BIOLOGY 3P03 (Cell Physiology)

Fall 2018

Instructors:
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Teaching Assistants:
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Course Description:

This course will examine several basic concepts in Cell Physiology and will illustrate general physico-chemical principles using examples from vertebrate, invertebrate, or plant systems. There will be emphasis on the electrical properties of cells, membrane proteins involved in ion transport functions, chemical signalling via second messengers, and regulation of cell homeostasis (intracellular Ca^{2+}, pH). The course will consist of two lectures per week plus one tutorial. Course material, including lecture notes (*sometimes in abbreviated form*), will be posted on Avenue. ***It is advisable to take additional notes during lecture, as material discussed in lectures may appear on exams/tests (though it may not be posted on Avenue).***

Prerequisites:

Prerequisite(s): One of BIOLOGY 2A03, PNB 2XB3, or both BIOLOGY 1A03 (or ISCI 1A24 A/B) and registration in Level III or above of Honours Kinesiology; and credit or registration in one of BIOCHEM 2BB3, 3G03, or registration in Honours Neuroscience; or ISCI 2A18 A/B

Course Format:

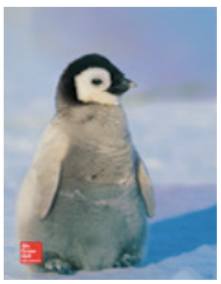
- All lectures are scheduled two days per week (Wednesdays and Thursdays, 1:30-2:20pm) in DSB AB102
- Tests are scheduled during class times as indicated in the attachd course schedule. Any changes to this schedule will be posted on Avenue to Learn
- Tutorial sessions will enable students to make connections between lecture material and applied principles in cell physiology. Under the guidance of teaching assistant, students will work in groups to work through group-based assignments that will further facilitate learning.

Required Text:

Our custom course textbook for BIOLOGY 3P03- Cell Physiology is **HIGHLY** recommended, as it will assist with your understanding of lecture material, tutorial exercises and group assignments. The custom textbook is available from the McMaster Campus Store and has been especially created for our course, taken from the "Principles of Neural Science" textbook by Eric R. Kandel.

Our custom textbook is available in two formats:

- **Print**- ISBN number 9781260072471: $70
- **Ebook**- ISBN number 9781259945793: $40



Evaluation: ***The final grade in BIOLOGY 3P03 will be determined as follows***:

Term Test 1 (Individual mark):		25%
Term Test 2 (Individual mark):		25%
Tutorial Assignments (Group mark):	4 x5% each;	Total: 20%
Tutorial Participation (Individual mark):		5%
2-hour Final Exam (Individual mark):		25%
Total		100%

Notes on Assessment:

Term Tests and Exam will test material presented during lectures and tutorials, along with any provided readings/lecture notes and assigned readings posted in lecture notes and on Avenue to Learn. All course examinations (tests and exam) will be cumulative, covering all course material up to that the test/exam date. Term tests will occur during class time (two ~50 min tests worth 25% each). **There are no make-up tests in BIO3P03**. The final exam will cover all course material and will take place during the Fall exam period, scheduled by the Registrar's office.

Without valid documentation to account for an absence, a missed test will be given a mark of zero. With valid documentation (ie. approval and documentation from your Faculty Office) to account for an absence for either Test #1 or Test #2 your final exam will be weighted more heavily to account for the missed work at the discretion of the instructor. i.e. If one test was missed, then the final exam will be worth 50% of your final grade.

Group Tutorial Assignments will be evaluated throughout the semester. The tutorials will allow students to evaluate their progress in the course. Students will work in groups on tutorial assignment questions. These assignments will provide students with an incentive to learn the course material progressively throughout the course. There will be a total of 4 tutorial assignments, each weighted at 5% of the total course grade.

