FST003V Introduction to Brewing and Beer
(Spring Quarter 2017 Syllabus)

Part 1: Course Information

Instructor Information

Instructor: Charles Bamforth  
Office: 2158 Robert Mondavi Institute North  
Professor Office Hours: Thursdays 3-5PM  
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TA: Laura Metrulas  
TA Office Hours: Monday 1-3PM  
TA E-mail: lkmetrulas@ucdavis.edu

Course Description

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  
GE Area if Applicable

None  
Science and engineering; Scientific literacy

Part 2: Course Objectives

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

<table>
<thead>
<tr>
<th>Analyze contemporary food science information and literature (Process)</th>
<th>Analyze contemporary food science information and literature (Business)</th>
<th>Apply critical thinking and analytical evaluation to contemporary food science information and literature (History and Society)</th>
<th>Apply principles from general chemistry, biology, physics, statistics, and / or mathematics to food science problems (Product)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagram the successive unit stages in malting and brewing, including the purpose, duration, and temperature ranges associated</td>
<td>Summarize production and consumption trends in the world beer market.</td>
<td>Explain the evolution of the brewing from its ancient origins to its growth as an industry in America.</td>
<td>Compare the major styles of beer according to raw materials and production protocols.</td>
</tr>
<tr>
<td>Classify the major ingredients used in the production of beer and the key properties demanded of them.</td>
<td>Describe the processes that breweries implement to make, package and distribute their products.</td>
<td>Analyze the social and legal consequences associated with diverse perspectives on alcohol consumption.</td>
<td>Articulate the basis for quantifying beer strength.</td>
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<td>---------------------------------------------------------------</td>
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<td>-----------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------</td>
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<tr>
<td></td>
<td>Categorize the major substances that contribute to beer taste and aroma, foam, clarity, gushing, and color.</td>
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<tr>
<td></td>
<td>Identify the locations within human sensory systems where major contributors to flavor are detected.</td>
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<td></td>
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<tr>
<td></td>
<td>Articulate the relationship between beer composition and human health.</td>
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</tbody>
</table>

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 a live sessions with the professor (Weeks 1, 5, 10) and classmates

**Part 3: Course Text, Materials, Logistics**

**Textbook & Course Materials**

**Required Text**

**Recommended Texts & Other Readings**
Other recommended texts and readings can be found on the library guide page http://guides.lib.ucdavis.edu/beer

**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 4-6PM on April 6\textsuperscript{th}, May 4\textsuperscript{th} and June 7\textsuperscript{th}. 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.

### Part 4: Grading Policy

**Graded Course Activities**

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

<table>
<thead>
<tr>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Meet your librarian</td>
</tr>
<tr>
<td>70</td>
<td>Quizzes (7 Quizzes at 10 points each)</td>
</tr>
<tr>
<td>80</td>
<td>Deconstruct a Beer (8 assignments at 10 points each)</td>
</tr>
<tr>
<td>10</td>
<td>Public Service Announcement</td>
</tr>
<tr>
<td>50</td>
<td>Final</td>
</tr>
<tr>
<td>220</td>
<td><strong>Total Points</strong></td>
</tr>
</tbody>
</table>
Letter Grade Assignment

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

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

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. [Link to Guidelines for discussion on Canvas]

Build Rapport

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the quarter so that we can help you find a solution.

Complete Assignments

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.

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 an 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 the course calendar 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.

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

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

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**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

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**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

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**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.

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**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

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**Week 06: History**
- Describe the evolution of brewing from its ancient and medieval origins
  - modern age developments
  - 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

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**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.

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**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

An opportunity to discuss any aspect of brewing and beer that the class would like to address.