

SYLLABUS  
Food Fermentation  
Food Science and Technology 5430  
Spring 2018

Jan 8– May 1  
Tu Th 10:30 AM to 11:15 AM Lecture  
Tu 11:30 AM-2:10 PM Lab

Rooms 114 (lecture) and 136 (lab) Parker Food Science & Technology Building

Instructors:	Hua Helen Wang Food Science & Technology 219 Parker FST Building 292-0579 Wang.707@osu.edu Office Hrs: by appointment	Valente Alvarez Food Science & Technology 335 Parker /144 Howlett Hall 292-7765, 688-4961 Alvarex.23@osu.edu Office Hrs.: by appointment
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**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 &amp; 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](http://oaa.osu.edu/coam/home.html))

*Ten Suggestions for Preserving Academic Integrity*  
([oaa.osu.edu/coam/ten-suggestions.html](http://oaa.osu.edu/coam/ten-suggestions.html))

*Eight Cardinal Rules of Academic Integrity* ([www.northwestern.edu/uacc/8cards.html](http://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)
1/09/2018 (Tu) 1/11(Th)	Introduction/food fermentation (HW) LAB-taxonomy, role in preservation, and basic metabolism	Aseptic Technique Total Plate Counts of fermented foods (1/9)
1/16 (Tu) 1/18(Th)	LAB metabolism-carbohydrate LAB metabolism-protein	Gram Staining—Microscopy (1/16)
1/23 (Tu) 1/25 (Th)	Starter cultures Phage resistance	TBA (1/23)
1/30 (Tu) 2/1 (Th)	Milk/Cheese (VA) Cheese	Cheese (1/30)
2/6 (Tu) 2/8(Th)	Yogurt (VA) Fermented dairy products (VA)	Yogurt (2/6)
2/13(Tu) 2/15 (Th)	Vegetable fermentation (I) Mid-term exam (I)	Sauerkraut #1 (2/13)
2/20 (Tu) 2/22 (Th)	Vegetable fermentation (II) TBA	Sauerkraut #2 (2/20)
2/27 (Tu) 3/1 (Th)	Beer (I) Beer (II)	Sauerkraut #3, Beer I (2/27)
3/6 (Tu) 3/8 (Th)	Wine/Cider TBA	Beer #2 (3/6)
3/12-16	Spring break	Break
3/20 (Tu) 3/22 (Th)	Sausage fermentation (LK) Mid-term exam (II)	Sausage fermentation (LK) (3/20)
3/27(Tu) 3/29(Th)	Molds and Yeasts Vinegar and food ingredients	Rice fermentation (3/27)
4/3(Tu) 4/5 (Th)	Bread Rice	Group project (2) (4/3)
4/10 4/12	Soy-based fermented products (I) Soy-based fermented products (II)	Group Project #3 (4/10)
4/17 4/19	Project presentation Project presentation (Last Day of class)	TBA
5/1	Final (10:00-11:45AM)	