



**CAMOSUN COLLEGE**  
**School of Arts & Science**  
**Department of Biology**

**BIOL-203-001A/B**  
**Microbiology 2**  
**Winter 2019**

## **COURSE OUTLINE**

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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.

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### **1. Instructor Information**

<b>(a) Instructor</b>	Dominic Bergeron, PhD
<b>(b) Office hours</b>	<b>Mon:</b> 9:30 – 12:30; <b>Tues:</b> 9:30-11:20
<b>(c) Location</b>	F 248 D
<b>(d) Phone</b>	(250) 370-3432
<b>(e) E-mail</b>	BergeronD@camosun.ca
<b>(f) Website</b>	<a href="https://www.youtube.com/user/MachineBiological">https://www.youtube.com/user/MachineBiological</a>

### **2. Intended Learning Outcomes**

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

1. Describe the process of prokaryotic DNA replication. Explain the mechanisms of gene expression and regulation. Describe the principles of mutation: classification, induction, selection and repair. Compare and contrast the mechanisms of bacterial DNA acquisition and recombination.
2. Demonstrate a detailed knowledge of current techniques and applications of recombinant DNA technology. Outline the steps involved in the preparation of recombinant DNA and the expression and detection of cloned DNA. Describe the uses of bacterial and viral cloning vectors.
3. Explain the principles of microbial genomics. Outline the steps involved in whole genome sequencing. Discuss the principles of bioinformatics and functional genomics.
4. Describe the relationship between normal microbiota and the human host. Discuss the role of physical and chemical barriers in non-specific host resistance. Explain the activation and consequences of inflammation, complement, phagocytosis and fever responses.
5. Discuss the role of adaptive immunity in host resistance. Identify the function of cytokines, interleukins and interferons in the immune response. Describe the role of each of the T cell subsets in cell-mediated immunity. Describe the role of B cells in humoral immunity. Explain the functions of the five classes of antibody and describe their structural and chemical characteristics.
6. Classify host parasite relationships. Explain the role of invasiveness, adherence factors and toxigenicity in the pathogenesis of bacterial diseases. Discuss the pathogenic properties of viruses. Discuss the principles of epidemiology of infectious diseases.
7. Conduct experiments to demonstrate techniques in clinical microbiology, recombinant DNA technology, bacterial genetics, and food and water analysis. Collect and assess data; present written laboratory reports.

### 3. Required Materials

PowerPoint presentations, articles, online resources etc, will be posted on D2L

### 4. Course Content and Schedule (Subject to change)

Week	Day	Date	Lecture Topic	Lab Activity
<b>1</b>	Tue	8 Jan	Introduction Microbial Pathogenicity	Enterobacteriaceae Part 1
	Wed	9		
	Thurs	10		
<b>2</b>	Tue	15	Microbial Pathogenicity	Gram-Positive Cocci Part 1
	Wed	16		Enterobacteriaceae Part 2
	Thurs	17		
<b>3</b>	Tue	22	Microbial Pathogenicity <b>Teaching Project #1</b>	Gram-Positive Cocci Part 2
	Wed	23		
	Thurs	24		
<b>4</b>	Tue	29	Immunology	Unknown Bacteria Part 1
	Wed	30		
	Thurs	31		
<b>5</b>	Tue	4 Feb	Immunology	Unknown Bacteria Part 2
	Wed	5		
	Thurs	6		
<b>6</b>	Tue	12	Immunology <b>Teaching Project #2</b>	Antibody Titering and Blood Group
	Wed	13		
	Thurs	14		
<b>7</b>	Tue	19	<b>READING BREAK – NO LECTURES, NO LAB</b>	
	Wed	20		
	Thurs	21		
<b>8</b>	Tue	26	Microbial molecular biology	Food / Milk Analysis Part 1
	Wed	27		Unknown Bacteria Part 3
	Thurs	28		
<b>9</b>	Tue	5 Mar	Microbial molecular biology	Food / Milk Analysis Part 2
	Wed	6		Unknown Bacteria Part 4
	Thurs	7		
<b>10</b>	Tue	12	Microbial molecular biology <b>Teaching Project #3</b>	Water Coliform Analysis Part 1
	Wed	13		
	Thurs	14		
<b>11</b>	Tue	19	Epidemiology	Lactose Operon – Lab Overview
	Wed	20		Water Coliform Analysis Part 2
	Thurs	21		
<b>12</b>	Tue	26	Epidemiology	Lactose Operon Part 1
	Wed	27		Water Coliform Analysis Part 3
	Thurs	28		
<b>13</b>	Tue	2 Apr	<b>Teaching Project #4</b> Bacterial Interactions & Microbiome	Lactose Operon Part 2
	Wed	3		Water Coliform Analysis Part 4
	Thurs	4		
<b>14</b>	Tue	9	Bacterial Interactions & Microbiome	
	Wed	10		
	Thurs	11		

## 5. Basis of Student Assessment (Weighting)

Teaching projects	30% (4 x 7.5%)
Pre labs	5%
Lab reports	15%
• Identification unknown bacteria (7.5%)	
• LacZ induction (7.5%)	
Midterm evaluation	20%
Final exam	30%

**IMPORTANT NOTICE:** Many assignments, lab exams, lab reports, etc. are **REQUIRED** to be uploaded to D2L's **DROPBOX**. This **DROPBOX** is set to open and to close at a specific time (Date). A penalty will be applied for any documents uploaded past the limit. If you run into a problem while uploading send an email ASAP and I will look into it. Do not let me know after the fact, be pro-active! **THEY NEED TO BE IN PDF FORMAT!**

Time over preset limit	Penalty
15 minutes – 60 minutes	15%
61 minutes – 120 minutes	30%
120 minutes – 1 day (24 hours)	50%
Over 24 hrs	The item will not be marked and the result will be "0"

## 6. Grading System

- Standard Grading System (GPA)
- Competency Based Grading System

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

This course is based on the most recent data published in scientific journals. Links to these resources will be provided in a special D2L section: "Academic resources". Students are expected to keep on top of newly added material. Students are NOT required or expected to buy a specific textbook. However, if desired, I will be happy to help you select one based on your special interests and needs. NOTE: As for all specialized commercially published materials, they can be pricey!

## 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	<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 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	<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.