Moravian College

Departments of Biological Sciences and Psychology

Introduction to Neuroscience Methodology - NEUR 367

Fall 2015

Instructors:	Dr. Cecilia M. Fox	Dr. Sarah Johnson
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Office Hours:	M 12-2pm, R 1-3pm and by appt.	T and Th 1-2:30pm and W 11am-12pm by appt.
Class Meeting:	Fridays 12:00pm-3:00pm PPHAC 301, CHoS 301, CHoS 320 and Animal Facility– *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 on a particular area of scientific interest. Students will apply the fundamental techniques learned in this course to design their own research projects as well as neuroimaging presentations for the general public as part of our Neuroscience Program Service Learning initiative.

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 as well as presenting such information to an audience
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	10 quizzes (25 points each) =	250 points
Laboratory Participation		100 points
Journal Club Presentation		100 points
Journal Club Participation		100 points
Neuroimaging Presentation		100 points
Final Research Project Proposal		200 points
Final Research Project Presentation		100 points
		950 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: for a particular unit will be administered the week following the relevant readings/laboratory experience (unless a different time is noted) 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) Neuroimaging Presentation: Each student will present the basics of a type of neuroimaging, with the intended audience being members of the community (those who might have to undergo such a procedure but who lack background knowledge).

h) 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 the Academic and Disability Support Office on the first floor of Monacacy Hall or by calling 610-861-1401. Accommodations cannot be provided until authorization is received from the Academic Support Center.

Class Schedule

Date:	Topic	Primary Instructor & Location
Sept. 4	Introduction and Expectations Selection of Journal Club Presentation Dates Database Review	Fox/Johnson PPHAC 301
Sept. 11	Comparative Neuroanatomy: Systems Approach to Brain Dissection *Dissection Paper (Will serve as Quiz 1)*	Fox CHoS 301
Sept. 18	Research Ethics and Society	Fox/Johnson PPHAC 301
Sept. 25	Care and Use of Animals in Laboratory Research Preparation of Research Animals for Surgical Lab **Journal Club 1**	Fox CHoS 301 Animal Facility
Oct. 2	Stereotaxic Surgery (*class time may vary*) *Quiz 2*	Fox CHoS 320
Oct. 9	Psychology Research Methods & Electrophysiology Techniques **Journal Club 2** *Quiz 3*	Johnson PPHAC 301
Oct. 16	Animal Behavior *Quiz 4*	Zaremba Animal Facility
Oct. 23	Neuroimaging Techniques *Quiz 5*	Johnson PPHAC 301
Oct. 30	Neuroimaging: Ethics and Concerns **Journal Club 3** *Quiz 6*	Johnson PPHAC 301
Nov. 6	Neuroimaging Presentations *Quiz 7*	Fox/Johnson PPHAC 301

Nov. 13	Neuropsychology: Patients/Lesions	Johnson PPHAC 301
Nov. 20	Neurotransmitters and Histology *Quiz 8*	Fox CHoS 301
Nov. 27	*Thanksgiving Holiday*	
Dec.4	Stereology *Quiz 9*	Fox CHoS 301
Dec. 11 and finals week	Final Research Proposal and Presentation *Quiz 10*	Fox/ Johnson PPHAC 301

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