Syllabus for Neurobiology of Disease
03-260, Fall 2014, 9 credit hours

Course Description:
This course will explore the biological basis of several neurological and neuropsychiatric diseases, with an emphasis on medical diagnostic tools and techniques. It will include discussions of the anatomical basis of neurological diseases as well as recent research into understanding the mechanisms of disease. This course is intended to broaden students' understanding of how diseases are diagnosed and studied. Students will also learn how basic neurological and psychiatric evaluations are conducted and gain proficiency in these evaluation techniques. We will discuss clinical neuroanatomy to serve as a basis for understanding brain structures and functional alterations in a variety of developmental, degenerative, neurological, and psychiatric disorders.

Prerequisites: 03-121 (Modern Biology) or 85-219 (BFoB) or another university-level neurobiology course


Class times: TR 10:30 AM – 11:50 PM, GHC 4307

Instructor: Daniel (DJ) Brasier
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412-268-3377
Office: Mellon Institute 336 or Wean 4624 (follow signs for Gelfand Center)
Office Hours: Friday 11:00 am to noon in WEH 4624, or by appointment (don’t be shy)

TA: Kamy Wakim kwakim@andrew.cmu.edu
Office hours: By appointment (don’t be shy)

Educational Objectives/Goals:
- Be conversant in functional brain anatomy.
- Understand the biological basis of many common brain disorders.
- **Think like a medical doctor**
  - Become familiar with clinical evaluations in neurology and psychiatry.
  - Understand the reasons for various clinical assessments and learn how to interpret results.
  - Become familiar with reading clinical evaluations of patients and diagnosing diseases.
- **Think like a scientist**
  - Become familiar with scientific methodology.
  - Understand and evaluate the evidence behind scientific theories about brain disorders.
  - Know the distinction between data and theories and its importance in scientific and clinical settings.
How to succeed in Neurobiology of Disease:

- **Attend class and be attentive in class.** Attending class is the most important thing that you can do to be successful in this class. Take notes during class. Students who do not have confidence in their note taking skills should consider audio taping the lectures or reviewing their notes with the TA. Classroom activities may be taped or recorded by a student for the personal use of that student or for all students presently enrolled in the class only, but may not be further copied, distributed, published, or otherwise used for any other purpose without the express consent of Dr. Brasier.

- **Ask questions in class.** Whether these are for clarification, repetition, or because you’re interested and want to know more, student questions make for a better learning environment for all.

- **Think about the in class activities & discussions.**

- **Review/think about/talk about what was covered in class.** In addition to simply showing up for class, spend time between lectures looking over your notes and thinking about what was discussed. This daily review of material is an immensely helpful way of preparing for the next lecture, having questions answered in a timely fashion and learning the material. You can do this alone or in groups with other students in the class. You should expect to spend on average 6 hours/week outside class reviewing material and preparing for upcoming lectures (9 units means 3 hours in class, 6 hours outside class).

- **Read (about the brain).** Lots of stuff gets written about the brain. You can go to the library, look on-line, read the newspaper/magazines. Talk to me or the TAs to find other stuff that people have written about the brain. All of this will make you a more sophisticated student and will help you to integrate the topics covered in the course.

- **Read the required and supplementary readings.** Many students have found they do much better with the material if they read ahead prior to class. Be aware of your individual learning style.

- **Contact the TA or the instructor.** Send e-mail any time. Call or visit during office hours for help with any aspect of the course.

- **Office hours.** All students are encouraged to make an appointment and visit the professor in office hours during the first 2-3 weeks of class to discuss your personal goals and interests in the course.

- **Success in this course is about more than your grade.** We want you to learn to think scientifically about your brain. This will serve you well long after you stop caring about your transcript.

**Students with Disabilities:**

*If you wish to request an accommodation due to a documented disability, please inform your instructor and contact Disability Resources as soon as possible. They can be reached at [access@andrew.cmu.edu](mailto:access@andrew.cmu.edu) or 412-268-2013.*

**Responsibilities**

*The choice to take this course is entirely up to you. If you do choose to take the course, please do your best to be a good course citizen. Although I never take attendance, this means you should make every effort to attend all classes on time and to participate in class discussions and activities.*

*In turn, I will make every effort to build a valuable learning experience for every student. If there is ever any way I can improve your learning, or if any topic doesn’t capture your interest, I welcome feedback (either in class, outside of class, or anonymously).*

*Finally, it is everyone’s responsibility to be respectful of others during class.*
Grading:

- **Exams.** Each in-class exam will constitute 20% of your grade. The mid-term exams are not explicitly cumulative, but the final is cumulative. However, many of the questions on the second and third midterms will assume a basic understanding of the concepts from the earlier units.
- **The final exam.** The final exam is cumulative for the entire course and will be during finals week.
- **Missed exams.** If you miss an exam, your score will be a zero. You may not drop an exam, however, the lowest exam will count for only 10% of your grade, including any unexcused missed exams. Please contact the instructor immediately with any situation that may cause you to miss an exam.

