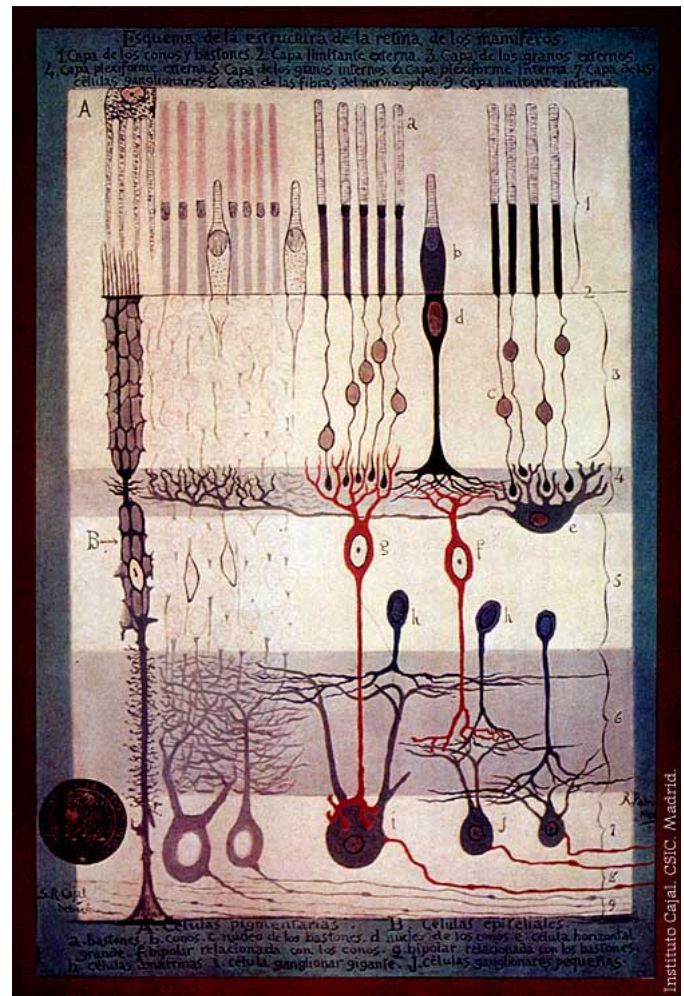


NYU GALLATIN SCHOOL OF INDIVIDUALIZED STUDY  
 MINDS AND BODIES: A HISTORY OF NEUROSCIENCE  
 IDSEM-UG 1801-001

THURSDAYS, 6:20 PM TO 9:00 PM  
 25 W. 4<sup>TH</sup> STREET, ROOM C-5



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 Office hours: Thursdays 4:00 PM-6:00 PM

## **COURSE DESCRIPTION:**

This course examines the history of the sciences of the mind and brain from the end of the eighteenth century to the present. Ranging from mesmerism and phrenology to physiology, genetics, and neuroscience, it will consider the development over time of knowledge about the brain and its relationship to the body. The course will also analyze the ways in which this knowledge has been applied in medicine, law, economics, government policy, and religion. Some of the topics we will look at include the following: mind-body dualism, neuron theory, psychoanalysis and biology, brain imaging, the molecular and plastic brain, and psychotropic drugs. The course takes a primarily historical approach to this topic, but work from other academic disciplines that engage with related questions will also be addressed. The last third of the course will focus on recent history and contemporary issues surrounding the “century of the brain.” One of our challenges will be to examine what history and science and technology studies more broadly might contribute to ongoing conversations about minds and bodies.

## **COURSE OBJECTIVES:**

- \*Gain a solid grasp of the content of the history of science, technology, and medicine as it relates to the course topic.
- \*Learn to trace and interpret key developments, themes, and issues in the sciences of the mind and brain from the eighteenth century to the present.
- \*Hone skills in thinking historically. Emphasis will be placed on the following: change over time (and continuity), causality, context, contingency, and complexity.
- \*Refine writing and oral presentation skills through critical engagement with various types of scholarly evidence.
- \*Develop the ability to analyze and debate contemporary issues through the lens of the past. This objective will require students to think along interdisciplinary as well as strictly historical lines.

## **COURSE STRUCTURE AND READINGS:**

The class time will be structured around in-class discussion and writing assignments, small group activities, and oral presentations. Readings, films, and/or material from the Internet will be assigned for each class, and I will provide additional background information and context to facilitate productive discussion.

