SYLLABUS

BIOLOGY 4177 [NEUROBIOLOGY], Summer 2010; DR. J. CAPRIO

Text: From Neuron to Brain, 4th edition (2001) by Nicholls, MartinWallace and Fuchs. In addition to the text, required readings will be made available: [Link: www.biology.lsu.edu/classes/biol4177; Login: neuroclass; Password: iluvneuroclass].

Lecture Topics:

Cellular Neurophysiology
- Membrane potentials (equilibrium and resting)
- Action potentials: unmyelinated and myelinated neurons
- Passive electrical (cable) properties of neurons
- Pharmacological agents in membrane studies
- Electrophysiological techniques: voltage-clamp, patch-clamp
- Ion channels: structure, distribution and function
- Intercellular Communication: Synaptic organization and function: gap junctions; ionotropic & metabotropic neurotransmitter receptors; presynaptic mechanisms for transmitter release.
- Axoplasmic transport
- Neuroglia

II. Sensory Physiology
- Principles of sensory function
- Anatomy and physiology of sensory systems:
  - Mechanoreception: skin senses and vertebrate "hair cell" senses (lateral-line, audition, balance and vestibular senses).
  - Chemoreception: olfactory, vomeronasal, gustatory and common chemical sensory systems.
  - Photoreception: retinal organization and function.

EXAMS: #1. July 21: Exam 1, 100 points
#2. July 29: Exam II, 100 points
#3. August 7: Final exam; 150 points

Grading Scale: A (90%); B (80%); C (70%); D (60%); F (<59)