

CAMOSUN COLLEGE
School of Arts & Science
Department

BIOL 151: Human Physiology
Winter 2004

COURSE OUTLINE

CALENDAR DESCRIPTION

This course is the companion to Biology 150. Biology 151 provides an overview of functional relationships within the human body. Physiological processes are studied at both the cellular and organ system level, with an emphasis on the maintenance of homeostasis. Laboratory exercises illustrate basic physiological principles. Prerequisites: Biology 150, Chemistry 11

PREREQUISITES

Biology 150, Chemistry 11 (or equivalent), English 12 or assessment.

1. Instructor Information

- (a) Instructor: Peggy Hunter.
- (b) Office hours: to be announced
- (c) Location: F248C
- (d) Phone: 370-3427
- (e) E-mail: hunterp@camosun.bc.ca

2. Intended Learning Outcomes

1. *Describe the concept of homeostasis and explain how it operates in the major physiological systems of the human body.*
2. *Demonstrate an understanding of the functioning of the major physiological systems of the human body at the cellular and systemic levels.*
3. *Explain how the major physiological systems of the body interact to bring about biological behaviors.*
4. *Understand how physiological processes are altered in injury or disease.*
5. *Correctly apply anatomical vocabulary in a physiological context.*
6. *Perform laboratory procedures relevant to physiology (observe physiological phenomena, measure physiological data, organize / record / analyze results of physiological experiments).*
7. *Utilize critical thinking to apply physiological concepts to specific problem solving situations.*

3. Required Materials

- (a) Texts: Human Anatomy and Physiology (6th edition), E. N. Marieb Benjamin / Cummings (2004)
- (b) Other: Biology 151 Lab Manual (Winter 2004)
Camosun College

4. Basis of Student Assessment (weighting)

| | |
|---------------------------------|-----|
| Quizzes and/or Assignments..... | 10% |
| Midterm I..... | 20% |
| Midterm II..... | 20% |
| Laboratory Final..... | 20% |
| Final Comprehensive..... | 30% |

5. Grading System

The following percentage conversion to letter grade will be used:

| | | |
|----------------|---------------|---------------|
| A+ = 95 - 100% | B = 75 - 79% | D = 50 - 59% |
| A = 90 - 94% | B- = 70 - 74% | F = 0.0 - 49% |
| A- = 85 - 89% | C+ = 65 - 69% | |
| B+ = 80 - 84% | C = 60 - 64% | |

ADDITIONAL INFORMATION

*Be sure that you are familiar with the **General Department Policies**, which are stated in the lab manual. These policies cover absenteeism, late assignments (but see below), attendance, exam scheduling, plagiarism as well as other topics and will be discussed during the first lab meeting.*

*Each student is required to sign a **Laboratory Safety Contract** and give it to the instructor prior to commencing laboratory work in the course.*

No programmable devices are allowed in exams.

ATTENDANCE

*You are expected to attend all classes. Assignments are due at the **beginning** of the class period on the due date. Assignments not handed in at the beginning of class will be considered late, for which there is a 15% penalty/day. Also, if you miss a class or are late, you are very likely to miss a handout, assignment or other essential information. Classes begin on time, so don't be late! It is your responsibility to obtain this material from either the instructor or other students.*

COURSE SCHEDULE - WINTER 2004

The following schedule is a tentative outline of lectures and laboratories. It is subject to change as the need arises. Changes will be announced in class.

