

**University of Guelph
College of Biological Sciences
Department of Integrative Biology**

COURSE OUTLINE

**Lab Studies in Animal Physiology I (ZOO*3610)
Fall 2016**

COURSE DESCRIPTION

This course will provide practical experience in comparative animal physiology. Students in this class will conduct laboratory experiments on living tissues using various tools and instruments. Through a variety of exercises, the students will learn how to apply the scientific method to the study of physiology, how to collect and statistically analyze experimental data, and how to write a formal laboratory report. The exercises completed in this course will complement the material taught in Comparative Animal Physiology I (ZOO*3200).

Credit weighting: 0.25

Prerequisites: ZOO*3600 prerequisite or co-requisite

TEACHING TEAM

Professor Prof. Todd Gillis, Ph.D.

Course Instructor Peter Smith

Teaching Assistant Shayla Tuttle-Raycraft, Abiran Sritharan

COURSE SCHEDULE

Labs will be held in SCIE 3314 and are scheduled weekly for a total of 10 lab days.

Section:	Your lab days are:
101	Monday
102	-section closed-
103	Wednesday
104	Thursday

LEARNING OUTCOMES

By the end of the course student will be able to:

1. Utilize the scientific method to design laboratory experiments.
2. Utilize a variety of laboratory equipment to collect physiological data
3. Measure the rate and strength of contraction by an isolated frog heart
4. Characterize liver function in live trout
5. Properly statistically analyze and interpret laboratory results.
6. Create a properly formatted data figure
7. Write a coherent and concise laboratory report

COURSE RESOURCES

Required resources

Lab Studies in Animal Physiology I lab manual (manual available for sale from department)
Simple dissecting kit; tissue forceps, fine forceps, scissors

Courselink

This course will make use of the University of Guelph's course website on D2L (via Courselink). Consequently, you are responsible for all information posted on the Courselink page for ZOO*3610. Please check it regularly. Course notices and discussions will also be posted here.

Undergraduate Calendar

The Undergraduate Calendar is the source of information about the University of Guelph's procedures, policies and regulations, which apply to undergraduate programs. It can be found at: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/>

COURSE CONTENT

Lab Activities		
Week	Lab activity and/or experimental study	Associated Assignment
1	How to accurately measure liquids and solids Calibrate a spectrophotometer Determine Lambda max	Appropriate figure and caption
2	How to generate and plot a standard curve Characterizing the influence of osmotic strength on erythrocyte volume	Methods and Figure
3	Quantifying passive transport through a membrane	Results and Discussion
4	Self-directed investigation of temp. effect on diffusion	Methods, Results and Discussion
5	Muscle physiology instrumentation	figure
6	Autonomic control mechanisms in frog heart	Lab Report
7	Skeletal muscle control and mechanics	Lab Report
8	Measuring glucose in biological samples	figure
9	Examination of the hormonal control of trout liver glucose metabolism <i>in vitro</i>	Lab Report

EVALUATION

Assessment			
Form of Assessment	Weight of Assessment	Due Date of Assessment	Learning Outcomes Addressed
Lab 1 – Fig.	3%	Next week	2,6,
Lab 2 – Methods + Fig.	8%	“	2,6,
Lab 3 – Results + Disc.	10%	“	1,2,5,6,
Lab 4 – Methods + Results + Disc.	12%	“	2,5,6,
Lab 5 – Fig.	3%	“	2,6,
Lab 6 – Lab Report	15%	“	1,2,3,5,6,7
Lab 7 – Lab Report	20%	“	1,2,5,6,7
Lab 8 – Fig.	4%	“	2,6,
Lab 9 – Lab Report	25%	“	1,2,4,5,6,7

WEIGHT OF ASSESEMENTS

The relative value of the lab assignments increases through the semester as the complexity of the associated exercises increase. Lab Reports for labs 6,7, &9 will be complete, formal lab reports describing the experiments completed. These reports will be expected to contain all components of a published scientific study.