Most of the readings will be uploaded to NYU Classes as PDFs or will be available online. However, the following texts are required:

- \*V.S. Ramachandran, *A Brief Tour of Human Consciousness* (New York: Pi Press, 2004).
- \*Marian C. Diamond and Arnold B. Scheibel, *The Human Brain Coloring Book* (New York: Harper Collins, 1985).

These books will be available for purchase at the NYU bookstore and will be on hold at the Bobst Library Reserve Desk.

### **COURSE REQUIREMENTS:**

Students are expected to read, listen to, or view all the assigned material before the class meeting. Attendance and participation in discussion is mandatory and will determine 10% of your final grade. To facilitate class discussion, students will be asked to prepare reading responses on occasion. These reading responses will constitute another 10% of your final grade.

Participants in the class are required to submit two writing assignments: two 7-page papers on topics of your choice. Each of the papers will determine 35% of your final grade. The remaining 10% of your final grade will be determined by a 7-minute oral presentation based on one of your papers. Additional details concerning these papers and the oral presentation will be provided in a separate handout.

To summarize, your final grade will be calculated based on the following:

Class participation: 10%

Reading responses: 10%

Paper 1: 35%

Paper 2: 35%

Oral presentation: 10%

### **POLICIES:**

Class attendance and active participation in discussion is expected. Excessive absenteeism and/or failure to engage with the assigned reading material will have a negative impact on the class participation portion of your grade. Students who miss more than 2 classes without a valid excuse will be required to meet with me. It is possible that you will then be given a failing grade. Papers must be submitted on time. Unless you have spoken to me in advance about an extension, I will deduct 10 points for each day the paper is late.

Please be courteous to your fellow students and me by putting your phone on vibrate and refraining from talking privately. Also, please arrive on time and remain for the duration of the class. Arriving more than 15 minutes late for class will constitute an absence.

While I do not prohibit the use of laptops and tablets, I expect that you use them to facilitate active participation in the course.

If you are a student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities at 212-998-4980 or [mosescsd@nyu.edu](mailto:mosescsd@nyu.edu). You must be registered with CSD to receive accommodations. Information about the Moses Center can be found here:

<http://www.nyu.edu/life/safety-health-wellness/students-with-disabilities.html>.

The Moses Center is located at 726 Broadway on the 2nd floor.

## **ACADEMIC DISHONESTY**

As a Gallatin student you belong to an interdisciplinary community of artists and scholars who value honest and open intellectual inquiry. This relationship depends on mutual respect, responsibility, and integrity. Failure to uphold these values will be subject to severe sanction, which may include dismissal from the University. Examples of behaviors that compromise the academic integrity of the Gallatin School include plagiarism, illicit collaboration, doubling or recycling coursework, and cheating. Please consult the Gallatin Bulletin or Gallatin website:

<http://gallatin.nyu.edu/about/bulletin/undergrad/policies/integrity.html>

## **COURSE SCHEDULE AND READINGS**

### **9/8, Introduction and Overview of Course, Early Ideas and Descartes**

\*Charles G. Gross, *A Hole in the Head: More Tales in the History of Neuroscience* (Cambridge, MA: The MIT Press), 3-24.

\*Stanley Finger, *Minds Behind the Brain: A History of the Pioneers and Their Discoveries* (Oxford: Oxford University Press, 2000), 53-84.

\*\*Listen to the episodes entitled “The Blood of the Gladiators” and “The Origin of Common Sense” in the BBC Radio 4 series *A History of the Brain*,

<http://www.bbc.co.uk/programmes/b017b1zd/episodes/guide>

### **9/15, The Functional Organization of the Brain and Phrenology**

\*Carl Zimmer, “A Distant Mirror for the Brain,” *Science*, Vol. 303, No. 5654 (Jan. 2, 2004): 43-44.

\*John van Wyhe, “The Authority of Human Nature: the *Schädellehre* of Franz Joseph Gall,” *British Journal for the History of Science* 35 (2002): 17-42.

\*Russell A. Poldrack, “Mapping Mental Function to Brain Structure: How Can Cognitive Neuroimaging Succeed?” *Perspectives on Psychological Science* Vol. 5, No. 6 (2010): 753-761.

\*\*Browse and skim John van Wyhe’s “History of Phrenology on the Web,”

<http://www.historyofphrenology.org.uk/>

Study some of the images in the “images” section and read one of the digitized primary sources in the “texts” section.

