APPH6212 Systems Physiology II: Physiology of Neuromotor Tissues
Spring 2012

Course description:
This class focuses on the function and adaptations of the skeletal, nervous and muscular systems. Students will gain understanding of the normal physiological responses of these systems and how each adapts to perturbations such as physical and psychological stressors such as loading and pathology. Interactions among the various systems and their plasticity will be emphasized.

Class meetings
Lecture: TTh 9:35-10:55
575 14th St Room 1253

Instructors:

Dr. Ed Balog	Dr. Richard Nichols	Dr. Chris Mizelle
Applied Physiology	Applied Physiology	Applied Physiology
555 14th St Room 1303	555 14th St Room 1352	555 14th St Room
894-3957	895-1559	385-2744
ed.balog@ap.gatech.edu	trn@ap.gatech.edu	jmizelle3@mail.gatech.edu

Dr. Balog's Office Hours:
By appointment

Text:
Medical Physiology, Second Edition (updated edition)
Boron & Boulpaep
Elsevier (2012) ISBN 978-1-4377-1753-2

Additional Readings will be assigned in class.

Evaluation
Exams 70%
Tentative Exams: Jan 31 (7 lectures, worth 20%), March 14 (11 lectures, worth 25%)
Final Exam: Tuesday April 30 (10 lectures, worth 25%) 8:00 - 10:50
Critique of journal article 20%; ***Due March 28***
Paper Presentation 10%
This will be a ~20 minute presentation of an original research article followed by class discussion.

The goals of journal article critique and the paper presentation are to foster critical analysis of the scientific literature and promote effective written and verbal communication.

Week	Date Lecturer	Topic
1	Jan 8 Balog	Introduction; Bone anatomy and histology; Bone Cells
	Jan 10 Balog	Bone Cells/Matrix
2	Jan 15 Balog	Bone Growth/Remodeling/Repair
	Jan 17 Balog	Hormone & cytokine regulation of bone
3	Jan 22 Balog	Biomechanics/Mechanotransduction
	Jan 24 Balog	Cartilage and Articular Tissues/Aging and Osteoporosis
4	Jan 29 Balog	**Paper Presentations – Bone**
	Jan 31 Balog	**EXAM 1**
5	Feb 5 Mizelle	Neurophysiology Introduction, Organization and Anatomy
	Feb 7 Balog	Cable properties; Membrane Potential; Action Potential
6	Feb 12 Balog	Action Potential; Ion Channels; Nerve Conduction
	Feb 14 Balog	Nerve Conduction; Classification of Neurons; Neurotransmitters and receptors
7	Feb 19 Balog	Synaptic Transmission: Neuromuscular
	Feb 21 Balog	Synaptic Transmission: Central Synapses ***Deadline for approval of paper topics.***
8	Feb 26 Balog	**Paper Presentations – Nerve**
	Feb 28 Balog	Muscle Introduction: Skeletal Muscle Organization, Excitation-Contraction Coupling
9	March 5 Balog	Sliding Filament Theory; Cross-bridge Cycle
	March 7 Balog	Contractile Properties, Motor Units and Fiber Types; Architecture Myogenesis
10	March 12 Balog	Metabolism Summary; Adaptation
	March 14 Balog	**EXAM2**
11	March 19	**Spring Break**
	March 21	**Spring Break**
12	March 26 Balog	Skeletal Muscle Fatigue and Aging
	March 28 Balog	Cardiac Myocytes; Smooth Muscle ***PAPER CRITIQUES DUE***
13	April 2 Balog	**Paper Presentations – Skeletal Muscle**
	April 4 Nichols	Fight or Flight Response
14	April 9 Nichols	Autonomic Nervous System
	April 11 Nichols	Special Senses
15	April 16 Nichols	Sensory Receptors/Reflexes
	April 18 Nichols	Comparative Motor Systems
16	April 23 Mizelle	Voluntary Movement
	April 25 Mizelle	Paper discussion