COMPARATIVE ANIMAL PHYSIOLOGY (BIOL 3250)
Course Syllabus F2020

The ongoing global COVID-19 pandemic affects us all and brings unique challenges to post-secondary education. We are here to help you succeed and will make every effort to grant reasonable requests for accommodation. We ask that you also be flexible and recognize that the uncertain and fluid nature of the pandemic may require impromptu adjustments to the course and syllabus. You will be informed prior to any changes and you will not be penalized or have your grade negatively affected as the result of any changes. We appreciate your understanding. Together, we can do this!

Faculty Information

Dr. Michael Cardinal-Aucoin
Professor
Office: OR2008
Phone: TBA (office)
Email: mcardin1@lakeheadu.ca
Office Hours: via Zoom (email to schedule appointment)

Dr. Usha Menon
Lab Instructor
Office: OA3003
Phone: 705-330-4008, ext. 2988 (office)
Email: umenon@lakeheadu.ca
Office Hours: via Zoom (email to schedule appointment)

Calendar Description

Comparative Animal Physiology I. 3-3; 0-0. Overview of the major physiological systems of the animal body with particular emphasis on mammals. Topics covered will include but not necessarily be restricted to form and function of neural systems including sensory and motor pathways, endocrine systems, the musculoskeletal system and locomotion, thermoregulatory strategies, cardiovascular systems and fluid compartments of the body, and respiration. **Prerequisite:** Biol 1110
Notes: Students who have previous credit in Biology 2030 may not take Biology 3250 or 3251 or 3253 for credit. An additional fee (see Miscellaneous Fees) is required for this course.

General Description

This course will differ slightly from its calendar description. This course and its companion course, Biol 3251, provide an overview of the basic principles of animal physiology – they explore how animals function. The physiology of different animals will be compared within an evolutionary context, with a slight focus on vertebrates.

In general, the courses will be organized by physiological systems. Biol 3250 will examine basic cell physiology, the endocrine system, the nervous system (including motor and sensory branches), and the muscular system. Biol 3251 will examine the cardiovascular, respiratory, urinary, digestive, and reproductive systems. If time permits the immune system may be discussed. Biol 3250 introduces the means by which the processes discussed in Biol 3251 are regulated.

Although the course is organized by systems it is important to remember that the systems function together as a whole, and therefore an integrative approach will be employed throughout. The labs complement and enhance material from lectures, with which they are integrated. They allow you to apply your knowledge and develop an understanding of how physiology is studied.

Topics Covered

- Unifying principles in physiology (e.g. homeostasis)
- Cellular basis of physiology
- Chemistry, biochemistry and cytology of intra- and intercellular communication
- Endocrinology, hormones and regulated behaviour
- Neuronal signalling, conduction and operation of synapse
- Electrical and pharmacological operations of neurons
- Organization of the two nervous systems
- Learning and memory of the brain
- Sensory systems: General and chemoreception, mechanosensing and hearing, electrosensing, vision
- Motor patterning
- Neuromuscular junction anatomy and muscle function
- Actin and myosin; sliding filaments, regulation of contraction and muscle diversity
- Muscle fibre types, energy metabolism, and perfusion
- Locomotion and skeletal systems, translating contraction into movement, moving in the environment
- Basic animal behaviours
- Thermoregulation (time permitting); thermal strategies (ecothermy, coping with changing body temperature and endothermy, controlling body temperature in changing environments)

Course Learning Outcomes

Upon successful completion of this course, the student will have reliably demonstrated the ability to:

- Develop an improved understanding of the fundamental concepts of animal physiology;
- Gain a deeper understanding the of the relationship between structure and function at
- the molecular, cellular, system, and organismal levels;
- Understand the basics of membrane permeability, hormonal communication, action potential propagation of nerves, mechanisms of sensory physiology, skeletal muscle activity and kinetics;
- Demonstrate proficiency in experimental design, data collection, statistical analysis, and interpretation of scientific results;
- Improve both oral and written scientific communication skills;
- Cultivate the ability to work as a productive member of a team.

Brightspace
All course information is on the *myCourselink (Brightspace (D2L)*) Lakehead University course shell. Students must have access to the course Brightspace to access assignments, quizzes, lessons, labs, etc.

To log into your course website:

1. Go to https://mycourselink.lakeheadu.ca/d2l/home.
2. Enter your Login/ID (your Lakehead University e-mail username) and your Password/PIN number.
3. Click on the course title to enter the course.

If you encounter any difficulties logging into the course site, please contact: mycourselink@lakeheadu.ca.

Textbook
Silverthorn, D.U. (2019) Human Physiology: An Integrated Approach (8th ed.). Upper Saddle River, NJ: Pearson Education Inc. (ISBN: 0134714857)

- **Must include access to Mastering A&P.**
- Mastering A&P will be used for homework assignments and labs and includes access to an electronic copy of the textbook which you can use in lieu of a hardcopy.
- Access to Mastering can be purchased online directly from Pearson. Instructions can be found on the course Brightspace.

