



**School of Arts & Science
BIOLOGY DEPARTMENT**

**BIOL 230-section
Cell Biology
Semester/Year, eg, 2009W or 2009 Q1**

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:	Geoffrey P. Haywood, Ph.D.		
(b)	Office Hours:	Friday 10.30 - 11.20 am		
(c)	Location:	F 344D		
(d)	Phone:	250 370 3506	Alternative Phone:	
(e)	Email:	haywoodg@camosun.bc.ca		
(f)	Website:	N/A		

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 and explain role of the smooth endoplasmic reticulum in drug detoxification, carbohydrate metabolism, and calcium storage. Describe the flow of molecules through the endomembrane system.

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 *The World of the Cell* Becker, Kleinsmith & Harding 6th or 7th Ed.

(b) Other Lab manual for labs.

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.)

The schedule, which follows, is an attempt to outline the weekly activities of the class. It is subject to change or modification as the need arises.

Week	Lectures	Dates	Lecture Topic	Chap.	Laboratory Exercise
1	1-3	Jan 5 - 9	Basic chemistry, molecular bonding, water Macromolecules, Proteins	2,3	Microscope work, staining micropipettes
2	4-6	Jan 12 -16	Nucleic acids, Carbohydrates Lipids Membrane structure & function	4,5,7	Lab 2 Animal cell culture
3	7-9	Jan 19 - 23	Membrane structure & function Intracellular components Golgi complex	7, 12	Lab 2continued
4	10-12	Jan 26 - 30	Cell movement, Extracellular matrix Laminins	12, 17	Lab 6 DNA CSI lab start
5	13-15	Feb 2 - 6	Lectins DNA and its packaging	17,18	Lab 6 DNA CSI lab finish Lab 3 Cockroach injections
6	16	Feb 9 - 13	Lecture Midterm Exam 1 – day selected by class Transport across envelope	18	Lab 3 continued
7	17-18	Feb 16 - 18	DNA replication, synthesis and shortening	19,	Midterm Lab Exam 1
			COLLEGE CLOSED FEB 19 & 20		
8	18-19	Feb 23 - 27	DNA shortening problems	19	Lab 4 Cockroach proteins analysis
9	20-22	Mar 2 - 5	Transcription Core Promoter Poly-A tails	21	Lab 4 Cockroach continued

10	23-25	Mar 9 - 13	Translation initiation & protein sorting	22	Lab 4 Cockroach finish
11	26-27	Mar 16 - 20	Midterm Exam 2 – day selected by class Signal transduction	14	Lab 5 Signal transduction in yeast
12	27-29	Mar 23 - 27	Signal transduction, kinase receptors Gene expression	14, 23	Midterm Lab Exam 2 Lab 5 finish
13	30-32	Mar 30 – Apr 3	Gene expression Regulation of cell cycle	23, 19	Review
14	33-34	Apr 5 - 9	Cell cycle regulation, Cancer	19, 24	No Lab
			April 14-18 & 20-22 Final Exams		

Final lecture examination will be scheduled during formal exam period.

All lecture exams are from the textbook. The exams will be in the format of written and multiple choice questions. Students are responsible for reading the Chapters indicated above as that is the material from which the assessment questions will be taken.

5. Basis of Student Assessment (Weighting)

(Should be linked directly to learning outcomes.)

- (a) Assignments. There will be ONE written assignment per week. This will be given out after the Friday lecture and will be due in for the following Wednesday.
- (b) Quizzes. Quizzes may replace assignments periodically – at the discretion of the instructor.
- (c) Exams. There will be TWO midterm exams and a final exam at the end of the course.
- (d) Other (e.g., Attendance, Project, Group Work)

Percentage breakdown of final marks: Assignments/quizzes 15%, Theory midterms 20% each, Final theory exam 25%, Lab midterms 10% each = 100%

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
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. <i>(For these courses a final grade will be assigned to either the 3rd 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.

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.

ADDITIONAL COMMENTS AS APPROPRIATE OR AS REQUIRED