

# **Brewing Process Technology**

**PPT 140 Syllabus**

**Online Lecture**

**Brew Labs 5:30 pm-7:30 pm**

**College of Education Building Rm 122**

Professor: Dr. Paul Pope

Office: LA 823

Contact: Phone: 406.657.2934, Email: paul.pope@msubillings.edu

Office Hours: Monday-Thursday, 8:30 am-10:30 am, or by appointment

## **Text:**

*The Practical Brewer: A Manual for the Brewing Industry*. 3<sup>rd</sup> Edition. Edited by John T. McCabe. Master Brewers Association of America, 1999

## **Course Description**

This course introduces students to the principles and processes of brewing and fermentation. Students will be exposed to the basic fundamentals of the sciences and processes used to create beer, fruit wines, ciders, and distillation. Students will learn to use various types of equipment such as brewing systems, plate chillers, pumps, filters, and distillation columns. The course is designed to provide instruction time balanced between hands-on labs and online course material.

## **Course Objectives**

Students will demonstrate knowledge of the scientific and mechanical principles of equipment used in brewing. Ability to analyze and demonstrate the steps in the brewing process like grain handling, wort production, starch conversion, boiling, filtration, pumping, fermentation, and distillation.

## **Course Policies**

1. Be courteous to your fellow students. Given the nature of our discussions it is important to maintain your decorum. You are expected to behave professionally.
2. Be on time to class. If late, be quiet entering and find your seat quickly.
3. Turn off cell phones and other noisy electronic devices, laptops with sound off.
4. Absolutely, positively **NO CHEATING or PLAGIARISM!** Cheating and plagiarism will result in a '0' and possibly the failure of the course. Cheating and plagiarism are academic crimes. Serious infractions will be reported to the university and graduate students may be asked to leave the program. See Sec. B of your Student Handbook regarding academic misconduct.
5. Students are expected to attend each lecture as scheduled. Your attendance is voluntary and may have an impact on your final grade. If you miss any class meeting scheduled during the semester for any reason you are responsible for the material that was, or should have been, covered regardless of attendance.
6. Your grade is based on assignments submitted for evaluation. Extra credit work may be available. If extra credit is made available, it will be available to the entire class and not assigned to individual students to overcome problematic or missing assignments.
7. Grade adjustments are purely at the discretion of the professor. Student grades will be based

entirely on grades awarded to properly submitted assignments and possibly class participation.

### **Grading**

Grading will consist of the A-F scale, including using the +/- system. Each student will be expected to turn in work on assigned due dates. Absolutely no late work will be accepted without prior notification. With prior notification, late work may be assessed a penalty of one grade point. Without prior arrangements, no late work will be accepted after the final day of scheduled classes, as per the university calendar. Your final grade is based on your cumulative scores on assignments submitted for grading and classroom participation if applicable.

### **Safety**

It is the decision of each student to engage in dangerous or potentially dangerous activities related to this course and its labs. The instructor will, to the best of their ability, advise the student of the possible risk and dangers. Students will be working with extremely hot materials, chemicals, metal, plastics, glass, alcohol, and heavy objects. Students will learn how to use the equipment safely and be expected to maintain safe operation of equipment. Students must demonstrate safe use of equipment and safe behavior at all times. A student may be removed from the class for safety misconduct and this misconduct may affect a student's grade. Noncompliance to reprimands for safety misconduct may result in failure of the course. Montana State University Billings will not be held responsible or liable for injury as a result of misconduct.

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### **Assignments**

#### **Exams: Online in D2L**

There will be two exams during the semester (Midterm/Final). Each exam will consist of questions derived from your text and other readings if assigned. Both Midterm and Final will include short answer and essay questions. The exam questions will be posted on D2L one week prior to the exam due date. You will research and write your answer for each question. Each student will then log into the course on D2L and submit their exam document in the assigned Drop Box. Exams are due by 11:59 pm on the due date in the schedule. (100 points each)

