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**School of Arts & Science**

**Biology 230 – Cell Biology  
Fall 2007**

**Course Information**

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**Instructor:** Larry Anthony, Ph. D.                      **Office:** Fisher 340A

**Email:** [anthonyl@camosun.bc.ca](mailto:anthonyl@camosun.bc.ca)                      **Website:** TBD

**Tel:** 370-3388 (voice messages may be left at this number)

**Drop-in office hours:**

Mon 1:30 PM – 2:20 PM

Tue 3:30 PM – 4:20 PM

Wed 3:30 PM – 4:20 PM

Thu 1:30 PM – 2:20 PM, 3:30 PM – 4:20 PM

I will also be available at other times if necessary. Simply arrange an appointment.

**Course Materials**

**Text**

Becker, Reece and Poonie (2006) *The World of the Cell*, 6th Edition (Benjamin )Cummings

**Lab Manual**

Biology 230 Laboratory Manual, Camosun College Biology Department 2007-2008

**Lecture Outlines**

Lectures will be delivered in a Power Point format. Printable lecture outlines will be made available that you may use to follow the lectures. The outlines will present basically the same information as the Power Point slides but will have blank spaces that you can fill in from the information on the slides.

**Course Evaluation**

Lectures (70%)

Quizzes/Assignments                      10%

Midterm Exam 1                              15%

Midterm Exam 2                              15%

Final Exam                                      30%

Laboratories (30%)

Lab Assignments/Reports                      15%

Lab Exam 1                                      5%

Lab Exam 2                                      10%

## Grading System

The School of Arts and Science have adopted the following letter grade and percentage scale:

A+	90-100	B+	77-79	C+	65-69	D	50-59
A	85-89	B	73-76	C	60-64	F	0-49
A-	80-84	B-	70-72				

## 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 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.

## Exam Return Policy

Term lecture and lab exams will be returned and taken up with the class. The exams will then be collected by the instructor and retained for a period of one year. Students are welcome to review these exams in the instructor's office during regular office hours.

## Laboratory Attendance

Attendance at the entire laboratory session is mandatory. If, for reasons of illness or family crisis, you are unable to attend a lab, the instructor must be notified. Such notification must occur in advance if possible. A penalty of 3% will be deducted for each unexcused absence from the lab. If a lab requires a written report, students who have not attended will not be given credit for that report; i.e. you may not use another student's data to write a report for credit.

### **Late Assignments**

Assignments and reports must be handed in at the beginning of the class/ lab on the due date. Late assignments and reports will be accepted, but they will be assessed a penalty of 15% of the value per day late; weekends count as two days. No assignments or reports will be accepted after the other student's assignments or reports have been returned.

### **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 be 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, laboratory reports and essays is a serious offense and is considered to be an academic misconduct.

### **Cheating**

A student caught cheating on an exam will forfeit that exam and perhaps the course. Cheating is a serious offense and is considered to be an academic misconduct.

### **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, illness or family crisis, 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 if possible or, at the latest, the day of the exam. The student will be required to provide verification of the emergency circumstance (i.e. medical certificate) in order to write a make-up exam.

## 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 and **only if documentation of the illness or emergency acceptable to the department** is received. 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.

## Academic Misconduct

Academic misconduct includes, but is not limited to, the following acts:

1. Giving or receiving unauthorized information to or from another student during any examination or test.
2. Obtaining or providing, without authorization, questions or answers relating to any examination or test prior to the time of the examination or test.
3. Using unauthorized sources of information during any examination or test.
4. Asking or arranging for another person to take any examination or test in one's place.

According to Camosun College policy, the consequence for academic misconduct is an 'F' grade for the work involved or for the course as a whole.

## Academic Conduct Policy

There is an Academic Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

<http://www.camosun.bc.ca/about/policies/education-academic/e-2-student-services-&-support/e-2.5.pdf>

