

FST003V Introduction to Brewing and Beer

(Fall Quarter 2018 Syllabus)

Part 1: Course Information

Instructor Information

Instructor: Charles Bamforth

Office: 2158 Robert Mondavi Institute North

Office hours: My preference is to schedule face to face sessions at a time that is mutually convenient. If you wish to meet with me, shoot me an email with the days and times that you are available and we will identify a time to meet. If you are not on the UC Davis campus then this meeting can be via a Zoom video chat (preferred) or by telephone.

Professor E-mail: cwbamforth@ucdavis.edu

TA: Jordan Beaver

TA Office Hours: On-line, each Monday, 5-7pm

TA E-mail: jwbeaver@ucdavis.edu

Course Description

This course will provide students with a basic description of brewing and associated processes, from raw materials to final product; history of brewing and brewing science; types of beer worldwide; world beer markets; basics of beer quality, including wholesomeness; role of scientist in brewing.

Prerequisite

None

GE Area if Applicable

Science and engineering; Scientific literacy

Part 2: Course Objectives

The course objectives encompass four primary areas: product; process; history and society; and business. There are specific objectives for each area.

<p>Product: Apply principles from general chemistry, biology, physics, statistics, and / or mathematics to food science problems</p>	<ul style="list-style-type: none">• Compare the major styles of beer according to raw materials and production protocols.• Articulate the basis for quantifying beer strength.• Categorize the major substances that contribute to beer taste and aroma, foam, clarity, gushing, and color.• Identify the locations within human sensory systems where major
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	<p>contributors to flavor are detected.</p> <ul style="list-style-type: none"> • Articulate the relationship between beer composition and human health.
<p>Process: Analyze contemporary food science information and literature.</p>	<ul style="list-style-type: none"> • Diagram the successive unit stages in malting and brewing, including the purpose, duration, and temperature ranges associated with each stage. • Classify the major ingredients used in the production of beer and the key properties demanded of them.
<p>History and Society: Apply critical thinking and analytical evaluation to contemporary food science information and literature</p>	<ul style="list-style-type: none"> • Explain the evolution of the brewing from its ancient origins to its growth as an industry in America. • Analyze the social and legal consequences associated with diverse perspectives on alcohol consumption.
<p>Business: Analyze contemporary food science information and literature</p>	<ul style="list-style-type: none"> • Summarize production and consumption trends in the world beer market. • Describe the processes that breweries implement to make, package and distribute their products.

You will meet the objectives listed above through a combination of the following activities in this course:

- Module Quizzes
- Weekly writing assignments exploring the production of beer
- Weekly reading assignments
- The creation of a public service announcement
- Participation in live sessions with the professor (Weeks 1, 5, 10) and classmates

Part 3: Course Text, Materials, Logistics, and Writing Support

Textbook & Course Materials

Required Text

Charles Bamforth: Beer: Tap Into The Art and Science of Brewing, 3rd edition. ISBN 978-0-19-530542-5

Recommended Texts & Other Readings

Other recommended texts and readings can be found on the library guide page <https://www.library.ucdavis.edu/guide/fst003v-deconstruct-beer-resources/>

Course Structure

This course will be delivered entirely online through the course management system Canvas. You will use your Canvas account to login to the course from the Canvas login page.

Course Site and Connectivity Requirements

Access to Canvas, which requires an Internet connection.
(<https://login.canvas.ucdavis.edu/>)

This course will be delivered online through a course management system named Canvas. In Canvas, you will access online lectures, course materials and resources. There will be weekly quizzes and individual writing assignments. Depending on your completion of previous assignments, material will be released every three weeks. Weeks 1, 5, and 10 will be live and from 3:30-5:20 PM on September 27th, November 1st, and December 6th.

Technical Assistance

If you need technical assistance at any time during the course or to report a problem with Canvas you can:

- Call the Canvas support hotline (844) 303-8285
- Review the Technical Support Page
- Review the Accessing the Course Page
- Select “Help” on the left bar once within Canvas

Important Note: This syllabus, along with course assignments and due dates, are subject to change. It is the student’s responsibility to check the Canvas website for announcements on a regular basis.

