BE 102/202 – Fall 2017 – Course Syllabus
Human Physiological Systems for Bioengineers I

Lecture: Monday and Wednesday, 10-11:50am, Boelter 9436

Discussion: Friday, 10-11:50am, Royce Hall 362

Final: Wednesday, December 13th, 11:30am-2:30pm, Location TBA

Course TA: Aidan Pearigen, email: apearigen1@yahoo.com


This course is the first of two in a series covering physiological mechanisms in the human body, both from a broad systems engineering perspective and from a molecular action perspective. Major functions covered in this first course are nerve function, skeletal and smooth muscle contractions, function of the heart, blood flow and heart disease, sensory feedback and pathways of the central and peripheral nervous system. This course will also cover anatomy to the extent that is necessary to understand the physiology of the body. In addition, there will be discussion of special assigned articles which will present reviews of the latest literature in relevant topics.

The course schedule will consist of lectures covering chapters in Guyton and Hall, guest lectures from clinicians and engineers, two midterms and a final. You are expected to read the assigned chapters in advance of the lectures. During discussion sections, TA will go over pertinent topics from the week's lectures, present lectures to make-up for material not covered during the week, or have guest lecturers.

Grades will be based on your performance on the midterms and final, participation during the class and discussion section. All exams must be written in PEN (black or blue ink), and will be closed book.

Course Schedule is only tentative, and will be changing based on availability of guest lecturers.
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<th>Week</th>
<th>Monday Lecture</th>
<th>Wednesday Lecture</th>
<th>Discussion Lecture</th>
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| 1    | Chap. 4-5: *Membrane Physiology and Action Potentials* | Chap. 6-7: *Excitation and Contraction of Skeletal Muscles* | **Week 0:** Course Overview - Ch. 1-3  
**Week 1:** Skeletal Muscle Review |
| 1/10 | Guest Lecture: Dr. Sangiorgio  
Chap. 8: *Smooth Muscle Contraction (Read on Own)* | Chap. 9-11: Introduction to the Heart, *Heart Beat and EKG* | **Week 2:** Smooth Muscle, Cardiac Anatomy and Function Review |
| 3    | Chap. 12-13: *EKG and Cardiac Arrhythmias* | Chap. 14-16: *Circulation - Blood and Lymphatics* | **Week 3:** Cardiac Abnormalities, Circulation, and Exam Review |
| 4    | Guest Lecture: Dr. Hsiai | **Exam I:** Chap. 1-16 - *Membranes - Muscles - Heart* | **Week 4:** Blood Flow Review |
| 5    | Chap. 17-18: *Control of Blood Flow* | Chap. 20-21: *Regulation of Cardiac Output and Exercise* | **Week 5:** Cardiac Failure and Shock Review |
| 7    | Chap. 45-46: *Nervous System* | Guest Lecture: Dr. Allen Ardestani  
Chap. 47-48: *Somatic Sensations (Read on Own)* | **Week 7:** Review Nervous System and Sensations Review |
| 8    | **Exam II:** Chap. 17-24, 45-48 - *Cardiac Physiology - Nervous Sensations* | Class Canceled for Thanksgiving  
Chap. 52-53: *Hearing, Chemical Senses - Taste and Smell (Read on Own)* | **No Class - Thanksgiving Holiday** |
| 9    | Chap. 49-51: *The Eye - Optics, Anatomy, and Neurophysiology* | Chap. 54-55: *The Central Nervous System* | **Week 9:** Optical, CNS and Brain Review |
| 10   | Chap. 56-57: *The Cerebellum, Basal Ganglia, and Cerebral Cortex* | **Review or Make-up Lecture** | **Week 10:** Review of Topics for Final Exam |