

**BIOLOGY 3U03**  
**Animal Physiology: Homeostasis**  
Term I – 2018

**OUTLINE:** The focus of this course is homeostasis in systems physiology and the mechanisms which achieve it. This course will cover the regulation of the cardiovascular system, the maintenance of fluid and electrolyte balance, kidney function, the principles of acid-base homeostasis, and respiratory function and ventilatory control systems. Aspects of animal metabolism will also be covered. The emphasis will be on higher vertebrates, principally mammals, but many examples and some laboratory exercises will employ non-mammalian vertebrates so as to provide a broader coverage for the course.

**IMPORTANT NOTE:** This course involves mandatory laboratory exercises involving the use of animals. In one exercise, animals will be sacrificed (painlessly) as part of the experiment. Other exercises involve experiments on the human body (your own). **IF YOU HAVE OBJECTIONS TO ANY OF THESE PROCEDURES, YOU SHOULD NOT TAKE THIS COURSE.**

**PREREQUISITES:** BIOLOGY 2A03, or both BIOLOGY 1A03 (or ISCI 1A24) and six units from KINESIOL 1A03, 1AA3, 1Y03, 1YY3, 2Y03, 2YY3; and registration in Level III or above of any Honours program. BIOCHEM 2EE3 and 3G03 are recommended. BIOLOGY 2A03 is strongly recommended.

**INSTRUCTOR:** Dr. Mike O'Donnell (LSB 524; [odonnell@mcmaster.ca](mailto:odonnell@mcmaster.ca))

**UNDERGRAD COORDINATOR:** Dr. Mihaela Georgescu (LSB 119A; [mgeorg@mcmaster.ca](mailto:mgeorg@mcmaster.ca))

**TEACHING ASSISTANTS:** Brittney Borowiec, [borowibg@mcmaster.ca](mailto:borowibg@mcmaster.ca); Michael Couchman, [couchmam@mcmaster.ca](mailto:couchmam@mcmaster.ca); Soren Coulson, [coulsoz@mcmaster.ca](mailto:coulsoz@mcmaster.ca); Catherine Ivy, [ivyxm@mcmaster.ca](mailto:ivyxm@mcmaster.ca); Samantha Lau, [lausc@mcmaster.ca](mailto:lausc@mcmaster.ca); Andrea Murillo, [murilloa@mcmaster.ca](mailto:murilloa@mcmaster.ca); Oliver Wearing, [wearingo@mcmaster.ca](mailto:wearingo@mcmaster.ca); Claire West, [westc6@mcmaster.ca](mailto:westc6@mcmaster.ca).

**LECTURES:** Thursdays and Fridays 11:30 am - 12:20 pm in MDCL 1110

**LABORATORIES/SEMINARS:** Tues, Wed, Thu 8:30 - 11:20 am and 2:30 - 5:20 pm in LSB 109 (Lab manual will be available via Avenue 2 Learn.)

Changes from assigned sections may be made for reasons of **academic conflict only**.

Make your own section switches via MOSAIC. If you are absent from your lab, you may not attend another lab section without previously contacting the undergrad coordinator. Otherwise you will be required to submit an MSAF or a grade of zero will be recorded.

**REQUESTS FOR RELIEF FOR MISSED ACADEMIC TERM WORK**

If you are absent from the university for a minor medical/personal 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.

Please note that the MSAF may not be used for term work worth 25% or more. Immediately after using the online tool, students MUST **contact Mihaela Georgescu (mgeorg@mcmaster.ca)** regarding the nature of the relief. Failure to do so may negate the opportunity for relief.

**RECOMMENDED TEXT:** Guyton, A.C. and Hall, J.E. Textbook of Medical Physiology. 12<sup>th</sup> or 13<sup>th</sup> Edition. W.B. Saunders Co.

IMPORTANT: The online version of the text is available at: <https://studentconsult.inkling.com/> Search for “Guyton and Hall” and select the 13<sup>th</sup> edition. The course includes material from units III (The Heart), IV (The Circulation), V (Body Fluids and Kidneys) and VII (Respiration). You can buy individual units rather than the whole text. Apps are available for access via your smart phone etc.

Many other comparative and environmental physiology textbooks may be useful resources for the laboratory portion of the course.

**MARKS:** 25% - Midterm (50 minutes, during class)  
40% - Laboratories/Seminars (1 seminar, 2 in-lab quizzes and 3 lab reports)  
35% - Final Exam (2 hours, December exam period as scheduled by the registrar)

**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.”

**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](mailto:sas@mcmaster.ca). For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities. <http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

Once your accommodation was being acknowledged by the instructor, please contact Mihaela Georgescu ([mgeorg@mcmaster.ca](mailto:mgeorg@mcmaster.ca)) to discuss your accommodation needs in the course.

### Laboratory/Seminar Schedule

Week	Date	Lectures	Laboratory/Seminar	Assignment (marks)
1	Sept 4 – 7	2	No Lab	
2	Sept 10 – 14	2	1. Introductory Laboratory/Animal Handling Lecture	
3	Sept 17 – 21	2	2. Exercise, Heart Rate, ECG and Peripheral Blood Flow	Quiz (3%)
4	Sept 24 – 28	2	Seminars	Seminar (7%)
5	Oct 1 – 5	2	3. Autonomic Control of Frog Heart	Lab Report (8%)
6	Oct 8 – 12	0	NO LABS (Mid-term Recess)	
7	Oct 15 – 19	2	4. Vagal Tone	Quiz (3%)
8	Oct 22 – 26	1 (midterm Oct. 26)	NO LABS	
9	Oct 29 – Nov 2	2	NO LABS	
10	Nov 5 – 9	2	5. Animal Respiration	Lab Report (9%)
11	Nov 12 – 16	2	Seminars (continued)	Seminar
12	Nov 19 – 23	2	6. Human Kidney Function	Lab Report (10%)
13	Nov 26 – 30	2	NO LABS	
14	Dec 3 – 5	0	NO LABS	Total = 40% of your final mark

### POLICY ON LATE LAB REPORTS

1. Lab reports and seminar reports are due at 8:30 am or 2:30 pm – one week after completion of the lab i.e. at the start of the next lab (or seminar) period, unless you are told otherwise.
2. All reports must be handed in as hard copies unless otherwise instructed.
3. A McMaster Student Absence Form is required if you miss attending a lab, seminar or a report submission deadline. These are submitted using MOSAIC. Ensure you enter [mgeorg@mcmaster.ca](mailto:mgeorg@mcmaster.ca) as the contact.
4. If you do not hand in a lab report but submit an MSAF or can provide a valid reason that is approved by the Associate Dean's Science Office, your accommodation will be a 48 hour extension from the lab report due date, regardless when the MSAF was submitted.

## **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/policy/Students-AcademicStudies/AcademicIntegrity.pdf>

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.**

Students should be aware that by providing their laboratory reports, essays or exams scripts to other students they may be helping that student commit an act of academic dishonesty.

**GRADES:** Grades 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			