BIOLOGY 384 H – Animal Physiology II – Winter 2008

Course outline
This course serves as a continuation of Animal Physiology I. We will move beyond the functions of the various organ systems to examine some of the more important forms of communication that occur within animals. These involve the nervous system, the interaction of the nervous and endocrine systems, and the reproductive system.

Course format
The course consists of two lectures and one three-hour lab or seminar per week. There are a total of three lab exercises. Seminars will consist of student presentations on current topics related to the course. Student presenters will make these presentations to their peers in the class, who are *required* to participate by asking questions.

Copies of lecture slides will be posted on the WebCT the day before each lecture. You are encouraged to print off a copy of the slides before each class.

Instructor Lara Sylvester, MSc., VMD
Office ESB A 101, Wednesday 4-6pm or by appointment
Email TBD

Text (STRONGLY recommended but not required):

Animal Physiology by R. W. Hill, G.A Wyse, and M. Anderson (1st Ed, 2005). Published by Sinauer Assoc.

OR any other animal physiology text, however bare in mind that many texts do not adequately cover the topics around which this course is focused.

Lectures Wednesday, 1800-1950

Labs
Tuesday, 09:00 – 11:50,
Tuesday, 13:00 – 15:50,
Wednesday 09:00 – 11:50,

Students will be assigned randomly to one of the lab sections. Changes will be made due to academic conflicts; any other changes will be dependent on space availability. *Students must come prepared* to laboratory sessions, meaning that they must have read and understood the principles and procedures outlined in the laboratory manual *before* arriving at the lab session. Lack of preparation will usually lead to poor or incomplete results!

We are required to include the following:

Academic Dishonesty: Academic dishonesty, which includes plagiarism and cheating, is an extremely serious academic offense and carries penalties varying from failure in an assignment to suspension from the University. Definitions, penalties, and procedures for dealing with plagiarism and cheating are set out in Trent University's Academic Dishonesty Policy which is printed in the University Calendar.

Access to Instruction: It is Trent University's intent to create an inclusive learning environment. If a student has a disability and/or health consideration and feels that he/she may need accommodations to succeed in this course, the student should contact the Disability Services Office (BL Suite 109, 748-1281, disabilityservices@trentu.ca) as soon as possible. Complete text can be found under Access to Instruction in the Academic Calendar.

Grading Scheme

Final exam	35%
Midterm exam	25%
Lab reports	15%
Seminar	15%
Abstract	5%
Seminar participation	5%

SEMINARS (15%)

As part of many of the laboratory sessions, students will present seminars on current topics related to the course. If you have your own suggestion for a topic, please see me. Students will form groups of 3, and will jointly present the topic. Each student in the group will give a 12 min (maximum) presentation. After each groups' presentation, there will be a general discussion. Other members of the class will be expected to pay close attention to the seminars, and at the end, to ask intelligent questions.

Students are encouraged to use overheads for their presentation: an overhead projector will be supplied for you. If you wish to use PowerPoint, you are responsible for obtaining a laptop and projector, and ensuring it works. *Each group should arrange to see me 1-week before their seminar to make sure they are on track.*

Seminar grading

Seminars will be graded according to the following criteria:

Content
Error/contradiction
Superficial treatment/inappropriate detail
Explanations clear/well developed
Logical progression

Use of Media
Effectiveness/necessity
Clarity (e.g., Font size, amount of text)

Personal presentation
Vocal projection/body position
Speed/timing

Questions
Quality of answers

Individual: 10/15 marks will be awarded to each individual for the effectiveness of his/her seminar in conveying the information, the efficiency of visual aids, and the ability to remain within the allotted time period.

Group: 5/15 will be awarded jointly among members of the group (this mark evaluates the effectiveness of the group seminar, and will consider such things as redundancy, duplication with other speakers in group and division of material between group members). It is the responsibility of all members to contribute to the group effort.

ABSTRACT (5%)
Each group will produce a 1-page single-spaced abstract summarizing their group's seminar (this will not be easy, but will help you learn to write concisely). If you use abbreviations, please make sure you define them. In the text of your abstract, you should cite a minimum of 5 articles from the primary literature (e.g., journal articles). The Web and textbooks are **not** considered primary references, and do not count. Review articles are acceptable but should constitute less than half of your references. The abstract page should have no less than 1" margins, and the text must be no smaller than 12-POINT font Times New Roman.

Format for citations in text: Standard in-line reference format should be used; example (Smith 2007).

Literature cited:
You must attach an additional page to your abstract for literature cited. Cited references should follow the following format: Burgess, S.A., M.L. Walker, H. Sakakilbara, P.J. Knight, and K. Oiwa. 2003. Dynein structure and power stroke. *Nature* 421: 715-718.

LAB REPORTS (15%).
There will be a total of 3 laboratory sessions. The write-ups are generally short, and should be typed. There is no lab manual to purchase; lab instructions will be posted on WebCT for print-off.

Lab reports are due two weeks after the completion of the exercise.

NOTES ON DEADLINES: Material to be handed in should be submitted at the beginning of class/lab on the indicated date. There will be a 10% deduction/day for late material, which must be handed in either in class or received and dated by staff of the biology office. A drop box may also be available in the hall near the biology office. Although we will make every effort to check this box every day after 4pm, materials submitted to the box will be considered as having been submitted on the day that they are collected from the box. **Exceptions will be made only for documented medical or family reasons unless arranged with the instructor *at least 2 weeks before the deadline date*.**

Important Dates	
Jan. 9	First Lecture (no labs in first week of class)
Feb. 13	**MIDTERM EXAM**
Feb. 18 – 22	Reading week (no classes)
Mar. 21	Good Friday (no classes)
Apr. 2	Last day of class

Lecture Topics
Organization of the nervous system
Neurons and impulse transmission
Sensing the environment (Properties of sensory reception/hearing)
Sensing the environment (Vision, taste and smell)
Motor units, reflexes and central pattern generators
Pathophysiology of pain
Autonomic nervous system
Hypothalamus and pituitary gland
Physiology of endocrine disorders
Reproductive development
Male and female reproductive physiology
Fertilization, implantation and gestation
Comparative reproductive systems
Sperm competition and cryptic female choice

Lab Topics
Nervous system (LAB EXERCISE #1) Action potentials. **Objectives:** To understand the basis of action potentials, conductance of ions, currents and channels.
Nervous system (LAB EXERCISE #2) Sensory physiology **Objectives:** To examine various sensory inputs: sight, taste, touch and smell.
Reproductive system (LAB EXERCISE #3) Sperm evaluation **Objective:** To evaluate fertility by evaluation of sperm quality

Seminar Topics
(1) Neurophysiology of song learning in birds
(2) Spatial memory in animals
(3) Myasthenia gravis
(4) Degenerative myelopathy (of German Shepherds)
(5) Biological clocks
(6) Echolocation in vertebrates
(7) Infrared detection in snakes
(8) Animal Navigation
(9) Endocrine disease (your choice- to be approved by the instructor)
(10) Role of the senses in human mate choice
(11) Affects of endocrine disrupting chemicals on reproduction