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 (4 hrs.)
- Upstream Manufacturing Process and Unit Operations
- Bioreactor/Fermentor Components and Controls
- CIP/SIP Principles and Concepts

Labs (4 hrs.)
- Interactive Tour
- Procedures and equipment for Vial Thaw and Seed expansion
- Bioreactor preparation / Probes & Monitoring/Walk down and failure points analysis

Day 2
Lectures (5 hrs.)
- Centrifuge Principles and Applications for Biomanufacturing
- Forward Flow Filtration and Integrity Testing
- Scale up considerations
- PLCs, Process Control & Loop Tuning

Labs (3 hrs.)
- Centrifugation: Disassembly, Assembly, and Operation
- PLCs, what they are, how they work, how to tune parameters
- Forward Filtration system components and review

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 and skid operation
- Column Packing and Operation / Column Packing
- Tangential Flow Filtration system operations and review

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

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