



**School of Arts & Science  
BIOLOGY DEPARTMENT**

**BIOL 230-01  
Cell Biology  
2006F**

## 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:	Christine Baugh		
(b)	Office Hours:	Tu 1130 & 1530; W1030; Th 1130 & 1530		
(c)	Location:	F340B		
(d)	Phone:	370 -3430	Alternative Phone:	
(e)	Email:	baugh@camosun.bc.ca		
(f)	Website:	Webct		

### 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 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

(a)	Texts	<p><b>Reference Text:</b> Optional; Strongly Recommended Becker, W.M., Reece, J.B. and Poonie, M.F. 2003 <i>The World of the Cell</i>; 6th Edition Benjamin Cummings</p> <p><b>Lab Manual:</b> Required Biology Department, 2006/ 2007 <b><i>Biology 230 Laboratory Manual</i></b>, Camosun College</p>
(b)	Other	<p><b>Lecture Outlines:</b> Required: You will be required to print these from WebCT. Electronic copies will be posted on WebCT as PDF files prior to the start of that lecture section.</p>

### 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.)

Week	Date	Lecture Topic	Text Chapter	Laboratory Exercise
1	Sep. 4 Sep. 5 – 8	<b>HOLIDAY</b> (Labor Day) Macromolecules	3	<b>No Lab – Holiday</b>
2	Sep. 11 – 15	Macromolecules	3	Intro & Use of Lab Equipment Lab 1 Microscopy and Histology
3	Sep. 18 – 22	Membrane Structure & Function	7	Lab 2 Animal Cell Culture; Week 1
4	Sep. 25 – 29	ECM; Cell Adhesion; Cell Junctions	17	Lab 2 Animal Cell Culture; Week 2
5	Oct. 2 – 6 Oct. 2 Oct. 4	ECM; Cell Adhesion; Cell Junctions  <b>Lecture Exam # 1</b>	17	Lab 3 Inject Cockroaches; <b>Lab Exam #1</b> Week 1
6	Oct. 9 Oct. 10 – 13	<b>HOLIDAY</b> (Thanksgiving) DNA & the Nucleus	18	<b>No Lab – Holiday</b>
7	Oct. 16 – 20	DNA Replication	19	Lab 3 Cockroach Immune System; Week 2

8	Oct. 23 – 27	Transcription	21	Lab 4 Cockroach Protein Analysis; Week 1
9	Oct. 30 – Nov. 3	Translation & Protein Sorting Regulation of the Cell Cycle	22 19	Lab 4 Cockroach Protein Analysis; Week 2
10	Nov. 6 – 10 <b>Nov. 7</b> <b>Nov. 8</b>	Regulation of the Cell Cycle Cancer; Apoptosis <b>Last Day to Withdraw</b> <b>Lecture Exam # 2</b>	19 14/24	Lab 4 Cockroach Protein Analysis; Week 3
11	<b>Nov. 13</b> Nov. 14 – 17	<b>HOLIDAY</b> (Remembrance Day) Regulation of Gene Expression	23	<b>No Lab – Holiday</b>
12	Nov. 20 – 24	Intracellular Compartments	12	Lab 5 Signal Transduction; Week 1
13	Nov. 27 – Dec. 1	Signal Transduction	14	Lab 5 Signal Transduction; Week 2
14	Dec. 4 – 8 <b>Dec. 4</b>	Cytoskeleton	15	<b>Lab Exam # 2</b>

## 5. Basis of Student Assessment (Weighting)

(Should be linked directly to learning outcomes.)

### Course Evaluation:

#### Lecture Component; 70% of the course mark.

Assignments/ Quizzes 5% Date: TBA

Material Covered: TBA

In Class Examination # 1 15% Date: October 4; all sections

Material Covered: Lecture material from the beginning of week 1 through to the end of week 4.

In Class Examination # 2 15% Date: November 8; all sections

Material Covered: Lecture material from the beginning of week 5 through to the end of week 9.

Final Examination 35% Date: To be scheduled during the final exam period.

Material Covered: The final exam will be comprehensive, however emphasis will be placed on material covered after the 2<sup>nd</sup> in class examination.

#### Laboratory Component; 30% of the course mark.

Lab Exam # 1 5%\* Date: October 2; all sections; during lab

Material Covered: Microscopy & Histology; Animal Cell Culture Techniques

Lab Exam # 2 10%\* Date: December 4; all sections; during lab

Material Covered: Cockroach Immune System; Cockroach Protein Analysis; Signal Transduction

Lab Reports/Assignments 15%\*

\* Lab marks may be reassigned, depending on the outcomes of the lab experiments.

### 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.

## 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
95-100	A+		9
90-94	A		8
85-89	A-		7
80-84	B+		6
75-79	B		5
70-74	B-		4
65-69	C+		3
60-64	C		2
50-59	D		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 at [camosun.ca](http://camosun.ca) or 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 are designed to have an anticipated enrollment that extends beyond one term. No more than two IP grades will be assigned for the same course.
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.

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.

## 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.

### **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:**

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.

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