

Neuroscience and Society

Psych 441 SYLLABUS

Winter 2014

Tuesdays 1:00-4:00



Professor: Patricia Reuter-Lorenz, Ph.D.

Course Description:

This seminar course explores the societal, ethical and legal implications of human neuroscience research. Topics include the use of brain technologies to understand traumatic brain injury, consciousness and coma, how such technologies and neural advances can be applied to marketing, cognitive enhancement, assessment of deception, assignment of blame, and how they may ultimately affect our understanding of ourselves and our humanity. Grades will be based on class participation, presentations, written assignments, and examinations.

Course Format:

The course meetings will include an overview lecture, media events/analysis, invited guest experts, discussion/debate, and student-led activities. The weekly topics are listed below.

Final Grade Determination:

Class Participation (including attendance) 20%; Reaction Papers (5 @ 4%) 20%; Neuroethical dilemma identification (e.g. in the media): 5%; Discussion Leading/Debate/Role Playing: 15%; Final Paper: 25%; Essay exam: 15%

NOTE: *Cheating or plagiarism are grounds for failing the course.*

Required Readings/Materials:

There will be up to 5 chapters/articles for you to read thoroughly before each class. You are expected to read and take notes on these articles, so that you can be prepared to ask and answer questions, and discuss the content of the papers. Reaction papers will be assigned to a subset of these articles. You may also be required to view, listen to, or read internet content in preparation for class.

1. PDF files will be made available on ctools; see reading list.
2. Two Books to Order from Amazon.com or preferred vendor:
 Neuroethics: An Introduction with Readings, by Martha Farah
 Brainwashed: The Seductive Appeal of Neuroscience by Sally Satel & Scott Lilienfeld

Date	Topic
January 14: week 1	Setting the stage
January 21: week 2	TBI & Sports
January 28: week 3	Finish TBI/Into ADHD
February 4: week 4	ADHD and its Treatment
February 11: week 5	Cognitive Enhancement: Brain stimulation and brain training
February 18: week 6	Memory Erasure
February 25: week 7	Neuromarketing & Brain Reading
March 11: week 8	Neurolaw: Culpability and Who's to Blame
March 18: week 9	Lie Detection
March 25: week 10	Brain and Coma
April 1: week 11	Psychiatric Diagnoses
April 8: week 12	Diagnosing Dementia
April 15: week 13	Rethinking Morality from a Neuroscience Perspective
April 22: week 14	Wrap-up

Course Assignments:

Reading

Come to each class having completed ALL of the assigned readings for that week. This seminar relies on informed students for fruitful discussion of the topic so assigned readings should be read BEFORE class.

Brief reaction papers (1-2 pages max) to the assigned readings. These will be announced on the Thursday of the week prior to the class on which they are due. Your paper is intended to present commentary on what you thought about the papers you read (main

issues, design/interpretation, linkages between articles). It is not intended to be a summary but rather to raise additional points for discussion in class. These will form 20% of the final grade.

Discussion Leading/Debate/Role Playing: 15%

For 7 or 8 of the topics we cover, a team of approximately 4 people will be assigned to organize a classroom activity to go along with that topic. Approximately thirty minutes of class time will be devoted to this activity. The activities could include

- 1) a debate that analyzes the pros and cons of the neuroethical dilemma inherent in the topic for that week
- 2) a role playing activity that illustrates the different points of view of the relevant stakeholders
- 3) Some other activity that the group devises and discusses with me prior to their leading opportunity.

Term paper: 25%

Instructions for this assignment will be provided in a separate document that will be available the fourth week of class. An outline and bibliography will be required the class meeting after Winter break. This paper will be approximately 10 pages and will be due April 15th.

Final Exam: 15%

A cumulative final exam will be given at the end of the semester based on the readings and lecture material. Format (in class on last day, or take home) to be determined.

Course Policies:

Attendance

Experience has shown that those who attend class regularly do well, and those who do not attend perform poorly. It is in your best interest to attend every class meeting, and I will take attendance because it contributes to your participation grade. You are responsible for all material provided in class. If you miss class (regardless of the reason), you are responsible for obtaining the missed information.