| WEEK/DATE | LECTURE TOPIC | LABORATORY ACTIVITIES |
|-------------|---|--|
| Jan 5 - 9 | Intro to physiology <ul style="list-style-type: none"> • homeostasis (p. 1-13) • cell membranes (p. 68-83) • enzymes (p. 53-60) • intro to cellular metabolism | NO LAB |
| Jan 12 - 16 | Cellular physiology (cont'd) <ul style="list-style-type: none"> • cellular metabolism <ul style="list-style-type: none"> cellular respiration (p. 962-965) protein synthesis (p. 98-110) • cell cycle <ul style="list-style-type: none"> DNA replication (p. 96-98) | LAB 1. Introduction to chemical concepts |
| Jan 19 - 23 | Neural Physiology and Integration (p. 396-424) <ul style="list-style-type: none"> • reflex pathways • membrane potentials • synapse and neurotransmitters • neural integration | LAB 2. Cellular respiration |
| Jan 26 - 30 | Sensory Reception (p. 558-602) <ul style="list-style-type: none"> • sensory pathways - cranial and spinal nerves • general and special senses • theories of smell, taste, vision and hearing | LAB 3. Electroencephalograms and reflexes |
| Feb 2 - 6 | Muscle Physiology (p. 276-321) <ul style="list-style-type: none"> • neuromuscular junction • sliding filament contraction theory • gross muscle physiology • comparison of smooth, skeletal and cardiac physiology | LAB 4. Sensory reception |
| Feb 9 - 11 | MIDTERM 1 | NO LAB |
| Feb 12 - 13 | READING BREAK | |
| Feb 16 - 20 | Cardiovascular Physiology (p.696-714 and p. 727-747) <ul style="list-style-type: none"> • ECG (action potentials) • cardiac cycle and controls • blood flow / blood pressure • capillary exchange | LAB 5. Muscle physiology |
| Feb 23 - 27 | Hematology (p. 654-675) <ul style="list-style-type: none"> • erythrocyte cycle (hemoglobin degradation and regulation) • hemostasis | LAB 6. Cardiovascular physiology |
| Mar 1 - 5 | Immunology (p. 792-830) <ul style="list-style-type: none"> • non- specific <ul style="list-style-type: none"> mechanical, chemical, cells, complement inflammatory response • specific <ul style="list-style-type: none"> - lymphocyte activation and inhibition - antibody mediated immunity cell mediated immunity acquired immunity | LAB 7. Hematology |

COURSE OUTLINE

| | | |
|----------------|---|--|
| Mar 8 - 12 | <p>MIDTERM II</p> <p>Respiratory Physiology (p. 850-881)</p> <ul style="list-style-type: none"> • ventilation • lung volume and capacities • gas laws and diffusion • blood flow / gradients (O₂ / CO₂) | <p>LECTURE CATCH-UP (as required)</p> |
| Mar 15 - 19 | <p>Digestive Physiology (p. 908-942)</p> <ul style="list-style-type: none"> • chemical digestion - enzymes • absorption - chemicals, routes, locations • neural and hormonal controls | <p>LAB 8. Respiratory Physiology</p> |
| Mar 22 - 26 | <p>Metabolism (p. 965-987)</p> <ul style="list-style-type: none"> • carbohydrate metabolism • lipid and protein metabolism • interconversion of molecules • absorptive and postabsorptive states, hormonal control | <p>LAB 9. Digestion of organic macromolecules</p> |
| Mar 29 - Apr 2 | <p>Renal Physiology (p. 1003-1069)</p> <ul style="list-style-type: none"> • filtration / reabsorption /secretion • fluid/ electrolyte balance • acid / base balance | <p>LAB 10. Glucose monitoring and urinalysis</p> |
| Apr 5 – 8 | <p>Reproductive Physiology (p. 1077-1085 and 1095-1104)</p> <ul style="list-style-type: none"> • spermatogenesis and oogenesis • regulation of reproduction • regulation of pregnancy/parturition and lactation | <p>LAB EXAM</p> |
| April 9 - 12 | <p>EASTER HOLIDAYS</p> | |
| April 13 - 21 | <p>FINAL EXAM</p> | |

LEARNING SUPPORT AND SERVICES FOR STUDENTS

There are a variety of services available for students to assist them throughout their learning. This information is available in the College Calendar, Registrar's Office or the College web site at <http://www.camosun.bc.ca>

ACADEMIC CONDUCT POLICY

There is an Academic Conduct Policy. It is the student's responsibility to become familiar with the content of this policy. The policy is available in each School Administration Office, Registration, and on the College web site in the Policy Section.

www.camosun.bc.ca/divisions/pres/policy/2-education/2-5.html