

Course Overview

Microbial Products in a Sustainable Garden State and Beyond

11:680:103

Fall and Summer Semesters

Course Times: TBD

Location: TBD

Contact Information

Instructor: Dr. Karla Esquilín-Lebrón

Lipman Hall, Room 215

karla.esquilin@rutgers.edu

Office Hours: Available upon request

Course Website, Resources, and Materials

There is no textbook for the course. Reading material, lecture notes, and assignments will be posted on Canvas. Reading assignments include selected sections from:

- John Postgate. *Microbes and Man*. 2000, Cambridge University Press.
- Sandor Ellix Katz. *Wild Fermentation*. 2003, Chelsea Green Publishing Co.
- Sanor Ellix Katz. *The Art of Fermentation*. 2012, Chelsea Green Publishing Co.
- Mark Kurlansky. *Milk!: A 10,000-Year Food Fracas*. 2018. Bloomsbury Publishing Co.
- Catherine W. Donnelly (Editor). *Cheese and Microbes*. 2014, ASM Press.
- Hugh Johnson. *Vintage: The Story of Wine*. 1989, Simon and Schuster
- Karen MacNeill. *The Wine Bible*. 2001, Workman Publishing Company
- Christian Teubner. *The Cheese Bible*. 2010, Chartwell Book

Course Description

The Microbiology of Agricultural Products in New Jersey is a 3-credit lecture and interdisciplinary engaged learning experience for undergraduate students with limited or no science background. The course explores the science and culture of microbial agricultural products through readings, lectures, and group projects. The course combines applied microbiology with an appreciation of cultural heritage, on site, in New Jersey. This dynamic program investigates the microbiology of

agricultural products and food and beverage fermentations, such as cheese production, wine and beer fermentation, fermented sausages, and mushroom cultivation. Students will learn about the factors that control microbiological growth and activity, and how humans exploit and manipulate microbes in food and beverage production and agricultural practices. Students will study the complex chemical and biological processes that create different fermented foods, with techniques that blend modern scientific knowledge with traditional values and practices.

During the semester, some days will be devoted to classroom lecture and group assignments, while other days will involve excursions to local sites on campus. Field trips and excursions may include visits to libraries, local farms, and farmer's markets in New Jersey. Readings, lectures, group projects, presentations, and field trips meld a comprehensive appreciation of the science, history, and culture of fermented foods and other agricultural products.

Learning Goals

- I. 21st Century Challenges
 1. Analyze the relationship that science and technology have to contemporary social issues.
- II. Areas of Inquiry
 1. Natural Sciences
 1. Understand and apply basic principles and concepts in the physical and biological sciences.
 2. Identify and critically assess ethical and societal issues in science.

Additional Course Goals

By the end of the course, students should be able to:

1. Describe the role of various microorganisms and how they impact humans, food, and the environment.
2. Articulate how microbial food fermentations are an art & craft as well as an example of both science & technology.
3. Compare and contrast the microbial principles relating to the production of cheese, wine, sausages, beer, and other fermented foods.
4. Analyze different claims about current issues in food microbiology and agriculture, and discuss these issues using evidentiary support.

- Evaluate the role of cultural heritage, using evidence, in the worldwide production, commerce and consumption of fermented agricultural products.

Assignments/Responsibilities, Grading, and Assessment

Course Grading (subject to change)

		Point Allocation
Examinations	50 pts/exam	200
In-Class Activities/Participation	5 pts/activity	75
Course Excursions	25 pts/assignment	75
Report 1 and Group Presentation	75 pts/report & 25 pts/presentation	100
Report 2	75 pts/report	75
Total		525

Student Projects & Reports, Examinations

Examination

There will be four exams scheduled throughout the semester. Exams will combine multiple choice, matching, and short answer questions.

Course Excursions

Group and individual excursions are incorporated throughout the course. Take detailed notes on visits and excursions. Short reports addressing a questionnaire will be submitted approximately one week following each excursion. Specific questions to address: How has the experience changed your view on the role of gastronomy in daily life? How does the way we approach food (both its production and its consumption) tell us about ourselves and our society?

In-class Activities and Class Participation

Students are expected to participate in group discussions which will occur regularly throughout the semester. Activities and blog entries will follow a guided format that will address questions posed throughout the course. Activities will be submitted periodically for grading during class.

Report 1: Group Report and Presentation Fermented Food Products

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Students will select a particular fermented agricultural product (e.g., cheese variety, beer, wine, or sausage) and discuss its characteristics, source of raw materials, production process, taste & aroma, history, trade. Prepare a class presentation and written research report.

Report 2: Individual Report

Report examining the impact of changes in agricultural practices over the last century on the production of any fermented food or beverage or the environment.

Late submissions are accepted for 75% of the original points.

Standard Semester Grades

A (90-100)

B+ (85-89)

B (80-84)

C+ (75-79)

C (70-74)

D (60-69)

F (0-59)

Accommodations for Students With Disabilities

Please follow the procedures outlined at ods.rutgers.edu/students/registration-form. Full policies and procedures are at ods.rutgers.edu.

Absence Policy

Students are expected to attend every class meeting and scheduled excursions. Assignments missed as a result of an unexcused absence will result in loss of points. Absences may only be excused if prior notification is given, and appropriate documentation provided.

