Animal Physiology I
BIOL 3173/ 3170L

Instructor: Brian Wilson (he/him)
Hear my name
Office: Biology Bldg. 106
Office hours: M, T, W & F 8:30-10:20am
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Lecture: M, W & F, HSH 202, 10:30-11:20
Lab: BIO 240
FA01 – Monday, 1:00-3:50pm
FA02 – Tuesday, 1:00-3:50pm

Evaluation	Percentage	Date
End of module quizzes	(4 X 17.5%) = 70%	Q1 Oct 4; Q2 Nov 8; Q3 Nov 25; Q4 TBA
Paper assignments	(4 X 5%) = 20%	Due 2 weeks after being assigned
Weekly review questions	(10 X 1%) = 10%	Due every Monday

Part 1: Course Information

Course Description

The objectives of this course are to introduce students to the principles and concepts of physiology and to compare physiological systems between and among animals. Topics discussed include tolerance and conforming to environmental change, regulating systems to maintain physiological setpoints, acclimation/acclimatization and adaptation to environmental change over different time scales.
Prerequisite(s): BIOL 1113, 1123, 2013 & 2073

Course Materials & Requirements

You will require a computer with reliable internet access, access to the course MOODLE page and access to the Vaughn Memorial Library's Biology LibGuide

Course Structure

Lecture material will be presented in 50min lecture slots in person.
Lectures will take place **M, W, & F** in **HSH 202**, **10:30AM-11:20AM**
Labs will take place in person in BIO240 on the following days:

Mon (Section FA01) and Tues (Section FA02), 1:00-3:50pm
****Labs will begin the 2nd week of classes**

Student Learning Outcomes

1. Understand the scope of physiology; different levels of study, different subdisciplines and proximate vs ultimate approaches.
2. Understand the concepts of homeostasis and steady state; know that animals regulate to setpoints or conform to environmental changes. Animals have different levels of tolerance for environmental change.
3. Understand how different animals circulate respiratory gases and nutrients to cells/tissues and clear wastes.
4. Understand how animals ventilate respiratory surfaces to maximize oxygen uptake and liberate CO2 produced from aerobic metabolism; understand the basis by which the respiratory and urinary systems buffer pH changes.
5. Understand how animals regulate water and salt content of body fluids.

How to Meet the Learning Outcomes

1. Attend lectures and labs.

2. Review all course content on MOODLE. Seek help with material during Office Hours.
3. Review consistently week by week. This is a content-rich course.
4. Complete case study assignments and weekly assignments.
5. Students will be evaluated on their performance on lecture quizzes, weekly questions, and Case Study assignments.

Part 2: Course Plan

Lecture:

Week 1	Introduction, syllabus
	Module 1: Physiology as a science, Organisms & Environment -change
Weeks 2-4	**Module 2**: Thermal physiology
Weeks 4-9	**Module 3**: Blood and Circulatory System
Weeks 10-12	**Module 4**: Respiratory System: Gas exchange and transport, Acid-Base balance
Weeks 12-14	**Module 5**: Urinary System: Osmoreg., Acid-Base balance
Quizzes	**Quiz 1**- Oct. 4, **Quiz 2**- Nov. 8, **Quiz 3**- Nov. 25, **Quiz 4**- TBD.
	Course materials are available on MOODLE.

The instructor reserves the right to amend the course plan with reasonable notice, and in consultation with the class.

Lab:

Week 2	Case 1 Thermoregulation; Introduction to Lab; Safety Case assignment 1
Week 3	Blood -composition, smears and staining, typing, clotting, HHMI BioInteractive
Week 4	Case 2 Blood Case 2 assignment
Week 5	No Lab – Truth and Reconciliation
Week 6	Circulatory System: iWorx – Auscultation, Blood Pressure, ECG
Week 7	No lab – Thanksgiving
Week 8	Circulatory System: Isolated Frog Heart

Week 9	Case 3 Circulatory System HHMI BioInteractive, McGill Physiol.; Case 3 assignment
Week 10	Respiratory System: iWorx: lung volumes and pulmonary effort
Week 11	No Lab -Remembrance Day
Week 12	Case 4 Respiratory System Case 4 assignment

Part 3: Assessment and Grading

Points	Description
Quizzes (70%)	4 quizzes, 17.5% each
Case study assignments (20%)	4 short assignments worth 5% each
Review Qs (10%)	weekly review (1 point each)
100	**Total Points Possible**

You are required to pass the lab to pass the course. Case study assignments will be assigned after each case study. Each assignment is to be completed in Microsoft Word and submitted via the link on the MOODLE web page for the course. The format and details of these assignments will be introduced in the first lab period.

Part 4: Course Policies

Work plan:

The course is organized into 5 modules (refer to the schedule above) and the expectation is that students will review material consistently each week. The course is content-rich and approaching your studies in a structured way will improve your chance at success.

Missed quizzes:

Quizzes will be written during lecture periods (see schedule). Missed quizzes will result in a grade of zero being assigned for that quiz. Students will NOT be allowed to write makeup quizzes. When documentation is provided to the Registrar's Office, which supports a medical excuse, the weighting of the missed exam/quiz will be applied to a subsequent exam/quiz. If students know that they will be missing an exam or quiz ie: for a job or admissions interview, arrangements can be made to write the exam or quiz before the scheduled time. Arrangements must be made at least one week PRIOR to the quiz date.

https://registrar.acadiau.ca/RecordsandOtherRequests.html

Late work:

Any assignments handed in after the due date will be accepted for up to 2 days afterwards. The student will be penalized 10% of the grade per day late up to 20% (2nd day). If an assignment is not handed in after 2 days, it will be assigned a grade of zero.

