**Downstream Principles and Techniques – 4 days**

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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Downstream Principals and Techniques

June 23, 2015

November 17, 2015

$3,800

2.8 CEUs

Register Today:
cpe.wpi.edu/+register
Instructors...

Don Mardirosian
Don has 20 years of experience in the Biomanufacturing industry. His background includes technology transfer and process engineering, as well as clinical cGMP manufacturing and training. Much of Dan’s experience involves the development and operation of cutting edge, single use bioreactors and disposable technology applications.

Chris Bellerive
Chris has over 18 years of experience in the Biomanufacturing industry. His background includes technology transfer and process scale-up, as well as clinical and commercial cGMP manufacturing and training. Chris has held leadership roles in both manufacturing and quality assurance for commercial products and is a subject matter expert in all phases of biologics manufacturing.

Go to wpi.edu/+betc for a full list of our program instructors.

Kevin Lauziere
Biotechnology consultant currently working for Waggett and Associates. Kevin holds a BS in Biochemistry and has worked for over 25 years in the Biotech industry. Over the course of his career he has worked for a number of companies including Integrated Genetics, Genzyme, Seragen, BASF Bioresearch Center, Abbott Bioresearch Center and Bristol-Myers Squibb before becoming a consultant.

Don Gibbs
Don has been in the biotech industry since 1988 performing purification and separation operations. His experience is in both biologics manufacturing and process development. Areas of specific expertise include chromatography, chromatography column packing, direct flow and tangential flow filtration, and aseptic operations. Prior to involvement in the biologics, he was employed as a high school math and science teacher.