BIOLOGY 3XL3

Comparative Vertebrate Anatomy & Physiology

Term I – 2015

OUTLINE:

Major organ systems (cardiovascular, respiratory, renal, skeletal, muscle, gastrointestinal) form and function compared across taxa (within vertebrates) and environments (heat, cold, salt, and oxygen stress)

PREREQUISITES:

BIOLOGY 2A03, or both BIOLOGY 1A03 (or ISCI 1A24 A/B) 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:

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INSTRUCTIONAL ASSISTANT:

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DEMONSTRATORS:

Cayleih Robertson
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LECTURES:

Tuesday and Friday, 8:30-9:20 in GS 101

LABORATORIES:

Wednesdays or Thursday, 14:30-15:20 in LSB 109

*Instructor-mediated 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 instructional assistant. Otherwise you will be required to submit an MSAF or a grade of zero will be recorded.*

TEXT:

Strongly Recommended:
Hill, Wyse, and Anderson (2008 or 2012). Animal Physiology (2nd edition or 3rd edition). Sinauer, Inc.

Additional Resources: *A number of comparative and environmental physiology and anatomy texts and other resources useful for the laboratory part of the course are available upon request from the Instructional Assistant or the Instructor.*

LAB MANUAL:

Laboratory handouts will be available on Avenue to Learn.

MARKS:

Intro Lab	1%
Dissection Quiz 1	2%
Dissection Quiz 2	2%
Dissection Quiz 3	2%
Dissection drawings (3 sets)	2%
Formal Lab 1	5%
Formal Lab 2	6%
Formal Lab 3	6%
Formal Lab 4	6%
Assignment 1	4%
Assignment 2	4%
Lab Component	**40%**
Midterm (Oct 26, 6:30-8, JHE A102)	**25 %**
Exam (2h, scheduled by the registrar)	**35%**
Total:	100%

LAB REQUIREMENTS (per group):

1. Dissecting kit (highly recommended) - coarse and fine scissors, forceps, scalpel with removable blades, blunt probe
2. Calculator
3. Lab coat

STATEMENT FROM AREB REGARDING USE OF ANIMALS IN LAB:

Some of the labs involve the use of animals for teaching purposes. It has been reviewed and approved by McMaster University's Animal Research Ethics Board (AREB). AREB is responsible for ensuring appropriate procurement, care and use of animals for research or teaching at all McMaster University affiliated Animal Facilities and Laboratories including those located at Hamilton teaching hospitals under its jurisdiction following the guidelines and policy statements established by the Canadian Council on Animal Care (CCAC), and legislation as presented in the Animals for Research Act, Ontario (1980) and administered by the Ontario Ministry of Agriculture and Food and Rural Affairs (OMAFRA). The Board ensures that procedures commensurate with current veterinary standards outlined by the Canadian Association of Laboratory Animal Medicine to ensure that:

- Unnecessary pain or distress is avoided, and animal stress and injuries are avoided, whether during transfers of animals or in their normal quarters;

- Anaesthesia and analgesia are properly and effectively used;
- Appropriate post-operative care is provided;
- All due consideration is given to animal welfare, including environmental enrichment; and
- Animal users and teaching assistants are properly trained and experienced in animal handling and procedures.

IMPORTANT NOTE:

This course involves mandatory laboratory exercises involving the use of animals. In several of the exercises, animals will be killed (painlessly) either as part of the experiment, or to provide tissues for the experiment. IF YOU HAVE OBJECTIONS TO ANY OF THESE PROCEDURES, YOU SHOULD NOT TAKE THIS COURSE.

MSAF POLICY:

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar "Requests for Relief for Missed Academic Term Work".

Please note these regulations have changed beginning Fall 2015, most notably:

- The timeframe within which the MSAF is valid has been reduced from 5 days to 3 days.
- The upper limit for which an MSAF can be submitted has been reduced from 'less than 30%' to 'less than 25%' of the course weight.

The entire MSAF policy is available in the Undergraduate Calendar 2015-16 (Fall/Winter) > General Academic Regulations > Requests for Relief for Missed Academic Term work.
Please review the entire policy prior to submitting any requests.

When using the MSAF, report your absence to the Instructional Assistant (Ryan Belowitz) immediately (normally within two working days) by email (belowir@mcmaster.ca). This form should be filled out immediately **when you are about to return to class after your absence**.

