CAMOSUN COLLEGE	**School of Arts & Science** **BIOLOGY DEPARTMENT** **BIOL 203** **Microbiology 2** **Winter 2015 (Jan−Apr)**

COURSE OUTLINE

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

Ω Please note: the College electronically stores this outline for five (5) years only.
It is **strongly recommended** you keep a copy of this outline with your academic records.
You will need this outline for any future application/s for transfer credit/s to other colleges/universities.

1. Instructor Information

(a)	Instructor:	Dr. Larry Anthony		
(b)	Drop-In Office Hours:	Tuesday 1:30 – 4:30	Thursday 1:30 – 4:30	All other times availability by appointment
(c)	Location:	E270		
(d)	Phone:	250-370-3459	Alternative Phone:	
(e)	Email:	anthonyl@camosun.bc.ca		
(f)	Website:	http://online.camosun.ca/ (D2L)		

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

(No changes are to be made to these Intended Learning Outcomes as approved by the Education Council of Camosun College.)

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

Text: Willey, Sherwood & Woolverton, Prescott's Microbiology 9th ed, McGraw-Hill

Please note: Prescott's 9th edition has undergone significant revisions, making earlier editions less useful.

Lab Manual: Biology 202 lab outlines will be posted on the Biology 202 D2L website several days prior to the lab times. You will be responsible for printing the outline (and any associated worksheet materials) and reading it before the lab session. You will also be responsible for following any pre-lab instructions that may be indicated in the lab. Knowledge of lab procedures and principles prior to the lab may be evaluated through pre-lab quizzes.

Lab Coat: Lab coats are required for laboratory work. For safety reasons they will be stored in a dedicated closet in the microbiology laboratory and will not be available for use in other courses.

Lecture Outlines: Lectures will be delivered in a PowerPoint format. PowerPoint slides will be made available on the Biology 202 D2L website. These may be used or printed at the student's discretion to help follow the lectures.

4. Course Content and Schedule

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

Class Schedule:

Lectures:	Tue	11:00 – 1220	F214
	Thu	11:00 – 1220	F214
Lab Section A:	Wed	1:30 – 4:30	F222
Lab Section B:	Wed	9:30 – 12:30	F222

Course Content: See Last Page

5. Basis of Student Assessment (Weighting)

(This section should be directly linked to the Intended Learning Outcomes.)

Lecture Midterm 1	15%
Lecture Midterm 2	20%
Lab Exam 1	12.5%
Lab Exam 2	12.5%
Lecture Final Exam	25%
Quizzes / Assignments / Labs	10%
Special Assignment Presentation	5%

Please note: It is possible that circumstances occur that can negatively affect an individual's performance on an individual exam. Because the final exam is cumulative, if **ONE** midterm lecture exam mark is less than 60%, then it may be possible to re-weight the value of the midterm, transferring some (but not all) of its value to the final exam. However, any adjustment will **NOT** be automatic; rather certain strict criteria need to be met:

1. The student must request this adjustment; the instructor will not make it automatically. The request must be in writing (by e-mail) and specify which of the two midterms (not both) the student wishes to be re-weighted.
2. The student must be willing to do supplementary questions added to the final exam in order to ensure the topic areas were adequately covered.
3. A minimum of 65% must be obtained on the additional questions or no re-weighting will occur.
4. A minimum of 65% must be obtained OVERALL on the final exam or no re-weighting will occur. This is to show that the reason for the poor midterm mark has been overcome.

If the above criteria are met the following strategy will be executed to obtain a final grade:

1. The weight of the midterm lecture exam mark will be reduced by one-half (e.g. from 15% to 7.5% in the case of Midterm 1).
2. The weight of the final exam will be increased by the amount reduced on the midterm (e.g. from 25% to 32.5% if Midterm 1 was re-weighted).

6. Grading System

(No changes are to be made to this section unless the Approved Course Description has been forwarded through the Education Council of Camosun College 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** for information on conversion to final grades, and for additional information on student record and transcript notations.

Temporary Grade	Description
I	*Incomplete*: 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	*In progress*: 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 3rd course attempt or at the point of course completion.)*
CW	*Compulsory Withdrawal:* 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.

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 the College web site in the Policy Section.

Plagiarism

Plagiarizing is appropriating the work of another or parts or passages of another's writing (including the ideas or language) and passing them off as the product of one's own mind or manual skill. **Plagiarism will not be tolerated.** All written material must be done individually. This **includes lab data and graphs**. Lab work may be performed in groups but any material submitted for grading must be processed and submitted independently, **unless otherwise instructed**. Plagiarism, **including the copying of any part of assignments or lab assignments**, is a serious offence and is considered to be academic misconduct.

