

BIOB32H3 – Animal Physiology Laboratory

Winter 2014

Prerequisite: BIOB34H

“This course examines physiological mechanisms that control and coordinate the function of various systems within the body. The laboratory exercises examine properties of digestive enzymes, characteristics of blood, pharmacological regulation of heart rate, metabolic rate, kidney function, nerve function and action potentials, synaptic transmission, skeletal muscle function and mechanoreception.”

Instructor: Kenneth Welch, Ph.D.

Office: SW521C; Office Hours: Mondays/Wednesdays 3-4 PM

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Note: Due to privacy concerns **I can only respond to e-mails sent from an official U. Toronto e-mail address.** I will respond to e-mails as soon as is reasonable.

Lab Technician:

Christopher Armstrong & Joanne Pearce, SW322

Textbook(s): There is no mandatory textbook for this course. However, BIOB34 is the required prerequisite course. Animal Physiology (by Hill, Wyse, and Anderson) was used as the textbook in BIOB34 and I will assume you still have this textbook. That said, many/most of the topics covered in this course are basic physiological principles that are the same in humans and other animals. However, any recent (last 2-3) edition of a human or animal physiology textbook such as Eckert's Animal Physiology (Randall, Burggren and French), Human Physiology (by Silverthorn), Comparative Animal Physiology (by Withers), and Principles of Animal Physiology (by Moyes and Schulte) will give most of the pertinent information. I will place copies of some of these various animal physiology textbooks on reserve in the library.

It is **STRONGLY** recommended that you read relevant text from one of these textbooks. This reading will dramatically help with your studying for this course.

Note: I will provide suggested readings for upcoming lectures from the Moyes and Schulte and Eckert books. These are intended only to be helpful as you study. I can't provide this for every different textbook, so you are responsible for determining the relevant section to review from other textbooks.

Lectures: Monday 11 AM - 12 PM, Room HW216

The first lecture will be on January 6th and will introduce the course material. This lecture will be presented by TA Derrick Groom.

Lecture Notes: The lecture notes (the slides) will be posted on the course Blackboard site the day before (when possible), or immediately after, the lecture. Please let me know if there are any problems accessing these notes. If the lecture is not present on the site, it is not yet ready. You are strongly encouraged to take some notes while I talk about each slide.

There is no web option for this course. I believe there is great value in the interactive, live lecture experience. However, you are welcome to record the audio portion of my lectures on your own devices to review at home.

Material for Testing:

BIOB32 is a companion course to BIOB34. BIOB34 serves as a prerequisite and I will assume that students taking BIOB32 have taken BIOB34 (or a comparable course somewhere else). This is, after all, a pre-requisite course. You are expected to know material covered in BIOB34 as well as what I will cover or review in BIOB32. Where possible, I will try to review some of the material covered in BIOB34. However, due to time constraints, I cannot cover all that material again. Please review your notes from this course.

Lab Sections:

Section	Day	Time	Room	TA
PRA0001	Monday	1-4 PM	SW321	Derrick Groom
PRA0002	Monday	1-4 PM	SW323	Sen Sivalingham
PRA0003	Tuesday	11 AM-2 PM	SW321	Brandy Velten
PRA0004	Tuesday	2-5 PM	SW321	Brandy Velten
PRA0005	Tuesday	2-5 PM	SW323	Megan McPhee
PRA0006	Wednesday	11 AM-2 PM	SW323	Usama Malik
PRA0007	Wednesday	2-5 PM	SW321	Chris Armstrong
PRA0008	Wednesday	2-5 PM	SW323	Ruben Flam-Shepherd
PRA0009				<i>closed</i>
PRA0010	Thursday	1 PM-4 PM	SW321	Stephanie Ross

Note: Your TA is the first person you should turn to for answers about questions having anything to do with the lab. They know your lab section and the details of what happened in lab that week even when the instructor doesn't. Questions about the lecture or exams, etc., should be directed towards the instructor.

Course Homepage:

Available on Blackboard. I will post announcements, answers to questions, and other relevant information here.

You should check the course homepage weekly for announcements, and the homepage should be your **first stop** for general information about the course material and assignments.

Lab Manual: Available on Blackboard. Each lab will be posted at least 1 week prior to lab. You can record all data in manual pages, or on separate sheets stapled to your lab manual. You will need to download and read the manual for each week's lab PRIOR TO attending the lab so that you understand what is expected of you in each laboratory session.

Materials: **You are required to purchase a lab coat before the week of January 13th.** You must submit lab manual materials for grading in a DUOTANG folder. Disposable gloves are provided in lab.

BioPac Lab Software:

This is the second year we will be using new lab equipment and software for many of the labs. This new equipment has dramatically improved these labs. You will have the ability to analyze computer recordings of lab data outside of lab time. Outside of lab, data analysis will be completed using the BioPac Student Lab Analysis software package. You can download the software at: http://www.utsc.utoronto.ca/~kwelch/BIOB32/bsl_analysis.zip

Lab rules: Provincial law states that the wearing of lab coats while inside the labs is mandatory at all times. There is to be no food or drink (including water bottles) inside the labs. There will be

periodic inspections to ensure these rules are followed. Those not complying will be removed from the class. It's the law, and we all have to follow it!

