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 of 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 will start with the topics of emotion and motivation, which may seem a little odd for a cognitive neuroscience based course. Hence, we will discuss why it seems odd that the course focused on emotion and motivation first. After this, we will delve into the major areas of cognitive neuroscience, including attention, memory, cognitive control, 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 papers:** 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 page). The thought papers 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. Your thought papers are also very important to me for assessing what you're getting out of the material.

**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 23, 2017

No Reading

Class 2: Functional Neuroanatomy: Overview
Wednesday, January 25, 2017

Dale, Purves et al, Chapters 1 of Principles of Cognitive Neuroscience

Class 3: Functional Neuroanatomy: Overview
Monday, January 30, 2017

Required Reading

Recommended Reading

Class 4: Functional Neuroanatomy: Overview
Wednesday, February 01, 2017

Required Reading

Class presentation
Students using some of these techniques will present 5-10 min each

Recommended Reading

Class 5: What can Neuroscience tell us about Clinical Psychology?
Monday, February 06, 2017

Required Reading

**Recommended Reading**

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


**Class 6: What can Neuroscience tell us about Clinical Psychology?**

**Wednesday, February 08, 2017**

**Required Reading**


**Class 7: Ethical Issues regarding Neuroscience Research (I)**

**Monday, February 13, 2017**

**Required Reading**


**Recommended Reading**


**Class 8: Ethical Issues regarding Neuroscience Research (II)**
Wednesday, February 15, 2017

Required Reading
http://blogs.plos.org/neuroanthropology/2014/02/09/research-domain-criteria-nimh-mental-health-research-diagnosis/

Recommended Reading

Class 9: Emotion & Motivation (I)
Monday, February 20, 2017

Required Reading

Recommended Reading

Class 10: Emotion & Motivation (II)
Wednesday, February 22, 2017

Required Reading

Class Presentation
Relevant RDOC system corresponding to emotion and motivation with an example study

Recommended Reading


**Class 11: Attention: How does attention affect stimulus processing?**

**Monday, February 27, 2017**

**Required Reading**


**Recommended Reading**


**Class 12: Attentional Control & Attentional Systems (I)**

**Wednesday, March 01, 2017**


**Recommended Reading**


**Class 13: Attentional Control & Attentional Systems (II)**  
**Monday, March 06, 2017**

**Required Reading**

**Class Presentation**
Relevant RDOC system corresponding to attention with an example study

**Recommended Reading**

**Class 14: Working Memory & Cognitive Control (I)**  
**Wednesday, March 08, 2017**

**Required Reading**

**Recommended Reading**

**Class 15: Spring Break**  
**Monday, March 13, 2017**

No Class

**Class 16: Spring Break**  
**Wednesday, March 15, 2017**

No class

**Class 17: Working Memory & Cognitive Control (II)**
Monday, March 20, 2017

Required Reading


Recommended Reading


Class 18: Working Memory & Cognitive Control (III)

Wednesday, March 22, 2017

Required Reading


Recommended Reading


Class 19: Working Memory & Cognitive Control

Monday, March 27, 2017

Class Presentation I: Relevant RDOC system corresponding to working memory with an example study

Class Presentation II: Relevant RDOC system corresponding to cognitive control with an example study
**Class 20: Memory (I)**  
**Wednesday, March 29, 2017**

**Required Reading**


**Recommended Reading**


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**Class 21: Memory (II)**  
**Monday, April 03, 2017**

**Required Reading**


**Recommended Reading**

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**Class 22: Memory (III)**  
**Wednesday, April 05, 2017**


**Class Presentation:** Relevant RDOC system corresponding to memory with an example study

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**Class 23: Learning (I)**  
**Monday, April 10, 2017**
**Required Reading**


**Class 24: Learning (II)**

**Wednesday, April 12, 2017**

**Required Reading**


**Recommended Reading**


**Class 25: Learning Class presentation**

**Monday, April 17, 2017**

**Class Presentation:** Relevant RDOC system corresponding to fear extinction with an example study

**Class Presentation:** Relevant RDOC system corresponding to fear generalization with an example study

**Class 26: Perceptual Decision Making (I)**

**Wednesday, April 19, 2017**

**Required Reading**


**Recommended Reading**

**Class 27: Perceptual Decision Making**  
**Monday, April 24, 2017**

**Recommended Reading**

**Class Presentation:** Relevant RDOC system corresponding to perceptual decision making with an example study

**Class 28: Decision Making & Neuroeconomics**  
**Wednesday, April 26, 2017**

**Required Reading**

**Recommended Reading**

**Class 29: Social Cognition (I)**  
**Monday, May 01, 2017**

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

**Class Presentation:** Relevant RDOC system corresponding to social cognition making with an example study

**Class 30: Translating Neuroscience Research (II)**  
**Wednesday, May 03, 2017**
Required Reading

Recommended Reading

Finals Week