Academic Integrity

All students are expected to follow the highest standards of academic integrity. <http://www.lsa.umich.edu/academicintegrity/>

Plagiarism is cause for receiving a failing grade. Plagiarism is using the ideas, data, or language of another without specific or proper acknowledgment. Example: copying another person's paper, article, or computer work and submitting it for an assignment, cloning someone else's ideas without attribution, failing to use quotation marks where appropriate, etc. Please see the following URL for more information on academic misconduct

<http://www.lsa.umich.edu/academicintegrity/examples.html>

Readings and Activities

Week 1 Setting the Stage

- 1) Farah Text Intro
- 2) Brainwashed Intro
- 3) Churchland chapter 1, Me, Myself & My Brain, from "Touching a Nerve" (or use link to On Point interview)

In class activity:

- 1) Penn Neuroethics videos
- 2) Small group discussions on ethic

Week 2 Concussion and sports

- 1) CTE.2011-- Chronic Traumatic Encephalopathy: A Potential Late Effect of Sport-Related Concussive and Subconcussive Head Trauma
- 2) Future advances_CTE_2011 --- Future Advances and Areas of Future Focus in the Treatment of Sport-Related Concussion
- 3) Conflict of Interest chapter from Hastings Center, Biomedical Briefings Book.

In class activity

- 1) Video--PBS League of Denial

Week 3 and 4 ADHD and Treatment

- 1) Dillar, L.H. (2010) The run on Ritalin. In MJ Farah Neuroethics: An Introduction with Readings. Chapter 2.3
- 2) Bush, G. (2008) Neuroimaging of Attention Deficit Hyperactivity Disorder: Can New Imaging Findings Be Integrated in Clinical Practice? Child Adolesc Psychiatric Clin N Am 17, 385–404.
- 3) Parens, E. & Johnston, J., (2009). Facts, values, and Attention-Deficit Hyperactivity Disorder (ADHD): an update on the controversies, Child and Adolescent Psychiatry and Mental Health 2009, 3:1-17.

- 4) SCHWARZ, A., (2013) The Selling of Attention Deficit Disorder New York Times, December 14, 2013

In class activity: Frontline: Medicating our children

Week 5 Cognitive Enhancement

- 1) Farah text: Reading 2.1 Lifestyle Drugs: Pharmacology and the Social Agenda
- 2) Farah text: Reading 2.2 Neurocognitive Enhancement: What can we do, what should we do?
- 3) Farah text: Reading 2.4 Beyond therapy Essential sources of concern
- 4) Farah text: Reading 2.5 Toward responsible use of cognitive enhancing drugs by the healthy
- 5) Cabrera, Evans and Hamilton, (2014) Ethics of the Electrified Mind: Defining Issues and Perspectives on the Principled Use of Brain Stimulation in Medical Research and Clinical Care. *Brain Topography* Jan;27(1):33-45.

In class activity:

- 1) *Guest speaker from Lumosity*

Week 6 Memory Erasure

- 1) Farah text: Reading 3 Brain, Self and Authenticity
- 2) Farah text: Reading 3.1 Memory Blunting: An Ethical Analysis
- 3) Farah text: Reading 3.2 Ethical Implications of Memory Dampening
- 4) Kroes, Tendolkar, van Wingen GA3, van Waarde, Strange, Fernández, (2013) An electroconvulsive therapy (ECT) procedure impairs reconsolidation of episodic memories in humans. *2014 Feb;17(2):204-6. doi: 10.1038/nn.3609. Epub 2013 Dec 22.*

In class activity:

- 1) *Student Team 1—Spotless Mind and debate*

Week 7 -- Neuromarketing

- 1) Chapter 2 Brainwashed: The Seductive Appeal of Neuroscience, by Sally Satel & Scott Lilienfeld
- 2) Levy, N. (2009) Neuromarketing: Ethical and Political Challenges. *Etica & Politica / Ethics & Politics*, XI, 2009, 2, pp. 10–17
- 3) Fisher, CE, Chin, L., and Klitzman, R., (2010). Defining Neuromarketing: Practices and Professional Challenges. *Harvard Review Psychiatry* 2010;18: 230–237.
- 4) Ariely, D. and Berns, G. S. (2010) Neuromarketing: the hope and hype of neuroimaging in business. *Nature Reviews | NeuroScience*.
- 5) Falk, E., Berkman, E., & Lieberman, M.D. (2012). From neural responses to population behavior: Neural focus groups predicts population-level media effects. *Psychological Science*, 23(5), 439-445.

In class activity:

- 1) *Student Team 2—Media and marketing – analysis of articles in the news*

Week 8 – Neuro Law and Blame

All of the readings for our next class meeting on March 11 are from the Farah text. These are:

- 1) Chapter 5 Neuroscience and Justice
- 2) Chapter 5.1 An Overview of the Impact of Neuroscience Evidence on Law
- 3) Chapter 5.4 Brain Overclaim Syndrome and Criminal Responsibility

Please take your text with you on winter break!

