

Fundamentals of Neuroethics

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Every Friday from July 7th, 10:30-12:00pm,
Pharmacology Small Conference room (2.663U)

DESCRIPTION

Recent advances in neuroscience have considerably improved our understanding of brain function. However, the study of brain's mysteries often intersects with ethical and public policy concerns. This course aims at presenting and discussing philosophical, societal and scientific perspectives on major bioethical issues pertinent to neuroscience research. Several subjects will be covered, including the effects of pharmacological and surgical interventions on the brain/mind, therapy versus enhancement, brain imaging and mental privacy, neurobiology of decision-making, consciousness, personhood, end-of-life management and death.

OBJECTIVES

1. Identify the ethical issues in neuroscience research
2. Understand the possible controversies and arguments regarding students' research projects in neuroscience
3. Be conversant in the social implications of neuroscience research

GRADING

Course grades will be based on three factors:

1. Reading, course attendance and participation (40%)
2. Leading a class discussion (20%)
3. Final ethical analysis paper (40%)

Students will be assigned a letter grade based on their performance in the class. Students are expected to complete all readings, engage in discussion at every class meeting and write a well argued and thoroughly researched paper.

CREDIT HOURS

16 lecture hours (1 credit)

PREREQUISITES

None.

FORMAT

The course will consist of lectures and group discussions of topics covered in class and/or readings. Each class meeting will be of 1 hour and 30 min duration, except for the movie, which will be a two-hour session.

TOPICS

1. Life-Span Neuroethics

- Moral status of the embryo and path to conscious life
- Predicting developmental outcome
- The Aging Brain

2. Drugs in the brain: Therapy vs. Enhancement (2 lectures)

- Shaping the brain with drugs
- Cognition enhancing drugs (learning and memory, attention, anti-psychotics, psychostimulants, steroids)
- Memory blunting and posttraumatic stress disorders
- Antidepressants as a way of life
- Ethics and social implications of brain enhancement

3. Neuroscience & Law

- Brain, Free will and decision-making
- Rational and moral thinking

4. The concept of “personhood”

- Personhood, person identity and the social brain
- Brain imaging and mental privacy
- Consciousness, unconsciousness and death

5. Neurotechnology: engineering the brain

- Ethics of neurosurgery
- Deep brain stimulation for movement disorders and depression
- Brain-computer interfaces
- Military applications

5. Film Evening Class 4-7 pm (1 lecture)

- Presentation of a movie about a neuroethical issue covered in class, followed by discussion of its scientific and ethical content.

READINGS

Books

MS Gazzaniga. *The Ethical Brain*. New York, Washington DC, Dana Press. 2005

Neuroethics (J. Illes ed.). New York, Oxford University Press. 2005

Articles

Farah, M., Illes, J., Cook-Deegan, R., Gardner, H., Kandel, E., King, P., Parens, E., Sahakian, B., Wolpe, P. (2004). "Neurocognitive enhancement: what can we do and what should we do?" *Nature Reviews Neuroscience*, 5: 421-425.

<http://www.sciencemag.org/content/350/6259/379.full.pdf> (2016)

Laureys, S. (2005). "Death, unconsciousness and the brain." *Nature Reviews Neuroscience*, 6: 899-909.

<http://www.northjersey.com/news/with-brain-death-doctors-and-families-struggle-to-define-when-the-fight-is-over-1.1435107> (2015)

Racine, E., Bar-Ilan, O., & Illes, J. (2005). "fMRI in the public eye." *Nature Reviews Neuroscience*, 6(2): 159-164.

Jones O.D. et.al. (2013) "Law and Neuroscience". *J. Neurosci*, 33: 17624-30