



**School of Arts & Science  
BIOLOGY DEPARTMENT**

**BIOL 203-001 A/B  
Microbiology 2  
Winter 2009**

## COURSE OUTLINE

**The Approved Course Description is available on the web @ your D2L Biol 203 website**

✦ *Please note: this outline will be electronically stored for five (5) years only.  
It is strongly recommended students keep this outline for your records.*

### 1. Instructor Information

(a)	Instructor:	Dominic Bergeron, Ph.D.		
(b)	Office Hours:	Tuesdays & Fridays 10:00 – 12:30		
(c)	Location:	F 252 B Lansdowne Campus		
(d)	Phone:	250-370-3465	Alternative Phone:	
(e)	Email:	Bergerond@camosun.bc.ca		
(f)	Website:			

### 2. Intended Learning Outcomes

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

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

- (a) Textbook – Optional but highly recommended  
Prescott, Harley and Klein. Microbiology 7<sup>th</sup> edition (McGraw-Hill)
- (b) Lab Manual – Biology Department, 2008-2009 Biology 202/203 Laboratory Manual. Camosun College

### 4. Course Content and Schedule

Week	Date	Lecture topic	Text chapter	Lab exercise
1	Jan 5 - 9	Immunology: Non-Specific / Innate Immunity	31	Media prep
2	Jan 12 - 16	Immunology: Non-Specific / Innate Immunity	31	Lab 11 Enterobacteria
3	Jan 19 - 23	Immunology: Specific / Adaptative Immunity	32	Lab 12 Cocci
4	Jan 26 - 30	Immunology: Specific / Adaptative Immunity	32	Lab 13 Identification Unknown Bacteria
5	Feb 2 - 6	Pathogenicity of Microorganisms	33	Lab 13 Identification Unknown Bacteria
6	Feb 9 - 13	Pathogenicity of Microorganisms	33 38	Lab 17 A&B Detection of coliforms
7	Feb 16 - 20	Epidemiology of Infectious Diseases	36	Lab 17 C&D Detection of coliforms
8	Feb 23 - 27	Microbial Molecular Biology & Genetics, DNA Replication, Expression, Regulation	11-12	Lab 19 Analysis of food and milk
9	Mar 2 - 6	Microbial Molecular Biology & Genetics, DNA Replication, Expression, Regulation	11-12	Lab 18 Diagnostic immunology
10	Mar 9 - 13	Microbial Molecular Biology & Genetics, DNA Replication, Expression, Regulation	11-12	New lab Lactose operon
11	Mar 16 - 20	Microbial Molecular Biology & Genetics, Mutation, Mutagenesis, Recombination	13	Lactose operon
12	Mar 23 - 27	Microbial Molecular Biology & Genetics, Mechanisms of DNA Acquisition	13	No lab Project evaluation
13	Mar 30 – Apr 3	Microbial Molecular Biology & Genetics, Recombinant DNA Technology	14	No lab Project evaluation
14	Apr 6 - 10	Microbial Molecular Biology & Genetics, Recombinant DNA Technology	14	Lab exam

## 5. Basis of Student Assessment (Weighting)

### LECTURE COMPONENT

(a) Assignments – 10% Final mark

- Selected topics in Immunology/Infectious diseases

(b) Quizzes – 10% Final mark

- Quiz #1: Tuesday Jan 26<sup>th</sup> (5%) – Immunology
- Quiz #2: Tuesday March 17<sup>th</sup> (5%) – Molecular Biology

(c) Exams – 50% Final Mark

- Midterm: Thursday Feb 26<sup>th</sup> (25%)
- Final Exam: As Scheduled (25%)

### LABORATORY COMPONENT

(d) Lab exams – 18% Final mark

- Exam #1: Wednesday Feb 25<sup>th</sup> (8%)
  - Material covered: Labs 11, 12, and 13
- Exam #2: Wednesday Apr 8<sup>th</sup> (10%)
  - Material covered: Labs 17, 18, 19 and lactose operon

(e) Lab Reports – 12% Final mark

- Lab 13 (4%)
- Lab 18 (4%)
- Lactose operon lab (4%)

## 6. Grading System

*(No changes are to be made to this section, unless the Approved Course Description has been forwarded through EDCO for approval.)*

### 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. <i>(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.)</i>
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