BIOLOGY 2A03
Integrative Physiology of Animals
Winter Term – 2017

INSTRUCTORS: Dr. Graham Scott, LSB-227 (scottg2@mcmaster.ca)
Dr. Neal Dawson, LSB-203
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INSTRUCTIONAL ASSISTANT: Ms. Sinah Lee, LSB-119 (leesk2@mcmaster.ca)

LECTURES: Mon & Wed 11:30-12:20, Fri 13:30–14:20 in TSH-120

LABORATORIES: Mon-Fri 14:30-17:20, and Tues 8:30-11:20 in LSB 109 & 110

RECOMMENDED TEXTBOOK: Stanfield, ***Principles of Human Physiology*** (4th or 5th edition), Pearson Benjamin Cummings

MARKS:

30%	2 Tests @ 15% each (written during lecture time); tests are cumulative
30%	Laboratories
40%	Final Exam; exam is cumulative

IMPORTANT DATES:

Jan 4	Classes begin
Jan 16-20	Lab 1 for ODD lab sections
Jan 23-27	Lab 1 for EVEN lab sections
Feb 3	Test #1
Feb 20-26	Mid-term recess
March 10	Test #2
Apr 8	Classes End

TENTATIVE LECTURE OUTLINE

LECTURES	TOPIC	CHAPTERS
1	Introduction	1
2	Cellular energy metabolism *Enzyme function, fuel oxidation, ATP production, etc.*	3
3	Cellular membrane transport *Diffusion, active transport, membrane potential, epithelia*	4
4	Cellular communication *Chemical messengers, receptors, signal transduction*	5
5-9	Neurophysiology *Nervous system organization, action potentials, synaptic transmission, sensory systems, autonomic nervous system*	7-11
10-12	Muscle physiology	12

	Muscle structure, sliding filament model, cross-bridge cycle, excitation-contraction coupling, motor units, mechanics, fibre types, muscle metabolism ***(Lectures by S. Mahalingam)***	
13-14	Endocrinology *Endocrine organs, hormones, negative feedback*	6
15-20	Cardiovascular physiology *Circulatory system anatomy, cardiac cycle, cardiac muscle function, regulation of cardiac output, blood vessels, blood pressure and flow, capillary filtration, baroreflex*	13-15
21-25	Respiratory physiology *Oxygen transport pathway, respiratory system anatomy, breathing cycle, gas exchange, haemoglobin function, neural control of breathing, chemoreception*	16-17
26-28	Special topic: Physiology of Bird Migration ***(Lectures by N. Dawson)***	n.a.
29-32	Renal physiology *Urinary system anatomy, nephron function, epithelial transport, regulation of water and ion excretion, acid-base regulation*	18-19
33-34	Gastrointestinal physiology *Gastrointestinal (GI) system anatomy, motility, secretion, digestion, absorption, regulation of GI function, nutrient storage*	20-21
34-35	Reproductive physiology *Reproductive system anatomy, gametogenesis, ovarian & uterine cycles, copulation, fertilization, pregnancy, parturition*	22

LAB DETAILS

Lab	**Odd Sections Lab Dates**	**Even Sections Lab Dates**	**Assignment**	**Due Date**	**Marks**
Lab 1 Introduction to iWorx and LabScribe 2	Jan 16-20	Jan 23-27	Partial lab report - **Results**	One week after lab at 2:30pm (hand in to drop box)	4%
Lab 2 Muscle Physiology	Jan 30-Feb 3	Feb 6-10	Partial lab report - **Discussion**	One week after lab at 2:30pm (hand in to drop box)	6%
Lab 3 Human Cardiovascular System	Feb 13-17	Feb 27-Mar 3	**Full formal lab report**	Two weeks after lab at 2:30pm (hand in at start of lab 4)	10%
Lab 4 Human Respiration	Mar 6 - 10	Mar 13-17	**Full formal lab report**	Two weeks after lab at 2:30pm (hand in to drop box)	10%

Lab manuals for each lab will be made available on Avenue to Learn, and must be brought to the lab.

* You must bring a USB stick to labs on which to save your data. Wear comfortable clothing that will permit mild exercise.

Please check your schedule to ensure that you know which lab room your section is assigned to. Students must attend the lab section to which they have been assigned. Those with **ACADEMIC CONFLICTS ONLY** should arrange their own lab change through Mosaic. **It is your responsibility to attend the correct lab section and room**. **NOTE: If you are absent from your lab, you may not attend another lab section without previously contacting the instructional assistant. If you cannot attend another lab section, you will be required to submit an MSAF.**

In the event of a storm closure check Avenue to Learn for alternate arrangements for those lab sections. Specific information may be sent to your McMaster email address. **NO OTHER EMAIL ADDRESSES WILL BE USED**.

POLICY REGARDING MISSED WORK IN THE FACULTY OF SCIENCE

Undergraduate students who have missed academic work resulting from a medical or personal situation, lasting up to 3 calendar days, may request relief, once per term, without documentation, using the McMaster Student Absence Form (MSAF). 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 the Instructional Assistant's contact email (leesk2@mcmaster.ca). Please note that the MSAF may not be used for term work worth 25% or more, nor can it be used for the final examination.

IMPORTANT NOTE – Students MUST complete all of the lab components to receive credit for Biology 2A03.

POLICY ON LATE LAB REPORTS

i) Formal lab reports are due at the beginning of the lab (8:30AM or 2:30PM) two weeks after you performed the exercises. Reports received after the deadline will not be marked and will receive a grade of zero.

ii) Partial lab reports are due at the beginning of the lab (8:30AM or 2:30PM) one week after you performed the exercise. They are to be submitted to the correct dropbox opposite LSB-109. Reports received after the deadline will not be marked and will receive a grade of zero.

POLICY ON MISSED TESTS

The weight of a missed test will be added to the final exam if an MSAF is provided. Missed tests without a MSAF will receive a grade of zero.

ACADEMIC DISHONESTY

Attention is drawn to the Statement on Academic Ethics and the Senate Resolutions on Academic Dishonesty as found in the Senate Policy Statements distributed at registration and available in the Senate Office. Any student who infringes any one of these resolutions will be treated according to published policy.

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 in 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 students may find it helpful to discuss assignments with each other, it is not acceptable to prepare common answers. **Where laboratories require you to work in groups the data obtained will be all the same, but your treatment of it (tables, graphs, Results & Discussion) must be your own individual work.** Your answers to theory questions, results & discussion & computer derived graphs should be your own. **For example, you and your lab partner(s) cannot print/insert 2 to 4 versions of the same graph(s) in your lab reports even though you are working with the same data. Each student must create and print/insert their own versions of the graphs in biology labs even though their data is the same as their lab partners.**
3. Copying or using unauthorized aids in tests and examinations.

GRADES

Please discuss any uncertainties about term grades with your TA **before the final exam is written**. Grades obtained for 2A03 will be converted according to the scheme used at McMaster University.

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

Disclaimer in the event of strikes, pandemics or other unanticipated circumstances

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 either type of 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.