

	School of Arts & Science BIOLOGY DEPARTMENT BIOL 230 Cell Biology Winter 2010 (Jan-Apr)
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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:	Larry Anthony, PhD		
(b)	Office Hours:	Mon	10:00 AM – 12:20 PM	
		Tue	11:30 AM – 12:20 PM	
		Thu	11:30 AM – 12:20 PM	
		Fri	09:30 AM – 10:20 AM	
(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. Described 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. Described 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*, 7th Edition (Benjamin Cummings)

Lab Manual

Biology 230 lab outlines will be posted on the Biology 230 D2L website several days prior to the Tuesday/Wednesday 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 PowerPoint format. PowerPoint slides will be made available on the Biology 230 website. These may be used or printed at the student's discretion to help follow the lectures.

Lab Attire

Students are required to wear closed shoes (flip flops, sandals or shoes with holes are not acceptable).

The wearing of lab coats at all lab sessions is mandatory. Cloth coats are preferable but disposable ones are acceptable. If you forget your lab coat you may rent one at a cost of \$10.

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

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:	Mon 1:30 PM – 2:20 PM
	Tue 10:30 AM – 11:20 AM
	Thu 10:30 AM – 11:20 AM
Lab Section A:	Tue 6:30 PM – 9:20 PM
Lab Section B:	Wed 9:30 AM – 12:20 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 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 rd 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.

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; although lab work is done in groups, material submitted for grading must be processed and submitted independently. 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.

Missed Exams

Without exception, all lecture and lab exams must be written at the scheduled times. **Under no circumstances** will a make-up exam be administered. Accommodation will be made only in emergency circumstances (e.g. illness or emergency in the immediate family), provided (a) the instructor is notified in advance of the exam 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 test knowledge of the untested subject matter.

Laboratory Attendance

Attendance throughout the entire laboratory session is mandatory and will be noted. Failure to attend the lab or leaving the lab before its scheduled finish time will result in forfeiting all credit for that lab, including any written assignments; another student's data **may not** write complete a lab assignment 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 - W2010 - Course Schedule (Note: Scheduled dates are subject to change)

Wk	Day	Date	Lecture Topic	Ch	Lab	Lab Activity
1	Mon	4-Jan-10				
1	Tue	5-Jan-10				NO LAB
1	Wed	6-Jan-10				NO LAB
1	Thu	7-Jan-10	Introduction			
2	Mon	11-Jan-10	Macromolecules	3		
2	Tue	12-Jan-10	Macromolecules	3	1	Microscopy and Histology
2	Wed	13-Jan-10			1	Microscopy and Histology
2	Thu	14-Jan-10	Macromolecules	3		
3	Mon	18-Jan-10	Macromolecules	3		
3	Tue	19-Jan-10	Macromolecules	3	2	Leukocyte Isolation
3	Wed	20-Jan-10			2	Leukocyte Isolation
3	Thu	21-Jan-10	Membrane Structure and Function	7		
4	Mon	25-Jan-10	Membrane Structure and Function	7		
4	Tue	26-Jan-10	Membrane Structure and Function	7	3a	Animal Cell Culture (1)
4	Wed	27-Jan-10			3a	Animal Cell Culture (1)
4	Thu	28-Jan-10	Signal Transduction	14		
5	Mon	1-Feb-10	Signal Transduction	14		
5	Tue	2-Feb-10	Signal Transduction	14	3b	Animal Cell Culture (2)
5	Wed	3-Feb-10			3b	Animal Cell Culture (2)
5	Thu	4-Feb-10	ECM; Cell Adhesion/Junctions	17		
6	Mon	8-Feb-10	MIDTERM EXAM 1 (WEEKS 1-4)			
6	Tue	9-Feb-10	ECM; Cell Adhesion/Junctions	17		NO LAB
6	Wed	10-Feb-10				NO LAB
6	Thu	11-Feb-10	ECM; Cell Adhesion/Junctions	17		
7	Mon	15-Feb-10	ECM; Cell Adhesion/Junctions	17		
7	Tue	16-Feb-10	ECM; Cell Adhesion/Junctions	17		LAB EXAM 1
7	Wed	17-Feb-10				LAB EXAM 1
7	Thu	18-Feb-10	READING BREAK - NO LECTURE			
8	Mon	22-Feb-10	DNA and the Nucleus	18		
8	Tue	23-Feb-10	DNA and the Nucleus	18	4	Receptor Tyrosine Kinase Signalling
8	Wed	24-Feb-10			4	Receptor Tyrosine Kinase Signalling
8	Thu	25-Feb-10	DNA and the Nucleus	18		
9	Mon	1-Mar-10	DNA Replication	19		
9	Tue	2-Mar-10	DNA Replication	19	5	Hemolymph Protein Concentration
9	Wed	3-Mar-10			5	Hemolymph Protein Concentration
9	Thu	4-Mar-10	DNA Replication	19		
10	Mon	8-Mar-10	Cell Cycle Regulation	19		
10	Tue	9-Mar-10	RNA Transcription and Processing	21	6	Hemolymph SDS-PAGE
10	Wed	10-Mar-10			6	Hemolymph SDS-PAGE
10	Thu	11-Mar-10	RNA Transcription and Processing	21		
11	Mon	15-Mar-10	MIDTERM EXAM 2 (WEEKS 5-9)			
11	Tue	16-Mar-10	RNA Transcription and Processing	21	7a	G-Protein Signalling (1)
11	Wed	17-Mar-10			7a	G-Protein Signalling (1)
11	Thu	18-Mar-10	Protein Translation and Sorting	22		
12	Mon	22-Mar-10	Protein Translation and Sorting	22		
12	Tue	23-Mar-10	Protein Translation and Sorting	22	7b	G-Protein Signalling (2)
12	Wed	24-Mar-10			7b	G-Protein Signalling (2)
12	Thu	25-Mar-10	Protein Translation and Sorting	22		
13	Mon	29-Mar-10	Regulation of Gene Expression	23		
13	Tue	30-Mar-10	Regulation of Gene Expression	23		NO LAB
13	Wed	31-Mar-10				NO LAB
13	Thu	1-Apr-10	Regulation of Gene Expression	23		
14	Mon	5-Apr-10	EASTER MONDAY - NO LECTURE			LAB EXAM 2
14	Tue	6-Apr-10	Regulation of Gene Expression	23		
14	Wed	7-Apr-10	Apoptosis	14		
14	Thu	8-Apr-10	Cancer	24		
	Mon	12-Apr-10	FINAL EXAM PERIOD BEGINS			