

BIOLOGY 459 (CRN 10437)
HUMAN MICROBIAL DISEASES:
MOLECULES TO COMMUNITIES
September – December 2021
COURSE OUTLINE

LECTURER:

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Lectures: Tu, Wed, Fri 12:30-13:20

Room: ECS 116

LEARNING OUTCOMES

1. Understand the interaction between microorganisms and humans as hosts at various levels of complexity: individual, population, and community.
2. Identify different methods of control of microbial diseases such as antimicrobial drugs and vaccines.
3. Describe some of the most common microbial diseases in BC, Canada, North America and the world.
4. Develop ability to critically read primary literature and synthesize findings to prepare case reports.

COURSE DESCRIPTION.

An introduction to human infectious diseases and the biology and ecology of pathogenic bacteria and viruses. Basic principles of epidemiology of infectious diseases. Methods of control: antibiotics, antivirals and vaccines. Classification, pathogenicity, molecular diagnostic, epidemiology of various types of human infectious diseases (respiratory, digestive, etc.).

EVALUATION

Examination will be on Brightspace

1. MID-TERM EXAM 1: (25 pts)
2. MID-TERM EXAM 2: (30 pts)
3. FINAL EXAM: (45 pts)
4. BONUS (up to 5 pts): Some example from the past

- 1) Reading of articles and answer sheet
- 2) Critical review of a peer-reviewed research article in epidemiology of infectious diseases. 2-page report and a 5-slide Powerpoint presentation. (5 pts)
- 2) Case Study Report (3 pages)

Grading scheme: A⁺ (90%-100%), A (85-89.5%), A⁻ (80-84.5%), B⁺ (77-79.5%), B (73-76.5%), B⁻ (70-72.5%), C⁺ (65-69.5%), C (60-64.5%), D (50-59.5%), F (<50%)

TEXTBOOKS

Bramadat, P., M. Guay, J. Bettinger, R. Roy (Eds). 2017. Public Health in the Age of Anxiety. Religious and Cultural Roots of Vaccination Hesitancy in Canada. University of Toronto Press, Toronto. (PHAA in Lectures schedule)

Madigan, M.T., J.M. Martinko, D.A. Stahl, D.P. Clark. 2012. Brock Biology of Microorganisms. 13th Ed. Pearson/Benjamin Cummings, San Francisco, CA, USA.

Selected Articles

Coursepack is now available on-line through Library. List of various articles to be discussed and read in class.

Additional References

Tortora, G.J., B.R. Funke, C.L. Case. 2013. Microbiology: an Introduction. 11th Ed. Pearson, Boston.

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

Mayer, K.H. and H.F. Pizer. 2008. The Social Ecology of Infectious Diseases. Academic Press, Amsterdam, The Netherlands.

Riley, L. 2004. Molecular Epidemiology of Infectious Diseases. ASM Press, Washington, D.C.

Carrington, M. and A.R. Hoelzel (Eds.). 2001. Molecular Epidemiology. Oxford University Press, Oxford, U.K.

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

Schulte, P.A. and F.P. Perera (Eds.). 1993. Molecular Epidemiology. Principles and

Practices. Academic Press, San Diego, CA.

NO CLASSES ON READING BREAK AND REMEMBRANCE DAY (NOV. 10 and 12)

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 DOCTOR'S NOTE.

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'wəḡən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ 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](#).*

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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.

Lectures schedule

Date	Lect.	Topic	Ref
Sept. 8	W 1	Course outline, evaluations, overview	
Sept. 10	F 2	Part I. Basic concepts of host-parasite relationships	
		1. Humans and the ecology of bacteria and viruses	
Sept. 14	Tu 3		
Sept. 15	W 4	2. Human diseases: some definitions	
Sept. 17	F 5	3. Some historical examples	
Sept. 21	Tu 6	4. Basic concepts in epidemiology	
Sept. 22	W 7		
Sept. 24	F 8		
Sept. 28	Tu 9	5. I Classification of infectious agents	
Sept. 29	W 10		
Oct. 1	F 11	5. II Classification of infectious agents: Bacteria	
<u>Oct. 5</u>	<u>Tu 12</u>	<u>MID-TERM EXAM 1 (25%)</u>	
Oct. 6	W 13		
Oct. 8	F 14	5. III Classification of infectious agents: Viruses	
Oct. 12	Tu 15		
Oct. 13	W 16	6. Molecular basis of infection	
Oct. 15	F 17	7. Disease control: Antimicrobials	
Oct. 19	Tu 18		
Oct. 20	W 19	8. Diseases control: Vaccines	
Oct. 22	F 20		
Oct. 26	Tu 21	9. Disorders of immune system	
Oct. 27	W 22	10. Epidemiologic trends in vaccine-preventable diseases	PHAA 8
Oct. 29	F 23	11. A portrait of vaccine hesitant Canadians	PHAA 6
Nov. 2	Tu 24	12. Learning from smallpox inoculation	PHAA 4
Nov. 3	W 25		
<u>Nov. 5</u>	<u>F 26</u>	<u>MID-TERM EXAM 2 (30%)</u>	
Nov. 9	Tu 27		
Nov. 10	W 28	READING BREAK (no lecture)	
Nov. 11	F 29	READING BREAK (no lecture)	
Nov. 12	Tu 30	13. Crises of trust and truth: religion and vaccine	PHAA 2
Nov. 13	W 31	14. Role of risk perception in vaccine hesitancy	PHAA 3
Nov. 15	F 32	15. Canada's vaccine safety system	PHAA 9
Nov. 19	Tu 33		
Nov. 20	W 34	16. Diseases of the respiratory system	
Nov. 22	F 35	17. Diseases of the digestive system	
Nov. 26	Tu 36	18. Diseases of the urinary and reproductive system	
Nov. 27	W 37	19. Diseases of the skin and eye	
Nov. 29	F 38	20. Diseases of the nervous system	
Dec. 3	Tu 39	21. Diseases of the cardiovascular system	
Dec. 4	W 40		
Dec.		Final Examination	