

SCHEDULE

Modules	Lectures	Topics	Instructor	Institute	Date	Time
		Administration		UML	Monday	8:30AM
	L1	Introduction – Biologics Development Overview	Sanchayita Ghose, PhD	BMS		8:40 AM
		Break				10:30-10:40
	L2	Upstream Bioprocessing Technology – Current Status, Challenges, and Future	Jeffrey Swanberg, PhD			10:40AM
		Upstream – Cell-line development				
		Upstream – Media				
		Upstream – Bioreactor Development and Operation	Kyle McHugh, PhD			1:00PM
		Upstream – Cell-Culture Scale-up				
		Break				
L4	Upstream – Harvest Technology I	Melissa Holstein, PhD Kyle McHugh, PhD	3:10PM			
	Upstream – Industrial case studies of upstream processes					
	L5	Downstream Processing Technology – Current Status, Challenges, and Future	James Angelo, PhD	BMS	Tuesday	8:30 AM
		Downstream – Chromatography I				
		Downstream – Chromatography II				
	Break					10:30-10:40
	L6	Downstream – Membrane filtration I	Melissa Holstein, PhD			10:40 AM
		Downstream – Membrane filtration II				
		Downstream – Cryo Technology	Alan Shupe			1:00 PM
		Pilot facility and Automations in Bioprocessing Development and Manufacturing	Derek Choy, PhD			
Break			3:00-3:10			
L8	Downstream – Industrial case studies of downstream processes	Srinivas Chollangi, PhD	3:10 PM			
	Downstream – Industrial case studies of downstream processes					
M3	L9	Analytical Technology – Current Status, Challenges, and Future	Julia Ding, PhD	BMS	Wednesday	8:30 AM
		Analytics – Protein characterization assays I				
		Analytics – Protein characterization assays II				
	Break					10:30-10:40
	L10	Analytics – Bioassay I	Rebeca Urbano, PhD			10:40 AM
		Analytics – Bioassay II				
L11	Analytics – Technologies for clinical bioprocessing and regulatory submission	Jason Starkey, PhD	1:00 PM			
Break			3:00-3:10			
L12	Analytics - CMC Analytical Strategies		3:10 PM			
M4	L13	Cell therapy Bioprocessing I	Kathleen Ongena, PhD Tristan Lawson Mark Lalli, PhD Tiffany Hood Jane Ring	Millipore	Thursday	8:30 AM
		Break				10:30-10:40
		Cell therapy Bioprocessing II				10:40 AM
M5	L15	Gene therapy, Science	Dan Wang, PhD	UMass Medical		1:00 PM
		Break				3:00-3:10
		Gene therapy Bioprocessing	Onur Kas, Dongli Guan Ashish Saksule, Sonal Patel	Millipore		3:10PM
M6	17	Regulatory, QbD and PAT	Steven Traylor, PhD	BMS	Friday	8:30 AM
		Break				
		Systems Biotechnology	Seongkyu Yoon, PhD	UML		10:40AM