2019 Master Brewers Brewery Systems Technology and Maintenance Course

University of Wisconsin | Madison, Wisconsin, U.S.A.
August 18–30, 2019

Week One: Aug 18–24 | Course Director: Darren Goodlin

Focus is on brewing and utility process systems, related sizing calculations, and common equipment.

Sunday, August 18: Check-in Day

All day	Students pick up course information packets when checking in at the front desk.
7:00 p.m.	**Dinner and Orientation**—Lowell Center Dining Hall (Casual Attire)

*All Classes are held in **Room 235** of the Pyle Center.*

Monday, August 19: Kickoff, Sanitary Equipment and Piping Fundamentals

8:00 a.m. – 8:30 a.m.	**Course Introduction and Case Study Assignments** *Darren Goodlin, GPS*
8:30 a.m. – 10:30 a.m.	**Process Pumps** *Randy Verges, Fristam Pumps*
10:30 a.m. – 12:00 p.m.	**Valves** *Jeff Tocio, Pentair Haffmans*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 3:00 p.m.	**Stainless Steel Fabrication & Weld Insights** *Matthew Kramer, Paul Mueller Co.*
3:00 p.m. – 5:00 p.m.	**Chiller System and Piping Insulation** *Dan Stromberg, GF Piping Systems*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study

Tuesday, August 20: Process Operations and Considerations

8:00 a.m. – 10:25 a.m.	**Electrical System Technologies, Designs and Maintenance** *Kelly White, Anheuser-Busch (Retired)*
10:35 a.m. – 12:00 p.m.	**Brewery Floors & Drain Technologies and Maintenance** *Randy Butera, BASF Maser Builders*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 3:25 p.m.	**CIP System Utility and Engineering Design Considerations** *Oliver Meinhold, Zee Loeffler*
3:30 9.m. – 5:00 p.m.	**Stainless Steel Equipment and Piping Passivation** *Oliver Meinhold, Zee Loeffler*

Wednesday, August 21: Brewery System Optimizations Techniques

8:00 a.m. – 9:55 a.m.	**High Efficient Brewhouse Operations** *Fred Scheer, ICC Northwest*
10:05 a.m. – 12:00 p.m.	**Brewing Operations and Optimized Considerations** *Bill Allison, Criterion Solutions*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 3:00 p.m.	**Utility Plant Operations and Optimized Considerations** *Bill Allison, Criterion Solutions*
3:10 – 5:00 p.m.	**Elements of a Production Best Practice SOP's** *Larry Posluszny, Accel Performance Solutions, LLC*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study

Thursday, August 22: Packaging Systems Designs and Maintenance

8:00 a.m. – 10:55 a.m.	**Packaging Engineering Design & Theory Considerations** *Robert Nantel, Gebo Cermax Canada, Inc.*
11:05 a.m. – 12:45 p.m.	**Maintaining a Packaging Facility** *Robert Nantel, Gebo Cermax Canada, Inc.*
12:15 p.m. – 12:45 p.m.	Lunch (Box lunch brought into classroom)
1:00 p.m. – 6:00 p.m.	**Tour: New Glarus Brewing Co.**

Friday, August 23: A Broader Brewery Engineering and Maintenance & Reliability Strategies

8:00 a.m. – 10:00 a.m.	**Applied Engineering Economics to Capital Expenditure Projects in the Brewery** *Jaime Jurado, Ennoble Beverages*
10:15 a.m. – 12:00 p.m.	**Applications for the Engineering Math Toolkit for Brewery Applications in Brewing, Processing and Packaging** *Jaime Jurado, Ennoble Beverages*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 3:00 p.m.	**Plant Reliability & Maintenance Management Tools** *Chris Hyberger, Lagunitas Brewing Co*
3:13 p.m. – 5:00 p.m.	**Project Management Steps and Responsibilities from Both Sides** *Pat Buchana, Design Group*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study

Saturday, August 24: Brewery Safety and Work on Case Studies

8:00 a.m. – 12:00 p.m.	**Brewery Safety Minded Toolbox** *Mark Jaeggi, Sabhailteacht Solutions, LLC*
12:00 p.m. – 11:00 p.m.	Beer Tails at Hotel and Free Time

Sunday, August 25: Free Day! No Scheduled Activities

For students participating only in Week 1 of the course, you must check-out of hotel by 11:00 a.m.