Course textbooks can be ordered online through the Lakehead University bookstore (http://bookstore.lakeheadu.ca/home). Purchases can be shipped to students' home addresses. For more information, contact Lakehead University bookstore (http://bookstore.lakeheadu.ca/contact-us).

Class Schedule

Lecture	Tuesdays and Thursdays	8:30-10:00am	Zoom
Lab	Mondays	11:30am-2:30pm	Zoom

No classes on:
Monday, Sept. 7, 2020 (Labour Day)
Monday, Oct. 12 to Friday, Oct. 16, 2020 (Study Week)
Tuesday, Dec. 8 to Wednesday, Dec. 9, 2020 (Exam Preparation Days)

Exam Period runs Thursday, Dec. 10 to Sunday, Dec. 20, 2020 (includes two weekends), with Monday Dec. 21, 2020 as a contingency date.

- This course will be offered remotely in a hybrid synchronous/asynchronous format. **The class will meet once a week on Thursdays, unless otherwise indicated.** Independent work, including readings, assignments, and discussions, will be assigned to be completed at your leisure.
- A **course schedule** will be provided separately including readings and assignment due dates.

Laboratories

Laboratory sessions are designed to introduce you to some of the common laboratory techniques of animal physiology and give you some hands-on experience with some of the basic concepts covered in lectures. **This year all the labs have been adapted to be offered online.** There will be 4 synchronous lab sessions that you must attend, each with a pre-lab quiz and lab assignment or report. The lab instructor will demonstrate the techniques and experiments and guide you through each lab. There will be 2 additional asynchronous labs that you will complete on your own.

It is mandatory to attend all four synchronous laboratory sessions. If you miss a laboratory session you will receive 0% on the report and/or on the assignment that week. There is only one lab session and therefore there are no opportunities for make up lab classes. Exceptions to this policy will only be granted in cases of verifiable medical emergency related to you, or a personal reason, disclosed to and accepted by the instructor. In the case of an allowable absence, the instructor may decide to apply the missing grade(s) to the final, with an appropriate scoring percentage adjustment. **If you miss a lab it is your responsibility to contact the lab instructor.**

- *More information about the labs can be found on the **separate Biol 3250 Lab Brightspace page**.*

Lab supplies: The lab manual will be supplied in pdf format via the lab Brightspace.

- ***Labs start the week of Sept. 14, 2020.***

Grading Scheme and Dates

Component		Value
Term tests	Term test 1 (Oct. 8)	= 15%
	Term test 2 (Nov. 10)	= 15%
	Term test 3 (Dec. 3)	= 15%
		= 45%
Assignments	Assignment 1 (Oct. 20)	= 5%
	Assignment 2 (Nov. 24)	= 5%
		= 10%
Mastering A&P	Weekly homework	**= 15%**
Discussions	Online discussion forums	**= 5%**
Labs	Pre-lab quizzes	= 5%
	2 lab assignments	= 4%
	3 informal reports	= 6%
	1 formal report	= 5%
	Lab "attitude" (performance, attendance, etc.)	= 5%
		= 25%
Total		**= 100%**

Exam and Assignment Policies

Term Test Policies: Term tests will consist of a variety of question types including multiple choice, mix-and-match, true/false, diagrams, and short answer. Term tests are non-cumulative, but it should be understood that material covered prior to the test may be included indirectly if it is essential to the understanding of the topics being tested. All term tests will be written online via the course Brightspace page. More detailed instructions will be provided.

A student who misses a term test will receive a zero. Exceptions to this policy may be granted at the discretion of the course director if either a medical or family emergency occurs and documentation is provided. Failure to make contact within 48 hrs. will result in a forfeiture of any opportunity to do a re-write. In the event of a missed term exam the value of the exam will be redistributed to the next term test.

Assignment Due Date Policies

Assignment due dates are indicated in the course schedule and on the course Brightspace page. Assignments submitted past the due date will be deducted 10% each day for 5 days after which the student will receive a grade of 0%. Exceptions to this policy may be granted at the discretion of the course director if either a medical or family emergency occurs and documentation is provided. It is your responsibility to contact the course director.

No Extra Credit: There is no possibility of **extra credit** (i.e. doing extra work if you did not do well on something) to increase your mark either during the term or after the final exam. Anyone receiving a final course grade of 49% will **automatically** have their final exam re-graded

Learning Environment

Everyone learns more effectively in a respectful, safe, and equitable learning environment free from discrimination or harassment. I invite you to work with me to create a classroom space—both real and virtual—that fosters and promotes values of human dignity, equity, non-discrimination and respect for diversity. These values and practices are in accord with the Lakehead University Equity, Diversity, and Inclusion Plan 2019-2024, which can be found at https://www.lakeheadu.ca/faculty-and-staff/departments/services/human-rights-and-equity/edi-action-plan-2019-2024. Please feel free to discuss with me any questions or concerns you have about equity in our classroom or in the Lakehead community. If I cannot answer your questions or help you address your concerns, I encourage you to contact the Office of Human Rights and Equity at humanrights@lakeheadu.ca or visit their contact page (https://www.lakeheadu.ca/faculty-and-staff/departments/services/human-rights-and-equity/contact).

