

FOS 6455C
Industrial Food Fermentations
3 Credits, Fall 2018
Proposed Course Syllabus

Course Instructors and Office Hours

Katherine Thompson-Witrick, Assistant Professor

Food Science and Human Nutrition Department

Room 329, FSHN Building, Newell Drive

Phone: 352.294.3908

Fax: 352.392.9467

Email: ktompsonwitrick@ufl.edu

Office Hours: Tuesday/Thursday, 10 – 12 am; Thursday, 1-3pm; or by appointment.

Time/Location:

- M W F: Period 3 (9:35am – 10:25am) MCCB 3124. For weeks with no lab/demo/exercise, we'll generally have three lectures for the week during period 3, and you'll have period 4 free.

- M: Period 4 (10:40am – 11:30am) Location Varies. The FSN 130 (FSHN Pilot Plant), 3rd floor Conference Room, and 3rd floor Teaching Lab will be utilized as outlined in the instructor's weekly email sent out on the Friday preceding the week in question. The laboratory aspect of this class will be a combination of hand-on experiments, demonstrations, taste panels and field trips. There will generally be NO lab exercise if a lecture is scheduled for Monday period 3 per the syllabus. Due to the nature of fermentation itself, demos and trips, there will be occasional events that will not fit into the official time/locations noted. Every effort will be made to accommodate individual schedules.

Teaching Assistant

We will not have a teaching assistant for this course.

Dr. Thompson-Witrick will be responsible for overall coordination and administration of the course, as well as instructional duties. Additionally, the specialized expertise of the members of FSHN and other faculty will be utilized in the form of guest lectures, laboratory exercises and/or discussions; see syllabus for tentative dates/topics.

Course Objectives

The overall objective of the course is to provide graduate-level knowledge, theory, and practice for a variety of commercially important fermented food products and ingredients, from a technical perspective. There will be an interdisciplinary emphasis upon safety, regulatory, nutritional, microbiological, and economic considerations of processes which add value to and/or reduce waste from agricultural commodities and natural resources.

Prerequisites

The prerequisite course is FOS 4222 or an equivalent course in food microbiology, or permission of instructor. All students must be 21 years of age or older by October 1, 2012 as we will be examining alcohol-containing products in the latter part of the course.

Course Format

Students will acquire knowledge of the microbiological, chemical, and physical aspects of food industry fermentations using various learning modalities including lectures, discussions, laboratory exercises/demonstrations and assignments.

Textbook and References

The required text, containing the basis for the course material, will be available at the UF Bookstores. It will also be on reserve at the Marston Science Library under FOS 6455C and will be made available for 2-hr use, along with other additional resources, in Room 329, FSHN Building. Although I've designated the book as "required", that does not mean that it must be purchased, just that the specified chapters will be part of the material for the exam, along with lecture notes and other designated materials. The books are quite old date-wise (although we are using the most updated—and the only edition) but it's still well-organized and pertinent for the study of fermented foods.

An updated syllabus, lectures and supplemental material will be posted on the UF eLearning site: <https://lss.at.ufl.edu/>. We will be utilizing the Canvas platform primarily as an archive of class lectures, supplemental material, and exercises.

Required Text:

Hutkins, R. 2006. Microbiology and Technology of Fermented Foods. Blackwell Publishing, Ames, IA.

Additional Text Resource:

Bamforth, C. and Ward, R. 2014. The Oxford Handbook of Food Fermentations. Oxford University Press., New York, NY.

Grading Policy

90 - 100	A
88 - 89	B+
80 - 87	B
78 - 79	C+
70 - 77	C
68 - 69	D+
60 - 67	D

Course Assignments

Grading

- Exams (4) 70%

These exams will each cover approximately 1/4 of the course material and be equally weighted for each quarter. Exam 4 will also have a section with your choice of 1 of 2 questions that cover the entire course, which will increase the number of points associated with that exam.

- Assignments/Lab Exercises 30%

Assignments/exercises represent a significant part of the course grade, and their completion supports learning in the area of food fermentations. One of these assignments will be a term paper, in the form of a scientific review paper on a particular topic relevant to commercial fermented foods, beverages or food ingredients. Please adhere to stated deadlines for maximum credit.

This course will not be graded on a curve and will not utilize minus grades. Please see <http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html> for official University of Florida grading policies.

Working Course Outline

Week 1

- 8/24/22: Review of syllabus and course objectives; Lecture: Introduction to Food Fermentation (Hutkins Chap. 1)
- 8/26/22: Lecture: Review of fermentation microbiology and biochemistry (Hutkins, Chap. 2); Assignment 1 Handed Out.

Week 2

- 8/29/22: Lecture: Fermented soy products (con't); Demo: Discussion/tasting of soy-based products (Hutkins, Chap. 12)
- 8/31/22: Lecture: Fermented soy products
- 9/1/22: Lecture: Culturing techniques, starter cultures, growth (Hutkins, Chap. 3)
Assignment 1 due.

