

SYLLABUS
Food Fermentation
Food Science and Technology 5430
Spring 2021

Jan 11– April 30
Tu Th 10:20 AM to 11:15 AM Lecture
Tu 11:30 AM-2:10 PM Lab

Howlett Hall 116 (lecture) and Parker Food Science & Technology Building

136, 124 (lab)

Instructors:	Hua Helen Wang	Valente Alvarez
	Food Science & Technology	Food Science & Technology
	219 Parker FST Building	335 Parker /144 Howlett Hall
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	Office Hrs: by appointment	Office Hrs.: by appointment

Course assistants: Jane Fu (Fu.770@osu.edu); Yutong Li (li.5263@osu.edu)

Course description: Microbiology, biochemistry, and processing of fermented foods.

Pre-requisites: MICRO 4000.

Objectives: Students will become knowledgeable in the following topics:

- Identity, characteristics, and sources of microorganisms in food fermentations.
- Metabolic activities of microorganisms and their influence on product attributes.
- Interactions between microorganisms.
- Processing of fermented foods.
- Growth, maintenance, and preservation of microbial starter cultures.
- Problems that may arise during fermentations and solutions.

Textbook:

Microbiology and Technology of Fermented Foods

by Robert W. Hutkins, Blackwell Publishing

[TP371.44 .H88 2006eb](#) ebook

Recommended References:

Tamine, A.Y. and R.K. Robinson. Yogurt Science and Technology. Second Edition. Woodhead Publishing Limited. CRC Press. Washington DC.

Kosikowski, F.V. 1997. *Cheese and fermented milk foods*. Frank Kosikowski and Vikram Mistry, Brooktondale, N. Y.

Fox, P.F. 1993. *Cheese : chemistry, physics, and microbiology*, London ; New York: Chapman & Hall,.

Microbiology and biochemistry of cheese and fermented milk. 1997. New York, Blackie Academic & professional.
Salminen, S. and A. vonWright. 1993. *Lactic acid bacteria.* Marcel Dekker, Inc., New York, NY.
Wood, J. B. 1985. *Microbiology of fermented foods.* Volumes I and II. . Elsevier Applied Science Publishers. London, England

Grading Criteria:

Exam 1	100
Exam 2	100
Exam 3 (Final)	100
Group Project	100
<u>Worksheets & Reports</u>	<u>100</u>
Total	500

Grade Percentage

A	90.0 - 100
A-	89.0 - 89.9
B+	88.0 - 88.9
B	80.0 - 87.9
B-	79.0 - 79.9
C+	78.0 - 78.9
C	70.0 - 77.9
C-	59.0 - 69.9
D+	58.0 - 58.9
D-	50.0 - 57.9
E	0.0 - 49.9

Academic Integrity (Academic Misconduct)

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination.

Ignorance of the University's *Code of Student Conduct* is never considered an "excuse" for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct.

If we suspect that a student has committed academic misconduct in this course, we are obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact either Dr. Wang or Dr. Alvarez.

Other sources of information on academic misconduct (integrity) to which you can refer include:

The Committee on Academic Misconduct web pages (oaa.osu.edu/coam/home.html)

Ten Suggestions for Preserving Academic Integrity
(oaa.osu.edu/coam/ten-suggestions.html)

Eight Cardinal Rules of Academic Integrity (www.northwestern.edu/uacc/8cards.html)

Resources for learning

Office for Disability Services
150 Pomerene Hall
1760 Neil Ave.
Columbus, OH 43210-1297
Phone: (614) 292-3307
24-Hour Info Line: (614) 292-0870

University Technology Services
<http://www.osu.edu/units/uts/>

The Center for The Study and Teaching of Writing
<http://www.cstw.ohio-state.edu/>
485 Mendenhall Labs
Columbus, Ohio 43210
(614) 688-5865

OSU Libraries
<http://www.lib.ohio-state.edu/>

Date	Lecture Topics	Lab (Tue)
1/12/2020 (Tu) 1/14(Th)	Introduction/food fermentation (HW) LAB-taxonomy, role in preservation, and basic metabolism	No lab
1/19 (Tu) 1/21(Th)	LAB metabolism-carbohydrate LAB metabolism-protein	No lab
1/26 (Tu) 1/28 (Th)	Starter cultures Phage resistance	Aseptic Technique Total Plate Counts of fermented foods (1/26)
2/2 (Tu) 2/4 (Th)	TBA Mid-term exam (I)	Gram Staining—Microscopy (2/2)
2/9 (Tu) 2/11(Th)	Veg fermentation (I) Veg fermentation (II)	Sauerkraut #1 (2/9)
2/16(Tu) 2/18 (Th)	Beer (I) Beer (II)	Sauerkraut #2 (2/16)
2/23 (Tu) 2/25 (Th)	no class Wine/cider	no lab
3/2 (Tu) 3/4 (Th)	Vinegar and food ingredients Molds/Yeasts Bread	Sauerkraut #3 (3/2) Cider fermentation
3/9 (Tu) 3/11 (Th)	Sausage fermentation (LK) TBA, Review	Sausage fermentation (3/30)
3/16 (Tu) 3/18 (Th)	Mid-term exam #2 Soy-based fermented products (I)	Rice fermentation
3/23(Tu) 3/25(Th)	Soy-based fermented products (II) Gut, Probiotics, Review	Project
3/30(Tu) 4/1 (Th)	Milk Protein no class	Project
4/6 4/8	Cheese VA) Yogurt VA	Cheese
4/13 4/15	Dairy foods VA Summary	Yogurt
4/20 4/22	TBA Project	
4/30	Final (Friday Apr 30 8:00am-9:45am)	