



CAMOSUN COLLEGE
School of Arts & Science
Department of Biology

BIOL-203-001
Microbiology 2
Winter 2020

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	Tuesdays 2:00 – 3:00; Thursdays 10:00 – 11:00; Fridays 10:00 – 12:00 AND by appointment
(c) Location	F 248 D
(d) Phone	250-370-3432
(e) E-mail	BergeronD@Camosun.ca
(f) Website	

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

Access to D2L

4. Course Content and Schedule

Week	Day	Date	Lecture Topic	Lab Activity
1	Tue	7 Jan	INTRO	<ul style="list-style-type: none"> Enterobacteriaceae Part 1
	Wed	8	LAB	
	Thurs	9	Microbial Pathogenicity	
2	Tue	14	Microbial Pathogenicity	<ul style="list-style-type: none"> Gram-Positive Cocci Part 1 Enterobacteriaceae Part 2
	Wed	15	LAB	
	Thurs	16	Microbial Pathogenicity	
3	Tue	21	Microbial Pathogenicity	<ul style="list-style-type: none"> Gram-Positive Cocci Part 2
	Wed	22	LAB	
	Thurs	23*	Teaching Project #1	
4	Tue	28	Immunology	<ul style="list-style-type: none"> Unknown Bacteria Part 1
	Wed	29	LAB	
	Thurs	30	Immunology	
5	Tue	4 Feb	Immunology	<ul style="list-style-type: none"> Unknown Bacteria Part 2
	Wed	5	LAB	
	Thurs	6	Immunology	
6	Tue	11	Immunology	<ul style="list-style-type: none"> Antibody Titering & Blood Group
	Wed	12	LAB	
	Thurs	13*	Teaching Project #2	
7	Tue	18	READING BREAK – NO LECTURES / NO LABS	
	Wed	19		
	Thurs	20		
8	Tue	25	Molecular Biology	<ul style="list-style-type: none"> Food / Milk Analysis Part 1 Unknown Bacteria Part 3
	Wed	26	LAB	
	Thurs	27	Molecular Biology	
9	Tue	3 Mar	Molecular Biology	<ul style="list-style-type: none"> Food / Milk Analysis Part 2 Unknown Bacteria Part 4
	Wed	4	LAB	
	Thurs	5	Molecular Biology	
10	Tue	10	Molecular Biology	<ul style="list-style-type: none"> Water Coliform Analysis Part 1
	Wed	11	LAB	
	Thurs	12*	Teaching Project #3	
11	Tue	17	Epidemiology	<ul style="list-style-type: none"> Water Coliform Analysis Part 2 Lac Operon – Lab Overview
	Wed	18	LAB	
	Thurs	19	Epidemiology	
12	Tue	24	Epidemiology	<ul style="list-style-type: none"> Lac Operon Part 1 Water Coliform Analysis Part 3
	Wed	25	LAB	
	Thurs	26*	Teaching Project #4	
13	Tue	31	Microbiome	<ul style="list-style-type: none"> Lac Operon Part 2 Water Coliform Analysis Part 4
	Wed	1 Apr	LAB	
	Thurs	2	Microbiome	
14	Tue	7	Microbiome	<ul style="list-style-type: none"> Lac Operon Part 3 (if needed)
	Wed	8	LAB	
	Thurs	9	Microbiome	

5. Basis of Student Assessment (Weighting)

- | | |
|---------------------------------------|----------------|
| a. Teaching Projects | 30% (4 x 7.5%) |
| b. Pre – Labs | 3% |
| c. Lab Reports | |
| i. Identification of unknown bacteria | 8% |
| ii. LacZ induction studies | 9% |
| d. Midterm Evaluation | 20% |
| e. Final Exam | 30% |

Important Notice: Many Assignments, lab exams, lab reports, etc. are REQUIRED to be uploaded to D2L's "Assignment" tool. This D2L tool is set to open and close at a specific time and date. Although you will be permitted to upload your work after the due date and time, a penalty will be applied if the document(s) is (are) uploaded past the prescribed date and time. If you run into a problem while uploading, IMMEDIATELY send me an email and I will look into it ASAP. Do not let me know after the fact. ALL DOCUMENTS ARE TO BE UPLOADED IN PDF FORMAT.

Time over preset limit	Penalty
15 – 60 minutes	15%
61 – 120 minutes	30%
121 minutes - 24 hours	50%
Over 24 hrs	Item will not be marked

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 specific resources will be provided in D2L.

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.