

BIOLOGY 3MM3

Invertebrate Form and Function

Term 2 (Winter) – 2018

OUTLINE

Analysis of sensory reception, nervous control systems, feeding, skeletal support, locomotion, excretion, respiration and reproduction in selected invertebrates.

Courses in invertebrate zoology tend to fall into one or the other of two categories: they are either systematic treatments covering each group of animals phylum by phylum, or they are functional approaches concerning invertebrate anatomical and physiological systems (respiration, movement, excretion, feeding, *etc.*). This course blends these two approaches. We start with a brief overview of the characteristics of each of the major phyla (e.g. arthropods, molluscs, echinoderms *etc.*), and then go on to functional analyses. We can thus compare and contrast the different mechanisms that have evolved for processes such as feeding, moving and breathing, and we can consider how these mechanisms are appropriate in the context of the animal's environment.

PREREQUISITES

BIOLOGY 2A03, or both BIOLOGY 1A03 (or ISCI 1A24 A/B) and six units from KINESIOL 1A03, 1AA3, 1Y03, 1Y3, 2Y03, 2Y3; and registration in Level III or above of any Honours program.

INSTRUCTOR

Dr. Mike O'Donnell
LSB 524/530
odonnell@mcmaster.ca

Undergraduate Coordinator

Dr. Mihaela Georgescu
LSB119
mgeorg@mcmaster.ca

NOTE: *Please use the e-mail above, I do not read e-mails on avenue.*

LAB DEMONSTRATORS

Catherine Ivy (ivycm@mcmaster.ca)

Ian Turner (turnei1@mcmaster.ca)

LECTURES

Tuesdays and Thursdays 11:30AM -12:20 PM in HSC 1A4

LABS: LSB 105

Wednesdays and Thursdays 8:30-11:20 AM and 14:30 – 17:20 PM.

You may make lab section changes via Mosaic.

TEXT AND LABORATORY MANUAL

Custom Courseware: BIOLOGY 3MM3 Invertebrate Form and Function

Note: The CourseWare includes all lecture overheads and outlines as well as the laboratory manual. (Please note that the price includes copyright costs for material from 16 different textbooks, laboratory manuals and journals).

Website: Additional material (including lecture notes, photographs, video clips and animations) is available on the course website on Avenue to Learn: <http://avenue.mcmaster.ca/>

LECTURE TOPICS

2 - 4 lectures per topic

1. Characteristics of the Major Invertebrate Phyla – a Brief Summary
2. Temperature and Invertebrate Life
3. Feeding
4. Neural and Sensory Systems
5. Support and Locomotion
6. Circulation and Respiration
7. Excretion, Ionic and Osmotic Regulation, and Buoyancy

EVALUATION

Lectures:	15%	Midterm Test – February 13 th
	10%	Internet Assignments (2 @ 5% each)
Laboratories:	15%	(5 dissection quizzes @ 3% each)
	25%	(5 labs @ 5% each)
Final Exam:	<u>35%</u>	
Final Mark:	100%	

Laboratory Schedule* **BIOLOGY 3MM3 – 2018**

(Reports due in your lab section the following week)

Week	Date	Lab Type	Topic
1	Jan. 3, 4	NO LAB	<i>No Laboratories this week</i>
2	Jan. 10, 11	LABORATORY	Effect of temperature on heart rate and ventilation rate in the water flea, <i>Daphnia</i>
3	Jan. 17, 18	DISSECTION	Lubber grasshopper and cricket
4	Jan. 24, 25	LABORATORY	Active dye transport by insect Malpighian tubules
5	Jan. 31, Feb.1	DISSECTION	Crayfish
6	Feb. 7, 8	NO LAB	<i>No Laboratories this week</i>
7	Feb. 14, 15	NO LAB	<i>No Laboratories this week</i>
8	Feb. 21, 22	<i>Mid-term recess</i>	<i>No Laboratories or lectures</i>
9	Feb. 28, Mar. 1	LABORATORY	Feeding
12	Mar. 7, 8	DISSECTION	Clam and squid
10	Mar. 14, 15	LABORATORY	Nitrogen metabolism: Aquatic versus terrestrial invertebrates
11	Mar. 21, 22	DISSECTION	Earthworm
13	Mar. 28, 29	LABORATORY	Invertebrate smooth muscle
14	Apr. 4, 5	DISSECTION	Sea star

*May be subject to change without prior notice at the instructor's discretion

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			

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 (<http://mcmaster.ca/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.

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. **It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work.**

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. <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) to discuss your accommodation needs in the course.

POLICY ON LAB REPORTS

1. Lab reports are due at 2:30 pm one week after completion of the lab (i.e. at the start of the next lab period, unless you are told otherwise)
2. All reports must be handed in as hard copies. Electronic copies will not be accepted.
3. Reports received after 2:40 pm on the due date will receive a 20% deduction
4. Reports received after 5:30 pm on the due date will not be marked.
5. A McMaster Student Absence Form is required if you miss attending a lab or a report deadline.

6. If you do not hand in a lab 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.

POLICY ON INTERNET ASSIGNMENTS

20% deducted per day^{SEP}

POLICY ON MISSED MIDTERM

If you are absent from the midterm and have proper documentation (e.g. MSAF or doctor's note submitted to Associate Dean's office), the value of the midterm (15%) will be added to the final examination, which will thus be worth 50% of the final mark.

In the absence of an MSAF submission or Associate Dean's approval, a mark of zero will be assigned.

CHANGES TO THE COURSE OUTLINE

At certain points in the course it may make good sense to modify the schedule outlined. The instructor reserves the right to modify elements of the course and will notify students accordingly, both in class and on Avenue to Learn. Posted changes take precedence over this course outline.

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 website (Avenue) regularly during the term and to note any changes.

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.**