BCHM 111Y: BrewMD Course Description

This course is for those interested in learning how to brew. We will discuss the theory behind brewing alcohol, the mechanisms that govern the process of yeast fermentation, and the proper techniques for applying that knowledge to produce alcoholic/fermented beverages in a safe, sterile, and efficient manner. This course will delve into the history of brewing on the planet, which several historians have stated is the reason for the development of stationary cultures. We will delve into the evolution of the modern brewing industry, from home breweries to multinational brewing corporations. This course will look into the complex distribution network required to market the brewed products globally. Ultimately we will apply the knowledge taught in this class to brew mead, beer, and cider in a safe sterile setting.

Course Details

- **Course**: BCHM111Y
- **Prerequisites**: none
- **Credits**: 1
- **Seats**: 25
- **Lecture Time**: 50 minutes
- **Location**: Biochem/chem building or animal sciences (tentative)
- **Semester**: Spring 2020
- **Textbook**: none
- **Course Facilitator(s)**: Gilad Hampel, William Ryba
- **Faculty Advisor**: Professor Lee Friedman

Topics Covered*

Syllabus may be subject to minor changes, but drastic revisions will require input of students/facilitators, and those involved will be notified immediately

- What is brewing?
    - Glycolysis
    - Reactants products
        - Flux
        - Fermentation
        - Lactic Acid Fermentation
        - Ethanol fermentation
    - Yeast growth
        - Lag phase, doubling time
        - Different strains of yeast: bread yeast, wine yeast, pathogenic yeast etc.
- How to brew
    - Materials and Glassware
    - Sterilization techniques

    - Brewing process
    - Storage
- History of Brewing
    - Genesis
        - Origins of brewing
        - Agriculture
    - Evolution of the industry
        - Brewed liquids as a commodity
        - From home breweries to multinational corporations
    - Cultural Significance
        - Prohibition era
        - Religious and ceremonial use

Assignments will be readings or videos to watch. The course will rely heavily on class participation, where the readings and videos will be discussed. There will be a few quizzes to assess the class understanding of the material.

Schedule (tentative)*

Week	Topic	Assignment
1 (1/27)	Lecture Topic 1: Glycolysis	Assigned: Reading on Glycolytic cycle
2 (2/3)	Lecture Topic 2: Alcohol Fermentation	Due: Reading on Glycolytic Cycle Assigned: View Write out steps of both Glycolytic cycle and Alcoholic fermentation.
3 (2/10)	Lecture Topic 3: oxygen	Due: written out steps for both Glycolytic cycle and poisoning of fermentation Alcoholic fermentation. Assigned: formulate an argument as to why brewing should or should not take place in the presence of Oxygen

4 (2/17)	Lecture Topic 4: Brewing apparatus	Due: Argument on oxygen level of the brewing environment. Assigned: Reading on sanitation chapter
5 (2/24)	Lecture Topic 5: Sanitizing a fermenting vessel	Reading quiz No HW, Study for midterm
6 (3/2)	MIDTERM	Due: Nothing
7 (3/9)	Lecture Topic 6: Pre-Fermentation brewing steps	Due: Nothing In-class participation – No HW
8 (3/16)	Lecture Topic 7: Fermentation and beyond brewing steps	Due: Nothing Assigned: Read through Hypothesis 1
9 (3/30)	Lecture Topic 8: Genesis of brewing	Assigned: Research a traditional brewing technique and prepare a short presentation.
10 (4/6)	Lecture Topic 9: Cultural significance of brewing	Assigned: continue to research beverages

11 (4/13)	Lecture Topic 10: Brewing around the world, student presentations	Due: research on traditional brewing technique Reading on brewing during the industrial revolution
12 (4/20)	Lecture Topic 11: Evolution of the brewing industry	Reading on prohibition
13 (4/27)	Lecture: Topic 12: Brewing during and after prohibition	Reading on modern brewing
14 (5/4)	Lecture Topic 13: modern brewing and its future	Assigned: Final Review Practice
15 (5/11)	FINAL	

*Note that this is a tentative schedule, and you have flexibility as an instructor to modify when assignments are assigned and due, as well as (limited) leeway on when the midterm will happen. The dates on this schedule also assume class is held on a Friday, so be sure to modify the dates to reflect which day your STIC will actually be held. All finals/final assignments **must** happen/be due during the last class so as to avoid hosting a final during finals week.

Grading

Grades will be maintained on (ELMS/department grade server/etc). You will be responsible for all material discussed in lecture as well as other standard means of communication (Piazza, email announcements, etc.), including but not limited to deadlines, policies, assignment changes, etc.

Any request for reconsideration of any grading on coursework must be submitted within one week of when it is returned. No requests will be considered afterwards.

Your final course grade will be determined according to the following percentages:

Percentage	Title	Description
50%	Participation	Students must attend and participate in class discussions. This includes participating in the class brewing procedures.
30%	Reading Quizzes	This includes both the weekly readings and/or videos.
10%	Midterm	The midterm will be on topics from weeks 1-7, and will consist of multiple choice, short answer, fill in the blank, etc.
10%	Final Exam	The final exam will cover all the topics discussed during the semester* and will consist of multiple choice, short answer, fill in the blank, etc. *You can choose whether your final is cumulative or only second-half topics

Communicating with course staff

Other means of communication have not been chosen as of now.
Interaction beyond the classroom is encouraged, but should be limited to important or more urgent issues. Topics that need not be addressed immediately can wait till class time.

Instructor(s) Name(s) and Email(s):
● Professor Lee Friedman: laf2h@umd.edu

Facilitator(s) Name(s) and Email(s):
● Gilad Hampel: ghampel@terpmail.umd.edu ● William Ryba: wryba@terpmail.umd.edu

Excused Absence and Academic Accommodations

See the section titled "Attendance, Absences, or Missed Assignments" available at Course Related Policies.

Disability Support Accommodations

See the section titled "Accessibility" available at Course Related Policies.

Academic Integrity

The University has a nationally recognized Honor Code, administered by the Student Honor Council. The Student Honor Council proposed and the University Senate approved an Honor Pledge. The University of Maryland Honor Pledge reads:

“I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."

Unless students are specifically advised to the contrary, the Pledge statement should be handwritten and signed on the front cover of all papers, projects, or other academic assignments submitted for evaluation in this course. Students who fail to write and sign the Pledge will be asked to confer with the instructor.

Course Evaluations

If you have a suggestion for improving this class, don't hesitate to tell the instructor or TAs during the semester. At the end of the semester, please don't forget to provide your feedback using the campus-wide CourseEvalUM system. Your comments will help make this class better.

Thanks to the CS professors at the University of Maryland, College Park for the basic syllabus outline.