

The Emotional Brain

Dr. LeDoux

Structure:

Faculty Lectures will take place during the first 7 classes. Read the papers and participate in discussion.

Midterm Exam will consist of multiple-choice questions taken from the readings and lectures up to that point.

Student Presentations Each student will be responsible for one presentation during the semester. We will have 3 presentations each week. Each should last about 20 min, followed by discussion. Each student has been randomly assigned to papers (see below). If you don't like your time or topic, find someone to swap with and let me know.

Class Participation All class members are required to read the assigned papers and participate in the discussion of the papers. Asking questions about what is in the paper indicates you did not read the paper. Ask questions that dig deeper.

Term Paper will be due the last day of class (or earlier). Papers should be 5 double-spaced pages, with Times Roman/Cambria 12 point-font. MORE DETAILS LATER.

Grading:

*Student Presentation 1/3

*Midterm (multiple-choice) 1/3

*Term Paper 1/3

*Class participation will be used to add or subtract from your final grade. Lots of good participation turns a course grade of B to a B+ while sparse participation turns a B into a B-

CLASS CALENDAR

Week 1	Introduction
Week 2	History of the Emotional Brain
Week 3	Fear and the Amygdala
Week 4	Rethinking the Emotional Brain
Week 5	A Philosophical Perspective on Emotional Consciousness
Week 6	Human Affective Neuroscience
Week 7	Mid-term exam (20 minutes); Deep History of Ourselves
Week 8	Memory and Emotion
Week 9	Stress
Week 10	Reward and Addiction - student presentations
Week 11	Eating Disorders - student presentations
Week 12	Depression - student presentations
Week 13	Anxiety - student presentations
Week 14	Term Paper Due

READINGS

Week 1 Introduction

Week 2 History of the Emotional Brain

Emotional Brain Chapter 3 – Blood, Sweat, and Tears

Emotional Brain Chapter 4 – The Holy Grail

Emotional Brain Chapter 5 – The Way Were, p. 104-125

Week 3 Fear and the Amygdala

Anxious Chapter 4 – The Defensive Brain

Adolphs R (2013) The biology of fear. *Curr Biol* 23:R79-93.

Week 4 Rethinking the Emotional Brain

LeDoux J (2012) Rethinking the emotional brain. *Neuron* 73:653-676.

Week 5 A Philosophical Perspective on Emotional Consciousness

LeDoux JE, Brown R (2017) A higher-order theory of emotional consciousness. *Proc Natl Acad Sci U S A* 114:E2016-E2025.

Anxious Chapter 6 – Let's Get Physical

Week 6 Human Affective Neuroscience

Phelps EA (2006) Emotion and cognition: insights from studies of the human amygdala. *Annu Rev Psychol* 57:27-53.

Hartley CA, Phelps EA (2010) Changing fear: the neurocircuitry of emotion regulation.

Neuropsychopharmacology 35:136-146.

Week 7 Deep History of Ourselves

No readings

Week 8 Memory and Emotion

Hirst W, Phelps EA (2016) Flashbulb Memories. *Curr Dir Psychol Sci* 25:36-41.

McGaugh JL (2000) Memory--a century of consolidation. *Science* 287:248-251.

Alberini CM, LeDoux JE (2013) Memory reconsolidation. *Curr Biol* 23:R746-750.

Week 9 Stress

McEwen BS, Bowles NP, Gray JD, Hill MN, Hunter RG, Karatsoreos IN, Nasca C (2015) Mechanisms of stress in the brain. *Nat Neurosci* 18:1353-1363.

Kruegers HJ, Joels M (2014) Long-lasting Consequences of Early Life Stress on Brain Structure, Emotion and Cognition. *Curr Top Behav Neurosci* 18:81-92.

Sorrells SF, Caso JR, Munhoz CD, Sapolsky RM (2009) The stressed CNS: when glucocorticoids aggravate inflammation. *Neuron* 64:33-39.

Week 10 Reward and Addiction

Everitt BJ, Robbins TW (2016) Drug Addiction: Updating Actions to Habits to Compulsions Ten Years On. *Annu Rev Psychol* 67:23-50.

Nestler EJ (2014) Epigenetic mechanisms of drug addiction. *Neuropharmacology* 76 Pt B:259-268.

Xue YX, Luo YX, Wu P, Shi HS, Xue LF, Chen C, Zhu WL, Ding ZB, Bao YP, Shi J, Epstein DH, Shaham Y, Lu L (2012) A memory retrieval-extinction procedure to prevent drug craving and relapse. *Science* 336:241-245.

Week 11 Eating Disorders

Volkow ND, Wise RA, Baler R (2017) The dopamine motive system: implications for drug and food addiction. *Nat Rev Neurosci* 18:741-752.

Steward T, Menchon JM, Jimenez-Murcia S, Soriano-Mas C, Fernandez-Aranda F (2017) Neural network alterations across eating disorders: a narrative review of fMRI studies. *Curr Neuropsychopharmacol*.

Glenny EM, Bulik-Sullivan EC, Tang Q, Bulik CM, Carroll IM (2017) Eating Disorders and the Intestinal Microbiota: Mechanisms of Energy Homeostasis and Behavioral Influence. *Curr Psychiatry Rep* 19:51.

Week 12 Depression

Foster JA, McVey Neufeld KA (2013) Gut-brain axis: how the microbiome influences anxiety and depression. *Trends Neurosci* 36:305-312.

Holtzheimer PE, Mayberg HS (2011) Deep brain stimulation for psychiatric disorders. *Annu Rev Neurosci* 34:289-307.

Krishnan V, Nestler EJ (2010) Linking molecules to mood: new insight into the biology of depression. *Am J Psychiatry* 167:1305-1320.

Week 13 Anxiety

Grupe DW, Nitschke JB (2013) Uncertainty and anticipation in anxiety: an integrated neurobiological and psychological perspective. *Nat Rev Neurosci* 14:488-501.

LeDoux JE, Pine DS (2016) Using Neuroscience to Help Understand Fear and Anxiety: A Two-System Framework. *Am J Psychiatry* 173:1083-1093.