Official CMU policies on make-ups for excused absences & missed exams can be found here: http://www.cmu.edu/policies/documents/Exams.htm

- **Exam re-grades.** We are committed to grading as fairly as possible. If you think a mistake was made in grading your exam, you can submit your exam and a written explanation of why you think you deserve more points than you were given and your exam will be re-graded. Re-grades must be submitted no more than one week after exams have been returned. The instructors reserve the right to re-grade the entire exam in addition to the disputed question, and add or subtract points.

- **Classroom activities.** Students are required to participate in all classroom activities and to engage in classroom discussions. This includes participating in discussion during lecture times and doing activities.

- **Report.** Students are required to write a report on recent research into one disease of the nervous system. The report will be 7-13 pages, plus references, and should reflect careful evaluation of the publication chosen. Topics must be approved by the instructor or TA by 11/6, and an outline is due on 11/20. More details will be given out the second week of classes. The final report is due at 4:00 pm on Dec. 2nd.

**Academic Integrity:**

- **Cheating.** Cheating of any sort will not be tolerated. For example, if quiz or exam answers are copied from another student, both students will receive zeros; if graded exams or quizzes are altered and resubmitted for a higher score, the revised score will be zero. In addition, these and other forms of cheating may also be referred to the Academic Review Board for more severe penalties. This warning has two purposes: 1) to dissuade a small number of students from even thinking about cheating; and 2) to persuade the large majority that they will get a fair grade based on their individual performance.

- **Plagiarism.** Cheating also includes plagiarism, the presentation of the work of another person as one’s own. This applies whether the source of the material is a printed book, a web site, or work of another student from this course or any other course. Lifting even a single sentence without appropriate attribution constitutes plagiarism. Read Promoting Academic Integrity (http://www.cmu.edu/policies/documents/Cheating.html) for official university policy on this issue. Any source you reference (aside from the class text books) must be referenced, even if you only used the source for ideas and did not quote a single word. This applies to all work at CMU, but is especially relevant in this class on the written report.

**TURN OFF YOUR CELL PHONE before YOU ARRIVE!** If your phone rings during class, turn it off ASAP. Do not answer it. If it happens more than once, you will be asked to leave for the day.
Check blackboard prior to each class period for required reading assignments and posted lecture slides.

Class Schedule

8/26  Brain Initiative Talk: UC RANGOS
8/28  Memory & Alzheimer’s disease
9/2   Alzheimer’s research
9/4   Neuroanatomy & the frontal lobes
9/9   Vision, Identification, & Neglect
9/11  Attention research
9/16  Delusional misidentification & other bizarre disorders

9/18  Exam 1

9/23  Depression, Anxiety, and the HPA axis (BK)
9/25  Depression, SSRI’s, and research topics
9/30  Anxiety research
10/2  Parkinson’s & Huntington’s diseases
10/7  Tourette’s and OCD
10/9  Basal Ganglia research topics
10/14 Ataxia & cerebellar function

10/16 Exam 2

10/21 Addiction & drugs of abuse (KW)
10/23 Addiction research
10/28 Autism spectrum disorders
10/30 ASD research
11/4  ADHD

********** Written report paper choice due 11/6 by 4:00 pm

11/6  ADHD research
11/11 Love and other bizarre interpersonal relationships
11/13 Chronic Traumatic Encephalopathy
11/18 Patient perspectives (DB)

********** Written report outline due 11/20 by 4:00 pm (preferably by e-mail)

11/20 Schizophrenia biology (AP)

11/25 Exam 3

12/2  Schizophrenia research

********** Written report due 12/4 by 4:00 pm (preferably by e-mail)

12/4  Psychopathy

TBA  Final Exam

********** Optional report rewrite due 12/14 at 4:00 pm, (preferably by e-mail)