## **9/22, Evolution, Brain Hierarchies, and Craniology**

\*Ann Fabian, “The Curious Cabinet of Dr. Morton,” in *Acts of Possession: Collecting in America*, ed. Leah Dilworth (New Brunswick: Rutgers University Press, 2003), 112-137.

\*Stephen Jay Gould, *The Mismeasure of Man* (New York: W.W. Norton, 1996), 114-141.

\*Stephen Jacyna, “The Most Important of All Organs: Darwin on the Brain,” *Brain: A Journal of Neurology* 132 (2009): 3481-3487.

\*Skim chapter three of Charles Darwin’s *The Descent of Man, Vol. 1* (1871).

\*\*Listen to the episode entitled “The Beast Within” in the BBC Radio 4 series *A History of the Brain*,

<http://www.bbc.co.uk/programmes/b017b1zd/episodes/guide>

## **9/29, The Electrical Brain**

\*Finger, *Minds Behind the Brain*, 101-118.

\*Gabriel Finkelstein, “M. du Bois-Reymond Goes to Paris,” *The British Journal for the History of Science* 36 (September 2003): 261-300.

\*Laura Sanders, “Brain Hack: Consumers Take Their Neurons Into Their Own Hands,” *Science News*, Vol. 186, No. 10 (November 15, 2014): 22-25.

\*\*Listen to the episode entitled “The Spark of Being” in the BBC Radio 4 series *A History of the Brain*,

<http://www.bbc.co.uk/programmes/b017b1zd/episodes/guide>

## **10/6, Charcot, Freud, and the Science of Mind**

\*Andrew Scull, *Hysteria: The Disturbing History* (Oxford: Oxford University Press, 2011), 104-130.

\*Katja Guenther, *Localization and its Discontents: A Genealogy of Psychoanalysis and the Neuro Disciplines* (Chicago: University of Chicago Press, 2015), 68-95.

\*Susan Dominus, “What Happened to the Girls in Le Roy,” *The New York Times*, March 7, 2012.

\*\*Browse the images from Charcot’s *Iconographie Photographique de la Salpêtrière* (1876-1880) available through the Yale Medical Library’s website,

<http://cushing.med.yale.edu/gsd/collect/salpetre/>

## **10/13, Neurons under the Microscope**

\*Mitch Glickstein, “Golgi and Cajal: The Neuron Doctrine and the 100th Anniversary of the 1906 Nobel Prize,” *Current Biology* 16, 5 (2006): R147-51.

\*Theodore H. Bullock, et al., “The Neuron Doctrine, Redux,” *Science* 310 (November 2005): 791-93.

\*Javier DeFelipe, *Cajal's Butterflies of the Soul: Science and Art* (Oxford: Oxford University Press, 2009), selections.

\*\*Listen to the episode entitled "Mind the Gap" in the BBC Radio 4 series *A History of the Brain*,

<http://www.bbc.co.uk/programmes/b017b1zd/episodes/guide>

### **10/20, Integration, Holism, and Anti-Reductionism**

\*Anne Harrington, "Kurt Goldstein's Neurology of Healing and Wholeness: A Weimar Story," in *Greater than the Sum of Its Parts: Holistic Biomedicine in the Twentieth Century*, eds. George Weisz and Christopher Lawrence (Cambridge: Cambridge University Press, 1998), 25-45.

\*Roger Smith, "Representation of Mind: C.S. Sherrington and Scientific Opinion, c. 1930-1950," *Science in Context* 14, 4 (2001): 511-539.

\*\*Watch the footage of shell shock victims from the Wellcome Library Moving Image and Sound Collection (Youtube Channel),

<https://www.youtube.com/watch?v=AL5noVCpVKw>

### **10/27, Biological Psychiatry and the Chemical Brain**

\*Scott Stossel, *My Age of Anxiety: Fear, Hope, Dread, and the Search for Peace of Mind* (New York: Vintage Books, 2013), 151-178.

\*\*Listen to the episode entitled "The Agony and the Ecstasy" in the BBC Radio 4 series *A History of the Brain*,

<http://www.bbc.co.uk/programmes/b017b1zd/episodes/guide>

\*\*Watch *PBS American Experience: The Lobotomist*.

