This course focuses on how research and theory from the neurosciences can be applied to better understand normal and abnormal human behavior. One important aim of this course is for you to develop a sense of key phenomena and methods in cognitive neuroscience. Although neurobiology is one of the hottest research areas right now, another important aim of this course is for you to be able to critically evaluate the explanations provided by this research and not fall for its “seductive allure”. Although this course spans the neural mechanisms of basic cognitive and emotional functions, the course will also emphasize translational research.

In the first portion of the course, we will discuss basic functional neuroanatomy and follow it up with how neuroscience (primarily with the imaging technique) can inform our understanding of cognition over and above what we already know (for example, from behavioral or clinical observation). We will then discuss some of the issues regarding brain-related explanations of normal and abnormal cognition and emotion (particularly the kinds the media likes), stigma, and neuroplasticity. After covering this introductory material we take an RDoc approach and start with the topics of emotion and motivation. After this, we will delve into the major areas of cognitive neuroscience, including perception, attention, cognitive control, memory, learning, decision making, and social cognition. Finally, we will end with whether this cognitive/affective neuroscience research has been effectively translated into practical applications, as well as the barriers that stand in the way of this translation. The course material will expose you to quite a variety of issues and hopefully will challenge your thinking about some of them.

For each week, the syllabus lists the required and recommended readings and I can provide you with an electronic copy of the readings. The format of the class meetings includes lecture and discussion, with emphasis on interactive discussion.

**Thought paragraph:** Throughout the semester, prior to each class meeting, please identify 2 or 3 important, confusing, controversial, or otherwise worthy issues for discussion and write up some brief comments about each issue (maximum 1 single spaced paragraph). The thought paragraph should not be summaries of the week’s readings, but can take many forms such as critiquing the points raised by some authors, integrating ideas across reading, relating them to your own research, developing hypothesis, and identifying and critiquing unstated assumptions in the readings. Please email your comments by 5:00 PM on the day before the class to me and the rest of the class and please do raise issues/questions in the class.

**Final Paper:** The final paper will be due during finals week. The format of the paper will be same as a F31 NIMH pre-doctoral training grant. Although you can pick a topic of choice, it is preferred that you propose a study that will use cognitive neuroscience paradigms and techniques to address an important question in your area of interest.
**Class 1: Functional Neuroanatomy: Overview**

**Monday, January 27, 2020**

Syllabus and Functional Neuroanatomy overview

**Class 2: Functional Neuroanatomy: Overview**

**Wednesday, January 29, 2020**

**Required Reading**
Read Chapter 3 (Gross Anatomy and General Organization of the Nervous System) Nolte’s Essentials of the Human Brain, Second Edition

This book is available in Ebook form on our university library website. If you are off campus you will have to click on links and access using your NetID

**Class 3: Behavioral Neuroanatomy: Overview**

**Monday, February 3, 2020**

**Required Reading**

**Recommended Reading**

**Class 4: Methods in Neuroscience**

**Wednesday, February 5, 2020**

**Required Reading (next week will have same readings, we will not discuss readings today but your classmates will present how they do analyses etc using neuroscience methods)**

**Recommended Reading**
Class 5: Methods in Neuroscience
Monday, February 10, 2020

Required Reading

Class 6: What can Neuroscience tell us about Cognitive Psychology?
Wednesday, February 12, 2020

Required Reading
https://www.wnycstudios.org/podcasts/radiolab/articles/276577-rebroadcast-emergence (this is a radiolab podcast, listen to whole thing but the one relevant is about how behavior (and probably symptoms) emerges from neural activity

Recommended Reading
Coltheart, M. (2006). What has functional neuroimaging told us about the mind (so far)? Cortex, 42(3), 323-331.

Class 7: What can Neuroscience tell us about Clinical Psychology?
Monday, February 17, 2020

Required Reading

Class 8: Ethical Issues regarding Neuroscience Research (I)  
Wednesday, February 19, 2020

Required Reading

Class 9: Measurement Issues regarding Neuroscience Research (II)  
Monday, February 24, 2020

Required Reading


https://erpinfo.org/blog/2019/2/19/reliability-and-precision

Recommended Reading

Class 10: Negative Valence  
Wednesday, February 26, 2020

Required Reading

**Recommended Reading**

https://www.ted.com/talks/lisa_feldman_barrett_you_aren_t_at_the_mercy_of_your_emotions_your_brain_creates_them/discussion?referrer=playlist-the_most_popular_ted_talks_of_2018


**Class II: Negative Valence (Learning)**

**Monday, March 2, 2020**

**Required Reading**


**Recommended Reading**


Class 12: Positive Valence  
Wednesday, March 4, 2020

**Required Reading**

**Recommended Reading**

Class 13: Negative and Positive Valence Networks  
Monday, March 9, 2020

**Required Reading**

Class 14: Perception  
Wednesday, March 11, 2020

**Required Reading**

**Recommended Reading**

**March 16 & 18, 2020**

**Spring Break**

**Class 15: Perception & Psychopathology**

**Monday, March 23, 2020**

**Required Reading**


**Recommended Reading**


**Class 16: Attention**

**Wednesday, March 25, 2020**

**Required Reading**


**Recommended Reading**


**Class 17: Attention & Psychopathology**

**Monday, March 30, 2020**

**Required Reading**


**Recommended Reading**


**Class 18: Attention & Emotion**

**Wednesday, April 01, 2020**

**Required Reading**


**Recommended Reading**


**Class 19: Working Memory & Cognitive Control (I)**

**Monday, April 06, 2020**

**Required Reading**


**Recommended Reading**

**Class 20: Working Memory & Cognitive Control (II)**  
**Wednesday, April 08, 2020**

**Required Reading**


**Recommended Reading**

**Class 21: Working Memory & Cognitive Control (III)**  
**Monday, April 13, 2020**

**Required Reading**


**Recommended Reading**


#### Class 22: Memory (I)
**Wednesday, April 15, 2020**

**Required Reading**

**Recommended Reading**

#### Class 23: Memory (II)
**Monday, April 20, 2020**

**Required Reading**

**Recommended Reading**

#### Class 24: Memory (III)
**Wednesday, April 22, 2020**


**Class 25: Decision Making & Neuroeconomics**  
**Monday, April 27, 2020**

**Required Reading**


**Recommended Reading**


**Class 26: Social Cognition (I)**  
**Wednesday, April 29, 2020**

**Required Reading**


http://www.talkingbrains.org/2010/03/mirror-neurons-unfalsifiable-theory.html

**Class 27: Social Cognition (II)**  
**Wednesday, May 04, 2020**

**Class 28: Translating Neuroscience Research (II)**  
**Monday, May 06, 2020**

**Required Reading**


**Recommended Reading**


**Finals Week**