

# BIOMANUFACTURING TECHNOLOGY, ADVANCED TECHNICAL CERTIFICATE

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## Program goals and student learning outcomes

### Program Goals:

The Advanced Technical Certificate in Biomufacturing is designed to prepare students with the advanced technical knowledge and hands-on experience necessary for employment in the biotechnology and biopharmaceutical manufacturing industries. The program aims to:

1. Provide students with in-depth knowledge of biomufacturing processes, including upstream and downstream operations.
2. Equip students with practical skills in laboratory methods, instrumentation, and quality control procedures used in the biosciences.
3. Foster an understanding of regulatory and quality assurance standards applicable to the production of medical and industrial biotechnology products.
4. Prepare students for immediate employment or career advancement in roles such as Biomufacturing Technician or Manufacturing Associate.
5. Support students in developing professional skills necessary for success in a regulated, team-oriented, and safety-conscious industry environment.

### Student Learning Outcomes:

Upon successful completion of the Advanced Technical Certificate in Biomufacturing, students will be able to:

1. Demonstrate foundational knowledge of biotechnology by explaining key concepts in molecular biology, genetic engineering, and the role of biotechnology in healthcare and industry. (*Intro to Biotechnology*)
2. Apply laboratory skills and techniques used in biomufacturing, including aseptic technique, pipetting, and spectrophotometry. (*Biotechnology Laboratory Methods and Techniques*)
3. Interpret and implement quality assurance and control protocols relevant to bioscience industries, including Good Manufacturing Practices (GMP) and standard operating procedures (SOPs). (*Quality Assurance for Biosciences*)
4. Operate and troubleshoot advanced laboratory instrumentation used in bioprocessing and analytical testing. (*Biotechnology Laboratory Instrumentation*)
5. Perform cell culture techniques for both research and production settings, including maintenance, subculturing, and harvesting of cells. (*Cell Culture Techniques*)
6. Explain the applications of biotechnology in medical contexts, including diagnostics, therapeutics, and vaccine production. (*Medical Biotechnology*)