Attendance: Attendance at both lectures and laboratories is mandatory.

Missing ONE lab (without prior legitimate excuse) may affect participation grade.

Missing TWO or MORE labs will result in student NOT PASSING the course. This is a practical course and 'doing' the labs is the whole point.

If you anticipate that you might need to miss a lab for any reason, contact me AS SOON AS POSSIBLE to avoid penalty.

If you are 10 or more minutes late to lab you will be considered absent for the whole lab. But you are still responsible for completing lab assignments, etc.

Only fully completed official University of Toronto Illness Verification forms will be accepted for consideration. I cannot accept other notes.

You can find the form at www.illnessverification.utoronto.ca.

Evaluation:

Lab Participation, **10%**

Lab manual assignments, **15%**

Quizzes (3 of them, dates announced >1 week in advance), **10%** (for all 3)

Midterm Exam, **20%**

Mini Lab Report, **5%**

Full Lab Report, **15%**

Final Exam, **25%**

The midterm will take place **TBD**.

The exam will be closed note and will consist of multiple choice, T/F, matching questions, **AND a few short-form answer questions** (e.g. ≤ 1 paragraph). It will cover material from lectures **TBD**.

The final exam will take place **TBD**.

The final exam will be cumulative. Approximately 1/3 of the material covered will be from the first half of the course (covered on the midterm) with about 2/3 of the material covered from after the midterm. The exam format will be very similar to the midterm.

All exams/quizzes are closed-note. Software intended to detect plagiarism within lab reports will be used. The UTSC academic ethics/cheating policies will be enforced.

Lab Participation:

You will be graded on your attendance, timeliness, and participation in group research projects (this will include equipment setup, carrying out experiments, recording results, and cleaning up).

TAs will periodically check your lab notebook to ensure that you are taking adequate notes, recording data, and will grade assignments in the lab manual. You are responsible for completing all lab manual assignments (e.g. for lab #4) for a given lab by the start of the next

lab section (e.g. by start of lab #5). Your TA can 'spot-check' your lab manual at any time. They may also require you to submit your lab manual for grading at a few select points during the term. Your TA will discuss the timing of this with you in lab.

Quizzes (x3): Quizzes will be brief (5-10 questions), composed of multiple choice and/or short answer questions, and will be administered at the beginning of **your lab**. The date of quizzes will be announced during the lecture the preceding week (≥ 1 week ahead of time). Quizzes will cover material from the last few labs AND material covered in the lab manual for the lab taking place that week (so, make sure you read the lab manual ahead of time). Quizzes are different for each lab section but are all of equal difficulty.

Lab Reports: Specific instructions on what is expected in this report will be made available online prior to the lab itself. This is not a group project but will require sharing of results from other groups.

Lab Report: More information will be provided later.

Important Note

During the winter 2014 term, we will be using the program "Turnitin" for the submission of assignments (e.g. lab report). More information will be provided once all of the details have been worked out. For now, you should be aware of the following policy for the use of Turnitin at the University of Toronto.

"Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site".

Late Policy: Late penalties are as follows: **≤ 1 day late (15%), ≤ 3 days late (30%), ≤ 5 days late (50%) and > 7 days late (100%).**

Exams: The midterm and final exams will consist of multiple choice, T/F, and matching questions as well as a select few short-form written answer questions. The final format of the exams will be announced once the exams are scheduled.

Exam questions will come from the lectures, lab manual, select readings posted to the intranet, carryover materials from BIOB34, and from concepts and data presented in the labs. You are not responsible for material from a textbook that was not covered in the lectures (BIOB34 or BIOB32) or the labs.

List of Laboratories

Week #	Week of	Laboratory Exercise
1	January 6	No lab scheduled; There IS a lecture
2	January 13	#1: Properties of Digestive Enzymes
3	January 20	#2: Blood: A Comparison Between Two Vertebrates
4	January 27	#3: Water Diuresis/Osmoregulation
5	February 3	#4: Metabolic Rate in Invertebrates
6	February 10	#5: Metabolic Rate in Vertebrates
	February 17	NO LECTURE OR LAB: READING WEEK
7	February 24	#6: Metabolic Rate, Specific Dynamic Action, and Acclimation to Cold
8	March 3	#7: Extracellular Recordings of Action Potentials I
9	March 10	#8: Extracellular Recordings of Action Potentials II
10	March 17	#9: Skeletal Muscle I & II
11	March 24	#10: Excitation of Crustacean Muscle
12	March 31	#11: Mechanoreceptors

* **Disclaimer: The above schedules, procedures and policies are subject to change in the event of extenuating circumstances.**