholarship and loan assistance is available for eligible students. For complete scholarship information, contact the Financial Aid office.

For more information on Bioprocessing Technology:

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<i>Course</i>	<i>Credits</i>
English	
EN 101 English Composition.....	3
Mathematics	
Mathematics Elective (GenEd course list).....	3/4
Arts & Humanities	
Communications Elective (GenEd course list).....	3
Social & Behavioral Sciences	
Social & Behavioral Sciences Elective (GenEd course list).....	3
Biological & Physical Sciences	
BI 101 General Biology.....	4
CH 101 General Chemistry.....	4
CH 102 General Chemistry.....	4
Interdisciplinary & Emerging Issues	
CIS 101 Information Systems and Technology.....	3
PE/Health Requirement	1/3
Departmental Requirements	
BI 120 Microbiology for Allied Health or	
BI 203 Elements of Microbiology.....	4
BI 140 Biotechnology and Society.....	3
BI 220 Cell Biology and Tissue Culture.....	4
BPM 102 Bioprocessing Environment.....	3
BPM 103 Laboratory Techniques I.....	1
BPM 110 Bioprocessing Measurements.....	4
BPM 214 Techniques in Bioproduction.....	4
INTR 103 Internship or Elective.....	3
<i>(If an internship is not taken, the qualified elective must be approved by the program manager and must be at least a 200-level mathematics or science course.)</i>	
Electives (Recommend BI 240, BU 273, CH 201, CMSP 107, EN 115).....	6/7
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<i>Course</i>	<i>Credits</i>
Departmental Requirements	
BI 101 General Biology.....	4
BI 120 Microbiology for Allied Health or	
BI 203 Elements of Microbiology.....	4
BI 140 Biotechnology and Society.....	3
BI 220 Cell Biology and Tissue Culture.....	4
BPM 102 Bioprocessing Environment.....	3
BPM 103 Laboratory Techniques I.....	1
BPM 110 Bioprocessing Measurements.....	4
BPM 214 Techniques in Bioproduction.....	4
CH 101 General Chemistry.....	4
CH 102 General Chemistry.....	4
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<i>Course</i>	<i>Credits</i>
Departmental Requirements	
BPM 102 Bioprocessing Environment.....	3
BPM 103 Laboratory Techniques I.....	1
BPM 110 Bioprocessing Measurements.....	4
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