

Prof. Paul R. Lennard
1462 Clifton Road, Suite 304
prlenna@emory.edu
404 727 4235
office hours by appointment

Prof. Laura Otis
N-306 Callaway Center
lotis@emory.edu
404 727 2234
office hours by appointment

NBB 470/IDS 385
Emory University, Spring 2007
Wed. 2-5, 1462 Clifton Road, Room 231

The Roots of Modern Neuroscience

Purpose: This course will trace contemporary issues in neuroscience from their origins in classical times through the 19th century and on to new frontiers. We will use a combination of scientific, philosophical, and literary readings as well as some sequences from innovative films, with emphasis on primary works by the creators of neuroanatomy and neurophysiology. Our aim is to show how questions essential to neuroscience today have evolved since its emergence from philosophy and physiology.

Texts: All readings will be available either as in-class hand-outs or through Reserves Direct on the Emory Library web page.

Requirements: One 15-page research paper (typed, double spaced, references APA or Chicago style) and two in-class powerpoint presentations

Grading: 50% research paper, 25% presentations, 25% class participation

January 17 Introduction: What Is Neuroscience?

Student Presentations: Your Favorite Neuroscientist before 1900

January 24 Seeking the Locus of Mind

Readings:

January 31 Perception in Action

Readings:

Lucretius, *On the Nature of the Universe* (selections)
Johann Wolfgang von Goethe, *Theory of Colors* (selections)

February 7 Does Electricity Power Life?

Readings:

Luigi Galvani, "Commentary on the Effect of Electricity on Muscular Motion" (selections)
Joost Mertens, "Shocks and Sparks: The Voltaic Pile as a Demonstration Device"
Mary Shelley, *Frankenstein*, ch. 1-4

February 14 Concepts vs. Instruments

Readings:

Emil du Bois-Reymond, *Animal Electricity* (abridged English edition, trans. Henry Bence Jones, 1852, selections)
Hermann von Helmholtz, "Recent Progress on the Theory of Vision" (1868)
Laura Otis, *Networking* (selections)
Santiago Ramón y Cajal, "The Corrected Pessimist"

February 21 Neurons, or a Net?

Readings:

Edwin Clarke and C. D. O'Malley, *The Human Brain and Spinal Cord*, pp. 87-138, "The Neuron vs. Net Controversy" (includes writings by Joseph von Gerlach, Camillo Golgi, Wilhelm His, August Forel, and Santiago Ramón y Cajal)
Santiago Ramón y Cajal, "The Fine Structure of the Nerve Centers" (1894)
George Henry Lewes, *The Physical Basis of Mind* (selections)

Microscope demonstration

February 28 Modeling Neuroscience through Fiction

Readings:

Santiago Ramón y Cajal, "For a Secret Offense, a Secret Revenge" and "The Fabricator of Honor"
S. Weir Mitchell, "George Dedlow"
Jim Grimsley, work to be announced

Special Guest: Science Fiction Writer Jim Grimsley

Abstract of Research Project due, including hypothesis and initial bibliography

March 7 **First Research Workshop: Introductory Presentations of Projects**

March 14 **Spring Break: No Class**

March 21 Modeling vs. Animal Experiments

Readings:

Sigmund Freud, *Project for a Scientific Psychology*

David Ferrier, *The Functions of the Brain* (selections)

Wilkie Collins, *Heart and Science* (selections)

Newspaper articles covering David Ferrier's Trial

Laura Otis, "Howled out of the Country" (in press)

March 28 Localization vs. Holism

Carl Wernicke, "The Motor Speech Path and the Relation of Aphasia to Anarthia"

Kurt Goldstein, "The Holistic Approach," from *Human Nature in the Light of Psychopathology*

Oliver Sacks, "The Disembodied Lady"

Jean-Dominique Bauby, *The Diving Bell and the Butterfly*

April 4 In Search of Memory

Readings:

Henry Bergson, *Matter and Memory* (selections)

Laura Otis, *Organic Memory* (selections)

Eric Kandel, *In Search of Memory* (selections)

Film Segments: *Memento*, *Eternal Sunshine of the Spotless Mind*

April 11 Brains as Machines, Machines as Brains: The Emergence of Neuroethics and Neurophilosophy

Readings:

E. T. A. Hoffmann, "The Sandman"

Norbert Wiener, *The Human Use of Human Beings* (selections)

E. M. Forster, "The Machine Stops"

April 18 Mentors and Students

Readings:

Johannes Müller, *Elements of Physiology*, trans. William Baly (1839)

Charles Sherrington

Laura Otis, *Müller's Lab* (selections)

Special guest: Professor Sander Gilman, Director of Psychoanalytic Studies

April 25 **Second Research Workshop: Presentations of Findings**

Research Paper due