

**BIOLOGY 359 (CRN 10420)**  
**FOOD, DISEASE AND PEOPLE**  
**September – December 2020**  
**COURSE OUTLINE**

**PROFESSOR:**

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**Lectures: Tu, W, F**

**Time: 12:30-13:20**

**Room: on-line (ZOOM)**

Join Zoom Meeting

<https://uvic.zoom.us/j/94594604758?pwd=N2NrUjlYNHRyVzhCQlVzMlBTSXVTQT09>

**Office Hours (Personal Meeting Room)**

Join Zoom Meeting

<https://uvic.zoom.us/j/4695576594?pwd=Z0VxbTk4WmF1TEFyZHZlZnRzUT09>

Meeting ID: 469 557 6594

Password: 105221

**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**

1. MID-TERM EXAM 1: (25 pts)
2. MID-TERM EXAM 2: (30 pts)
3. FINAL EXAM: (45 pts)
4. Assignments: Bonus for final marks (1-3%)

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. 15<sup>th</sup> 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 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).**

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**Lectures schedule (tentative)**

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