Module 1. Bioprocess General

**(Carl Lawton, Associate Professor, Department of Chemical Engineering, UML)**

This module will cover fundamental principles underlying cell growth, protein expression, and recovery/purification processes. The module will provide basic for the following modules so that all participants are competent for fundamental principles in engineer working in biopharmaceutical process development, particularly those new to the field. In the module, participants will learn about: Properties of proteins relevant in process development; Choice of cell type for expression; Expression systems; Analytical tools; Cell cultivation; Media development; Filtration; Chromatography.



Dr. Carl W. Lawton is director of the Massachusetts BioManufacturing Center (MBMC) and associate professor in the Department of Chemical Engineering at UMass Lowell. Dr. Lawton is responsible for overseeing the coordination and completion of process development client services including expression development, fermentation and cell-culture development, downstream processing, process optimization and characterization. Dr. Lawton is developing and maintaining an applied research program which focuses on technological advances to improve the quality, cost and productivity of large-scale biomanufacturing production. Before joining UMass Lowell and creating the MBMC, Dr. Lawton was a bioengineering process consultant to companies on both the east and west U.S. coasts and in Canada.