\*\*\*First paper due (7 pages)

\*\*\*Group A oral presentations

### **11/3, The Neuromolecular Brain and the New Imaging Technologies**

\*Nikolas Rose and Joelle M. Abi-Rached, *Neuro: The New Brain Sciences and the Management of Mind* (Princeton and Oxford: Princeton University Press, 2013), 1-81.

\*Eric Racine et al., "fMRI in the Public Eye," *Nature Reviews Neuroscience* 6, 2 (February 2005): 159-164.

\*\*Listen to the episode entitled "All or Nothing" in the BBC Radio 4 series *A History of the Brain*,

<http://www.bbc.co.uk/programmes/b017b1zd/episodes/guide>

\*\*Watch *CBS 60 Minutes* segment on “Mind Reading,”

<http://www.cbsnews.com/video/watch/?id=5119805n>

### **11/10, The Century of the Brain and Neuroscience Basics**

\*Sean Hill, “Whole Brain Simulation,” in *The Future of the Brain*, eds. Gary Marcus and Jeremy Freeman (Princeton: Princeton University Press, 2015), 111-124.

\*Jeremy Freeman, “Large-Scale Neuroscience: From Analytics to Insight,” in *The Future of the Brain*, eds. Gary Marcus and Jeremy Freeman (Princeton: Princeton University Press, 2015), 100-110.

\*V.S. Ramachandran, *A Brief Tour of Human Consciousness* (New York: Pi Press, 2004).

\*\*Watch footage of President Obama discussing the BRAIN Initiative,

<https://www.youtube.com/watch?v=uJuxLDRsSQc>

### **11/17, Brain as Computer, Computer as Brain**

\*Jessica Riskin, “Eighteenth-Century Wetware,” *Representations* 83 (2003): 97-125.

\*Ray Kurzweil, *How to Create a Mind: The Secret of Human Thought Revealed* (New York: Penguin Books, 2012), 179-198 & 248-282.

\*\*Watch the PBS Nova episode *Smartest Machine on Earth* (2011),

<http://video.pbs.org/video/1786674622/>

\*\*Watch the film *Transcendence* (2014).

### **11/24, Thanksgiving, No Classes**

### **12/1, Neurohumanities and Neurotheology**

\*Daniel Lord Smail, “Neurohistory in Action: Hoarding and the Human Past,” *Isis* 105 (2014): 110-122.

\*Yi-Yuan Tang, Britta K. Hölzel, and Michael I. Posner, “The Neuroscience of Mindfulness Meditation,” *Nature Reviews Neuroscience* Vol. 16 (April 2015): 213-225.

\*\*Watch the TED Talk by Charles Limb, “Your Brain on Improv,”

[http://www.ted.com/talks/charles\\_limb\\_your\\_brain\\_on\\_improv?language=en](http://www.ted.com/talks/charles_limb_your_brain_on_improv?language=en)

\*\*Listen to the *NPR Talk of the Nation* program on “Neurotheology,”

<http://www.npr.org/2010/12/15/132078267/neurotheology-where-religion-and-science-collide>

## **12/8, Neurolaw and Neuromarketing**

\*Jeffrey Rosen, "The Brain on the Stand," *The New York Times*, March 11, 2007.

\*John Cassidy, "Mind Games: What Neuroeconomics Tells Us About Money and the Brain," *The New Yorker*, September 18, 2006.

\*Samuel McClure et al. "Neural Correlates for Cultural Preference of Culturally Familiar Drinks," *Neuron* 44 (2004): 379-387.

\*\*Listen to the *NPR Fresh Air* segment, "Criminologist Believes Violent Behavior is Biological,"

<http://www.npr.org/2013/05/01/180096559/criminologist-believes-violent-behavior-is-biological>

## **12/15, Gender, the Self, and Neuroenhancement**

\*Cordelia Fine, *Delusions of Gender: How Our Minds, Society, and Neurosexism Create Difference* (New York: W.W. Norton, 2010), 141-175.

\*Margaret Talbot, "Brain Gain: The Underground World of 'Neuroenhancing' Drugs," *The New Yorker*, April 27, 2009.

\*Nicolas Langlitz, *Neuropsychedelica: The Revival of Hallucinogen Research since the Decade of the Brain* (Berkeley: University of California Press, 2013), selections.

\*\*Watch the film *Ex Machina* (2015).

\*\*Browse the following website and try some of the mind-enhancement exercises:

<http://www.lumosity.com/>

\*\*\*Second paper due (7 pages)

\*\*\*Group B oral presentation