**BIO 270H1F – ANIMAL PHYSIOLOGY I**

24L, 9P

**This course has a lab fee of $10.**

**Professor:**

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**Course Administrator:**

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**Prerequisite:** BIO130H1

Animal physiology is a biological subdiscipline that aims to understand, in physical and chemical terms, how animals work. Physiologists focus on the principles, processes, and mechanisms involved in biological function, including systems of molecular interactions at the cellular level and systems of interacting cells and tissues at the organismal level. Further, they investigate the way that these functions are determined by the organism’s evolutionary heritage, by its environment, by its size, shape, and structure, and by physical and chemical laws. The shared goal of physiologists is to understand the integrated functioning of the whole organism and the processes by which regulation of physiological functions occur.

Physiology applies a variety of conceptual and experimental approaches and this introductory course will endeavour to reflect this scope and to convey the excitement of physiological research. This course will utilize examples from throughout the animal kingdom in a comparative approach. Our goal is to provide students with a solid grounding in the cellular basis of animal physiology with an emphasis on the physiology of homeostasis and the endocrine system. The course will continue to discuss the importance of homeostasis and the endocrine system in the reproductive, osmoregulatory, and digestive systems of animals. Moreover, we will strive to illustrate the role of experimentation in developing our understanding of living animals.

The laboratory section of the course will allow students to experience firsthand the role that experimentation, data collection, and interpretation of data plays in the nature of the scientific process and ultimately in the development of concepts introduced in lectures. In addition, students will begin to develop a working scientific vocabulary and writing approach to communicate effectively within the scientific community.

A brief (tentative) outline of the lecture and laboratory topics is listed below:

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| **Section** | **Lecture Topics** | **Laboratory Exercises** |
| 1. Sept - Oct | Introduction to animal physiology; Biochemical basis of physiology; Cell signaling; Reproduction. | How science ‘works’: An introduction; Experimental design; Written communication – Materials and Methods. |
| 1. Oct – Dec | Movement and muscle physiology; Osmoregulation; Digestion; Thermal physiology. | Skeletal muscle contraction: Electromyography and Glycerinated muscle contraction; Written communication – Introduction. |

**Required Texts:**

Moyes, CD, Schulte, PM. 2015. Principles of animal physiology. 3rd Edition. Toronto: Pearson Benjamin Cummings. 750 p.

Pechenik, JA. 2015. A short guide to writing about biology. 9th Edition. Toronto: Pearson. 262 p.

Lab Manual: The lab manual is available online only through the course website. Any additional lab readings (if required) will also be available online.

Classroom Response System:

Please bring your internet-enabled device to lectures.

**Evaluation (tentative)**

* Lecture Participation and Quizzes (4%)
* Mid-term test (30%), final exam (36%)
* Two lab assignments (15% each) = 30% (2 Pre-labs + 2 Lab sessions per term)

**Relationship to Department of Cell and Systems Biology Curriculum**

This course has been planned for students intending to take further courses in animal physiology as well as those terminating at one course. It is primarily intended for students in their second year who have already taken BIO150Y1/BIO120H1 and 130H1 and is a prerequisite for those students intending to take BIO271H1S. BIO 270H1F is an ideal introduction to aspects of animal physiology and related fields of experimental biology. BIO270H1F is an excellent preparation for upper level animal physiology and related courses such as CSB 325H1, 332H1, 343H1, 345H1, 346H1, 348H1, 426H1, 432H1, 445H1 and 447H1.

**\*\*Student Schedule Planning Tips\*\*:**

* Please note that if you have a course conflict with a BIO270H lab, you need to keep trying to resolve these until lab enrolment closes. Check frequently because spots may open up at any time. If you still cannot enroll in a lab that fits your schedule you may come to the BIO230H office during specified times (refer to Quercus for dates and times) and we will do our best to assist you. If you do require assistance with obtaining a lab, please make sure that when you visit the course office that you bring your timetable and have multiple lab times to avoid disappointment.