

Moravian College
Department of Biological Sciences
Neuroscience - BIO 362



Fall 2012

Instructor: Dr. Cecilia M. Fox
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Office: Collier Science Room 304
Office Hours: Wednesdays 12-2pm, Thursdays 1-2pm
and by appointment
Lecture: Mondays, Wednesday and Fridays 10:20am-11:10am
PPHAC 103
Lab: Thursdays 8:30am-11:30am
Collier Hall of Science, Room 303
Required Textbook: Neuroscience: Exploring the Brain – 3rd edition
By Mark F. Bear, Barry W. Connors and Michael A. Paradiso
Lippincott Williams and Wilkins

Course Description: The study of neuroanatomy, neurophysiology and neuropathology; special emphasis on the functional aspect of brain organization; introduction to theories and research advances in the field of neuroscience will be presented through journal club and “Neuroscience in the News” activities. Laboratory includes gross anatomy and microscopic study of the central nervous system, computer assisted neurophysiology experimentation, computerized and radiographic study of the brain and a semester long behavior project.

Course Objectives: Upon completion of this course the student will be able to:

- 1) identify and discuss neuroanatomical structures and their related functions
- 2) appreciate the interrelationships among neurological structures
- 3) understand the various means through which neural transmission of information is achieved
- 4) realize the interrelationships among the central nervous system, peripheral nervous system and musculoskeletal system
- 5) become familiar with various imaging techniques in studying and identifying structures of the central and peripheral nervous systems
- 6) effectively discuss current advances in scientific research regarding various areas in neuroscience through journal club and “Neuroscience in the news” activities
- 7) understand and discuss the symptoms, pathology, current therapies and research regarding neurodegenerative diseases such as Parkinson’s disease, Alzheimer’s disease and ALS

Grading: The grading system is as follows: (+/- will be administered as the professor deems appropriate)

A = 90 - 100

B = 80 - 89

C = 70 - 79

D = 60 - 69

Course Requirements: The student's grade will be based on the following:

Three written lecture exams	100 points each
Two laboratory exams	100 points each
Journal club presentation and participation	100 points
"Neuroscience in the News" presentation and participation	100 points
Neurotransmitter presentation	100 points
Behavior experiment	200 points
Brain Awareness Service Learning Assignment	100 points
Semi-comprehensive final exam	<u>200 points</u>
	1300 points

** Both lecture material and reading assignments are fair game for lecture exams.

** The final lecture exam is cumulative.

** The "presentation / participation grade" is based on your participation during the journal club and "news" discussions, preparation for discussion and quality of presentation.

** Presentations, assignments and behavior experiment will be discussed once the course is in progress.

Expectations and Policy:

- Attendance: Regular lecture and lab attendance is expected. **No** make-up exams will be given unless you have an acceptable reason (family emergency, illness, etc). If an emergency should arise, you must notify me **prior to** the exam and **not** after. If you plan to miss lab please notify me in advance.
- Cheating: will not be tolerated. Students will be held to the highest standards as specified by the Moravian College Honor Code. Violations of this code will be handled in the most severe manner allowed by university policy.
- Reading Assignments: should be completed prior to lecture as well as lab.
- Neuroscience in the News: Each student will present some new information in the field of Neuroscience that has been mentioned in the news that week. A schedule of presentations will be posted on Blackboard once the semester begins. Presentations will be on Fridays.
- Extra Help: If difficulties interpreting lecture or lab material arise, please contact me regarding tutoring sessions. *I will be more than happy to help!!*
- Cell Phones/Pagers: Please turn off (or set on vibrate/quiet mode) your cell phones and pagers prior to entering the lecture hall and laboratory. **As a courtesy to the professor, no text messaging during lecture and lab!**

Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center.

I look forward to introducing the field of Neuroscience to you. Best wishes for a great semester!

Lecture Schedule

<u>Week of:</u>	<u>Topic</u>	<u>Reading Assignment</u>
Aug. 27	Introduction to Neuroscience	Chapter 1
Sept. 3	No Class - Labor Day	
Sept. 3	Neurons and Glia	Chapter 2
Sept. 10	Resting Membrane and Action Potentials	Chapters 3, 4
Sept. 13	Fall Convocation	
Sept. 17/24	Synaptic Transmission and Neurotransmitter Systems	Chapters 5, 6
Sept. 28	Exam 1 (Introduction through Neurotransmitter Systems)	
Oct. 1/8	Structure of the Nervous System	Chapter 7
Oct. 6-9	Fall Break	
Oct. 12-15	No Class - Society for Neuroscience Conference	
Oct. 15/22	Cranial Nerves and Chemical Senses	Chapter 8
Oct. 29	Somatic Sensory System	Chapter 12
Nov. 2	Exam 2 (Structure of NS through Chemical Senses) Spinal Control of Movement Central Nervous System Lesions	Chapter 13
Nov. 5	Rhythms of the Brain	Chapter 19
Nov. 12	Sex and the Brain	Chapter 17
Nov. 19	Brain Mechanisms of Emotion	Chapter 18
Nov. 21-25	Thanksgiving Holiday	
Nov. 30	Exam 3 (Central Nervous System Lesions) The Aging Brain	
Dec. 3	Special Topics in Neuroscience	

Dec. 12 **Final Exam at 1:30pm**
(Topics TBD)

Laboratory Schedule

<u>Lab</u>	<u>Topic</u>
Aug. 30	Library Instruction Session - <i>meet in front of Reeves Library at 9:00am</i>
Sept. 6	Microscopic Study of the Nervous System Physio Ex. Neurophysiology of Nerve Impulses
Sept. 13	Fall Convocation - <i>meet in Collier 303 at 9am</i>
Sept. 20	Behavior Experiment - Positive Reinforcement Meet in Collier 303 followed by Animal Facility
Sept. 27	Gross Anatomy of the Brain, Spinal Cord and Skull; Radiographs
Oct. 4	Exam 1
Oct. 11	No Lab - Society for Neuroscience Conference
Oct. 18	Cranial Nerve and Special Senses Testing
Oct. 25	Somatosensory and Reflex Testing Biopac - Reaction Time <u>Journal Club Presentation: Group 1</u>
Nov. 1	Central Nervous System Lesions PS <u>Journal Club Presentation: Group 2</u>
Nov. 8	Biopac: EEG <u>Journal Club Presentation: Group 3</u>
Nov. 15	Exam 2
Nov. 22	No Lab - Thanksgiving Holiday
Nov. 29	BAW Service Learning Activity Presentations
Dec. 6	Behavior Experiment Presentations

Professor reserves the right to amend this syllabus as the course progresses