Cheating

A student caught cheating on an exam will forfeit all credit for that exam and perhaps for the course. Cheating is a serious offence and is considered to be academic misconduct. **Cheating includes, but is not limited to, using unauthorized materials in a quiz/exam and providing information to another person regarding exam content.**

The consequences for cheating and plagiarism are outlined by Camosun College policies (see http://camosun.ca/about/policies/education-academic/e-2-student-services-&-support/e-2.5.pdf and http://camosun.ca/about/policies/education-academic/e-2-student-services-&-support/e-2.5.1.pdf) and may be severe.

Lab Attire

For safety reasons students are **required** to wear closed shoes in all lab times. Flip flops, sandals or shoes with holes are not acceptable.

The wearing of lab coats at all lab sessions is **absolutely mandatory** for both safety and professional reasons. Cloth coats are preferable but disposable ones are acceptable. If you forget your lab coat you may rent one at a cost of $5. The money received through lab coat rental will be donated to **Spread the Net**, an organization that supplies insecticide-impregnated bed nets to help prevent the spread of malaria in Africa.

Failure to wear proper lab attire will result in the inability to enter the lab and the subsequent **loss of credit** for that lab, including any pre-lab assessment credit.

Laboratory Attendance

The laboratory experience is critical to the course objectives and so attendance throughout the entire laboratory session is mandatory and will be noted. Lateness in arriving, failure to attend the lab or leaving the lab before its scheduled finish time will result in forfeiting credit for that lab, including any written assignments. If a lab session is missed, another student's data ***may not*** be used to complete a lab assignment for credit. Exceptions can be made ***at the instructor's discretion*** in legitimate cases of emergency (e.g. illness); in such cases the instructor must receive ***advance notification*** and ***documented evidence*** of the situation (e.g. medical certificate) and grant approval for any accommodation. In cases when a lab is done over two or more weeks, missing one of the weeks without instructor approval will result in a pro-rata reduction in the grade for any assignment associated with that lab.

Missed Exams

Without exception, all exams must be written at the scheduled times. **Under no circumstances will a make-up exam be administered**. However, it is understood that emergency circumstances occur (e.g. illness or emergency in the immediate family); for such circumstances accommodation may be offered at the discretion of the instructor, provided (a) the instructor is notified in advance of the exam (**not after**) and (b) the student provides **documented evidence** of the circumstance (i.e. medical certificate). **Without exception**, the accommodation will be in the form of adjusting the weighting of the final exam to make up the missing marks. In such cases, the final exam will include extra questions to thoroughly examine knowledge of the untested subject matter.

Please note:

**** HOLIDAYS OR SCHEDULED FLIGHTS ARE NOT CONSIDERED TO BE EMERGENCIES ****

Be sure not to make travel plans for the end of semester until the final exam schedules are finalized and posted. Please ask any family members who might make travel plans on your behalf to consult you before booking tickets.

Other Instructions

Unless otherwise indicated, all written material to hand in must be prepared using a word processor. Where appropriate, MS Word templates will be provided for this purpose by posting on the course D2L website; these templates should not be altered except to complete the blank areas. All written work must be submitted in **hard copy**, not e-mailed or posted to the D2L website. This is for purely practical reasons: printing out many assignments is problematic because instructors use shared-access printers and documents or parts of documents can go missing easily. Always be on the lookout for special instructions. Finally, unless otherwise instructed, graphs must be prepared using software with graphing capability (e.g. Excel).

Late Penalties

All assignments must be handed in on the scheduled date **before 4:30 PM**. If the instructor is not in the office then slide your work under the office door. Late assignments will be graded but marks equivalent to 15% of the total value of the assignment will be deducted per day past the deadline. Please note that weekends only count as one day.