Week Two: Aug 25–30 | Course Director: Darren Goodlin

Dive into the details on the brewery utilities, including water and wastewater treatment, compressed air, steam boilers, CO_2 systems, electrical and other aspects of utilities. Considerations of brewery inline instrumentation, automated process controls and presentation of each team's case study.

Sunday, August 25: Free Day! No Scheduled Activities

For students participating only in Week 2 of the course, this is check-in day at the hotel.

*All Classes are held in **Room 235** of the Pyle Center.*

Monday, August 26: Incoming Water, Outgoing Wastewater, & Related Project Considerations

8:00 a.m. – 8:15 a.m.	**New student introduction & weekend review** *Darren Goodlin, GPS*
8:15 a.m. – 10:00 a.m.	**Incoming Brewery Water Treatment Systems** *Jack Bland & Rick Brundage, ChemTreat, Inc.*
10:15 a.m. – 12:00 p.m.	**Water Deareation Technologies and Troubleshooting** *Juan Jurado, Alfa Laval Brewery Systems*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 3:00 p.m.	**Waste Water Systems Overview** *Jeff Van Voorhis, Symbiont*
3:15p.m. – 5:00 p.m.	**Waste Water Projects, Operations, & Troubleshooting** *Jeff Van Voorhis, Symbiont*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study

Tuesday, August 27: Compressed Air, Steam System Considerations

8:00 a.m. – 9:50 a.m.	**Brewing Waste Byproducts Handling Considerations (Grain, Filter Aids, Hops, Yeast)** *Chris Atkinson, ATPGroup*
10:05 a.m. – 12:00 p.m.	**Compressed Air Equipment Selection and Sizing** *John Molnar, Rogers Machinery*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 2:50 p.m.	**Steam System & Steam System Calculations** *Steve Huffman, Mead O'Brien, Inc.*
3:05 p.m. – 5:00 p.m.	**Steam Systems, Parts, and Pieces** *Steve Huffman, Mead O'Brien, Inc.*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study

Wednesday, August 28: Chiller and CO_2 Systems

8:00 a.m. – 9:50 a.m.	**Chiller System Types, Selection, and Sizing** *Damon Reed, Pro Refrigeration Inc.*
10:05 a.m. – 12:00 p.m.	**Chiller System Operation and Maintenance Considerations** *Damon Reed, Pro Refrigeration Inc.*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 2:50 p.m.	**CO_2 Collection** *Gabriel Dominguez, Pentair*
3:05 p.m. – 5:00 p.m.	**CO_2 Distribution Systems** *Gabriel Dominguez, Pentair*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study

Thursday, August 29: Brewery Process Automation, Inline Instrumentation, and Digital Bus Technologies

8:00 a.m. – 9:50 a.m.	**Process Controllers (PID Demystified)** *Stephen Carter, LT Software Solutions Inc.*
10:00 a.m. – 12:00 p.m.	**Brewery Process Automation and Integrator Considerations** *Stephen Carter, LT Software Solutions Inc.*
12:00 p.m. – 1:00 p.m.	Lunch at Pyle Center
1:00 p.m. – 2:00 p.m.	**Brewery Automation, Instrumentation, and Communication Bus Type Considerations** *Stephen Carter, LT Software Solutions Inc.*
2:10 p.m. – 3:25 p.m.	**Inline Instrumentation Types, Selection, Considerations, Maintenance** *Darren Goodlin, GPS*
3:35 p.m. – 5:10 p.m.	**Computer Information Technology Network & Security Awareness and Considerations** *Dino Busalachi, Velta Technology*
5:10 p.m. – 6:00 p.m.	Work on Assigned Case Study
7:00 p.m.	**Dinner**—Lowell Center Dining Hall (Casual Attire) *Closing Remarks and Awarding of Certificates*

Friday, August 30: Case Study Presentations and Check-out

All students must check-out of hotel by 11:00 a.m.

8:00 a.m. – 12:00 p.m.	**Students Present Results of Case Study** *All students, Course Director*
11:00 a.m.	**Finalize Hotel Check-out**