



WPI

BIOMANUFACTURING EDUCATION & TRAINING CENTER

ENHANCE YOUR SKILLS & ADVANCE YOUR CAREER

Fundamentals of Bioprocessing for Engineers

This four day training program provides a critical overview of the process, the function of each piece of equipment, and how that equipment is used within the process. Participants will engage in hands-on experiences that lend a deeper understanding of the interplay between the process and the mechanics of the equipment—all within a pilot-scale manufacturing setting. This program is suitable for the new employee up through the veteran in need of a refresher and has been developed for Metrology, Facility and Maintenance technicians and engineers as well as Process, Automation and Quality engineers. 33% of the activities are hands-on activities.

SCHEDULE

Day 1

Lectures (5.5 hrs.)

- Introduction to Biopharmaceutical Products and Processes
- Fundamentals of Mammalian Cell Based Biomanufacturing
- Principles and Practices of Cell Banking and Cryopreservation
- Bioreactor Components and Controls

Labs (2.5 hrs.)

- Interactive Tour
- Bioreactor Walk-down and Failure Points Analysis
- Procedures for Vial Thaw and Seed expansion
- Bioreactor preparation / probes & monitoring

Day 2

Lectures (5 hrs.)

- Centrifuge Principles and Applications for Biomanufacturing
- Scale up considerations
- PLCs, what they are, how they work, how to tune parameters
- CIP/SIP Concepts and Applications

Labs (3 hrs.)

- CIP System Overview and Functionality
- Bioreactor Preparation & Aseptic Transfers / System walk down, Pressure hold / Sampling
- Hands-On Centrifugation: Disassembly, Assembly, and Operation

Day 3

Lectures (5 hrs.)

- Overview of Downstream Processing
- Microfiltration, Ultrafiltration, and Diafiltration Techniques
- Column Set Up, Equipment, and Packing and Operation Overview
- Column Efficiency Analysis

Labs (3 hrs.)

- Principle Applications in Chromatography / Column operation
- Column Packing and Operation / Column Packing
- Troubleshooting in Purification / Reading Chromatograms

Day 4

- Interactive lectures with on-plant clean utility system walk-downs focused on system safety, design, maintenance and compliance.
- Water Purification system
- HVAC System Design
- Compressed Air Systems
- Process Gasses
- Steam Systems
- Effluent Water Treatment
- Facility Design

Learn More: WPI.edu/+BETC

50 Prescott Street, Suite 2400, Worcester, MA 01605

508.831.4879 | betc@wpi.edu