Downstream Principles and Techniques

This four day training program provides an introduction to downstream processing and the major unit operations involved. Fifty five percent of this program is hands-on in the lab. This program was developed for those new to downstream processing who wish to gain hands-on experience and practice running NFF, TFF and Chromatography unit operations.

SCHEDULE:

**Day 1**

Lectures (4 hrs.)
- Biomanufacturing Process Overview (Vial to BDS)
- Cell Culture Process Overview
- Principles of Centrifugation
- Principles of Normal Flow Filtration

Labs (3 hrs.)
- Continuous Flow Centrifugation (disc stack)
- Filtration
- Filter Integrity Testing

**Day 2**

Lectures (3 hrs.)
- Quality Control Considerations
- Viruses (introduction, facility considerations and process controls)
- Virus Inactivation and Removal
- Chromatography Overview (principals, types, set up and load adjustments)

Labs (4 hrs.)
- Chromatography Column Operation (bench scale and pilot scale)

**Day 3**

Lectures (3 hrs.)
- Column Packing
- TFF

Labs (4 hrs.)
- Chromatography Column Operation (bench scale and pilot scale)
- Column assembly and packing

**Day 4**

Lectures (3 hrs.)
- TFF Principles and Applications
- Bulk Drug Bottling
- Introduction to Downstream Disposables and Processing

Labs (4 hrs.)
- TFF (UF/DF multiple stations)
- Final Filtration, BDS

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