Course Title: RAPID's Modular Chemical Process Intensification Boot Camp

Course ID:	**Course Type:**
CH375	Instructor-led (classroom) Course
http://www.aiche.org/ch375	

Course Schedule

Day One: Designing for Process Intensification

7:45 – 8:00	Registration
8:00 – 8:30	Welcome
8:30 – 9:45	The Change in Paradigm: Chemical Technologies Go 2D
9:45 – 10:00	Morning Break
10:00 – 11:30	Time Scale Analysis & Characteristic Times
11:30 – 1:00	Lunch Break
1:00 – 2:30	Introduction to GTL Bioprocesses
2:30 – 3:15	Class Exercise: Four Tenants of PI
3:15 – 3:30	Afternoon Break
3:30 – 4:00	Class Exercise: Suggested PI Improvements
4:00 – 5:00	Lab Stations (Bio-Lamina-Plate Reactor, Multiphase Microchannel Separator, BHD Reactor, Corona Reactor)
5:00 – 5:30	Wrap-Up

Day Two: Designing for Process Intensification

8:30 – 9:45	BLP Reactor Analysis
9:45 – 10:00	Morning Break
10:00 – 11:00	Lamina Plate Separation
11:00 – Noon	Lab Visit: L-P Separation Demonstration
Noon – 1:00	Lunch Break
1:00 – 2:00	Solid Catalyzed Reaction Processes
2:00 – 3:15	Class Exercise: Characteristic Times for Innovation Opportunities
3:15 – 3:30	Afternoon Break
3:30 – 4:00	Microfluidics
4:00 – 5:00	Lab Visit: Demonstration of Microfluidics Testing
5:00 – 5:30	Wrap-Up

Day Three: Implementing Novel PI Components

8:00 – 9:15	Challenges with Implementing PI, Process Selection & Shaping Processes
9:15 – 9:30	Morning Break
9:30 – 11:00	Lab Demonstrations: Binder Jetting, Electrically-Assisted Embossing, Hot-Embossing, Characterizing Shape
11:00 – 11:15	Morning Break
11:15 – 12:00	Bonding Processes
12:00 – 1:00	Lunch Break
1:00 – 2:30	Lab Demonstrations: Diffusion Bonding and Brazing, Laser Welding, & Laser Powder Bed Fusion (LPBF)
2:30 – 2:45	Afternoon Break
2:45 – 3:15	Machine Tool Selection, Process Step Analysis
3:15 – 3:45	Class Exercise: Develop a Phase Separator Design Based on Manufacturing Constraints
3:45 – 5:00	Requirements, Exploring Design and Manufacturing Innovations, Engaging with Suppliers
5:00 – 5:30	Wrap-Up

Day Four: Implementing MCPI

8:00 – 9:30	Introduction to Modular Offsite Construction, When to Choose Modular vs. Conventional Processing, How Chemical PI Advances Modular Offsite Construction
9:30 – 9:45	Morning Break
9:45 – 10:45	Show & Tell: Sizing of Plants: Discuss Specification of EPC Flow Sheet and Real-Time Modular Assembly of Components
10:45 – 11:00	Morning Break
11:00 – Noon	Understanding MCPI
Noon – 1:00	Lunch Break
1:00 – 2:45	Barriers to MCPI, Understanding Total Cost of Ownership, Forecasting and Net Present Value of Chemical Plants
2:45 – 3:00	Afternoon Break
3:00 – 4:00	Class Exercise: Make a Business Case for MCPI
4:00 – 4:30	Wrap-Up
5:00 - 5:30	Workshop Feedback