Requests for Relief for Missed Academic Term Work: The MSAF on-line, self-reporting tool cannot be used to apply for relief from any course work that is valued at 25% or greater of the final grade, or any final examination or its equivalent. For medical or personal situations lasting more than three calendar days, and/or for missed academic work worth 25% or more of the final grade, and/or for any request for relief in a term where the MSAF has been used previously in that term: Students must report to their Faculty Office to discuss their situation and will be required to provide appropriate supporting documentation. If warranted, the Faculty Office will approve the absence, and the instructor will determine appropriate relief. A missed test's percentage worth will be added to the percentage worth of the Final Exam.

Term mark corrections

Any term mark corrections must be made BEFORE the Biology3P03 Final Exam is written. Contact Dr. da Silva regarding tests/assignment grades corrections within **one week of return**. There are no alternative assignments that can be completed for students to increase marks once the final exam is written.

TOPICS AND COURSE SCHEDULE:

Lecture #	*Dates*	*Topic*	*Tutorial*
1 2	Wed. Sept. 5 Thurs. Sept. 6	The cell and its membrane Passive movements through the cell membrane	**None-** Sept. 4, 5, 7
3 4	Wed. Sept. 12 Thurs. Sept. 13	Ion channel diversity & control Electrochemical gradients & equilibrium potentials	**None-** Sept. 11, 12, 14
5 6	Wed. Sept. 19 Thurs. Sept. 20	Ion flux and the resting membrane potential Electrical properties of excitable cells (Part 1)	**Tutorial 1-** Sept. 18, 19, 21
7 8	Wed. Sept. 26 Thurs. Sep. 27	Electrical properties of excitable cells (Part 2) The action potential (Part 1)	**Tutorial 2-** Sept. 25, 26, 28
9 10	Wed. Oct. 3 Thurs. Oct. 4	The action potential (Part 2) The action potential (Part 3)	**Tutorial 3-** Oct. 2, 3, 5 ***Group Assignment 1 Due Fri Oct 5 by 11:59pm***
	Oct. 10th, 11th	***Mid-term Recess (no lectures)***	***(no tutorials)***
11 12	Wed. Oct. 17 Thurs. Oct. 18	The action potential (Part 4) Neuromuscular transmission (Part 1)	**Tutorial 4-** Oct. 16, 17, 19 ***Group Assignment 2 Due Fri Oct 19 by 11:59pm***
  13	**Wed. Oct 24** Thurs. Oct. 25	***Test #1 1:30-2:20 pm in DSB AB102*** Neuromuscular transmission (Part 2)	**None** – Oct. 23, 24, 26
14 15	Wed. Oct. 31 Thurs. Nov. 1	Synaptic Integration (Part 1) Synaptic Integration (Part 2)	**Tutorial 5-** Oct. 30, 31, Nov 2

16 17	Wed. Nov. 7, Thurs. Nov. 8	Intracellular messengers (Part 1) Intracellular messengers (Part 2)	**Tutorial 6-** Nov 6, 7, 9 ***Group Assignment 3 Due Fri Nov 9 by 11:59pm***
18 19	Wed. Nov. 14 Thurs. Nov. 15	Intracellular messengers (Part 3) Motor control of muscle action	**Tutorial 7-** Nov 13, 14, 16
20 21	Wed. Nov. 21 Thurs. Nov. 22	Diseases of the nerve and motor unit Homeostasis (Part 1)	**Tutorial 8-** Nov 20, 21, 23 ***Group Assignment 4 Due Fri Nov 23 by 11:59pm***
  22	**Wed Nov. 28** Thurs. Nov. 29	***Test #2 1:30-2:20 pm in DSB AB102*** Homeostasis (Part 2)	**None-** Nov. 27, 28, 30
23	Wed. Dec. 5	No class- *Independent study*	**None**

IMPORTANT NOTE:

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If any modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes. Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

Academic Accommodation of Students with Disabilities: Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. 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 Academic Accommodation of Students with Disabilities policy.

Academic Accommodation for Religious, Indigenous or Spiritual Observances (RISO): Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students requiring a RISO accommodation should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

Academic Integrity: 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 www.mcmaster.ca/academicintegrity.

The following illustrates only three forms of academic dishonesty:

- Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- Improper collaboration in group work.
- Copying or using unauthorized aids in tests and examinations.