

BIOLOGY 459 (CRN 10406)
HUMAN MICROBIAL DISEASES:
MOLECULES TO COMMUNITIES
September – December 2024
COURSE OUTLINE

LECTURER:

RÉAL ROY, Ph.D.

Office: Cun048a

Tel: 472-5071

email: realroy@uvic.ca

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

Room: ECS 116

LEARNING OUTCOMES

1. Understand the interaction between microorganisms as pathogens and humans as hosts at various levels of complexity: individual, population, and community.
2. Use basic concepts in epidemiology and molecular biology as it applies to infectious diseases.
3. Describe some of the most common microbial diseases in BC, Canada, North America and the world.
4. Identify different methods of control of microbial diseases such as antimicrobial drugs and vaccines.
5. Develop ability to critically read primary literature and synthesize findings.

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

Required

1. MID-TERM EXAM 1: September 27th CLE A102 12:30-1:20 (30 pts)
2. MID-TERM EXAM 2: November 8th CLE A 102 12:30-1:20 (30 pts)
3. FINAL EXAM: (40 pts): TBA

Examination will be on Brightspace in a designated room at UVic.

Students missing the midterm for illness need to notify me by email prior to the examination. If possible, a remedial examination will be scheduled as soon as possible after the midterm.

Facultative

4. BONUS (up to 5% of final mark). Some example from the past:

- 1) Reading of articles and answer sheet to be submitted
- 2) Case Study Report (3 pages)
- 3) Attendance of guest lecture

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.

IMPORTANT: assignments must be submitted at the time specified to be counted as bonus marks.

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

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.

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)

Selected Articles (Course Reserve on Brightspace)

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.

ATTENDANCE

Attendance to lecture is expected (attendance sheet will be circulated from time to time to record a sample of attendance).

Attendance to evaluations (midterms and final examination) is also recorded and required for marking of evaluation.

LECTURES

This course is delivered in a face-to-face format. Zoom lectures may be done if for some reason (illness) I cannot come to campus to give the lecture.

Lectures are Powerpoint presentations available on Brightspace if students cannot attend for sickness.

NO CLASSES ON READING BREAK AND REMEMBRANCE DAY (NOV. 14 and 15)

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^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.

Lectures schedule (Tentative)

Date		Lecture	Topics
Sept. 4	W	1	Course outline/Introduction <i>Assignment 1: A new tuberculosis vaccine</i>
Sept. 6	F	2	Introduction/ <i>Assignment 2: The next pandemic?</i>
Sept. 10	Tu	3	1. Basic concepts in epidemiology
Sept. 11	W	4	<i>Read: Lin et al. 2000. Avian-to-human transmission of H9N2 subtype of influenza A virus</i>
Sept. 13	F	5	
Sept. 17	Tu	6	<i>Discuss: Lin et al. 2000. Avian-to-human transmission of H9N2 subtype of influenza A virus in Hong Kong</i>
Sept. 18	W	7	
Sept. 20	F	8	
Sept. 24	Tu	9	
Sept. 25	W	10	2. Human diseases: definitions
Sept. 27	F	11	MID-TERM EXAM 1 CLE A 102 12:15-1:20 (30 pts)
Oct. 1	Tu	12	3. Ecology of bacteria and viruses
Oct. 2	W	13	
Oct. 4	F	14	<i>Assignment 3: Guiyoule et al. Plague in Madagascar</i>
Oct. 8	Tu	15	4. Some historical examples of human epidemics
Oct. 9	W	16	
Oct. 11	F	17	<i>Discuss : Guiyoule et al. Plague in Madagascar</i>
Oct. 15	Tu	18	5. Classification I: General
Oct. 16	W	19	5. Classification II: Bacteria
Oct. 18	F	20	<i>Raed: Hernandez-Garduno et al. Tuberculosis in Greater Vancouver</i>
Oct. 22	Tu	21	
Oct. 23	W	22	5. Classification III: Viruses
Oct. 25	F	23	<i>Discuss: Hernandez-Garduno et al. Tuberculosis in Greater Vancouver</i>
Oct. 29	Tu	24	
Oct. 30	W	25	6. Molecular basis of infection
Nov. 1	F	26	7. Disease control: Antimicrobials
Nov. 5	Tu	27	
Nov. 6	W	28	<i>Read: Reingold, A.L. 1998. Outbreak investigations.</i>
Nov. 8	F	29	MID-TERM EXAM 2 CLE A 102 12:15-1:20 (30 pts)
Nov. 12	Tu	30	READING BREAK (no lecture)
Nov. 13	W	31	READING BREAK (no lecture)
Nov. 15	F	32	<i>Discuss: Reingold, A.L. 1998. Outbreak Investigations.</i>
Nov. 19	Tu	33	8. Disease control: Vaccination
Nov. 20	W	34	<i>Assignment 4: Case Study Report</i>
Nov. 22	F	35	9. Canada's vaccine safety system
Nov. 26	Tu	36	10. Epidemiology of vaccine-preventable diseases (synthesis)
Nov. 27	W	37	
Nov. 29	F	38	
Dec. 3	Tu	39	
Dec. 4	W	40	
			FINAL EXAM TBA

