<table>
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<tr>
<th>Week</th>
<th>Tuesday</th>
<th>Wednesday (if needed)</th>
<th>Thursday</th>
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| 1    | Jan16&18 | 1. Introduction to Beer Brewing (1-1.5hr)  
Brewing process overview, brewing raw materials (malted barley, water, hops and yeast).  
2. Lab basics: pipetting, making solutions  
LIFE 212 Lab Session 1 Parts 2 and 1  
3. Microscopy: Prepare slides and count yeast cells with a hemocytometer  
LIFE 212 Lab Session 7 Part 1 and Session 12 | 1. Brewing process overview continued, the biochemistry of each step in the brewing process.  
2. Brewing nonalcoholic beer overview, the methods used with a focus on maltose-negative yeast strains and species.  
3. Lab notebook and note taking.  
LIFE 212 Lab Session 3 & FST VDK Broad Spectrum Method | |
| 2    | Jan23&25 | 1. Quiz on Beer Brewing overview from Tuesday  
2. Chemical Properties of Beer Lesson:  
- Organic and inorganic compounds (ions/ CO₂ and flavor)  
- Alcohol (C₅H₁₀O): talk about the different ways to determine ABV; speak about alcohol free beer  
- Carbs and fermentation  
- Other organic compounds (volatile vs nonvolatile)  
3. Measuring pH – measure pH of beer samples | 1. Types of Analysis that can be done on Beer Samples (1 hr)  
- chromatography, GC/MS, yeast counting, refractometers, Anton Paar Densitometer/Alcolyzer, sensory analysis, colorimetric, spectrophotometers etc.  
→ why do one over the other; what does each tell us?  
2. Measuring EtOH, sugar, VDK and IBU levels in beer  
FST Alcohol and Density by Anton Paar Density Meter/Alcolyzer, VDK Broad Spectrum Method & IBU in Beer  
Spectrophotometric Method | |
| 3    | Jan30 & Feb1 | 1. Quiz on types of Biochemical Analysis and Chemical Components of Beer (0.5 hr)  
2. Beer analysis at Fermentation Science Tech Lab  
- FST Lab and Ramskeller tour  
- GC chromatography  
FST VDK GC Method  
- Sensory analysis  
2. Homework go through data and interpret the results | 1. Get into groups and interpret results of MS data (0.5hr)  
2. Give another example of MS data with/out boiling  
3. Students start brainstorming question and analytical method they will focus on in their final report  
4. Additional analytical methods | |
| 4    | Feb6&8 | 2. Describe and explain sample preparation for GC-MS (0.5 hr)  
2. GC/MS analysis of Beer Samples  
- tour of equipment in Prenni lab (1.5 hr)  
3. Interpret results of GC/MS (0.5hr)  
4. Homework; interpret sample MS data | --- | 1. Summarize the data collected  
2. Any analyses need to be repeated?  
2. Homework go through data and interpret the results | |
| 5    | Feb13&15 | 1. Introduction to scientific Paper writing  
- how to find paper, Mendeley, how to read a paper  
- how to write intro, experimental, results, conclusions  
2. Create groups of 2- split up parts of the paper (1 group will do the abstract & intro, 1 will do the experimental/results, 1 will do results/conclusions)  
3. Go through their data from last week and review findings in class | --- | 1. Scientific Poster assembly and presentation  
2. Scientific Oral Presentations  
- choose additional beer analysis method to present to the class | |
| 6    | Feb20&24 | 1. Data analysis, additional/repeat analyses | 1. Data analysis, additional/repeat analyses | |
| 7    | Feb27&29 | 1. Working on methods talk, paper and poster | 1. Working on methods talk, paper and poster | |
| 8    | Mar5&7 | 1. Presentations on additional beer analysis methods | 1. Present poster  
Consider Presenting your poster at CSU CURC Showcase  
2. Turn in final reports | |