Part 5: University Policies

University policies are available in the Acadia University Academic Calendar or through the Registrar's website: https://registrar.acadiau.ca/welcometotheregistrarsoffice.html

Equity, Diversity and Inclusion

Acadia University is committed to becoming a culturally safe and anti-oppressive community. This can only be achieved where there are simultaneous efforts to eliminate all forms of discrimination and harassment from our campus community, including the elimination of all discrimination, harassment and violence based on one's identity, including but not limited to, gender, race, class, ethnicity, sexual orientation, disability, gender identity, gender expression, and Indigeneity. The policy against harassment and discrimination, and resources for students who believe they may have experienced, or witnessed, discrimination or harassment, are available here: https://www2.acadiau.ca/student-life/equity-judicial/equity.html

Last Drop Day

Last day to drop a course and receive a "W". Please check the Acadia University calendar dates, which are available here: https://registrar.acadiau.ca/AcademicCalendars.html

Inform Your Instructor of Accommodations

Acadia University is dedicated to improving access to campus life for all students with disabilities. While we attempt to ensure that all courses are accessible, we recognize that there are barriers that need to be addressed on an individual basis. Students who require accommodations to complete coursework or otherwise fully participate in class should contact Accessible Learning Services directly as soon as possible. https://www2.acadiau.ca/student-life/accessiblelearning.html

The Use of Animals in Teaching and Research

The use of animals in teaching and research at Acadia University is done in accordance with guidelines on the care and use of animals published by the Canadian Council on Animal Care (CCAC). For more information on the CCAC, please visit their website at http://www.ccac.ca

Commitment to Integrity

It is standard practice in Biology to check exams and assignments for cheating and plagiarism. Cheating in the class and/or lab, including plagiarism, will not be tolerated. Please read the appropriate sections of the current Acadia University Academic Calendar: https://registrar.acadiau.ca/AcademicCalendars.html

Information on copy-write and course content from Acadia University is available through the Vaughan Memorial Library: http://libguides.acadiau.ca/c.php?g=433650&p=5027078

Students may not use generative AI, such as Chat GPT, or paraphrasing software, such as QuillBot, to help them complete assignments. When an assignment seems like it has been completed with the aid of one of these programs, the procedure for investigating academic integrity infractions will be followed (pages 40-41 of Acadia's Academic Calendar at https://registrar.acadiau.ca/AcademicCalendars.html).

The spoken and written course content (including the syllabus, handouts, lectures, presentations, labs, assignments, quizzes, tests, and exams) are the intellectual property of the instructor and may only be copied for personal use. Sharing these materials or uploading them where they may be accessed by others is a violation of copyright. If you wish to make audio, video, or photographic recordings in class, you must first obtain the consent of the instructor and of any other persons (e.g., guest speakers, other students) who may be captured in such recordings. In the case of personal use by students with disabilities, the instructor's consent shall not be unreasonably withheld.

Part 6: Program Learning Outcomes

Foundations of knowledge		**Course specific examples**	**Proficiency** 1-Introduction 2-Reinforcement 3-Proficient
Scientific method, inquiry and hypothesis testing	Find, understand and apply information from the literature; understand how to use the scientific method to examine problems from different perspectives	Experimental design, statistical models, normal distributions, variation.	2
Historical concepts and contributions by important figures	Explain foundational concepts in biology, Two-eyed Seeing, and ethical implications of scientific discoveries	Historical male bias/privilege in science; profiling discoveries of women and members of underrepresented minority groups	1
Biodiversity and ecology	Understand the genetic, taxonomic and ecosystem levels of biodiversity; focus on SW Nova including the Acadian Forest and Bay of Fundy ecosystems		0
Genetics and evolution	Understand the chemical basis of heredity, genetics and genomics; integrate concepts across disciplines to understand evolution	Natural selection, selective pressures, adaptation	2
Human and environmental health	Understand form and function in health and disease within a One Health framework, integrating human and environmental health	How organisms are intimately linked to environments	3
Lab and field skills			
Experimental design	Gain experience in applying the scientific method	Application of scientific method	1
Safety	Work safely and productively in lab and field settings	WHMIS and lab safety considerations	2
Lab skills	Gain experience with basic and advanced lab techniques and understand their application in research, health science and industry	Experience with basic lab skills and computer-based data acquisition systems.	2
Field skills	Gain experience in basic and advanced field skills and understand their application in ecology, conservation biology and environmental change		0
Data acquisition, analysis and interpretations	Collect data, present results both qualitatively and quantitatively, and interpret outcomes in light of the literature	Collect data, analyze statistically, prepare graphic and tabular output	2
Statistical analysis	Use R and or other programs to analyze biological data	Use R and other programs	2
Professional skills			
Ethical practices	Demonstrate ethical conduct, apply principles of academic integrity and understand the principles of EDI in science	Review literature considering ethics, EDI and academic integrity	2
Collaboration and group work	Work effectively in groups within and across disciplines	Case study work in groups	2
Critical thinking	Analyze and evaluate information to make science-based decisions	Case study work in groups	2
Computer proficiency	Use common and discipline- specific software	Use of software/hardware in data acquisition	2
Scientific communication	Communicate science effectively to both scientific and general audiences	Peer review of literature; criticism	2