Moravian College

Departments of Biological Sciences and Psychology

Introduction to Neuroscience Methodology - NEUR 367

Fall 2012

Instructors:	Dr. Cecilia M. Fox	Dr. Sarah Johnson
Phone:	610-861-1426	610-625-7013
E-mail:	cfox@moravian.edu	skjohnson@moravian.edu
Office:	Collier Science Room 304	PPHAC 224
Office Hours:	W 12-2pm, R 1-2pm and by appt.	T & R 1-3pm and by appt.

Class Meeting: Fridays 12:00pm-3:00pm
Collier 302, Collier 309, Animal Facility and PPHAC 103 – *depending on the class (see class schedule)*

Prerequisites: BIO 362, PSYCH 211 and 212 or permission of the instructor

Required Readings: Selected primary and secondary scientific literature sources

Course Description: This course will provide students with the background to understand the various experimental methods used in the discipline of neuroscience. Laboratory experiences and journal club discussions of primary scientific literature will be used to develop skills in preparation for future neuroscience research endeavors. Students will apply the fundamental techniques learned in this course to design their own research projects.

Course Objectives: The objectives of this course are the following:

a) To introduce students to the range of experimental methods used in the field of neuroscience
b) To strengthen skills used in reading, analyzing data and forming conclusions from scientific literature
c) To develop research skills using a hands-on approach in a laboratory setting
d) To investigate neuroscience from the anatomical, behavioral, molecular, cognitive and biochemical perspectives
e) To apply the experimental methods learned in designing a research project
f) To discuss important ethical implications associated with neuroscience research
g) To provide an awareness of appropriate procedures and potential implications for the use of animals and humans in neuroscience research

Grading: The grading system is as follows: *(+/- will be administered as the instructor 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:

Laboratory Quizzes	Top 10 quizzes (25 points each) =	250 points
Laboratory Participation		100 points
Journal Club Presentation		100 points
Journal Club Participation		100 points
Final Research Project Proposal		200 points
Final Research Project Presentation		100 points
		850 points

Please note: It is within the instructor's purview to apply qualitative judgment in determining grades for an assignment or the entire course.

Expectations:

a) Attendance*:* Regular attendance is expected. **No** make-up quizzes will be given unless you have an acceptable reason (family emergency, illness, etc). If an emergency should arise, you must notify the instructor prior to the quiz and **not** after. If you plan to miss a laboratory experience please notify the instructor in advance. Students are allowed a maximum of one absence within this semester. If you miss class more than once, 50 points will be deducted from your laboratory participation grade. Another 10 points will be deducted from your laboratory participation grade for each additional absence. Please be aware that absences are not divided into excused and unexcused. Regardless of the reason, an absence from class is counted as an absence.

b) Cheating and Plagiarism: 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 college policy.

c) Reading Assignments: should be completed **prior** to every journal club discussion and laboratory experience.

d) Laboratory Quizzes: will be administered following each laboratory experience to ensure key concepts have been understood.

e) Laboratory Participation: You are expected to come prepared to the assigned laboratory experience. The requirements will vary depending upon the nature of the laboratory as well as the instructor for that particular laboratory experience.

f) Journal Club Presentation and Participation: Each student will have the opportunity to lead a journal club discussion. ***All students*** **should come prepared to these presentations by having completed the assigned readings.**

g) Final Research Project Proposal and Presentation: The details of this proposal will be distributed as the course progresses. ***This assignment will serve as the final exam for the course.*** It is expected that each student will design a research project that will apply existing techniques to new questions and we also encourage students to think creatively about innovative approaches.

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.

Class Schedule

Date:	Topic	Primary Instructor & Location
Aug. 31	Introduction and Expectations Selection of Journal Club Presentation Dates Primary literature exercise Database Review – *Reeves Library at 1pm*	Fox/Johnson PPHAC 103
Neuroanatomy		
Sept. 7	Comparative Neuroanatomy: Systems Approach to Brain Dissection *Dissection Paper (Will serve as Quiz 1)* Introduction to Structural Neural Imaging	Fox Collier 302
Sept. 14	Care and Use of Animals in Laboratory Research Preparation of Research Animals for Surgical Lab **Journal Club 1** *Quiz 2*	Fox PPHAC 103 Animal Facility
Sept. 21	Stereotaxic Surgery *(Surgery times during the week TBD)* *Quiz 3*	Fox Collier 309
Sept. 28	Neurotransmitters and Histology **Journal Club 2** *Quiz 4*	Fox Collier 309
Behavior and Cognition		
Oct. 5	Psychology Research Methods & Electrophysiology Techniques **Journal Club 3** *Quiz 5*	Johnson PPHAC 103
Oct. 12	Neuroimaging Techniques **Journal Club 4** *Quiz 6*	Johnson PPHAC 103
Oct. 19	Neuroimaging: Ethics and Concerns **Journal Club 5** *Quiz 7*	Johnson PPHAC 103

Oct. 26	Patient Studies *Quiz 8*	Johnson TBD
Nov. 2	Ethics in Animal and Human Research **Journal Club 6** *Quiz 9*	Fox PPHAC 103
Nov. 9	Animal Behavior *Quiz 10*	Zaremba/Fox Animal Facility
Nov. 16	Stereology **Journal Club 7** *Quiz 11*	Fox PPHAC 103 Collier 302
Nov. 23	*Thanksgiving Holiday*	

Presentations

Nov. 30 and Dec. 7	Final Research Proposal and Presentation	Fox/ Johnson PPHAC 103

Due to the experimental and hands-on nature of this course, the professors reserve the right to amend this syllabus as the course progresses.