

BIOLOGY 359 (CRN 10429)
FOOD, DISEASE AND PEOPLE
September 7 – December 5 2022
COURSE OUTLINE

PROFESSOR:

RÉAL ROY, Ph.D.

Office: CUN 048a

email: realroy@uvic.ca

Lectures: Tu, W, F

Time: 9:30-10:20

Room: BWC A104

Office Hours:

Monday : 10:00 -12:00 am

CUN 048 or

Zoom Meeting Room (send email request)

<https://uvic.zoom.us/j/4695576594?pwd=Z0VxbTk4WmF1TEFyZlZlYnRzUT09>

COURSE DESCRIPTION.

Microorganisms and their role in human societies today and in the past.

Microorganisms in fermentation of food (cheese, sourdough bread) and beverages (wine, beer) but also in foodborne and non-foodborne diseases (listeriosis, plague).

Aspects of growth, genetics, evolution and ecology of microorganisms as part of food and diseases with an emphasis on bacteria and their classification. Importance of microorganisms in trade and history.

LEARNING OUTCOMES

By the end of this course:

1. You will be able to explain the multiple interactions between microorganisms and humans as normal microflora, food preservatives, and food borne pathogens.
2. You will learn about bacteria and yeasts forming communities that have been domesticated in various food in the past and that are responsible for an important economic activity in BC, Canada and the world.

3. You will learn about the epidemiology of foodborne and waterborne diseases in BC, Canada, and the world and how institutions in BC, Canada and the world have established safety systems to prevent or to address such diseases outbreak.
4. You will develop an ability to critically read a range of scientific and humanistic literature on microbial food and disease to better understand the role of bacteria in human society.
5. You will be able to make yogurt and a sourdough bread using lactic acid bacteria

EVALUATION

REQUIRED

1. MID-TERM EXAM 1: (30 pts)
2. MID-TERM EXAM 2: (30 pts)
3. FINAL EXAM: (40 pts)

All examinations will be done on-line on Brightspace but in a designated room at UVIC.

FACULTATIVE

4. Assignments: Bonus for final marks (1-3%)

Assignments are facultative but intended to prepare for the midterm and final examinations. Examinations may even include some questions from the assignments. Students are therefore encouraged to do the assignments. Bonus points may also be given after the final examination for completion of the assignments.

Grading scheme: A+ (90%-100%), A (85-89.9%), A- (80-84.9%), B+ (77-79.9), B (73-76.9%), B- (70-72.9%), C+ (65-69.9%), C (60-64.9%), D (50-59.9%), F (<50%)

TEXTBOOKS

Hutkins, R.W. 2006. Microbiology and Technology of Fermented Food. IFT Press. Blackwell, Ames, Iowa, USA.

Braudel, F. 1979. The Structure of Everyday Life. Harper and Row. Relevant chapters on food and diseases. Chap. 1, 2 , and 3. (In Coursepack) (HN13 B74 1981)

Garrity, G. et al. 2001-2013. Bergey's Manual of Systematic Bacteriology. Springer.

Relevant chapters on *Lactobacillus*, *Streptococcus*, *Leuconostoc*. (In Coursepack)

See on-line

Firmicutes

(<http://ezproxy.library.uvic.ca/login?url=https://link.springer.com/openurl?genre=book&isbn=978-0-387-95041-9>)

Actinobacteria

(<http://ezproxy.library.uvic.ca/login?url=http://dx.doi.org/10.1007/978-0-387-68233-4>)

Proteobacteria

Volume II - The Proteobacteria part A

<http://ezproxy.library.uvic.ca/login?url=http://dx.doi.org/10.1007/0-3>

Volume II part B

<http://ezproxy.library.uvic.ca/login?url=http://dx.doi.org/10.1007/0-387-28022-7>

Volume II part C

<http://ezproxy.library.uvic.ca/login?url=http://dx.doi.org/10.1007/0-387-29298-5>

Alexopoulos et al. 1996. Introduction to Mycology. Relevant chapters on Saccharomycetes and Eurotiomycetes. (In Coursepack)

Additional References

Microbiology

Madigan, M.T., J.M. Martinko, D.A. Stahl, D.P. Clark. 2018. Brock Biology of Microorganisms. 15th Ed. Pearson/Benjamin Cummings, San Francisco, CA, USA.

