BIOLOGICAL SCIENCES 305
Animal Physiology
2002-2

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Prerequisite:  BICH 221 and PHYS 102

Course Fee: $ 3.00

Course description

This course will deal with how animals function in their environment from general and
comparative viewpoints with emphasis on mechanisms. As such we will consider the major
physiological systems and how they are coordinated or integrated to deal with environmental
challenges.

Central themes - homeostasis, feedback, diffusion, and membrane transport
Communication - nerves and nervous systems, sensory and hormonal systems
Movement - muscle mechanics and adaptations
Behavior - sensory processing and control
Dealing with oxygen - gas exchange, blood and circulation
Dealing with water and electrolytes - osmoregulation, excretion
Dealing with energy - metabolism, temperature regulation and body size

Tutorials will begin Week 1.: These will compliment the lectures and provide additional
learning opportunities. There will be demos, assignments, quizzes and practice tests.

Mark distribution:

        Tutorial work: 25%
        3 Midterms: 25% each

Required text:

# BISC 305 Animal Physiology

**Summer 2002**
A H Jay Burr and Inigo Novales-Flamarique

## SEMESTER CALENDAR:

<table>
<thead>
<tr>
<th>Week/Date</th>
<th>Lecture Topics</th>
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| 1 6 May   | L1 Introduction. Central themes  
           | L2 Homeostasis & feedback control  
           | L3 Neurons: structure and activity |
| 2 13      | L4 Membrane permeability & transport  
           | L5 Equilibrium and diffusion potentials  
           | L6 Passive transmission along neurons |
| 3 20      | Holiday |
| 22        | L7 Receptor, synaptic and reversal pots.  
           | L8 Action potentials in membrane patch |
| 4 27      | L9 Conduction & propagation of APs  
           | L10 Sensory reception  
           | L11 Sensory reception |
| 5 3 June  | L12 Sensory reception  
           | L13 Synapses  
           | L14 Synapses |
| 6 10      | **MIDTERM 1**  
           | L15 Sensory processing  
           | L16 Reflex control of movement |
| 7 17      | L17 Muscle and movement  
           | L18 Muscle and movement  
           | L19 Muscle and movement |
| 8 24      | L20 Circulation and Cardiovascular System  
           | L21 Circulation and Cardiovascular System  
           | L22 Circulation and Cardiovascular System |
| 9 1 July  | Holiday |
| 10 8      | **MIDTERM 2**  
           | L23 Gas exchange and Respiration  
           | L24 Gas exchange and Respiration |
| 10 8      | L25 Acid-base balance  
           | L26 Control of Respiration |
| 11 15     | L27 Ion Transport across Epithelia  
           | L28 Osmoregulation and Excretion  
           | L29 Osmoregulation and Excretion |
| 12 22     | L30 Osmoregulation and Excretion  
           | L31 Secretion and Glands  
           | L32 Hormones and Endocrine Systems |
| 13 29     | L33 Energy, metabolism and temperature  
           | L34 Energy, metabolism and temperature |
| 2 Aug     | **MIDTERM 3** |