BIOL 3700 Neuroscience Spring 2014

Dr. Gannon
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Office Hours: TR 11:00 – 12:00
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Syllabus

The objective of this course is to provide students with the knowledge of how the brain functions at the cellular level. We will examine how the nervous system operates while completing routine tasks such as maintaining posture or more sophisticated skills such as communicating with language. This course will also introduce students to some of the extremely sophisticated technology used by neuroscientists to explore the functions of the brain. Finally, this course will contrast the function of the nervous system in normal and pathological states in order to demystify the etiology of neurological diseases.

Topics will be divided into four general areas: neural signaling, sensory input, motor output, and modification of neural circuits in complex brain functions. The accompanying lecture schedule provides a more detailed calendar of topics.

Knowledge-Based Goals for Students:

1) Know the general anatomy of the nervous system and associated cell types;
2) Know the sensory pathways for input into the CNS;
3) Know the motor pathways for output from the CNS;
4) Know the interactive processes in coordinating sensory input and motor output;
5) Know chemical transmission and potential modifications using pharmaceuticals;
6) Know neuronal plasticity and potential uses/limitations of cell replacement;
7) Know the basics of neurological and motor diseases.

These goals support the Department of Biology Educational Outcome #3 and VSU General Educational Outcomes #5.

Assessment: Four in-class exams (multiple choice/short answer/essay)

Exam I	20 % of Grade
Exam II	25 % of Grade
Exam III	30 % of Grade
Final Exam	25 % of Grade
Total	100 % of Grade

There are no make-up exams so be sure to be here on exam days. I will of course work with you in cases of medical issues or other *serious* events. Please inform me of any special accommodations you may need for taking exams.

Required Text: *Neuroscience*, by Purves et al., 5th Edition

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Tentative Lecture Schedule

Date	Topic	*Neuroscience* Purves et al., 5th Ed Chapter
1/14	Introduction – General Anatomy	1, App.
1/16	Neurons and Glia – Brain Imaging Techniques	1
1/21	Ionic Generation of Electrical Impulses	2-3
1/23	No Class	4
1/28	Channels, transporters, synaptic transmission	5
1/30	Neurotransmitters, Receptors & 2nd Messengers	6-7
2/4	**Exam I** "	
2/6	Somatic Sensory System	9
2/11	" " & Pain	9, 10
2/13	Vision	11
2/18	" "	12
2/20	Central Visual Pathways	12, 20
2/25	Auditory & Vestibular System	13, 14
2/27	Chemical Senses	15
3/4	**Exam II**	
3/6	Spinal Cord & Motor Control	16
3/11	Spinal Cord & Brainstem	16, 17
3/13	Upper Motor Neuron Control of Brainstem & Spinal Cord	17
3/25	Basal Ganglia	18
3/27	Cerebellum	19
4/1	Motor System Diseases – Neurological Films	
4/3	No Class	
4/8	No Class	
4/10	Construction of Neural Circuits	23
4/15	Modification of Neural Circuits	8, 24
4/17	**Exam III**	
4/22	Association Cortices, Language	26, 27
4/24	Sleep	28
4/29	Stem Cells & Repair/Regeneration - Handout	25
5/1	Neurological Diseases – Handouts	
5/8	**Exam IV 10:15 – 12:15**	