Neurobiology (Biol 4177) Syllabus: Dr. John Caprio

Students will be required to attend two 1.5 hour lectures, M-F, and one 1.5 hour lecture Sat.

LECTURE TOPICS (Students will have Powerpoint Slides of all lectures):

*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.

Students’ knowledge of these areas will be assessed through weekly written exams and a final written exam at the completion of the course.