ANIMAL PHYSIOLOGY I

Calendar Description: Fundamental concepts in sensory, neural and behavioural physiology. The biochemical mechanisms whereby nerve cells detect and transmit information and the processes whereby information is integrated in the nervous system and gives rise to the outputs of behaviour. Three lecture hours, three laboratory hours. One term. Four credits.

Prerequisites: SC/BIOL 2030 4.0; SC/BIOL 2020 4.0; SC/BIOL 2021 4.0
(Students lacking prerequisites may be de-enrolled).

Course Director:
Dr. C.G.H. Steel. Office: Room 010B Farquharson
Laboratory: Rooms 010/010A Farquharson
Phone: 416-736-2100 Ext. 33437
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Lectures:

Monday	1:30 - 2:30 p.m.	SLH- B
Wednesday	1:30 - 2:30 p.m.	"
Friday	1:30 - 2:30 p.m.	"

Laboratories: 3 hrs/week on any one of the following days:

Monday	2:30 - 5:30 p.m.	Rm. 206 Farquharson
Tuesday	2:30 - 5:30 p.m.	"
Wednesday	2:30 - 5:30 p.m.	"
Thursday	2:30 - 5:30 p.m.	"
Friday	2:30 - 5:30 p.m.	"

Labs start Monday, September 15th, 2008

Required Texts: 'Eckert Animal Physiology', 5th Edition (2002) by Randall, Burggren, and French Freeman and Co. Available at the York University Bookstore.

No lab Manual in Bookstore (due to late arrival of new lab equipment)

Grading:

Term Test (October 24th, 2008)	=	20%
Laboratory work:		
Laboratory reports	=	17%
One laboratory test	=	18%
Final examination	=	45%
Total	=	**100%**

Other Information: The following topics will be discussed: cell permeability and exchange; nerve cells, impulses and neural transmission; coding of environmental stimuli by sense organs and physiology of the senses; integration in the nervous system; mechanisms and nervous pathways by which a particular stimulus leads to a particular behavioural response; plasticity in the nervous system, including learning; muscles and movement; hormones and other chemical messengers. Examples will be drawn from both vertebrate and invertebrate nervous systems.

SC/BIOL 3060 4.0
York University
Animal Physiology I
Fall 2007

LECTURE SCHEDULE

Cell Permeability and Exchange Mechanisms
Membrane structure and models
Mechanisms of exchange across membranes
Intercellular communication

The Nervous System, Ions and Excitation
Design of nervous systems; types of neuron;
Origin and maintenance of the resting potential; action potential; cable properties
Ion channels; types, structure

Information Transmission
Electrotonic spread and regenerative propagation; non-spiking interneurons
Synaptic transmission - electrical and chemical
Neurotransmitters and neuromodulators

Muscle and Movement
Neural control of contraction; vertebrates and invertebrates
Muscle fibre types and their innervation
Muscle types and behaviours: flight, swimming

MID-TERM TEST FRIDAY OCTOBER 24th, 2008

Sensory Mechanisms
Coding of environmental stimuli by sense organs
Chemoreceptors, stimulus transduction
Mechanoreceptors; physiology of the ear
Photoreceptors; visual pigments, colour vision

From Nerve Cells to Animal Behaviour
Neural circuits and behaviour: integration; Pattern generators
Circuitry of behavioural pathways in simple animals

Hormones and Other Chemical Messengers
Receptors
Hormone action
The spectrum of neurochemical communication; multiple messengers from single cells

FINAL EXAMINATION: TO BE HELD IN PERIOD 5th – 22nd DECEMBER

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LABORATORY SCHEDULE

Week of:	Lab #	Title	Written Report ?
Sept. 15 – 19	1	Properties of Membranes	Required
Sept. 22 – 26	2	Introduction to Powerlab and Labchart	No
Sept. 29 – Oct 3	3	Compound Action Potentials (no labs on Tues or Weds)	Yes
Oct. 6 – 10	4	Sensory Perception (no lab on Thurs)	Yes
Oct. 13- 17	-	No lab on Mon (Thanksgiving) or Friday Tues and Weds do Lab #3, Thurs do lab #4	
Oct. 20 – 24	5	Skeletal Muscle	Yes
Oct. 27- 31	6	Physiology of Hearts (Cardiac Muscle)	Yes
Nov. 3 – 7	7	Blood Sugar Regulation	Yes
Nov. 10 -14	8	Smooth Muscle	Yes
Nov 17 -21		Return Marked lab reports Lab exam review	-
Nov. 24 – 28	-	**LABORATORY EXAM** , 18% final grade Each section on its customary day of the week.	

Note: **Written reports are required for FOUR laboratories. You are required to write a report on Lab #1, worth 2% of the final grade. This exercise will introduce you to detailed laboratory report writing and you will be given extensive feedback by your TA that should help you with the other laboratory reports. The three other reports are worth 5% each and you can choose ANY THREE exercises to write up from Lab #3 – Lab #8 ie. any three of the six exercises marked "YES" above.**

You are reminded that the Senate Policy on Academic dishonesty is in force and applies to all written work handed in. Copying or close paraphrasing from your lab partner, from the computer software used in labs or from the internet are all considered plagiarism and any suspected cases will be reported. See Biology Department Handbook for further information.

YOU ARE EXPECTED TO TAKE GOOD CARE OF THE APPARATUS YOU USE.