



**School of Arts & Science  
BIOLOGY DEPARTMENT**

**BIOL 203-001 B/D  
Microbiology 2  
Winter 2008**

## **COURSE OUTLINE**

The Approved Course Description is available on the web @ \_\_\_\_\_

Ω 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:	Mon-Fri 10h30 – 11h30		
(c)	Location:	F 252 B		
(d)	Phone:	3465	Alternative Phone:	
(e)	Email:	bergerond@camosun.bc.ca		
(f)	Website:	D2L		

### **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.

- 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

**Reference Textbook:** Optional; Highly Recommended  
Prescott, L.M. 2006 *Microbiology*, 6<sup>th</sup> Edition McGraw-Hill

**Laboratory Manual:** Required  
Biology Department, 2007-2008 Biology 202 / 203 Laboratory Manual. Camosun College, Victoria BC

**Other:** Scientific articles will be discussed in class and available for downloading from D2L

### 4. Course Content and Schedule

(Can include: class hours, lab hours, out of class requirements and/or dates for quizzes, exams, lectures, labs, seminars, practicums, etc.)

#### Course schedule – Biol 203 – Winter 2008

Week	Date	Lecture topic	Text chapter	Laboratory exercise
1	Jan. 7-11	Microbial Molecular Biology & Genetics: DNA: Replication, Expression, Regulation	11 - 12	Media preparation
2	Jan. 14-18	Microbial Molecular Biology & Genetics: DNA: Replication, Expression, Regulation	11 - 12	<b>Lab 12</b> The Cocci
3	Jan. 21-25  <b>Jan. 24</b>	Microbial Molecular Biology & Genetics: DNA: Replication, Expression, Regulation <b>QUIZ # 1 (5%)</b>	11 - 12	<b>Lab 13</b> Identification of unknown bacteria
4	Jan. 28- Feb. 1	Microbial Molecular Biology & Genetics: Mutation & Mutagenesis, Recombination	11 - 13	<b>Lab 13</b> Identification of unknown bacteria
5	Feb. 4-8	Microbial Molecular Biology & Genetics: Mechanisms of DNA Acquisition	13	<b>Lab 19</b> Analysis of food and milk
6	Feb. 11-12  <b>Feb. 14-15</b>	Microbial Molecular Biology & Genetics: Recombinant DNA Technology <b>Reading break</b>	14	<b>Lab 19</b> <b>Lab 16</b> Conjugational Mapping <b>NO LAB FRIDAY</b>
7	Feb. 18-22	Microbial Molecular Biology & Genetics: Recombinant DNA Technology	14	<b>Lab Exam # 1</b> <b>Feb. 20</b> <b>NO LAB FRIDAY</b>
8	Feb. 25-29  <b>Feb. 28</b>	Immunology: Non-Specific / Innate Immunity <b>Midterm Exam (25%)</b>	31	<b>Lab 14</b> DNA fingerprinting; PCR
9	Mar. 3-7	Immunology: Non-Specific / Innate Immunity	31	<b>Lab 15</b> Transformation; Cloning of PCR DNA

10	Mar. 10-14 <b>Mar. 10</b>	Immunology: Specific / Adaptive Immunity <b>Last day to withdraw</b>	32	<b>LAB 17 A&amp;B</b> Detection of coliforms
11	Mar. 17-21 <b>Mar. 21</b>	Immunology: Specific / Adaptive Immunity <b>Good Friday</b>	32	<b>LAB 17 C&amp;D</b> Detection of coliforms
12	Mar. 25-28 <b>Mar. 24</b> <b>Mar. 27</b>	Pathogenicity of Microorganisms <b>Easter Monday</b> <b>Quiz # 2 (5%)</b>	34	<b>Lab 18</b> Diagnostic Immunology
13	Mar. 31- Apr. 4	Pathogenicity of Microorganisms Epidemiology of Infectious Diseases	34 37	Review; Tutorial <b>No Lab Friday</b>
14	Apr. 7-11	Epidemiology of Infectious Diseases	37	<b>Lab Exam # 2</b> <b>Wed Apr. 9</b>

## 5. Basis of Student Assessment (Weighting)

(Should be linked directly to learning outcomes.)

### LECTURE COMPONENT (70% of final mark)

#### (a) Assignments – 10% of final mark

- Selected Topics in Molecular Microbiology (10%)

#### (b) Quizzes – 10% of final mark

- Quiz # 1: January 15<sup>th</sup> (5%)
- Quiz # 2: March 27<sup>th</sup> (5%)

#### (c) Exams – 50% of final mark

- Midterm Exam: February 28<sup>th</sup> (25%)
- Final Exam: As Scheduled (25%)

### LABORATORY COMPONENT (30% of final mark)

#### (d) Pre-Lab Quizzes - 3% of final mark

#### (e) Lab Reports – 12% of final mark

- Lab 13 (4%)
- Lab 15 (4%)
- Lab 18 (4%)

#### (f) Lab Exams – 15% of final mark

- Lab Exam # 1: Feb. 20<sup>th</sup> (5%)
  - Material Covered: Labs 12, 13 and 19
- Lab Exam # 2: Apr. 9<sup>th</sup> (10%)
  - Material Covered: Labs 14, 15, 16, 17 and 18

## 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
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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.

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ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED