ANXIETY, INATTENTION, AND THE BRAIN: AN INTRODUCTION TO DEVELOPMENTAL CLINICAL NEUROSCIENCE

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Schedule

Mondays and Wednesdays from 3:30 - 4:45 p.m. in Perkins 101.

Course Description

This course will provide an in-depth examination of the functional neuroanatomy and clinical phenomenology associated with common emotional and behavioral problems that arise during childhood, adolescence, and early adulthood. Topics will include inattention/hyperactivity, anxiety, depression, autism spectrum, and externalizing problems. Emphasis will be placed on findings from human neuroimaging studies.

Course Objectives

Upon successful completion of this course, students should:

- Possess a greater understanding of how the human brain is organized, both structurally and functionally
- Be able to articulate dimensional and categorical conceptualizations of developmental psychopathology
- Be familiar with various neuroimaging modalities and methodologies
- Be able to describe specific large-scale neural networks that are involved in higher-level cognitive functions (e.g., attention, working memory, emotion regulation)
- Be able to explain how dysfunction in various brain networks is posited to underpin different types of psychiatric symptomatology
- Be able to effectively integrate and synthesize neuroimaging studies, drawing from different imaging modalities (e.g., structural imaging, functional imaging, diffusion imaging)

Texts & Materials

NOTE: ***All readings will be made available to students as either an electronic PDF file, or a photocopy.***

Suggested (but not required):

Mesulam, M. (2000). *Principles of behavioral and cognitive neurology* (2nd ed.). New York: Oxford University Press.

Nolte, J. (2002). *The human brain: an introduction to its functional anatomy* (5th ed.). St. Louis: Mosby, Inc.

Rumsey, J.M. & Ernst, M. (2009). *Neuroimaging in developmental clinical neuroscience*. New York: Cambridge University Press.

Schmahmann, J.D. & Pandya, D.N. (2006). *Fibers pathways of the brain*. New York: Oxford University Press.

Evaluation

Class Attendance and Participation (50%)

Each class will involve some degree of lecturing; however, I am hoping for solid discussion throughout. I purposely opted for a smaller class size with the aim of promoting discussion and the asking of questions. Participation can include any or all of the following: answering questions posed in class, asking questions, commenting on the ongoing discussion, interjecting during lecturing with questions or comments, etc.

Mid-Term Quiz (10%)

Approximately halfway through the semester, there will be an in-class quiz mainly covering material presented in lectures. The quiz will likely be a combination of multiple choice and short answer questions. Review materials will be provided.

Final Group Project (15%)

At the end of the semester, students (in groups of 5) will choose a psychiatric disorder to present on—preferably one that has not been covered extensively in class (e.g., substance use disorders, bipolar disorders, tics and Tourette's disorder, obsessive-compulsive disorder, trichotillomania. eating disorders, social anxiety, generalized anxiety). Presentations should be approximately 45 minutes long. Leading up to presentation, each group will assign one article for the class to read. I am happy to meet with groups and recommend relevant materials (provided it is at least one week in advance).

Final Paper (25%)

At the end of the semester, students will write a 10-page paper (double-spaced, 1-inch margins, 12 point font) on the psychiatric disorder of their choosing. Please note: the disorder should be different from the one you presented on as part of the Final Group Project. Papers will overview the phenomenology and proposed neural underpinnings of the disorder. Students should plan to cite at least 15-20 empirical journal articles (drawing primarily from the neuroimaging literature), and should attempt to synthesize findings. Again, I am happy to meet with individuals to help identify pertinent articles and assist in interpreting study findings (provided it is at least one week in advance).

Grade Scale

A+ 100-97	A 96-94	A- 93-90	B+ 89-87	B 86-84	B- 83-80
C+ 79-77	C 76-74	C- 73-70	D+ 69-67	D- 66-64	F <60

Academic Honesty

As in other classes offered at the University of Vermont, academic honesty is expected in this course. **In this intermediate-level course, there is a "zero tolerance" policy with regard to plagiarism and other acts of academic dishonesty. Students are expected to read and understand the University's academic integrity policy (https://www.uvm.edu/policies/student/acadintegrity.pdf), which includes detailed definitions for plagiarism and other acts of academic dishonesty.** In this course, acts of academic dishonesty include (but are not limited to) plagiarizing written assignments, copying answers from other students on any assignment, knowingly allowing others to copy from your own work, and utilizing unauthorized materials during in-class tests and quizzes. **Plagiarism and other acts of academic dishonesty outlined in the above link will automatically result in a failing course grade in addition to further actions taken by the University. Again, students are directed to the link, above, for further details.**

Course Calendar

Date	*Topic*	*Reading/Assignments Due*
Jan. 17	**Introduction and Overview**	**None**
Jan. 22	**Organization of the Nervous System and Behavioral Neuroanatomy I**	**Chapter 1 in Mesulam (not required)**
Jan. 24	**Organization of the Nervous System and Behavioral Neuroanatomy II**	**Chapter 1 in Mesulam (not required)**
Jan. 29	**Neuroimaging Methods**	**Chapters 17 & 19 in Rumsey & Ernst (not required)**
Jan. 31	**Neuroanatomy Lab**	**None**
Feb. 5	**Assessing Brain Development with Magnetic Resonance Imaging**	**Gogtay et al., 2004;**

Feb. 7	**Neural Circuitry of Emotion Regulation**	**Kanske et al., 2011; Albaugh et al., 2013**
Feb. 12	**Neural Circuitry of Inhibitory Control**	**Guest Lecturer: Nicholas D'Alberto, Doctoral Candidate in Neuroscience; Reading TBA**
Feb. 14	**Assessing Psychopathology: Categorical and Dimensional Perspectives**	**Hudziak, Achenbach et al., 2007**
Feb. 19	**NO CLASS – PRESIDENTS' DAY**	
Feb. 21	**Inattention/Hyperactivity**	**Shaw, Gilliam et al., 2010; Karalunas et al., 2014**
Feb. 26	**Inattention/Hyperactivity**	**Faraone et al., 2015; Albaugh et al., 2017**
Feb 28	**Anxiety**	**Blackford & Pine, 2012**
March 5	**Anxiety**	**Kim & Whalen, 2009; Kim, Louks et al., 2011**
March 7	**Mid-Term Quiz**	**None**
March 12	**NO CLASS – SPRING BREAK**	
March 14	**NO CLASS – SPRING BREAK**	
March 19	**Depression**	**Price & Drevets, 2010**
March 21	**Depression**	**Hamani, Mayberg, et al. 2011**
March 26	**Aggression/Conduct Problems/Psychopathy**	**Ameis et al., 2014**
March 28	**Aggression/Conduct Problems/Psychopathy**	**Breeden, Cardinale et al., 2015; Blair, 2010**

April 2	**Trauma & Adversity**	**Davidson & McEwen (2013)**
April 4	**Trauma & Adversity**	**Teicher & Samson (2016)**
April 9	**Autism Spectrum**	**Ecker, Bookheimer, et al. (2015)**
April 11	**Schizophrenia and Psychotic Disorders**	**Ordóñez, Luscher et al. (2016)**
April 16	**GROUP PROJECT #1**	**TBA**
April 18	**GROUP PROJECT #2**	**TBA**
April 23	**GROUP PROJECT #3**	**TBA**
April 25	**GROUP PROJECT #4**	**TBA**
April 30	**GROUP PROJECT #5**	**TBA**
May 4	**GROUP PROJECT #6**	**TBA**