



**School of Arts & Science  
BIOLOGY DEPARTMENT**

**BIOL 202-001  
Microbiology 1  
FALL 2012**

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## **COURSE OUTLINE**

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

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### **1. Instructor Information**

Instructor:	Dominic Bergeron, PhD		
Drop-In	Tuesdays	2:30 PM – 3:20 PM	
Office Hours:	Fridays	9:30 AM – 12:20 PM; 3:30 PM – 4:20 PM	
Location:	F342B		
Phone:	250-370-3465	Alternative Phone:	
Email:	BergeronD@camosun.ca		
Website:	<a href="http://online.camosun.ca/">http://online.camosun.ca/</a> (D2L entry site)		

**IMPORTANT NOTE:** I understand that my scheduled drop-in office hour times will not fit into everyone's class schedules. ***This should not deter you from trying to visit me in my office!*** My schedule will be posted on my office door and on the course D2L website: I can be available at almost any time that I'm not already in class or lab. Simply arrange an appointment by phone or e-mail and I'll be very pleased to meet with you at a mutually convenient time.

### **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, disinfection 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:** - OPTIONAL BUT STRONGLY RECOMMENDED –  
Prescott`s Microbiology, 8<sup>th</sup> Edition, McGraw-Hill
- (b) **Laboratory Manual:** Required  
Biology Department, *Biol 202/203 Laboratory Manual*. Camosun College, Victoria BC
- (c) **Laboratory Coat:** Required  
Disposable, water repellent lab coat for use in the microbiology lab only.

### 4. Course Content and Schedule

#### Lecture

Tues	1:30 – 2:20	F202
Fri	1:30 – 3:30	F202

#### Lab

Section 001A	Wed. 1:30 – 4:20	F222
Section 001B	Wed. 4:30 – 7:20	F222

**NOTE:** The schedule, which follows, is an attempt to outline the weekly activities of the class. It is subject to change or modification as the need arises.

Week	Date	Lecture Topic	Laboratory Exercise
1	Sep. 4 - 7	Introduction to Microbiology Introduction to Prokaryotic & Eukaryotic Cells	NO LAB
2	Sep. 10 – 14	Prokaryotic Cell Structure and Function	Start Environmental Isolate Lab 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- 5 Oct. 5	Bacterial Growth and Reproduction	Lab 4 <b>Midterm #1</b>
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 <b>Nov. 9</b>	Animal Viruses	Lab 8 - Part II* Lab 9 <b>Midterm #2</b>
11	Nov. 12 – 16	Animal Viruses Microbial Metabolism: ATP Generation	Lab 10
12	Nov. 19 – 23	Microbial Metabolism: ATP Generation	Complete Environmental Isolate*
13	Nov. 26 – 30	Microbial Metabolism: ATP Generation	NO LAB
14	Dec. 3 – 7 <b>Dec. 5</b>	Microbial Metabolism: ATP Generation	<b>Lab Exam</b>

\* Lab Report

### 5. Basis of Student Assessment (Weighting)

Midterm #1	12.5%
Midterm #2	12.5%
Final Lecture Exam	25%
Projects	20%
1. <i>Microbiome project</i>	10%
2. <i>Virus project</i>	5%
3. <i>Hurdle Technology project</i>	5%
Lab reports	15%
1. <i>Lab #5</i>	3.5%
2. <i>Lab #8</i>	4.0%
3. <i>EI Lab</i>	7.5%
Lab exam	15%

**IMPORTANT**: Lab attendance is **MANDATORY**. During the semester you will be allowed to miss a total of 2 hours without penalty. If more than 2 hours are missed, 1% will be deducted **for each hour** missed.

## 6. Grading System

### 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	Minimum level of achievement for which credit is granted; a course with a "D" grade cannot be used as a prerequisite.	1
0-49	F	Minimum level has not been achieved.	0

### 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 E-1.5 at [camosun.ca](http://camosun.ca) for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	<i>Incomplete:</i> 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	<i>In progress:</i> A temporary grade assigned for courses that, due to design may require a further enrollment in the same course. No more than two IP grades will be assigned for the same course. (For these courses a final grade will be assigned to either the 3 <sup>rd</sup> course attempt or at the point of course completion.)
CW	<i>Compulsory Withdrawal:</i> 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.

## 7. Recommended Materials or Services to Assist Students to Succeed Throughout the Course

### LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College calendar, at Student Services or the College web site at [camosun.ca](http://camosun.ca).

## 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 on the College web site in the Policy Section.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED