Syllabus: BSCI 440

Lectures: 10:00am-10:50am Mondays, Wednesdays, and Fridays (BPS 1250)

Professor: Joshua Singer
E-mail: jhsinger@umd.edu
Office: BRB 1112; Office hours: Wednesday, 1 PM – 3 PM

Four discussion sections:

M.....11:00am-12:50pm (BPS 1236)
M..... 2:00pm- 3:50pm (BPS 1236)
M..... 2:00pm- 3:50pm (BPS 1238)
W.....11:00am-12:50pm (BPS 1228)
W.....11:00am-12:50pm (BPS 1236)

TAs: Rongkong Deng, Adam Jones, Aminah Sheikh

Text: Silverthorn, Human Physiology 6th ed.

Course overview

A) 6 units:

1) Nerve-muscle
2) Cardiovascular
3) Respiratory
4) Renal
5) Endocrine
6) Integrated, problem-based studies

B) In-class exams (largely paragraph-long answers):

1) Friday October 4, 2013
2) Friday November 15, 2013
3) Monday November 25, 2013
4) Friday December 13, 2013 (last day of class; in lieu of a final scheduled for Saturday December 21 at 8 AM, which is the day of commencement)

C) Discussion sections:

1) Group work on weekly review questions
2) Exams (individually or group; notes, but not books or computers, allowed):
    a) Week of September 30, 2013
    b) Week of October 28, 2013
    c) Week of November 11, 2013
    d) Week of December 2, 2013
    e) Week of December 9, 2013

D) Canvas discussion groups: mediated by TAs and advanced undergraduates

E) Weekly review questions posted to Canvas

Expectations and evaluation

A) What do I expect?

1) That students attend all lectures and discussion sections.
2) That students ask questions in lectures and answer questions when called upon.
3) That students treat each other and their TAs with respect.

B) Grading

1) All exam questions that are not fill-in-the blank or multiple choice will be graded holistically: students' answers will be compared and graded relative to each other.
2) Re-grades must be requested within one week of the receipt of a grade and must be accompanied by a written request that includes a detailed rebuttal of the grade received.
3) Students will be excused from exams for illness or for travel to interviews given that they provide doctors' notes or proof of travel.
4) How will grades be determined?
    a. In-class exams (each exam weighted equally): 66.66%
    b. Group exams (each exam weighted equally): 33.33%
5) I expect to apply a curve to the final grades. The curve will be set so that the median score is at the C+/B- boundary. Grading (per UMD policy):
    a. A+, A, A-: mastery of the subject and outstanding scholarship
    b. B+, B, B-: good understanding of the subject and good scholarship
    c. C+, C, C-: acceptable understanding of the subject
    d. D+, D, D-: borderline understanding of the subject, marginal performance, unsatisfactory progress toward a degree
    e. F: failure to understand the subject, unsatisfactory performance
6) There is no extra credit, participation credit, etc…

C) Any infringement of the academic honor code will not be tolerated:

1) All assignments must be signed: "I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination."
2) http://www.shc.umd.edu/SHC
3) Under the code of academic integrity, (http://www.president.umd.edu/policies/iii100a.html) if a student is found responsible for violating the *Code*, the normal sanction is a grade of "XF" assigned for the course.

Lecture Schedule

Wednesday, September 4: Introduction

Friday, September 6: Rosh Hashanah (no class)

Week 1: Discussion sections: Ch8 questions

- Monday, September 9: Electrochemical gradients and resting membrane potential
- Wednesday, September 11: The action potential
- Friday, September 13: Synaptic transmission

Week 2: Discussion sections: Ch12 questions

- Monday, September 16: Muscle 1: The sarcomere
- Wednesday, September 18: Muscle 2: Excitation-contraction coupling
- Friday, September 20: Motor units and neural control of movement

Week 3: Discussion sections: Ch12 questions

- Monday, September 23: Reflexes and the spinal cord
- Wednesday, September 25: Physics of flow
- Friday, September 27: Cardiac action potential and pacemaking

Week 4: Discussion sections: group nerve-muscle exam

- Monday, September 30: Guest lecture
- Wednesday, October 2: No class
- Friday, October 4: In-class exam 1: nerve-muscle

Week 5: Discussion sections: Ch14 questions and one-month review

- Monday, October 7: Modulation of cardiac contractility
- Wednesday, October 9: Vascular 1: control of arterial flow
- Friday, October 11: Vascular 2: control of venous return

Week 6: Discussion sections: Ch 15 questions, running case

- Monday, October 14: Cardiovascular disease

Wednesday, October 16: Respiratory tract and mechanics of ventilation

Friday, October 18: Gas exchange, O_2 and CO_2 transport

Week 7: Discussion section: Ch17 questions, running case

Monday, October 21: Respiratory control of acid / base

Wednesday, October 23: Comparative respiratory physiology

Friday, October 25: Pulmonary Disease

Week 8: Group Exam: cardiovascular

Monday, October 28: Introduction to the nephron

Wednesday, October 30: Filtration and reabsorption

Friday, November 1: Volume regulation and electrolyte balance

Week 9: Discussion section: Ch19, 20 and two-month review

Monday, November 4: Renal acid base regulation

Wednesday, November 6: Disorders affecting the kidney

Friday, November 8: Hypertension: causes and treatment

Week 10: Group exam: respiratory

Monday, November 11: No class

Wednesday, November 13: To be determined

Friday, November 15: In class exam: renal and respiratory

Week 11: Ch15, 20 Running Case

Monday, November 18: Endocrine 1

Wednesday, November 20: Endocrine 2

Friday, November 22: Endocrine 3

Week 12: Discussion section: Ch26

Monday, November 25: In-class exam: renal and endocrine

Wednesday, November 27: Introduction to integrated physiology

Friday, November 29: No class for Thanksgiving

Week 13: Group exam: renal physiology

Monday, December 2: Integrated physiology: case studies and discussion

Wednesday, December 4: Integrated physiology: case studies and discussion

Friday, December 6: Integrated physiology: case studies and discussion

Week 14: Group exam: integrated physiology

Monday, December 9: Integrated physiology: case studies and discussion

Wednesday, December 11: Integrated physiology: case studies and discussion

Friday, December 13: In-class exam: integrated