Moon, G., M. Gould, et al. 2000. Epidemiology: An Introduction. Open University Press, Buckingham, U.K.

History

Jacob, F. 1974. The Logic of Living Systems. A History of heredity. Allen Lane, UK. Betty Spillman for French translation (*La Logique du vivant; une histoire de l'hérédité*. Gallimard. 1970)

McGovern, P. 2009. Uncorking the Past. The quest for wine, beer, and other alcoholic beverage. University of California Press, Berkeley, CA, USA.

McNeil, W.H. 1998. Plagues and Peoples. Anchor Books (Random House): New York, NY. 365 p.

Tannahill, R. 1988. Food in History. Crown Publishers, New York, NY, USA.

Recipes

Amrein-Boyes, D. 2009. 200 Easy Homemade Cheese Recipes. Robert Rose, Toronto, Ontario.

Hynes, G. 2011. Island Wineries of British Columbia. Touch Wood Editions, Victoria, BC.

Reinhart, P. 2001. The Bread Baker's Apprentice. Mastering the Art of Extraordinary Bread. Ten Speed Press, Berkeley, CA, USA.

NO CLASSES ON NATIONAL DAY OFG TRUTH AND RECONCILIATION, THANKSGIVING, AND READING BREAK.

THE DEPARTMENT OF BIOLOGY DOES NOT OFFER SUPPLEMENTAL FINAL EXAMS.

ABSENCE TO THE EXAMS FOR HEALTH PROBLEM WILL BE GRANTED ONLY WITH THE SUBMISSION OF A VALID DOCTOR'S NOTE (ORIGINAL ONLY).

UVic is committed to promoting, providing and protecting a supportive and safe learning and working environment for all its members.

Territorial Acknowledgement

We acknowledge and respect the lək^wəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

Attendance and absences

*Medical documentation for short-term absences is **not required** for the Fall 2021 term (approved by Senate). **Attendance is important.** Students who can not attend due to illness are asked to notify their instructors immediately. If illness, accident, or family affliction causes a student to miss the final exam or to fail to complete any assignment by the end of the term students are required to submit a request for academic concession.*

- *Policies regarding undergraduate student academic concessions and deferrals are also detailed on the [Undergraduate Records](#) Students must submit a [Request for Academic Concession](#).*

Academic Integrity

Students are required to abide by all academic regulations set as set out in the University calendar, including standards of academic integrity. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties.

Class recording (Echo360)

Be aware that sessions in this course may be recorded to allow students who are not able to attend to watch later. The recording will be posted in Brightspace. Students who have privacy concerns can

contact me and will have the option to limit their personal information shared in the recording. If you have other questions or concerns regarding class recording and privacy please contact privacyinfo@uvic.ca.

Transcription & Captioning

Auto-generated transcription and captioning is enabled in this course. Please be aware that automated transcription and captioning is at best 70-90% accurate and by nature will include error. This depends on the subject matter, speaker, audio quality etc. Words prone to error include specialized terminology and proper names. Students are asked to refer to the audio feed for clarification of any errors. If you find transcription or captioning **that is offensive**, please contact your instructor and/or teaching assistant so that they are aware. If you require captions as part of an academic accomodation, please contact [CAL](#).

Copyright

All course content and materials are made available by instructors for educational purposes and for the exclusive use of students registered in their class^[1]. The material is protected under copyright law, even if not marked with a ©. Any further use or distribution of materials to others requires the written permission of the instructor, except under fair dealing or another exception in the Copyright Act. Violations may result in disciplinary action under the [Resolution of Non-Academic Misconduct Allegations policy \(AC1300\)](#).