Behaviour and Conduct

- Students are expected to ensure that the classroom and laboratory learning environments are inclusive, respectful, peaceful, and safe.
- Interactions and relationships with instructors and other students (in person, online, in email, etc.) within the academic context should be professional and characterized by integrity, courtesy and mutual respect.
- Lectures should be interactive - please get engaged in the material and ask as well as answer questions!
- I fully encourage a reduction in the use of paper but if you bring your laptop to take notes, please refrain from using the internet in class (otherwise you will be banned from bringing your computer).
- Please be considerate in lectures and refrain from talking as it will disturb the learning environment.
- For your benefit and the benefit of students around you, turn your phone off to ensure it does not ring during lecture and to avoid the urge to text or you may be asked to leave the lecture hall.
- Students are expected to attend all lectures and labs.
- Recording devices of any kind are not permitted to be used in lectures.

Email Policies and Etiquette

I will try to respond to email within two working days, but this is not always possible as there are many students and only 1 professor. I may also answer your question in the next class meeting if appropriate. Questions and answers that I deem of interest to the entire class may be posted (anonymously) on Brightspace or sent via course announcements if urgent. Emails that do not meet the requirements below will not be answered:

- Use your @lakeheadu.ca or @georgiancollege.ca email address when emailing instructors and others within the university. Email from other sources may be filtered out and not reach the intended recipient.
- SUBJECT LINE - Include the course code, and a brief indication of topic.
- Lecture email example: BIOL 3250 – question regarding plasma membranes
- Lab email example: BIOL 3250 Tuesday am – missed lab 2 because of illness.
- Include your NAME and STUDENT NUMBER at the end of each email. I work with many students and this facilitates my ability to help you.

- Remember, you are in a professional environment and thus all your written correspondence, including emails, should be professional. This means full sentences, proper grammar, NO text message lingo.
- Before emailing the instructor, consider the nature of your question and whether another resource should be consulted first. For example, lab-related queries should be directed to the Lab Instructors.

Accessible Learning

The University is committed to principles of respect, inclusion, and equality of all persons. The University provides services for students with disabilities (including physical, medical, learning, and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. For access to the resources and services available at Lakehead visit: https://www.lakeheadu.ca/students/student-life/student-services/accessibility/. Students requiring accommodation are asked to register by contacting Alisia Johnston, the Accessibility and Academic Skills Advisor for the Orillia Campus, at oraccess@lakeheadu.ca. ***Students are encouraged to contact their professor to discuss accommodation needs or any way in which they can help you succeed.***

Academic and Student Code of Conduct Policies

- Academic and student policies and procedures for those enrolled in the Lakehead-Georgian programs can be found on the Lakehead-Georgian Student Portal.
- All Lakehead-Georgian programs will follow the Lakehead Regulations as list in the Lakehead University Academic Calendar (http://csdc.lakeheadu.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&loaduseredits=False).The University Regulations include but are not limited to Registration, Examinations, Reappraisals and Academic Appeals, Special Examinations, Academic Misconduct, Withdrawal, and Timely Feedback. Additional Faculty Regulations may also apply. Please review the Academic Calendar.
- The Lakehead University Student Code of Conduct - Academic Integrity (https://www.lakeheadu.ca/students/student-life/student-conduct) will apply to all Lakehead-Georgian students regardless of campus of study.
- The Lakehead University Student Code of Conduct - Appeals (https://www.lakeheadu.ca/students/student-life/student-conduct) will apply to all Lakehead-Georgian students regardless of campus of study.
- The Georgian College Student Code of Conduct (http://www.georgiancollege.ca/student-code-of-conduct/) will apply to the Lakehead-Georgian students studying at the Barrie campus. Additional campus policies of Sexual Violence Procedure and Protocol (https://www.georgiancollege.ca/about-georgian/campus-safety-services/tab/sexual-violence), Alcohol, Drugs and Tobacco (https://www.georgiancollege.ca/about-georgian/campus-safety-services/tab/alcohol-drugs-and-tobacco), and Information Technology Acceptable Use Procedure (http://www.georgiancollege.ca/wp-content/uploads/2-117IT-acceptable-use.pdf) also apply.
- The Lakehead University Student Code of Conduct – Non-Academic (https://www.lakeheadu.ca/students/student-life/student-conduct) will apply to the Lakehead-Georgian students studying at the Orillia campus.

Plagiarism and Academic Dishonesty

A breach of Academic Integrity is a serious offence. The principle of Academic Integrity, particularly of doing one's own work, documenting properly (including use of quotation marks, appropriate paraphrasing and referencing/citation), collaborating appropriately, and avoiding misrepresentation, is a core principle in university study. Students should view the Student Code of Conduct -Academic Integrity (https://www.lakeheadu.ca/students/student-life/student-conduct) for a full description of academic offences, procedures when Academic Integrity breaches are suspected and sanctions for breaches of Academic Integrity.