Course Schedule (Tentative)

Date	Day	Week	Lecture	Lecture Topics	Assignments
2-Sept	Th	1	1	Introduction to Course & Structure	-Introduce yourself -Week 1 Onboarding
		2	2	Exploring the Microbial World/ The Birth of Agriculture/ Humans, Agriculture, and Microbes	-A World Without Microbes -Humans, Agriculture, and Microbes -Week 2 Wrap-Up
9-Sept	Th	2	3	Synchronous Discussion	
		3	4	Life and Microbes/Building Blocks of Life	-The Definition of Life -Seeing the Invisible World
16-Sept	Th	3	5	Celebration of International Microbiology Day with Hyacinth, Barn Excursion! Synchronous Discussion	Location: RU Barn, Cook Campus with Clinton Burgher -Week 3 Wrap-Up <u>-International Microorganism Day Sept 16-17</u>
		4	6	Microbes Making a Living/Control of Microbes	-Discussion: Tiny conspiracies video -Week 4 wrap up

23-Sept	Th	4	7	Synchronous Discussion	EXAM 1 Due 24-Sept
		5	8	Food Spoilage/Control of Microbes Follow-up/Living Foods	-Controlling Growth for Fermentation -Pre and Post Lecture
30-Sept	Th	5	9	Synchronous Discussion	
		6	10	Milk products	-Discuss a Cheese -Pre and Post Lecture
7-Oct	Th	6	11	Synchronous Discussion Cheese tasting	Farmer's Market Excursion Due
		7	12	Vegetables (Sauerkraut, Kimchi, Pickles) Mushrooms and Fungi	-The role of culture and tradition in fermentation -Pre and Post Lecture
14-Oct	Th	7	13	Synchronous Discussion	Exam 2 Due 17-Oct
		8	14	Mushrooms and Fungi	-Mushrooms of NJ -Week 7 Wrap-Up -The role of culture and tradition in fermentation -Week 8 Wrap-Up
21-Oct	Th	8	15	Synchronous Discussion	
		9	16	Meats	-Sausages of the World -Week 9 wrap up

28-Oct	Th	9	17	Library instruction with Dr. Judit Ward	Resources: For students https://rutgers.instructure.com/courses/86353/pages/new-library-research-skills-at-sebs-video-series?module_item_id=5061669 (Links to an external site.) Toolkit: https://rutgers.instructure.com/courses/86353 (Links to an external site.)
		10	18	Fermented meats: Rakfisk article Grain (Sourdough Breads/Beer and Spirits)	-Sourdough starter project -Beer
4-Nov	Th	10	19	Synchronous Discussion	-Sourdough starter project (Prof will bring flour to classroom)
		11	20	Work on Your Reports	Report updates and breakout groups
11-Nov	Th	11	21	Synchronous Discussion	Exam 3 Due 14-Nov
		12	22	Honey (Mead), Fruit (Wines)/Cider and Ports)	-Design your own vineyard -Week 12 Wrap-up
18-Nov	Th	12	23	Synchronous Discussion	Individual Report Due 17-Nov

		13	24	Climate Change and Global Consequences of Agriculture	-Week 13 Wrap-up
25-Nov	Th	13	--	Thanksgiving break (no classes)	
		14	25	Climate Change and Agriculture Continued	-GCC and Agriculture -Week 14 Wrap-up
2-Dec	Th	14	26	Synchronous Discussion	Group Report Due 3-Dec
		15	27	21st Century Challenges and Solutions	-Solutions -Week 15 Wrap-up
9-Dec		15	28	Group presentations	Exam 4 DUE Dec 16

Academic Integrity

[Read the university's policy on Academic Integrity](#). The principles of academic integrity require that a student:

- properly acknowledge and cite all use of the ideas, results, or words of others.
- properly acknowledge all contributors to a given piece of work.
- make sure that all work submitted as his or her own in a course or other academic activity is produced without the aid of impermissible materials or impermissible collaboration.
- obtain all data or results by ethical means and report them accurately without suppressing any results inconsistent with his or her interpretation or conclusions.

- treat all other students in an ethical manner, respecting their integrity and right to pursue their educational goals without interference. This requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress.
- uphold the canons of the ethical or professional code of the profession for which he or she is preparing.

Adherence to these principles is necessary in order to ensure that:

- everyone is given proper credit for his or her ideas, words, results, and other scholarly accomplishments.
- all student work is fairly evaluated, and no student has an inappropriate advantage over others.
- the academic and ethical development of all students is fostered.
- the reputation of the University for integrity in its teaching, research, and scholarship is maintained and enhanced.

Failure to uphold these principles of academic integrity threatens both the reputation of the University and the value of the degrees awarded to its students. Every member of the University community therefore bears a responsibility for ensuring that the highest standards of academic integrity are upheld.

Student Wellness Services

[Just In Case Web App](#)

Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

[Counseling, ADAP & Psychiatric Services \(CAPS\)](#)

848-932-7884

17 Senior Street, New Brunswick, NJ 08901

CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students' efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

848-932-1181

3 Bartlett Street, New Brunswick, NJ 08901

The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

848-445-6800

Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

<https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. To begin this process, [please complete the Registration form on the ODS web site](#).

Scarlet Listeners

732-247-5555

Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.