In class activity:

- 1) *Video on Morse* <http://sackler.nasmediaonline.org/2011/uk/morse/morse.html>
- 2) *Student Team 4—Simulated Trial with Neuroscience evidence*

Week 9 -- Lie Detection

- 1) Brain washed Chapter 4
- 2) Farah text Chapter 4.3
- 3) Daniel L Schacter & Elizabeth F Loftus (2013). Memory and law: what can cognitive neuroscience contribute? Nature Neuroscience volume 16 | number 2 | FEBRUARY 2013
- 4) Rusconi & Mitchener-Nissen (2013). Prospects of function magnetic resonance imaging as lie detection. Frontiers in Human Neuroscience, 7, 594.
- 5) Greene, J., Paxton, J. and Raichle, M.E. (2009) Patterns of Neural Activity Associated with Honest and Dishonest Moral Decisions: Proceedings of the National Academy of Sciences of the United States of America, Vol. 106, No. 30 (Jul. 28, 2009), pp. 12506-12511

In class activity:

- 1) Video <http://www.nature.com/news/brain-decoding-reading-minds-1.13989>
- 2) Student team 5: Ethical applications of mind reading?

Week 10 - Brain and Coma

- 1) Farah Text Reading 6.1
- 2) Damasio, A. & Meyer, L. Consciousness: An Overview of the Phenomenon and of Its Possible Neural Basis.
- 3) Fernandez Espejo, D. & Owen, A.M. Detecting Awareness after Severe Brain Injury. Nature Reviews Neuroscience, 2013.
- 4) Fins, Joseph J., Judy Illes, James L. Bernat, Joy Hirsch, Steven Laureys & Emily Murphy (2008) Neuroimaging and Disorders of Consciousness: Envisioning an Ethical Research Agenda, The American Journal of Bioethics, 8:9, 3-12.

In class activity:

- 1) Video Joseph Fins; Adrian Owen; Terry Schiavo
- 2) Student team 6: Debate on ethics on imaging and coma

Week 11-- Psychiatric Diagnoses

- 1) Shackle, E.M. (1985). Psychiatric diagnosis as an ethical problem
Journal of medical ethics, 11, 132-134
- 2) Nesse R., and Stein, D. Towards a genuinely medical model for psychiatric nosology
BMC Medicine 2012, 10:5 <http://www.biomedcentral.com/1741-7015/10/5>
- 3) Rabins, P., et al., (2009). Scientific and Ethical Issues Related to Deep Brain Stimulation for Disorders of Mood, Behavior, and Thought ARCH GEN PSYCHIATRY/VOL 66 (NO. 9), SEP 2009
- 4) Gilbert, F. (2013). Deep Brain Stimulation for Treatment Resistant Depression: Postoperative Feelings of Self-Estrangement, Suicide Attempt and Impulsive–Aggressive Behaviours. Neuroethics (6) 473-481.
- 5) F. Focquaert & D. DeRidder Direct Intervention in the Brain: Ethical Issues Concerning Personal Identity

In class activity:

- 1) *Student team 7: Case studies of ethics of psychiatric interventions*

Week 12 Dementia Diagnosis

- 1) Karlawish, J., (2011) Addressing the ethical, policy, and social challenges of preclinical Alzheimer disease. Neurology 77
- 2) Leuzy A. & Gauthier S. (2013) Ethical issues in Alzheimer’s disease: an overview Expert Rev. Neurother. 12(5) 557-567.
- 3) Lineweaver, T.T., Bondi, M.W., Galasko, Salmon, D.P. (2014). Effect of Knowledge of APOE Genotype on Subjective and Objective Memory Performance in Healthy Older Adults. Am J Psychiatry, 171:201–208.
- 4) Karlawish, J., & Green (2014). Minding the Aging Brain: Are We Ready for Personalized Medicine? Am J Psychiatry 171:2

In class activity:

- 1) *NPR: Ethics of blood test for Alzheimer’s Disease*
- 2) *Student team 8: Debate Ethical Issues Pertaining to Care & Treatment of Dementia*

Week 13-- Rethinking Morality

Greene, et al. (2001). An fMRI Investigation of Emotional Engagement in Moral Judgment. *Science* (293, no. 5537) pp. 2105-2108.

In class activity:

- 1) Video <http://bioethics.as.nyu.edu/object/bioethics.events.20120330.conference>
- 2) https://www.ted.com/talks/sam_harris_science_can_show_what_s_right
- 3) Debate: *If we can enhance moral behavior, should we?*