

BIOLOGY 2A03
Integrative Physiology of Animals
Winter Term – 2019

INSTRUCTOR: Dr. Grant McClelland, grantm@mcmaster.ca. Office hours TBA.

COURSE COORDINATOR: Alison Cowie, cowieal@mcmaster.ca

Lab technician: Julie Zimmerman (LSB106)

LECTURES: Mon, Wed, Thurs 1:30–2:20pm in CNH 104

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

RECOMMENDED TEXTBOOK: A textbook is not required for this course. Lectures will be based on material in the following textbooks, either of which is recommended as an optional supplemental resource for the course:

Moyes & Schulte, *Principles of Animal Physiology* (3rd edition), Pearson Benjamin Cummings

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

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

IMPORTANT DATES:

Week of Jan 7 Classes begin
 Week of Jan 21 Lab 1 for ODD lab sections
 Week of Jan 28 Lab 1 for EVEN lab sections
 Thursday Feb 7 Test #1 in class
 Feb 18 - 24 Mid-term recess
 Thursday March 7 Test #2 in class
 Apr 9 Classes End

TENTATIVE LECTURE TOPICS

CHAPTERS (Moyes)	TOPIC
1-2	Introduction to Animal Physiology <i>Integration, form and function, homeostasis, animal evolution</i>
3	Cellular energy metabolism <i>Energy metabolism, enzyme function</i>
3	Cellular membrane transport <i>Diffusion, active transport, membrane potential, epithelia</i>

4	Cell signalling and the endocrine system <i>Chemical messengers, signal transduction, endocrine organs, hormones</i>
5,7,8	Neurons and nervous systems <i>Nervous system organization, graded potentials and action potentials, synaptic transmission, sensory systems, autonomic nervous system</i>
6,12	Muscle function and locomotion <i>Motor proteins, muscle structure, sliding filament model, cross-bridge cycle, excitation-contraction coupling, motor units and recruitment, fibre types</i>
9	Circulatory systems <i>Circulatory systems in animals, cardiac cycle, cardiac muscle function, blood vessels, regulation of blood pressure and flow, capillary filtration, lymphatics</i>
11	Respiratory systems <i>Respiratory systems in animals, ventilation and gas exchange, gas transport to tissues, respiratory pigments, control of ventilation</i>
13	Regulation of ion and water balance <i>Strategies for ionic and osmotic regulation, nitrogen excretion, kidney structure and function, evolutionary diversity of excretory systems</i>
14	Digestion and assimilation of nutrients <i>Digestive systems in animals, motility, secretion, digestion, absorption, regulation of digestive system function, nutrient storage</i>
16	Reproductive physiology <i>Sex determination, gametogenesis, fertilization, ovarian & uterine cycles, copulation, pregnancy, parturition</i>

LAB DETAILS

Lab	Odd Sections Lab Dates	Even Sections Lab Dates	Assignment	Due Date	Marks
Lab 1: Introduction to iWorx and LabScribe 2	Jan 21 - 25	Jan 28 - Feb 1	Partial lab report - Results	One week after lab at 2:30pm (hand in to drop box)	4%
Lab 2: Muscle Physiology	Feb 4 - 8	Feb 11 - 15	Partial lab report - Discussion	One week after lab at 2:30pm (hand in to drop box)	6%
Midterm recess	Feb 18 - 24	Feb 18 - 24	No labs		
Lab 3: Human Cardiovascular System	Feb 25-Mar 1	Mar 4-8	Full formal lab report	Two weeks after lab (hand in at start of lab 4)	10%
Lab 4: Human Respiration	Mar 5 - 9	Mar 12-16	Full formal lab report	Two weeks after lab (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 course coordinator. 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, please put Alison Cowie as the contact email (cowieal@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 the lab. Reports received after the deadline will be penalized at 10% per day.
- ii) Partial lab reports are due at the beginning of the lab (8:30AM or 2:30PM) one week after you performed the lab. They are to be submitted to the correct dropbox opposite LSB-109. It is your responsibility to ensure they are placed in the correct dropbox. Reports received after the deadline or found later in the wrong dropbox, will be penalized at 10% per day.

If you need to use the MSAF to extend the deadline for a lab report the extension granted will be 48 hours from the time the lab report was due, irrespective of when you submit the MSAF. You must contact Alison Cowie immediately to be accommodated. Exceptions to this will reviewed on an individual basis.

POLICY ON MISSED TESTS

With an approved MSAF the weight of a missed test will be added to that of the final exam. Missed tests without a MSAF will receive a grade of zero. You must contact Alison Cowie by email after filing the MSAF.

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.

ACADEMIC ACCOMMODATION

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 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.

GRADES

Please discuss any uncertainties about term grades with the course coordinator **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.