USE OF ANIMALS

This course uses selected vertebrates for dissection. The University is committed to principles of conducting research and teaching in accord with the highest ethical standards. Given that the use of animals, in research and teaching, is a critical aspect of the work of the University of Guelph, the Department of Integrative Biology is committed to minimizing the use, pain, and suffering of animals used for teaching and to ensuring that animals which are used will receive care and treatment that meets or exceeds the standards outlined by provincial guidelines and statutes, and by the Guidelines of the Canadian Council on Animal Care. For more information http://www.uoguelph.ca/research/assets/acs/docs/university_animal_care_policy_and_procedures.pdf

COURSE AND UNIVERSITY POLICIES

Grading

Late Policy: Lab assignments and reports are due in the D2L Dropbox at the specified time (see the specific Dropbox for the time for your lab section). There are no extensions. The late penalty is 25% of assignment value per day or part thereof.

Lab Reports and assignments: Grades will be assigned according to the standards outlined in the U of G Undergraduate Calendar.

- **80 - 100 (A) Excellent.** An outstanding performance in which the student demonstrates a superior grasp of the subject matter, and an ability to go beyond the given material in a critical and constructive manner. The student demonstrates a high degree of creative and/or logical thinking, a superior ability to organize, to analyze, and to integrate ideas, and a thorough familiarity with the appropriate literature and techniques.
- **70 - 79 (B) Good.** A more than adequate performance in which the student demonstrates a thorough grasp of the subject matter, and an ability to organize and examine the material in a critical and constructive manner. The student demonstrates a good understanding of the relevant issues and a familiarity with the appropriate literature and techniques.
- **60 - 69 (C) Acceptable.** An adequate performance in which the student demonstrates a generally adequate grasp of the subject matter and a moderate ability to examine the material in a critical and constructive manner. The student displays an adequate understanding of the relevant issues, and a general familiarity with the appropriate literature and techniques.
- **50 - 59 (D) Minimally Acceptable.** A barely adequate performance in which the student demonstrates a familiarity with the subject matter, but whose attempts to examine the material in a critical and constructive manner are only partially successful. The student displays some understanding of the relevant issues, and some familiarity with the appropriate literature and techniques.
- **0 - 49 (F) Fail.** An inadequate performance. Meet a Course Requirement

When you cannot meet a course requirement:

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise **the course instructor** in writing, with your name, id#, and e-mail contact. See the undergraduate calendar for information on regulations and procedures for Academic

Consideration: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Centre for Students with Disabilities as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.uoguelph.ca/csd/>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community – faculty, staff, and students – to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

E-mail Communication

As per university regulations, all students are required to check their <uoguelph.ca> e-mail account regularly: e-mail is the official route of communication between the University and its students.

Drop Date

The last date to drop one-semester courses, without academic penalty, is the 40th drop day of the term of offering. See University calendar for dates: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Copies of out-of-class assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

Recording of Materials

Presentations which are made in relation to course work—including lectures—cannot be recorded or copied without the permission of the presenter, whether the instructor, a classmate or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

CAMPUS RESOURCES

The Academic Calendars are the source of information about the University of Guelph's procedures, policies and regulations which apply to undergraduate, graduate and diploma programs: <http://www.uoguelph.ca/registrar/calendars/index.cfm?index>

If you are concerned about any aspect of your academic program:

- make an appointment with a program counsellor in your degree program. <http://www.bsc.uoguelph.ca/index.shtml> or <https://www.uoguelph.ca/uaic/programcounsellors>

If you are struggling to succeed academically:

- There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist. <http://www.learningcommons.uoguelph.ca/>

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance. <https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations. <http://www.uoguelph.ca/~ksomers/>

If you have a documented disability or think you may have a disability:

- Student Accessibility Services (SAS) can provide services and support for students with a documented learning or physical disability. They can also provide information about how to be tested for a learning disability. For more information, including how to register with the centre please see: <https://www.uoguelph.ca/csd/>