Online conduct

The University of Victoria is committed to promoting critical academic discourse while providing a respectful and supportive learning environment. All members of the university community have the right to this experience and the responsibility to help create such an environment. The University will not tolerate racism, sexualized violence, or any form of discrimination, bullying or harassment. Please be advised that, by logging into UVic's learning systems or interacting with online resources, and course-related communication platforms, you are engaging in a university activity.

All interactions within this environment are subject to the university expectations and policies. Any concerns about student conduct may be reviewed and responded to in accordance with the appropriate university policy.

To report concerns about online student conduct: onlineconduct@uvic.ca

Mental Health

A note to remind you to take care of yourself. Diminished mental health can interfere with optimal academic performance. Do your best to engage in self-care and maintain a healthy lifestyle this semester. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone. The source of symptoms might be related to your course work; if so, please speak with me. However, problems with other parts of your life can also contribute to decreased academic performance. [The UVic Student Wellness Centre](#) provides cost-free and confidential mental health services to help you manage personal challenges that impact your emotional or academic well-being.

This copy was made pursuant to the [Fair Dealing Guidelines](#) of the University, library database licenses, and other university licenses and policies. The copy may only be used for the purpose of research, private study, criticism, review, news reporting, education, satire or parody. If the copy is used for the purpose of review, criticism or news reporting, the source and the name of the author must be mentioned. The use of this copy for any other purpose may require the permission of the copyright owner.

Lectures schedule (tentative)

Date	Lect.	Topic
Sept. 7	W 1	1. Course outline, evaluations, overview
Sept. 9	F 2	2. Human Digestion
Sept. 13	Tu 3	3. Microbiome and Bacteria
Sept. 15	W 4	
Sept. 16	F 5	4. How do we study bacteria in food?
Sept. 20	Tu 6	
Sept. 22	W 7	5. Nutrition, Health, and Diet
Sept. 23	F 8	6. People and Food in pre-History
Sept. 27	Tu 9	
Sept. 28	W 10	7. Cultured Dairy
Sept. 30	F 11	NATIONAL DAY FOR TRUTH AND RECONCILIATION (NO CLASS)
Oct. 4	Tu 12	8. Cheese
Oct. 5	W 13	
Oct. 7	F 14	9. Bread
Oct. 11	Tu 15	MID-TERM EXAM 1
Oct. 12	W 16	10. Wine
Oct. 14	F 17	
Oct. 18	Tu 18	
Oct. 19	W 19	11. Beer
Oct. 21	F 20	
Oct. 25	Tu 21	12. Food in Ancient History (Before 15th)
Oct. 26	W 22	13. Food in History (15th-18 th): a) Weight of numbers
Oct. 28	F 23	13. b) Bread (15 th -18 th century)
Nov. 1	Tu 24	13. c) Food and drink as luxury (15 th -18 th century)
Nov. 2	W 25	
Nov. 4	F 26	14. Concepts in Epidemiology
Nov. 8	Tu 27	MID-TERM EXAM 2
Nov. 9	W 28	READING BREAK (NO CLASS)
Nov. 11	F 29	REMEMBRANCE DAY (NO CLASS)
Nov. 15	Tu 30	15. Foodborne diseases
Nov. 16	W 31	Lecture by Dr. Mark Lewis: (Tentative title: Mathematical biology of disease)
Nov. 18	F 32	16. a) Key Bacteria in Food: <i>Lactobacillus</i>
Nov. 22	Tu 33	16. b) <i>Lactococcus</i> and <i>Streptococcus</i>
Nov. 23	W 34	
Nov. 25	F 35	17. Key Fungi in Food
Nov. 29	Tu 36	17. a) <i>Saccharomyces</i>
Nov. 30	W 37	17. b) <i>Penicillium</i> and <i>Aspergillus</i>
Dec. 2	F 38	LAST CLASS
Dec. 5-23		FINAL EXAM