Summary of Student Responsibilities

1. It is believed that attending and actively engaging in lecture times is in the best interests of student success. Should it be necessary to miss a lecture, however, it is the student's responsibility to catch up on anything that may have been missed (e.g. important announcement or assignments).
2. Students are expected to hand in any required reports on time. Late assignments will be penalized (see above).
3. All written work (including numerical entries in data tables) is to be submitted in word processed form.
4. Any evaluation of work for in-class/lab assignments, reports and/or participation will not be given if a student is not present for any reason.
5. Students are expected to work independently on reports unless instructed that the evaluation is based on group effort and evaluation.
6. Students must know and follow all Safety Rules and Procedures. Students must sign the Safety Contract before participating in any laboratory activity. Failure to follow the Safety Rules and Procedures will result in penalties at the discretion of the instructor.
7. Eating or drinking is **strictly prohibited** and failure to comply may result in expulsion from the lab and loss of any associated lab credit. **No exceptions** will be tolerated.
8. **All students must wear a lab coat during laboratory sessions.** Failure to bring a lab coat to the lab may result in being unable to work in the lab and loss of credit for the lab.
9. Students must turn off cell phones and pagers during lectures and laboratory sessions.
10. All laboratories start punctually. Information necessary for performing the laboratory correctly and safely is given at the beginning of the lab. Late attendance may result in inability to attend the lab and subsequent loss of credit for any assignments.

Biology 203 – W15 – Course Schedule (Note: Scheduled dates are subject to change)
Topics may be added or deleted depending upon time constraints

Wk	Day	Date		Unit	Lecture Topic	Lab	Lab Activity
1	Tue	6-Jan	Lec	1	Bacterial DNA Replication		
1	Wed	7-Jan	Lab				Handwashing
1	Thu	8-Jan	Lec	1	Bacterial DNA Replication		
2	Tue	13-Jan	Lec	2	Bacterial Gene Expression		
2	Wed	14-Jan	Lab				Enterobacteriaceae (Week 1)
2	Thu	15-Jan	Lec	2	Bacterial Gene Expression		
3	Tue	20-Jan	Lec	3	Mutations in Bacteria		
3	Wed	21-Jan	Lab				Enterobacteriaceae (Week 2)
3	Thu	22-Jan	Lec	3	Mutations in Bacteria		Food & Milk Analysis (Week 1)
4	Tue	27-Jan	Lec	4	Bacterial DNA Acquisition		
4	Wed	28-Jan	Lab				Food & Milk Analysis (Week 2)
4	Thu	29-Jan	Lec	4	Bacterial DNA Acquisition		Gram-Positive Cocci (Week 1)
5	Tue	3-Feb	Lec	5	Molecular Microbiology		
5	Wed	4-Feb	Lab				Gram-Positive Cocci (Week 2)
5	Thu	5-Feb			**MIDTERM EXAM 1**		Coliform Detection (Week 1)
6	Tue	10-Feb	Lec	5	Molecular Microbiology		
6	Wed	11-Feb	Lab				Coliform Detection (Week 2)
6	Thu	12-Feb			**READING BREAK**		Recombinant DNA (Week 1)
7	Tue	17-Feb	Lec	6	Microbial Interactions		
7	Wed	18-Feb	Lab				**Field Trip (TBD)**
7	Thu	19-Feb	Lec	6	Microbial Interactions		
8	Tue	24-Feb	Lec	7	Innate Host Resistance		
8	Wed	25-Feb	Lab				**LAB EXAM 1**
8	Thu	26-Feb	Lec	7	Innate Host Resistance		Coliform Detection (Week 4)
9	Tue	3-Mar	Lec	7	Innate Host Resistance		
9	Wed	4-Mar	Lab				Recombinant DNA (Week 2)
9	Thu	5-Mar	Lec	7	Innate Host Resistance		
10	Tue	10-Mar	Lec	8	Acquired Host Resistance		
10	Wed	11-Mar	Lab				Coliform Detection (Week 3)
10	Thu	12-Mar			**MIDTERM EXAM 2**		Recombinant DNA (Week 3)
11	Tue	17-Mar	Lec	8	Acquired Host Resistance		
11	Wed	18-Mar	Lab				**Field Trip (TBD)**
11	Thu	19-Mar	Lec	8	Acquired Host Resistance		
12	Tue	24-Mar	Lec	8	Acquired Host Resistance		
12	Wed	25-Mar	Lab				HIV / Diagnostic Immunology
12	Thu	26-Mar	Lec	8	Acquired Host Resistance		
13	Tue	31-Mar	Lec	9	Microbial Pathogenesis		
13	Wed	1-Apr	Lab				**Field Trip (Confirmed)**
13	Thu	2-Apr	Lec	9	Microbial Pathogenesis		
14	Tue	7-Apr	Lec	10	Epidemiology		
14	Wed	8-Apr	Lab				**LAB EXAM 2**
14	Thu	9-Apr	Lec	10	Epidemiology		
	Mon	13-Apr			**FINAL EXAM PERIOD**		