CAMOSUN COLLEGE
School of Arts & Science
Department of Biology

BIOL-202
Microbiology 1
Fall 2018

COURSE OUTLINE

The course description is online @ http://camosun.ca/learn/calendar/current/web/biol.html

Ω *Please note: This outline will not be kept indefinitely. It is recommended students keep this outline for their records, especially to assist in transfer credit to post-secondary institutions.*

1. Instructor Information

(a) Instructor	Dominic Bergeron, PhD		
(b) Office hours	Tuesday: 9:30 – 11:30; Wednesday 9:30 – 11:30 & 12:30 – 13:30		
(c) Location	F 248 D		
(d) Phone	250-370-3432	**Alternative:**	
(e) E-mail	BergeronD@Camosun.ca		
(f) Website	https://www.youtube.com/user/MachineBiological		

2. Intended Learning Outcomes

Upon completion of this course the student will be able to:

1. Demonstrate detailed knowledge of prokaryotic cell structure, function and physiology. Compare and contrast, at the molecular level, the distinguishing characteristics of the Gram-positive and Gram-negative Bacteria and the Archaea.
2. Explain the nature of prokaryotic cellular and population growth, and describe the ways growth can be measured. Explain the mechanisms of nutrient acquisition and categorize the nutritional patterns of microorganisms. Discuss the influence of environmental factors on microbial growth.
3. Compare the effectiveness and identify the appropriate use of physical and chemical agents to achieve decontamination, disinfect ion and sterilization. Explain the molecular mechanism and spectrum of activity of selected antibacterial and antiviral drugs. Discuss the mechanisms of drug resistance. Outline the induction and mechanisms of programmed cell death.
4. Discuss the diversity of metabolic strategies employed by bacteria for energy conversion. Compare and contrast heterotrophic ATP generation through the processes of aerobic respiration, anaerobic respiration and fermentation. Explain the events associated with lithotrophic ATP generation.
5. Describe the characteristics and molecular structure of enveloped and non-enveloped viruses. Describe the replication cycle and quantification of viruses. Compare and contrast, at the molecular level, the replication strategies of DNA and RNA containing animal viruses. Differentiate between the types of virus infectious cycle.
6. Conduct experiments to demonstrate techniques in microbial staining, culturing, biochemical characterization and enumeration. Collect and assess data; present written laboratory reports.

3. Required Materials

(a) Textbook: Microbiology Openstax Textbook, for FREE download go to: https://openstax.org/details/books/microbiology

(b) Lab Manual: The lab manual will be available on BIOL 202 D2L website, **there are no copies to purchase at the bookstore.**

(c) Lab coat: ABSOLUTELY required for ALL lab work. Lab coats will be stored in the microbiology lab for the duration of the semester and will not be available for use in other courses.

4. Course Content and Schedule (Subject to change depending on circumstances)

Wk	Date	Lecture Topic	Lab / Exam
1	Sep. 4 - 7	*Introduction to Microbiology* *Introduction to Prokaryotic & Eukaryotic Cells*	Lab Intro – Safety and other things
2	Sep. 10 – 15	*Prokaryotic Cell Structure and Function*	Lab 1
3	Sep. 17 – 21	*Prokaryotic Cell Structure and Function*	Lab 2
4	Sep. 24 – 28	*Prokaryotic Cell Structure and Function*	Lab 3
5	Oct. 1- Oct. 5 **Oct. 5**	*Bacterial Growth and Reproduction*	Lab 4 **Midterm #1**
6	Oct. 8 - 12	*Bacterial Growth and Reproduction*	Lab 5 - Part I*
7	Oct. 15 - 19	*Control of Microbial Growth*	Lab 5 - Part II* Lab 6
8	Oct. 22 – 26	*Control of Microbial Growth*	Lab 7 Lab 8 - Part I
9	Oct. 29 – Nov 2	*Introduction to Viruses* *Animal Viruses*	Lab 8 - Part II*
10	Nov. 5 – 9 **Nov. 9**	*Animal Viruses*	Lab 8 - Part II* Lab 9 **Midterm #2**
11	Nov. 12 – 16	*Animal Viruses* *Microbial Metabolism: ATP Generation*	Lab 10
12	Nov. 19 – 23	*Microbial Metabolism: ATP Generation*	Lab 10 observations

13	Nov. 25 – 30	*Microbial Metabolism: ATP Generation*	NO LAB
14	Dec. 3 – 7	*Microbial Metabolism: ATP Generation*	NO LAB

5. Basis of Student Assessment (Weighting)

(a) Assignments **(10% of final mark)**

- Microbiology – Historical Perspective (5%)
- Hurdle Technology Project (5%)

(b) Exams **(80% of final mark)**

- Midterm 1 (Oct 5) (15%)
- Midterm 2 (Nov 9) (15%)
- Final exam (TBD) (30%)
- Take Home Lab exam (TBD) (20%)

(c) Lab reports **(10% of final mark)**

- Lab #5 (5%)
- Lab #8 (5%)

Missed Lecture Exams (Midterms and Final exam)

Without exception, all lecture exams must be written at the scheduled times. However, it is understood that emergency circumstances occur (e.g. illness or emergency in the immediate family); for such circumstances accommodation may be offered at the discretion of the instructor, provided the student:

(a) notifies the instructor in advance of the exam (**not after**), and
(b) provides documented evidence of the circumstance (i.e. medical certificate).

