



## COURSE OUTLINE

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

✦ 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:	Larry Anthony, PhD		
(b)	Office Hours:	Mon	1:30 PM – 2:20 PM	
		Tue	11:30 AM – 12:20 PM	
		Wed	1:30 PM – 2:20 PM	
		Thu	3:30 PM – 4:20 PM	
		Fri	11:30 AM – 12:20 PM	
(c)	Location:	F340A		
(d)	Phone:	250-370-3388	Alternative Phone:	
(e)	Email:	anthonyl@camosun.bc.ca		
(f)	Website:	http://online.camosun.ca/		

**IMPORTANT NOTE:** I understand that the scheduled times will not fit into everyone's schedules. ***This should not deter you from trying to visit me in my office!*** My schedule will be posted on my office door: 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 monomeric components, synthesis and properties of the polymer for each of the four groups of macromolecule.
2. Examine the molecular structure of cellular membranes. Discuss the roles of active and passive transport mechanisms in the movement of molecules across cellular membranes.
3. Classify and describe the structural and adhesive proteins of the extracellular matrix. Describe the structure and function of the major types of cell junction. Discuss the roles of the extracellular matrix and cell junctions in cell-cell recognition, communication and adhesion.
4. Explain the structural organization of DNA and chromosomes in the nucleus. Describe the structure and function of the nuclear matrix and lamina. Discuss passive and active transport of molecules through nuclear pores.
5. Demonstrate knowledge of the molecular mechanism of eukaryotic DNA replication. Understand the events associated with, and the molecular basis of, regulation of the cell cycle. Discuss how abnormalities in cell cycle regulation contribute to the development of cancer.
6. Discuss the principles of eukaryotic transcription, RNA processing and RNA surveillance. Explain the events associated with translation, polypeptide folding, post-translational processing and protein targeting and sorting.
7. Discuss the role of the smooth endoplasmic reticulum in drug detoxification, carbohydrate metabolism, and calcium storage. Describe the flow of molecules through the endomembrane system. Explain the roles of the rough endoplasmic reticulum and the Golgi complex in glycosylation and protein sorting.
8. Describe, at the molecular level, the means by which G protein-linked and protein-kinase associated receptors activate signal transduction pathways within the cell. Discuss the molecular mechanisms of induction and regulation of apoptosis.
9. Describe and differentiate among the major structural elements of the cytoskeleton. Discuss the role of the cytoskeleton in cell movement, division and positioning and movement of organelles.

10. Conduct complex experiments and use a variety of current molecular and analytical techniques to assess various aspects of cellular biology. Critically evaluate data and present written laboratory reports.

### 3. Required Materials

#### Text

Becker, Kleinsmith, Hardin & Bertoni (2009) *The World of the Cell*, 7<sup>th</sup> Edition (Benjamin Cummings)

#### Lab Manual

Biology 230 labs will be posted on the Biology 230 D2L website several days prior to the Monday lab times. You will be responsible for printing the lab 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.

#### Lecture Outlines

Lectures will be delivered in a Power Point format. PowerPoint slides, which may be printed by students, will be made available on the Biology 230 website. These may be used at your 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 12:30 PM – 1:20 PM  
Wed 12:30 PM – 1:20 PM  
Thu 12:30 PM – 1:20 PM

**Lab Section A:** Mon 8:30 PM – 11:20 PM  
**Lab Section B:** Mon 2:30 PM – 5:20 PM

#### Course Content:

See Last Page

### 5. Basis of Student Assessment (Weighting)

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

Lab Exam I	10%
Lab Exam II	15%
Midterm I	15%
Midterm II	20%
Final Lecture Exam	25%
Assignments/labs/quizzes	15%

### 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](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>d</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 the College web site in the Policy Section.

### ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED

#### 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. Should two very similar reports be received, the mark will either be divided between the students or both students will forfeit their mark for that report. Plagiarism, including the copying of any part of assignments or lab reports is a serious offence and is considered to be an 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 an 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.

### **Missed Exams**

All in class lecture and lab exams and the final lecture exam must be written at the scheduled time. Only in emergency circumstances (e.g. illness) may a student write an exam before or after the scheduled time. It is the student's responsibility to ensure that the instructor is notified if an exam must be missed. Such notification must occur **in advance**. The student will be required to provide **documented evidence** of the circumstance (i.e. medical certificate) in order to write a make-up exam.

### **Laboratory Attendance**

Attendance at the entire laboratory session is mandatory and will be noted. Failure to attend the lab will result in forfeiting all credit for that lab, including any written assignments, i.e. you **may not** use another student's data to write a report for credit. The only exceptions will be in the case of emergency (e.g. illness), in which case the instructor must receive **advance notification** and **documented evidence** of the situation (e.g. medical certificate).