Writing Support

For writing support, please visit the [Writing Support Center’s website](http://success.ucdavis.edu/services/writing.html) <http://success.ucdavis.edu/services/writing.html>. The Writing Support Center offers a variety of support services ranging from writing specialists and tutors who can provide feedback on your writing to the writing studio where you can work on your writing in a collaborative writing space.

Part 4: Grading Policy

Graded Course Activities

Visit the **Modules** link in Canvas for details about each assignment and quiz listed below.

Points	Description
10	Meet your librarian
70	Quizzes (7 Quizzes at 10 points each)
80	Deconstruct a Beer (8 assignments at 10 points each)
10	Public Service Announcement
50	Final
220	Total Points

Letter Grade Assignment

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

Letter Grade	Percentage	Performance
A+	95-100%	Outstanding Work
A	90-94%	Excellent work
A-	85-89%	Nearly Excellent Work
B+	80-84%	Very Good Work
B	75-79%	Good Work
B-	70-74%	Mostly Good Work
C+	65-69%	Above Average Work
C	60-64%	Average Work
C-	55-59%	Mostly Average Work
D+	50-54%	Below Average Work
D	45-49%	Poor Work
F	0-44%	Failing Work

Late Work Policy

Be sure to pay close attention to deadlines—there will be *no make up* assignments or quizzes, or late work accepted without a compelling reason and instructor approval. Contact instructor for further information.

Viewing Grades in Canvas

Points you receive for graded activities will be posted to the Canvas Grade Book. Click on the Grades link on the left navigation to view your points.

Quizzes will be graded automatically and grades will be made available for viewing immediately after completion. Written assignments can be expected to be graded within a week from the due date.

Important note: For more information about grading at UC Davis, visit the academic policies and grading section of the university catalog.

Part 5: Course Policies

Participation

Students are expected to participate in all online activities as listed on the course calendar. In Discussions, there is a [General Question and Answer discussion](#) open with guidelines on how to participate

Complete Assignments and Quizzes

All assignments for this course will be submitted electronically through Canvas unless otherwise instructed. Assignments must be submitted by the given deadline or special permission must be requested from instructor *before the due date*. Extensions will not be given beyond the next assignment except under extreme circumstances.

All discussion assignments must be completed by the assignment due date and time. Late or missing discussion assignments will affect the student's grade.

To best test your understanding of course content, I suggest you take the quizzes without notes or the course text. Not only will this best help you assess your own learning, it will better prepare you for the challenges of the more complex assessments like the public service announcement and final exam.

Understand When You May Drop This Course

It is the student's responsibility to understand when they need to consider un-enrolling from a course. Refer to the <https://registrar.ucdavis.edu/calendar/quarter.cfm> for dates and deadlines for registration. After this period, a serious and compelling reason is required to drop from the course. Serious and compelling reasons includes: (1) documented and significant change in work hours, leaving student unable to attend class, or (2) documented and severe physical/mental illness/injury to the student or student's family.

For specific information on how to drop the class, refer to this site:
<http://crossenroll.universityofcalifornia.edu/content/dropping-course>

Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned if it meets the conditions outline by the UC Davis Senate Regulations (Section A540C; http://academicsenate.ucdavis.edu/bylaws_and_regulations/regulations.cfm?#A540).

Inform Your Instructor of Any Accommodations Needed

If you have a documented disability and verification from the [UC Davis Student Disability Center](#) (SDC), and wish to discuss academic accommodations, please contact your instructor as soon as possible. It is the student's responsibility to provide documentation of disability to the SDC and meet with a SDC counselor to request special accommodation *before* classes start. [Contact the SDC](#).

Commit to Integrity

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

UC Davis's Academic Honesty Policy & Procedures

Read about UC Davis's [Code of Academic Conduct](#). The Code of Academic Conduct clearly defines what UC Davis considers cheating and plagiarism.

Important Note: Any form of academic dishonesty, including cheating and plagiarism, may be reported to the Office of Student Support and Judicial Affairs: <http://sja.ucdavis.edu/>.

Course policies are subject to change. It is the student's responsibility to check Canvas for corrections or updates to the syllabus. Any changes will be posted in Canvas.

