

Biology 2B03: Cell Biology Term 1: Fall 2017

INSTRUCTOR: DR. SULEIMAN IGDOURA

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Office hours: TBA

COURSE COORDINATOR: Alison Cowie

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LECTURES:

Course content will be delivered as online lectures delivered through Avenue to Learn.

There will be additional weekly in-class lectures during the Monday lecture time slot, 11:30 – 12:20 in MDCL1305.

The scheduled lecture time will also be used for the midterm exam.

TUTORIALS:

The scheduled tutorial times will be used for supplementary presentations, assignments and discussions. Attendance at your scheduled Tutorial section is required.

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, and Chemistry 1A03, 1A03 or iSci1A24.

FORMAT:

This course consists of on-line lectures together with one in-class lecture and one tutorial each week. The in class lectures will relate to the material in the recorded lectures of the week before. The on-line lectures will be released every Monday morning. There are online activities and quizzes based on lecture material and related new material. You will have to have watched the on-line lecture to have the lecture quiz made available to you. In addition there will be in-class tutorials, these represent an extension of the course work and are highly recommended. There will be some times when you will be required to attend the tutorial class for in-class quizzes.

This course uses Avenue to Learn to post the course outline, lectures, 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, 2013.

COURSE EVALUATION:

Midterm Test: 25%
Final Exam: 45%
Online quizzes: 10%
Tutorial assignments: 10%
Group project: 10%

CHANGES TO THE COURSE OUTLINE:

At certain points in the course it may make good sense to modify the schedule outlined below. The instructors reserve 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.

RECOMMENDED SCHEDULE TO VIEW THE ON-LINE LECTURE MATERIAL:

With an online course it is important that you plan and manage your time effectively. The recorded lectures will also be available as ppt and pdf files but you will need to view the lecture to gain access to the related online quiz. On-line modules will be released Monday mornings each week, quizzes will be available once you view the lecture.

Week of September 4th

Module 1: *From polypeptide to functional protein*

Week of September 11th

Module 2: *Protein structure and function. Regulating protein function*

Week of September 18th

Module 3: *Biomembranes and cell architecture*

Week of September 25th

Module 4: *Protein targeting – where do proteins go and how do they get there?*

Week of Oct 2nd

Module 5: *Protein trafficking – leaving the cell?*

Week of October 9th: Mid Term Recess**Week of October 16th**

Module 6: *Communication: Signal Transduction*

Midterm exam during class time **Monday Oct. 16th**, covers modules 1 to 5 and the in class lectures.

Week of October 23rd

Module 7: *Cytoskeleton.*

Week of October 30th

Module 8: *cell-cell interactions.*

Week of November 6th

Module 9: *Introduction to the cell cycle*

Week of November 13th

Module 10: *Regulation of cell division*

Week of November 20th

Module 11: *regulation of apoptosis*

The final exam is scheduled within the exam period by the Registrar's Office and will cover all recorded and in class lecture material.

REGARDING MISSED TESTS AND ASSIGNMENTS:**Requests for Relief for Missed Academic Term Work**

If you are absent from the university for a minor medical reason, lasting fewer than 3 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 by email at cowieal@mcmaster.ca to learn what relief may be granted for the work you have missed. If you put Dr. Igdoura as the contact the information may not get passed on and accommodation may not then be possible.

Please note that **the online MSAF can only be used for term work worth less than 25%**, MSAFs filed with the wrong value of the exam will not be accepted. it cannot be used for the final examination.

With an approved MSAF the following accommodations may be granted. If you miss a tutorial assignment you must write a make up as soon as possible after the scheduled tutorial. If you miss the midterm exam the value will be added to that of your final exam.

There is no accommodation for missing the online lecture quizzes as they will be available for extensive periods of time. There may be exceptions based on individual circumstances.

Academic Accommodation of Students with Disabilities

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Policy for [Academic Accommodation of Students with Disabilities](#).

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.

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|-----------|----|----|
| 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, borderline cases will be reviewed and, where warranted, adjustments will be made in the final mark.