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

### **Student Responsibilities**

1. Students are expected to hand in any required reports on time. Late assignments will receive a penalty of 10% per day.
2. Attendance is important to ensure success. If unable to attend a session, the student is responsible for arranging with a classmate to obtain information such as notes, handouts and announcements.
3. Examinations must be written as scheduled. Exceptions may be made for emergencies at the discretion of the instructor (see above). The student must notify the instructor in advance of the examination.
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. Students must turn off cell phones and pagers during lectures and laboratory sessions.
8. All laboratories start punctually. Information necessary for performing the laboratory correctly and safely is given at the beginning of the lab.
9. **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.

**Biology 230 - Fall 2009 - Course Schedule (Note: Scheduled dates are subject to change)**

Wk	Day	Date	Lecture Topic	Ch	Lab	Lab Activity
1	Mon	7-Sep-09	<b>LABOUR DAY - NO CLASSES</b>			<b>LABOUR DAY - NO LABS</b>
1	Tue	8-Sep-09	Introduction			
1	Wed	9-Sep-09	Macromolecules	3		
1	Thu	10-Sep-09	Macromolecules	3		
2	Mon	14-Sep-09			1	Microscopy and Histology
2	Tue	15-Sep-09	Macromolecules	3		
2	Wed	16-Sep-09	Macromolecules	3		
2	Thu	17-Sep-09	Macromolecules	3		
3	Mon	21-Sep-09			2a	Leukocyte Isolation / Cryopreservation (1)
3	Tue	22-Sep-09	Membrane Structure and Function	7		
3	Wed	23-Sep-09	Membrane Structure and Function	7		
3	Thu	24-Sep-09	Membrane Structure and Function	7		
4	Mon	28-Sep-09			2b	Leukocyte Isolation / Cryopreservation (2)
4	Tue	29-Sep-09	ECM; Cell Adhesion/Junctions	17	3a	Crime Scene Investigation (1)
4	Wed	30-Sep-09	ECM; Cell Adhesion/Junctions	17		
4	Thu	1-Oct-09	ECM; Cell Adhesion/Junctions	17		
5	Mon	5-Oct-09			3b	Crime Scene Investigation (1)
5	Tue	6-Oct-09	ECM; Cell Adhesion/Junctions	17	4a	Cell Culture (1)
5	Wed	7-Oct-09	ECM; Cell Adhesion/Junctions	17		
5	Thu	8-Oct-09	<b>MIDTERM EXAM 1 (WEEKS 1-4)</b>			
6	Mon	12-Oct-09				<b>THANKSGIVING - NO LAB</b>
6	Tue	13-Oct-09	Signal Transduction	14		
6	Wed	14-Oct-09	Signal Transduction	14		
6	Thu	15-Oct-09	Signal Transduction	14		
7	Mon	19-Oct-09				<b>LAB EXAM 1</b>
7	Tue	20-Oct-09	DNA and the Nucleus	18		
7	Wed	21-Oct-09	DNA and the Nucleus	18		
7	Thu	22-Oct-09	DNA and the Nucleus	18		
8	Mon	26-Oct-09			4b	Cell Culture (2)
8	Tue	27-Oct-09	DNA Replication	19	5a	Cockroach Immunity (1)
8	Wed	28-Oct-09	DNA Replication	19		
8	Thu	29-Oct-09	DNA Replication	19		
9	Mon	2-Nov-09			5b	Cockroach Immunity (2)
9	Tue	3-Nov-09	Cell Cycle Regulation	19		
9	Wed	4-Nov-09	RNA Transcription and Processing	21		
9	Thu	5-Nov-09	RNA Transcription and Processing	21		
10	Mon	9-Nov-09			6a	Protein Analysis (1) (Concentration)
10	Tue	10-Nov-09	<b>MIDTERM EXAM 2 (WEEKS 1-4)</b>	21		
10	Wed	11-Nov-09	<b>REMEMBRANCE DAY - NO LECTURE</b>			
10	Thu	12-Nov-09	Protein Translation and Sorting	22		
11	Mon	16-Nov-09			6b	Protein Analysis (2) (SDS-PAGE)
11	Tue	17-Nov-09	Protein Translation and Sorting	22		
11	Wed	18-Nov-09	Protein Translation and Sorting	22		
11	Thu	19-Nov-09	Protein Translation and Sorting	22		
12	Mon	23-Nov-09			7a	Signal Transduction (1)
12	Tue	24-Nov-09	Regulation of Gene Expression	23		
12	Wed	25-Nov-09	Regulation of Gene Expression	23		
12	Thu	26-Nov-09	Regulation of Gene Expression	23		
13	Mon	30-Nov-09			7b	Signal Transduction (2)
13	Tue	1-Dec-09	Regulation of Gene Expression	23		
13	Wed	2-Dec-09	Apoptosis	14		
13	Thu	3-Dec-09	Cancer	24		
14	Mon	7-Dec-09				<b>LAB EXAM 2</b>
14	Tue	8-Dec-09	Intracellular Compartments	12		
14	Wed	9-Dec-09	Intracellular Compartments	12		
14	Thu	10-Dec-09	Intracellular Compartments	12		
	Mon	10-Dec-09	<b>FINAL EXAM PERIOD BEGINS</b>			