



2023 Quality Course Schedule

July 17 – 21, 2023 ▪ Fort Collins, Colorado, U.S.A.
Colorado State University ▪ CSU Stadium, Room 1205

Monday – July 17

- 8:30 am** **Introduction and Welcome**
Coffee/tea (provided)
- 10:00 am** **Raw Material Analysis & Quality control** -- Jeff Biegert, CSU & New Belgium
Presentation
- 12:00 pm** **Lunch** (Provided)
- 1:00 pm** **Raw Materials Continued** -- Jeff Biegert, CSU & New Belgium
Classroom Discussion: Certificate of Analyses, Contaminants, etc.
- 2:00 pm** **Microbiology: Yeast!** – Charlie Hoxmeier, Gilded Goat Brewing Company
Presentation/ Demonstration
- 3:00 pm** **In the Lab: Cell Counting Basics**
- Microscopes
 - Pipettor handling and proper techniques training
 - Yeast viability
 - Hemocytometer
 - Dilution math
- 5:00 pm** **Tour:** New Belgium Brewing Company
- 7:00 pm** **Dinner:** New Belgium (provided)

Tuesday – July 18

- 8:00 am** **Microbiology: Propagation and Pitching & Contamination** – Kelly Tretter, New Belgium
Presentation
Classroom Activities:
- Yeast pitching calculations
 - Media: streaking for isolation
- 12:00 pm** **Lunch** (Provided)
- 1:00 pm** **Practical Systems for Record Keeping, Data Management & Communication** – Jeff Biegert,
CSU & New Belgium
Presentation
Classroom Activity: KPI's, Brewing Calculations, and Paperless Logs
- 5:00 pm** **Dinner:** Gilded Goat (provided)



2023 Quality Course Schedule

July 17 – 21, 2023 ▪ Fort Collins, Colorado, U.S.A.
Colorado State University ▪ CSU Stadium, Room 1205

Wednesday – July 19th

- 8:00 am** **Brewing Chemistry Methods** -- Kimberly Bacigalupo, Sierra Nevada
Presentation:
- Safety & good laboratory techniques
 - Methods of Analysis: Overview and Standards Calculation
- 10:00** **In the Lab: Chemistry Methods**
Demonstration:
- Anton Paar
 - Proper sample prep
- Hands-on Practice:
- Pipetting and building a calibration curve
 - VDKs, distillation method
 - Measuring IBUs
- Clean-up/ Safe disposal methods
- 12:00 pm** **Lunch** (Provided)
- 1:00 pm** **Sensory Training**– Ali Schultz, New Belgium Brewing Co.
Presentation:
- Sensory program development
 - Sensory evaluation & QC
 - Sensory validation & new product development
- Classroom activity: Off-flavor training
Discussion: Shelf-life studies
- 5:00 pm** **Open night** to explore Fort Collins

Thursday – July 20

- 9:00 am** **Brewing Chemistry Methods** – Kimberly Bacigalupo, Sierra Nevada
Presentation:
- IAAs versus IBUs
 - DMS
 - Fermentation Volatiles
 - Gas Chromatography
 - Foam
 - Metals
- 11:00 am** **MFDH and Biotransformation** – Stacey Williams, New Belgium Brewing Co.
Guest Speaker
- 12:00 pm** **Lunch Provided**



2023 Quality Course Schedule

July 17 – 21, 2023 ▪ Fort Collins, Colorado, U.S.A.
Colorado State University ▪ CSU Stadium, Room 1205

1:00 pm **GMO/CRISPR yeast** -- Nick Harris, Berkeley Brewing Science
Guest speaker & class discussion

2:00 pm **ASBC Fishbones** – Kelly Tretter, New Belgium Brewing Co.
Presentation
Classroom activity: Case Study

5:00 pm **Tour:** Ramskeller Brewhouse, Colorado State University

6:00 pm **Open night** to explore Fort Collins

Friday – July 21

8:00 am **Packaging Quality**
Presentation: Perry Dickerson, Bells Brewing
Activity: Group problem-solving exercises based on customer complaints

10:30 **Classroom Activity:** Evaluate plates from Tuesday's lab activity

11:30 am **Lunch** (provided, presentation of completion certificates)

12:30 pm **Packaging Safety and Dangers**—Perry Dickerson, Bells Brewing
Presentation & Demonstration

5:00 pm **Take your knowledge back to your brewery!**