6. Grading System

[X] Standard Grading System (GPA)

[ ] Competency Based Grading System

7. Recommended Materials to Assist Students to Succeed Throughout the Course

Please visit my YouTube page. I have several videos directly linked to lab material.
https://www.youtube.com/user/MachineBiological

STUDENT CONDUCT POLICY

There is a Student Conduct Policy **which includes plagiarism**.
It is the student's responsibility to become familiar with the content of this policy.
The policy is available in each School Administration Office, at Student Services, and the College web site in the Policy Section.

Concerning Academic Honesty, I will assume all students have read and understood the following documents. If you are unsure, confused or have difficulty understanding the information please ask!

1) http://camosun.ca/learn/school/arts-science/images/Arts%20and%20Science%20Academic%20Honesty%20Guidelines.pdf

2) http://camosun.ca/learn/school/arts-science/images/Arts%20and%20Science%20Academic%20Infraction%20Report.pdf

8. College Supports, Services and Policies

Immediate, Urgent, or Emergency Support
If you or someone you know requires immediate, urgent, or emergency support (e.g. illness, injury, thoughts of suicide, sexual assault, etc.), **SEEK HELP**. Resource contacts @ http://camosun.ca/about/mental-health/emergency.html or http://camosun.ca/services/sexual-violence/get-support.html#urgent

College Services
Camosun offers a variety of health and academic support services, including counselling, dental, disability resource centre, help centre, learning skills, sexual violence support & education, library, and writing centre. For more information on each of these services, visit the **STUDENT SERVICES** link on the College website at http://camosun.ca/

College Policies
Camosun strives to provide clear, transparent, and easily accessible policies that exemplify the college's commitment to life-changing learning. It is the student's responsibility to become familiar with the content of College policies. Policies are available on the College website at http://camosun.ca/about/policies/. Education and academic policies include, but are not limited to, Academic Progress, Admission, Course Withdrawals, Standards for Awarding Credentials, Involuntary Health and Safety Leave of Absence, Prior Learning Assessment, Medical/Compassionate Withdrawal, Sexual Violence and Misconduct, Student Ancillary Fees, Student Appeals, Student Conduct, and Student Penalties and Fines.

A. GRADING SYSTEMS *http://camosun.ca/about/policies/index.html*

The following two grading systems are used at Camosun College:

1. **Standard Grading System (GPA)**

Percentage	Grade	Description	Grade Point Equivalency
90-100	A+		9
85-89	A		8
80-84	A-		7
77-79	B+		6
73-76	B		5
70-72	B-		4
65-69	C+		3
60-64	C		2
50-59	D		1
0-49	F	Minimum level has not been achieved.	0

2. Competency Based Grading System (Non GPA)

This grading system is based on satisfactory acquisition of defined skills or successful completion of the course learning outcomes

Grade	Description
COM	The student has met the goals, criteria, or competencies established for this course, practicum or field placement.
DST	The student has met and exceeded, above and beyond expectation, the goals, criteria, or competencies established for this course, practicum or field placement.
NC	The student has not met the goals, criteria or competencies established for this course, practicum or field placement.

B. Temporary Grades

Temporary grades are assigned for specific circumstances and will convert to a final grade according to the grading scheme being used in the course. See Grading Policy at http://camosun.ca/about/policies/index.html for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: A temporary grade assigned when the requirements of a course have not yet been completed due to hardship or extenuating circumstances, such as illness or death in the family.
IP	*In progress*: A temporary grade assigned for courses that are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
CW	*Compulsory Withdrawal*: A temporary grade assigned by a Dean when an instructor, after documenting the prescriptive strategies applied and consulting with peers, deems that a student is unsafe to self or others and must be removed from the lab, practicum, worksite, or field placement.

IMPORTANT Student Safety Information

NOTHING is more important to the instructor than students enjoying a safe class and lab environment. In addition, we will use in our labs organisms capable of causing infection. While the likelihood of laboratory acquired infection is very low and the organisms are easily eliminated with antibiotic therapy, Camosun is nevertheless mandated by federal and provincial legislation and regulations to conform to strict safety standards. These will be outlined fully at your first lab meeting and throughout the semester as required.