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

**Biology 230 – Cell Biology – Fall 2007**
**Schedule of Anticipated Lecture and Laboratory Topics (subject to change)**

<b>Week</b>	<b>Day</b>	<b>Date</b>	<b>Lecture Topic (Text Chapter)</b>	<b>Laboratory Exercise</b>
1 (Sep 3-7)	Mon	3-Sep		<b>No Lab</b>
	Tue	4-Sep	Introduction	
	Wed	5-Sep	Macromolecules (3)	
	Thu	6-Sep	Macromolecules (3)	
2 (Sep 10-14)	Mon	10-Sep		Introduction and Use of Lab Equipment Lab 1 Microscopy and Histology
	Tue	11-Sep	Macromolecules (3)	
	Wed	12-Sep	Macromolecules (3)	
	Thu	13-Sep	Macromolecules (3)	
3 (Sep 17-21)	Mon	17-Sep		Lab 2 Animal Cell Culture (Pt 1)
	Tue	18-Sep	Membrane Structure & Function (7)	
	Wed	19-Sep	Membrane Structure & Function (7)	
	Thu	20-Sep	Membrane Structure & Function (7)	
4 (Sep 24-28)	Mon	24-Sep		Lab 2 Animal Cell Culture (Pt 2)
	Tue	25-Sep	ECM; Cell Adhesion; Cell Junctions (17)	
	Wed	26-Sep	ECM; Cell Adhesion; Cell Junctions (17)	
	Thu	27-Sep	ECM; Cell Adhesion; Cell Junctions (17)	
5 (Oct 1-5)	Mon	1-Oct		<b>Lab Exam 1</b> Lab 3 Inject Cockroaches (Pt 1)
	Tue	2-Oct	<b>Lecture Exam 1</b>	
	Wed	3-Oct	ECM; Cell Adhesion; Cell Junctions (17)	
	Thu	4-Oct	ECM; Cell Adhesion; Cell Junctions (17)	
6 (Oct 8-12)	Mon	8-Oct	<b>HOLIDAY (Thanksgiving)</b>	<b>No Lab</b>
	Tue	9-Oct	DNA and the Nucleus (18)	
	Wed	10-Oct	DNA and the Nucleus (18)	
	Thu	11-Oct	DNA and the Nucleus (18)	
7 (Oct 15-19)	Mon	15-Oct		Lab 3 Cockroach Immune System (Pt 2)
	Tue	16-Oct	DNA Replication (19)	
	Wed	17-Oct	DNA Replication (19)	
	Thu	18-Oct	DNA Replication (19)	
8 (Oct 22-26)	Mon	22-Oct		Lab 4 Cockroach Protein Analysis (Pt 1)
	Tue	23-Oct	Transcription & RNA Processing (21)	
	Wed	24-Oct	Transcription & RNA Processing (21)	
	Thu	25-Oct	Transcription & RNA Processing (21)	
9 (Oct 29-Nov 2)	Mon	29-Oct		Lab 4 Cockroach Protein Analysis (Pt 2)
	Tue	30-Oct	Translation & Protein Sorting (22)	
	Wed	31-Oct	Translation & Protein Sorting (22)	
	Thu	1-Nov	Regulation of the Cell Cycle (19)	
10 (Nov 5-9)	Mon	5-Nov		Lab 4 Cockroach Protein (Analysis) (Pt 3) Last Day to Withdraw Without Penalty
	Tue	6-Nov	<b>Lecture Exam 2</b>	
	Wed	7-Nov	Regulation of the Cell Cycle (19)	
	Thu	8-Nov	Cancer (24); Apoptosis (14)	
11 (Nov 12-16)	Mon	12-Nov	<b>HOLIDAY (Remembrance Day)</b>	<b>No Lab</b>
	Tue	13-Nov	Regulation of Gene Expression (23)	
	Wed	14-Nov	Regulation of Gene Expression (23)	
	Thu	15-Nov	Regulation of Gene Expression (23)	
12 (Nov 19-23)	Mon	19-Nov		Lab 5 Signal Transduction (Pt 1)
	Tue	20-Nov	Intracellular Compartments (12)	
	Wed	21-Nov	Intracellular Compartments (12)	
	Thu	22-Nov	Intracellular Compartments (12)	
13 (Nov 26-30)	Mon	26-Nov		Lab 5 Signal Transduction (Pt 2)
	Tue	27-Nov	Signal Transduction (14)	
	Wed	28-Nov	Signal Transduction (14)	
	Thu	29-Nov	Signal Transduction (14)	
14 (Dec 3-7)	Mon	3-Dec		<b>Lab Exam 2</b>
	Tue	4-Dec	Cytoskeleton (15)	
	Wed	5-Dec	Cytoskeleton (15)	
	Thu	6-Dec	Cytoskeleton (15)	