Part 6: Topic Outline/Schedule

Important Note: Refer to Modules for specific meeting dates and times. Activity and assignment details will be explained in detail within each week's corresponding learning module. If you have any questions, please contact your instructor. **Live sessions are from 3:30-5:20 p.m. on September 27th, November 1st, and December 6th.** Live Dates are noted below as well

Week 01: Basics

- Discover the breadth of topics that will be examined in Introduction to Beer and Brewing.
- Identify the key ingredients and processes involved in brewing
- **Live Session:** 3:30-5:20 p.m. on September 27^h

Week 02 – part 1: Malt

- Understand properties of barley that facilitate good malt.
- Explain nature of malting process
- Classify types of malts and identify when certain malts would be used.

- Articulate the reason for the unit stages in malting

Week 02 – part 2: Hops

- Explain the role of hops in the brewing process.
- Describe how hops are cultivated.
- Compare and contrast the trade-offs associated with when to add hops to the brewing process.
- Summarize the advantages and disadvantages of using whole cone hops as opposed to hop products in the brewing process

Week 03 – part 1: Water

- Summarize the desired ratio of water use to beer produced
- Explain how different ionic components affect water hardness
- Describe the types of water used in the brewing process

Week 03 – part 2: Yeast

- Compare characteristics of *Saccharomyces cerevisiae* and *Saccharomyces pastorianus*
- Identify the methods used to determine yeast age, viability and concentration and what the methods measure specifically.
- Identify the chemical products from yeast that deliver specific flavors

Week 04: A walk through the brewery

- Differentiate between the processes that occur during the “hot side” and the “cold side” of beer production.
- Explain how a brewery’s distribution processes, cleaning in place (CIP) systems, sensory and pilot work, and waste management practices contribute to a brewery’s reputation and the quality of its beer.

Week 05: The sociology and business of brewing

- Identify the major beer markets in the world
- Trace the evolution of larger brewing companies through merger and acquisition and compare with the evolution of so-called ‘craft’ brewers.
- Synthesize the driving forces that impact beer markets and consumption
- **Live Session:** 3:30-5:20 p.m. November 1st

Week 06: History

- Describe the evolution of brewing from its
 - o ancient and medieval origins
 - o modern age developments
 - o history in America
- Explain the role of women in the history of beer.
- Identify scientists and their scientific contributions to the advancement of the brewing process.
- Synthesize the social effects associated with the consumption of beer during its history

Week 07: Beer Styles and Types

- Explain what traditionally distinguishes lagers from ales.
- Identify at least one example of a lager; lighter ale; and darker ale and describe

the character of each.

- Gain an appreciation for the diversity of beer styles and the skill required to brew high quality beer.

Week 08: Quality of Beer

- Describe the eight categories that are used to describe the quality of beer.
- Synthesize why brewers view consistency as a critical factor in the quality of beer.
- Identify the attributes that contribute to the flavor of beer.
- Apply descriptors from the beer flavor wheel to distinguish a beer's taste.
- Summarize the meaning of flavor threshold.
- Graph the changes that can take place in flavor over time.
- Discuss the practices brewers use to minimize change in beer over time.
- Describe how the appearance of beer is described in terms of foam, clarity and color.

Week 09: Beer as Part of the Diet

- Review the evidence surrounding arguments for and against beer consumption.
- Describe which nutritional properties of beer lead some to refer to it as “liquid bread.”
- Summarize the main findings of scientific research studies that examined the relationship between alcohol consumption and health outcomes.

- **Social Responsibility:**
- Compare historical perceptions of beer consumption with contemporary viewpoints.
- Recognize that emotional states and social contexts exert a large influence on drinking behaviors.
- Evaluate the policy positions of organizations opposed to alcohol consumption, such as MADD and the Marin Institute.

Week 10: Ask Charlie Anything

- E-Learning Café: An opportunity to discuss any aspect of brewing and beer that the class would like to address.
- **Live Session:** 3.30-5:20 p.m. December 6th

Part 7: Final Examination

UC Davis now permits online examinations, which will be proctored by ProctorU. The university will cover the cost of your exam in ProctorU unless you delay registering for the exam in which case you will incur a late fee which you will be responsible to pay. However, you do not need to come to campus on the date of the exam, simply be available during the exam time, **which will be confirmed**. For more information about ProctorU, including how to schedule and purchase proctoring services, please visit <http://cee.ucdavis.edu/testing-services/online-proctored-exams.html>.