Week 3

- 9/5/22: No class – UF holiday
- 9/7/22: Lecture: Fermented vegetable products – an overview (Hutkins, Chap. 7)
- 9/9/22: Lecture: Fermented vegetables (con't.)

Week 4

- 9/12/22: Lab: Assignment 2 - fermented vegetable exercise - kimchi
- 9/14/22: Cereal fermentations – yeast-leavened products, sour dough bread (Hutkins, Chap. 8)
- 9/16/22: Lecture: Cereal fermentations with a focus on international products

Week 5

9/19/22: Work session/Demo: Wrap-up assignment 2 – fermented vegetable products kimchee assessment; fermented vegetable and cereal product demo

9/21/22 Exam 1 (50 minutes, closed book); Assignment 2 due

9/23/22: Vinegar production and *Acetobacter* (Hutkins, Chap. 11)

Week 6

9/26/22: Lecture: Fermentation technology - unit operations, flow diagrams and processing equipment; Second Lecture: Fermented fish products (Hutkins, Chap. 12)

9/28/22: Lecture: Kombucha, tea and coffee “fermentation”; Begin Assignment 3 (term paper)

9/30/22: Demo: Kombucha, tea, and coffee tasting. Pilot plant or Conference Room. Location will be confirmed at a later date.

Week 7

10/3/22: Lecture: Probiotics and their use in commercial food products; Turn in paper topic for approval (Assignment 3)

10/5/22: Lecture: Milk and dairy product chemistry and processing; Introduction to dairy fermentations – cultured products (Hutkins, Chap. 4)

10/7/22: No class – UF Homecoming

Week 8

10/10/22: Lab: Cultured dairy products - yogurt/kefir/crème fraiche (Assignment 4); meet in Experimental Kitchen/Pilot Plant – one class period only

10/12/22: Demo: Cultured dairy product demo/sampling (Assignment 4 con't.)

10/14/22: Lecture: Cheese – Overview and Principles (Hutkins, Chap. 5)

Week 9

10/17/22: Lab/Demo (Assignment 5 but no formal report) due: Mozzarella, ricotta and formed/molded cheese production; cheese evaluation; Assignment 4 due

10/19/22: Lecture: Types of cheese – technology and microbes

10/21/22: Exam 2 (50 minutes, closed book)

Week 10

10/24/22: Lecture: Microbial processes for food ingredient production

10/26/22: Lecture: Toxicological concerns of fermented food products

10/28/22: Lecture: Biofuels and food waste utilization (sustainability 1) Dr. MacIntosh

Week 11

10/31/22: Lecture: Beer production (Hutkins, Chap. 9); begin Assignment 6

11/2/22: Lecture: Beer (2)

11/4/22: Demo/tasting: 2:30 – 4 pm. Location will be determined at a later date. No report due

Week 12

11/7/22: Lecture: Wine and wine making (Dr. Sims) (Hutkins, Chap. 10);

11/9/22: Lecture: Wine (con't.);

11/11/22: No Lecture – UF holiday

Week 13

11/12/22: Exam 3 (50 minutes, closed book)

11/14/22: Lecture: Microbial biomass as food (sustainability 2); begin Assignment 7

11/16/22: Demo/tasting 2:30-4pm, Room 109, Building 120; Wine sensory analysis basics (no report due)

Week 14

11/21/22: Lecture: Current trends in fermented food products. Submit draft for final paper (Assignment 3) for instructor review and comment (optional but highly recommended; please submit electronically)

11/23/22: No class – UF class holiday

11/25/22: No class – UF holiday

Week 15

- 11/28/22: Lecture: Fermented meat products – introduction (Hutkins, Chap. 6); Assignment 7 due
- 11/30/22: Lecture: Fermented meats (con't.)
- 12/2/22: Open Date

Week 16

- 12/5/22: Lecture: Mead, cider and some distilled beverages; Demo: fermented meat products; Quorn, and mead/ciders; begin Assignment 8
- 12/7/22: Last day of classes; Course review
- 12/9/22: UF reading day (no class; no work due)

Week 17

- 12/12/22: Assignment 3 due (Term Paper); Assignment 8 due
- 12/15/22: Final Exam (Exam 4): 7:30 to 9:30am, Location TBD; 2 hours, closed book

Information for All Students

Age restrictions:

Due to the nature of the products produced and evaluated in this course, all students must be 21 years of age or older by 10/1/22. Registration in this course serves as pledge by student that they meet this requirement.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the [Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing . Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students online .

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” [The Honor Code](#) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the [Notification to Students of FERPA Rights](#).

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: , and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or .

Academic Resources

[E-learning technical support](#), 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

[Career Resource Center](#), Reitz Union, 392-1601. Career assistance and counseling.

[Library Support](#), Various ways to receive assistance with respect to using the libraries or finding resources.

[Teaching Center](#), Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

[Writing Studio](#), 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

[Student Complaints Campus](#)

[On-Line Students Complaints](#)