

## **BMED/BIOL 4752: Introductory Neuroscience**

**Credit:** 3-0-3

**Prerequisite(s):** Senior standing or consent of instructor

### **Catalog description**

Goals are to understand the components of the nervous system and their functional interactions, and appreciate the complexity of higher order brain functions and pathways.

### **Text**

Purves, *et al.*. Neuroscience, 3<sup>rd</sup> Edition, Sinauer Associates, Sunderland, MA. with Sylvius CD  
Additional reading as assigned.

### **Objectives**

To learn the components of the nervous system and their functional interactions, and appreciate the complexity of higher order brain functions and pathways.

### **Outcomes**

Specifically at the end of the course students will be able to:

1. Understand the building blocks of the nervous system and how they functionally interact
2. Appreciate the complexity of higher order brain functions and begin to understand the pathways involved
3. Synthesize new connections, ideas and approaches about neuroscience research drawing from examples given in lecture, handouts and the textbook
4. Independently obtain and report, in written and oral form, topical neuroscience information.

### **Topical Outline**

1. Neuroanatomy
2. Development and wiring
3. Membranes
4. Synaptic transmission, neurotransmitters and signaling
5. Somatic sensory system
6. Vision
7. Chemical senses
8. Pain
9. Sensorimotor integration
10. Motor neurons and circuits and motor system control
11. Synaptic and activity-mediated plasticity
12. Association cortices
13. Learning and memory
14. Language and speech
15. Drug abuse
16. Functional brain imaging
17. Consciousness
18. Auditory & vestibular systems
19. Emotions
20. Neuroethics
21. Sleep and dreams