#### **Labs:**

There will be 9 labs during the semester. With the exception of two Saturday labs, all other labs are scheduled for Thursdays from 5:30-7:30 pm. Each lab will address an aspect of brewing or distillation. Attendance and participation in each lab is required. There may not be opportunity to make up a missed lab so intend to participate in every scheduled lab. If a lab has to be cancelled (weather or something else) a makeup lab may be scheduled, possibly on a day

other than Thursday. Please Note: the distillation lab will be held at City College and the two full brew day labs will be on **Saturday from 12:00 pm to 5:00 pm.** Each student must maintain proper safety procedures at all times during labs. Failure to do so will negatively impact your grade as well as continuation of the course. (50 points each)

#### **Grade Breakdown**

Exams 1 & 2 = 100 Points each (200 pts total)

Labs 9 = 50 Points each (450 pts total)

Total points = 650

#### **Grading Scale in Percentages**

95-100= A, 90-94= A-, 87-89= B+, 84-86= B, 80-83= B-, 77-79= C+, 74-76= C, 70-73= C-, 67-69= D+, 64-66= D, 60-63= D-, 59 or <= F

#### **Students with Disabilities:**

MSU Billings is committed to providing equal access. If you anticipate barriers related to the format or requirements of this course, please meet with me so that we can discuss ways to ensure your full participation in the course. If you determine that disability-related accommodations are necessary, please contact Disability Support Services (657-2283; located in Room 135 in the College of Education). We can then plan how best to coordinate your accommodations.

#### **Academic Support Center:**

The Academic Support Center of MSU Billings provides tutoring services to support the academic success students. Any MSUB/City College student can utilize the services on either campus. The ASC is staffed with student tutors, professional tutors and instructors who are trained to tutor in a variety of subjects. Tutors are available to assist students with math, writing, reading, anatomy and physiology, and other specialty areas for specific majors. Tutoring services are "free" as they are already paid for as part of your student fees.

**Course Schedule  
(Subject to Change)**

<b>Week</b>	<b>Subject</b>	<b>Readings/Assignments</b>	<b>Labs</b>
Week 1	Course Introduction, Safety	Syllabus, Ch. 1, Lab Notes	<b>Jan. 18 Lab 1:</b> Lab/Brewery Safety
Week 2	Ingredients: Water, Malt, Hops, Yeast	Ch. 2, & 3 Lab Notes	<b>Jan. 25 Lab 2:</b> Ingredients
Week 3	Wort Production, Composition, Adjuncts	Ch. 4, 5, & 6	
Week 4	Wine and Mead Fermentation	Wine Quality Article, Fermentation of Mead Article, Characteristics of Fermentation Article, Lab Notes	<b>Feb. 8 Lab 3:</b>
Week 5	Wort Boiling, Hops, & Cooling	Ch. 7, 8, & 9	
Week 6	Fermentation & Yeast	Ch. 10 & 11, Lab Notes: Formulating a Recipe	<b>Feb. 22 Lab 4:</b> Sensory Analysis of Lab 3
Week 7	Cellar Operations	Ch. 12, <b>Midterm Exam Due Thursday, March 1 by 11:59 pm</b>	
Week 8	<b>SPRING BREAK</b>	<b>NO CLASS</b>	
Week 9	Distillation Process	<u>Guest Instructor</u> , Lab Notes	<b>March 15 Lab 5:</b> Distilling Spirits *Held at City College
Week 10	Packaging: Draft & Bottles	Ch. 13 & 14, Lab Notes	<b>March 24 Lab 6:</b> Full Brew Day *Saturday Session at COE
Week 11	Beer Quality	Ch. 15	
Week 12	Interpreting Lab Results	Ch. 17, Lab Notes	<b>April 12 Lab 7:</b> Sensory Analysis of Lab 6
Week 13	Cleaning and Sanitizing & Control Systems	Ch. 19 & 20, Lab Notes	<b>April 14 Lab 8:</b> Full Brew Day *Saturday Session at COE
Week 14	Instrument Management	Ch. 21	
Week 15	Craft Brewing	Ch. 24, Lab Notes	<b>April 26 Lab 9:</b> Sensory analysis of Lab 8
Week 16	<b>FINALS WEEK</b>	<b>Final Exam Due: Wednesday, May 2 by 11:59 pm</b>	<b>NO LAB</b>