Biology 2BO3: Cell Biology
Term 2: Winter 2013

INSTRUCTOR: DR. KIM DEJ
Email contact: dej@mcmaster.ca
Office hours: TBA

INSTRUCTIONAL ASSISTANT:
Alison Cowie, BSB 201A/B Ext. 26369 cowieal@mcmaster.ca
Office hours: in BSB201A, Monday – Friday 9:00 – 11:00

LECTURES:
Monday 12:30 – 13:20, Tuesday 13:30 – 14:20, Thursday, 12:30 – 13:20 in BSB147

COURSE DESCRIPTION:
A single cell is a complex and dynamic system. Thousands of proteins interact to allow a cell to move, communicate, and reproduce. Cell Biology is the study of the inner workings of the cell. Research in Cell Biology goes beyond what molecules are found in a cell to the understanding of how these molecules interact with one another in order to make a living cell.

In this course we examine:

- The components and mechanisms that control the trafficking of proteins to organelles within the cell.
- Intercellular communication and the regulation of intracellular signal transduction pathways.
- The mechanisms and machinery that control cell division.

Cell Biologists employ techniques from different fields of research to study the properties and functions of the proteins in a cell including biochemistry, genetics, and molecular biology. In order to visualize the dynamic inner workings of a cell, researchers use fluorescent microscopy and video technologies. We will be looking at how experiments are designed and how data is analyzed in order to develop models of cellular function.

COURSE AIMS

Familiarization with current models of cellular function including cell signalling, protein transport and cell cycle regulation.
Interpretation and analysis of research data used to develop current models.

COURSE OBJECTIVES:
By the end of this course students:

- will develop a scientific attitude towards research and data gathering by practising the scientific methods: formulation of a hypothesis, experimental testing of predictions.
- will be able to analyse and interpret experimental results from the field of Cell Biology
- will be able to describe common mechanisms used in the cell to communicate, grow and divide

PREREQUISITES:
Biology 1A03, 1M03, and Chemistry 1AA3 or iSci1A24.

FORMAT:

This course consists of three one-hour lectures and one tutorial each week. There are online activities and quizzes based on lecture material and related new material. In addition there will be in-class tutorials, these represent an extension of the course work but for most attendance is not mandatory. However, there will be some times when you will be required to attend the tutorial class.

This course uses Avenue to Learn to post the course outline, assignments, and other notices. Go to http://avenue.mcmaster.ca to find out how to log-on to the course home page. You will need your McMaster username and password to login – these are likely the same as you use for you McMaster email account.

TEXTBOOK:

We will make reference to the following textbook in lecture and tutorial:
Molecular Cell Biology, 7th Edition (the 6th (or 5th) edition can also easily be used, older editions have not been examined)
Author: Lodish et al Publisher: W. H. Freeman, 2007.

COURSE EVALUATION:

Test 1: 15%
Test 2: 20%
Online quizzes: 12%
Essay project: 18% (includes 15% for the essay, 2% for peer review, 1% plagiarism quiz)
Final Exam: 35%

CHANGES TO THE COURSE OUTLINE:

At certain points in the course it may make good sense to modify the schedule outlined below. The instructor reserves the right to modify elements of the course and will notify students accordingly (in class and post any changes onto Avenue to Learn). Posted changes take precedence over this course outline.

SCHEDULE OF LECTURE MATERIAL:

Week 1: January 7rd.
Module 1: Introduction. *From polypeptide to functional protein*

Week 2: January 14th.
Protein structure and function. Regulating protein function

Week 3: January 21st.
Module 2: *Biomembranes and cell architecture*

Week 4: January 28th.
Module 3: *Protein trafficking – where do proteins go and how do they get there?*

Week 5: Feb 4th.
Protein trafficking – where do proteins go and how do they get there?

Week 6: February 11th. TEST 1 in class: Monday Feb 11th.
Module 4: *Leaving the cell – secreted proteins*

Reading Week: Feb 18th to 22nd

Week 7: February 25th.
Communication: Signal Transduction

Week 8: March 4th.
Communication: Signal Transduction, disease and drug discovery

Week 9: March 11th.
Module 6: *Cell-cell interactions*

Week 10: March 18th. TEST 2 in class Monday March 18th.
Module 5 and 7: *Cell Cycle Regulation Part I*

Week 11: March 25th.
Cell Cycle Regulation Part II

Week 12: April 1st.
Cancer: loss of control

The final exam is scheduled within the exam period by the Registrar's Office.

REGARDING MISSED TESTS:

Requests for Relief for Missed Academic Term Work

If you are absent from the university for a minor medical reason, lasting fewer than 5 days, you may report your absence, **once per term**, without documentation, using the McMaster Student Absence Form. Absences for a longer duration or for other reasons must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted.

When using the MSAF, enter Alison Cowie (cowieal@mcmaster.ca) as the contact for the course . You must then contact Alison Cowie immediately (normally within 2 working days) by email at cowieal@mcmaster.ca to learn what relief may be granted for the work you have missed, and relevant details such as revised deadlines, or time and location of a make-up exam. If you put Dr. Dej as the contact the information may not get passed on and accommodation may not be possible.

Please note that the MSAF may not be used for term work worth more than 30%, nor can it be used for the final examination.

If you miss a tutorial quiz you must write a make up quiz as soon as possible after the scheduled tutorial.
If you miss a test, you must write a makeup test in the last weeks of classes. The makeup test will be of a different format from the original test, but will cover the same material.

ACADEMIC DISHONESTY:

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results, or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at http://www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work. While we encourage you to work with your peers in solving problems on your assignments, copying of answers is not acceptable. Your final work must be your own.
3. Copying or using unauthorized aids in tests and examinations.

Grades obtained in Biology 2B03 will be converted according to the following scheme, which is the one in general use at McMaster University.

90 – 100%	A+	12
85 – 89%	A	11
80 – 84%	A-	10
77 – 79%	B+	9
73 – 76%	B	8
70 – 72%	B-	7
67 – 69%	C+	6
63 – 66%	C	5
60 – 62%	C-	4
57 – 59%	D+	3
53 – 56%	D	2
50 – 52%	D-	1
0 – 49%	F	0

When the final marks are obtained, ALL borderline cases will be reviewed and, where warranted, adjustments will be made in the final mark.