Northeastern UNIVERSITY

Department of Biology

Neurobiology

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Biology U405; Key Number: 50363

This course will introduce students to the issues, models and experimental paradigms of Neurobiology.

Date	Topic	Subject	Reading
Jan 7	Introduction	Neuroscience and Neurotechnology	Chap 1, PDF
9	Evolution of Nervous Systems	Neuroanatomy of Different Phyla	Chap. 2
14	Techniques of Analysis	Visualization and Recording from Neurons	PDF
16	Bioelectricity I	Compartmentalization, Transport of Ions and Origin of the Resting Potential	Chap. 3
21	*Martin Luther King Day: No class*		
23	Bioelectricity II	Action Potentials	Chap. 3
28	Bioelectricity III	Slow Membrane Phenomena & Neuronal Integration	Chap. 3
30	Bioelectricity IV	Electronic and Chemical Synapses	Chap. 4
Feb 4	Neuronal Communication I	Types of Synaptic Potentials and Their Integration	Chap. 4, 5
6	Neuronal Communication II	Neuromodulation	Chap. 6
11	*1st Exam*		
13	Motor Systems I	Muscle Physiology: Excitation and Contraction	Chap. 7
18	*President's Day: No Class*		
20	Motor Systems II	Central Pattern Generators, Command and Coordinating Systems	Chap. 8
25	Motor Systems III	Spinal Cord, Adaptive Control of Locomotion, Pain	Chap. 8,9
27	Brain I	Functional Anatomy of The Brain	Chap. 9
Mar 10	Brain II	Neocortical Systems	Chap. 9, 10
12	Brain III	Descending Premotor Systems, Brain Stem Motor Systems	Chap. 9, 10
17	Brain IV	Sympathetic and Parasympathetic Nervous System, Limbic System	Chap. 10, 11
19	*2nd Exam*		
24	Brain IV	Sleep and Hypothalamus, Neuroendocrinology	Chap. 12
26	Sensory Systems I	, Sensory Integrative Mechanisms, Mechanoreception	Chap. 13, 14
31	Sensory Systems II	Visual System: Retina & Higher Centers	Chap. 15, 16
Apr 2	Sensory Systems III	Auditory System, Olfaction and Taste	Chap 17, 18
7	Neurodevelopment	Neuronal & CNS Development	Chap 19, 20
9	Neuroplasticity I	Plasticity and Learning	Chap 19, 20
14	Neuroplasticity II	Trauma: Stroke and Spinal Cord Injury, Regeneration	Chap. 20
16	Neuroplasticity III	Neuroprostheses & Neurorehabilitation	PDF

GRADING
Course credit will be based on midterm and final exams. The final grade will be weighted as follows:

2 Midterm exams (Feb 11, March 19)	50%
Final Exam (April 24)	50%

Text: Gary Matthews Neurobiology, Molecules, Cells and Systems, 2nd Edition.