POLICY ON LATE LAB REPORTS/ASSIGNMENTS

1. Lab reports/assignments are due 1 week after the lab (unless told otherwise)
2. All reports must be handed in as hard copies to your TA at the beginning of your lab (i.e. at 14:30). Electronic copies will not be accepted.
3. Reports received after 2:40 pm on the due date will receive an automatic 20% deduction.
4. Reports received after 5:30 pm on the due date will not be marked.

MSAF ACCOMODATION FOR LAB REPORTS, ASSIGNMENTS AND MIDTERM

NOTE – These accommodations are based on legitimate and documented reasons for absence, and are subject to change at the instructor's discretion

1. If you miss attending a lab, a MSAF form (or permission from the Associate Dean's Office) is required.
2. If the missed lab was a dissection lab, the value of the missed work will be added to the exam.
3. If the missed lab was a formal lab or assignment, you must contact the IA (Ryan Belowitz) to learn what relief will be granted.
4. If you miss the midterm, a re-write may be arranged (determined on a case by case basis)

BIOLOGY DEPARTMENT STATEMENT ON ACADEMIC DISHONESTY

The Department of Biology considers academic dishonesty to be a very serious matter. Instructors will seek to identify instances of academic dishonesty, charge those responsible and impose the appropriate penalty as defined by Senate regulations. The penalty for academic dishonesty is high. We have prepared the following guidelines to ensure that you are aware of what the Department of Biology considers academic dishonesty. Study these examples with care so that you will never inadvertently commit such an offence.

A. Deliberate Cheating – Examples include:

- Use of unauthorized aids during an exam.
- Alteration of an exam after it has been returned and claiming that the altered sections were present in the original exam script.
- Alteration of the marks given on an exam and then claiming that the original addition was incorrect.
- Verbal communication of answers from one student to another during a test.
- Allowing someone else to write an exam in your place.

B. Presentation of Material That Is Not Your Own Work – Examples include:

- Copying an answer from another student during an exam.
- Copying (either directly or after memorization) from texts, lab reports, essays, old exam scripts, etc. written by others without appropriate reference citation.
- Submitting essays, drawings, micrographs, cultures or other laboratory results that were prepared or obtained by others as though they were your own.

C. Aiding Other Students to Commit an Act of Academic Dishonesty

This includes not only giving unacceptable aid to students taking a course at the same time you are taking the course, but also providing the means whereby students in future may cheat.

Examples include:
- Writing an exam or completing an assignment for someone else.

- Assisting another student to cheat by making it possible for that student to see your exam.
- Discussing an exam that you have just completed with students from other sections that have yet to write the exam.

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.

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Laboratory/Lecture Schedule*

Active learning is more effective than passive learning

"What I hear, I forget; what I see, I remember; what I do, I understand"

- Chinese Proverb

Week	Date	Lecture	Lecture Topic*	Laboratory*	Assignment*
1	Sept 8-11	1-2	Introduction/ Muscle Function	Intro Lab	In lab assignment (1%)
2	Sept 14-18	3-4	Specialized Muscles	Dissection 1 (muscle)	In lab quiz 1 (2%) + drawings
3	Sept 21-25	5-6	Running, Flying and Swimming	Anoxia Tolerance	Formal report 1 (5%), due week 4
4	Sept 28– Oct 2	7-8	Respiratory System	Properties of Skeletal Muscle	Assignment 1 (4%), due week 5
5	Oct 5 - 9	9-10	Respiratory System	Dissection 2 (rabbit)	In lab quiz 2 (2%) + drawings
6	Oct 12-16		Midterm Recess	No Lab (Midterm Recess)	n/a
7	Oct 19-23	11-12	Respiratory System, Cardiovascular System	Dissection 3 (dogfish)	In lab quiz 3 (2%) drawings
8	Oct 26-30	13-14	Cardiovascular System	Comparative Respiration	Formal report 2 (6%), due week 9
9	Nov 2-6	15-16	Cardiovascular System	Trout Blood Vessel Perfusion	Assignment 2 (4%), due week 10
10	Nov 9-13	17-18	Water Balance and Nitrogen Excretion	Nitrogen Metabolism	Formal report 3 (6%), due week 11
11	Nov 16-20	19-20	Feeding and Digestion	No Lab	n/a
12	Nov 23-27	21-22	Ionoregulation and Osmoregulation	Trout Gut Transport	Formal report 4 (6%), due week 13
13	Nov 30- Dec 4	23-24	Ionoregulation and Osmoregulation	No Lab	
14	Dec 7-8			No Lab	

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