NEUROPSYCHOLOGY 830:310:B6 SUMMER 2015

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Course Description

Neuropsychology is the study of brain-behavior relationships in which the focus is on the human brain. It is a branch of neuroscience that traditionally has relied more on clinical case studies as a source of information for identifying the functional significance of various regions of the brain. However, basic laboratory research using animal models, has provided (and continues to provide) a wealth of information that has been extrapolated to human brain function. In recent years, the ascendance of cognitive neuroscience, a branch of cognitive science that correlates brain activity with normal psychological processes in healthy, unimpaired human subjects, has served to extend the domain of neuropsychological investigation. In essence, whether it's called neuropsychology, behavioral neurology, or cognitive neuroscience, the ultimate goal is prediction and understanding of what parts of the brain serve as the basic substrates for measureable ongoing behavior. And as such, this information serves to aid the diagnosis and treatment of many different behavioral disorders ranging from acquired or inherited deficits in language and cognition, to severe neuropsychiatric conditions such as Alzheimer's dementia and schizophrenia. The course will provide the basis for appreciating the many different ways in which behavior has been related to specific regions of the human brain, and will cover basic neuroanatomy, neuropsychological testing, the newer methodologies used by cognitive neuroscience, such as neuroimaging, and proceed to a more detailed description of how the brain allows for the expression and processing of emotion, language, thought, and memory.

Learning Goals

After taking this course, students should be familiar with:

1. Methods for assessing normal and abnormal brain function at the structural and physiological level in human and non-human primates
2. Neuropsychological approaches to assessing the consequences of brain damage
3. The functional properties of the cerebral cortex in human and non-human primates
4. Functional differences between the left and right cerebral hemispheres
5. The relationship of neuropsychology to cognitive neuroscience approaches to understanding
    a. Sensation and Perception
    b. Goal-directed actions
    c. Attention
    d. Learning and memory
    e. Emotion
    f. Language
6. The neurocognitive basis of psychiatric disorders

Assessment

There will be three exams. Exams 1 and 2 will be a mixture of written and multiple choice questions. The first exam will account for 25% of the total grade. Exam 2 will account for 25% of the total grade. The Final Exam will be all multiple choice and worth 35% of the total grade.

There will be three quizzes of multiple choice questions each Thursday when no exam is scheduled. The quizzes are based on the content of the previous two class. Each quiz will account for 5% of the total grade. All seven quizzes will account for 15% of the total grade.

Grading System: Students will need to achieve predetermined cut-off points for grades of A, B+, and so on. Cut-off points will be as follows:

A 90-100 B+ 86-89.9 B 75-85.9 C+ 71-74.9 C 60-70.9 D 50-59.9 F <50

Extra Credit:

Students can choose to undertake additional work in order to receive extra credit. The extra credit will be earned by answering additional questions in the Final Exam. These questions will pertain to target articles that will be posted through Sakai once Exam 1 has been taken and graded. Reading these articles is not mandatory, but if you have fallen behind, you may wish to read the articles and answer relevant questions in the Final Exam. Answering all extra credit questions correctly will earn 5% extra credit. This can be added to whatever percentage score is received based on the three exams testing lecture material and the required reading. If the regular overall score for a student was, say, 86%, then an extra 5% (assuming all extra credit questions are correct) will boost a student to 91, and a grade of A. By the same principle, the extra credit questions can improve on other potential grades that you find yourself facing. The maximum score one can earn is 100%.

Makeups:

I religiously verify all excuses for missing an exam. So please DO NOT TRY to pull the wool over my eyes. If you do miss an exam, it will be a different exam that you will be asked to take. If the exam is missed for a legitimate and verifiable reason, the student must sit for the makeup within three weekdays of the scheduled date for the missed exam. Written and signed documentation will be required, and since the makeup will allow for more study time, the exam will look for evidence of greater and more precise understanding.

IMPORTANT: Failure to take the makeup within three weekdays of the scheduled exam will mean that you will have to take it during the reading period between the final class and the final exam. This will be the only opportunity to take a missed exam prior to the final exam. THERE ARE NO MAKEUP EXAMS AFTER THE FINAL EXAM (unless you have a conflict with another class, and which is acknowledged on the SAS website for exam schedules and rules concerning conflicts).

Rutgers athletic obligations, religious events, weddings etc that are going to interfere with taking the scheduled exams will require that you take the exam earlier than scheduled. It is up to you to anticipate the conflict, and let me know about these upcoming events so I can administer the exam earlier. If you don't take the exam, then you will either (i) fail to receive any points, or (ii) have the option to take the missed exam during the reading period between the final class and the final exam.

Required Reading

Cognitive Neuroscience: The Biology of the Mind (Fourth Edition) by Michael S. Gazzaniga, Richard B. Ivry and George R. Mangun.
Publisher: W. W. Norton & Company; 4th edition (October 1, 2013)
ISBN-13: 978-0393913484 ISBN-10: 0393913481

Purchase of a formal textbook on neuropsychology is not required, since the lectures and lecture outlines (to be posted on sakai) will be sufficient to get you through the course. There is a wealth of information on the internet, such that a student merely needs to type in a keyword (eg., 'ataxia' or 'apraxia') to get a host of links defining these terms.

However, if you wish to know more (especially if planning a career along these lines) about specific terms encountered in the course, you will benefit from having a copy of the following (but this is optional, since I will define terms for you :
Beaumont, J. G., Kenealy, P.M., & Rogers, M.J.C. (1999). *The Blackwell Dictionary of Neuropsychology*. Malden, Massachusetts,Blackwell Publishers.

Further, if you definitely must have a textbook on neuropsychology (and few fit my approach for an introductory course), then the following is worth purchasing (there is a more expensive 6th edition out now - about $95). It is written at a graduate level, but considered the top textbook. Purchase only if you are having trouble with the lectures: Kolb, B., & Wishaw, I.Q. (2003). *Fundamentals of Human Neuropsychology* (5th edition). Freeman.

Finally, any textbook (completely optional) on physiological psychology or biological psychology should alleviate concerns about understanding the neurobiology that we will cover (eg., that used for Physiological Psychology [830:313] at Rutgers is *Physiology of Behavior* by Neil Carlson; this book will be placed on reserve at the library, since it covers the neuroanatomy and some other physiological aspects that students may find difficult; many used copies are available through your favorite vendor, and 8th through 10th editions of the book will be fine).

Outline of Course Lectures and Dates of Exams

*This part will be updated as class goes on.

Section I:

Lecture #			Topic
1	Tue	May 26	Introduction and History The Nervous System: Central vs Peripheral Nervous System
2	Thu	May 28	Quiz Structure and function of the nervous system
3	Tue	June 2	Vision
4	**Thu**	**June 4**	Object recognition **EXAM 1 (25% of total grade)**

Section II:

Lecture #			Topic
5.	Tue	June 9	Action Attention
*6.	Thu	June 11	No class: There is no lecture on this day but an online quiz. Papers for extra credits in the final will be given..
7	Tue	June 16	Memory
8	**Thu**	**June 18**	Emotion **EXAM 2 – (25% of total grade)**
9	Tue	June 23	Language Cognitive control (1)
10	Thu	June 25	Cognitive control (2) Social cognition
11	Tue	June 30	Review
12	**Thu**	**July 2**	**FINAL EXAM (36% of total grade)**