

Moravian College  
Biology Department  
Neuroscience - BIO 362  
Spring 2007



Instructor: Dr. Cecilia M. Fox  
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Office: Collier Science Room 304  
Office Hours: Monday, Wednesday and Friday 11:30am-12:15pm, Thursday 1:00-3:00pm  
(except for the first Thursday of each month) *and by appointment*  
Lecture: M, W, F 10:20-11:10am  
PPHAC 235  
Lab: Monday 12:45-3:45pm  
Collier Science Room 303  
Required Textbook: Neuroscience: Exploring the Brain - 3<sup>rd</sup> 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 regarding neurodegenerative disorders through journal club and “Neuroscience in the News” discussions. 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” discussions
- 7) understand and discuss the symptoms, pathology, current therapies and present research regarding several neurodegenerative diseases (i.e. Parkinson’s disease, Alzheimer’s disease, ALS)

Grading: The grading system is as follows:

- 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 and "Neuroscience in the News" presentation / participation	100 points
Behavior Experiment	100 points
Service Learning Project	100 points
Comprehensive final exam	<u>200 points</u>
	1000 points

- \*\* Both lecture material and reading assignments are fair game for lecture exams.
- \*\* 1/3 of each exam will contain material from previous 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.
- \*\* The presentations and behavior experiment will be discussed once the course is in progress.
- \*\* Service Learning Opportunity: Brain Awareness Day (March 17<sup>th</sup>) - to be discussed as the course progresses

Expectations:

- a) 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.
- b) 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.
- c) Reading Assignments: should be completed prior to lecture as well as lab.
- d) 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. Presentations will be on Fridays.
- e) Extra Help: If difficulties interpreting lecture or lab material arise, please contact me regarding tutoring sessions. *I will be more than happy to help!!*



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

*- C. Fox*

## Lecture Schedule

<u>Week of:</u>	<u>Topic</u>	<u>Reading Assignment</u>
Jan. 15	Introduction to Neuroscience	Chapter 1
<b>Jan.19 and 22</b>	<b>No Class (International Brain Conference)</b>	
Jan. 22	Neurons and Glia	Chapter 2
Jan. 29	Resting Membrane and Action Potentials	Chapters 3, 4
Feb. 5	Synaptic Transmission and Neurotransmitters	Chapters 5, 6
Feb.12	Structure of the Nervous System	Chapter 7
<b>Feb. 14</b>	<b>Exam 1</b>	
Feb. 19	Structure of the Nervous System (con't)	
Feb. 26	Cranial Nerves and Chemical Senses	Chapter 8
<b>March 3-11</b>	<b>Spring Break</b>	
Mar. 12	The Spinal Cord <b>Brain Awareness Week!!</b> <b>March 17<sup>th</sup>: Service Learning Project – Brain Awareness Day!</b>	Chapter 12
Mar. 19	Somatic Sensory System	
<b>Mar. 26</b>	<b>Exam 2</b>	
Mar. 26	Chemical Control of Brain and Behavior	Chapter 15
Apr. 2	Sex and the Brain The Aging Brain	Chapter 17
<b>Apr. 6-9</b>	<b>Easter Holiday</b>	
Apr. 9	The Emotional Brain	Chapter 18
<b>Apr. 16</b>	<b>Exam 3</b>	
Apr. 16	Rhythms of the Brain	Chapter 19
Apr. 23	Motivation	Chapter 16
<b>Apr. 30–May 4</b>	<b>Final Exam Week</b>	

## Preliminary Laboratory Schedule

<u>Lab</u>	<u>Topic</u>
Jan. 15	Introduction to Lab
<b>Jan.22</b>	<b>No Lab - (International Brain Conference)</b>
Jan.29	Introduction to Neuroscience Literature Journal Club / Presentation / Service Learning Expectations Microscopic Study: Neuron, Spinal Cord, Cortex, Ganglia
Feb. 5	Neuroscience Abstract Writing Exercise Physio Ex. Neurophysiology of Nerve Impulses
Feb.12	Behavior Experiment - Positive Reinforcement Gross Anatomy of the Brain, Spinal Cord and Skull; Radiographs
Feb. 19	Virtual Hospital: Dissection of the Human Brain Journal Club Presentation: Group 1
<b>Feb. 26</b>	<b>Exam 1</b>
<b>Mar. 5</b>	<b>No Lab - Spring Break</b>
Mar. 12	Cranial Nerve Testing
<b>Mar. 17</b>	<b>Service Learning Project: Brain Awareness Day</b> (9am–4pm) DaVinci Discovery Center of Science and Technology
<b>Mar. 19</b>	<b>No Lab due to Service Learning Project</b>
Mar. 26	Introduction to Biopac Software Reflex Testing; Biopac - Reaction Time Journal Club Presentation: Group 2
Apr. 2	Sex and the Brain: Brain Games Biopac: GSR and Polygraph
<b>Apr. 9</b>	<b>No Lab - Easter Holiday</b>
Apr. 16	Biopac: EEG 1 and 2
<b>Apr. 23</b>	<b>Exam 2</b> Behavior Experiment Presentations

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

