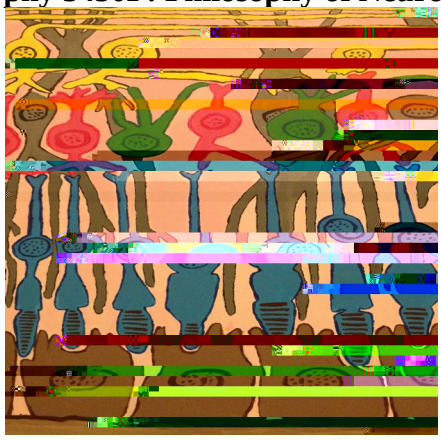
THE UNIVERSITY OF WESTERN ONTARIO
DEPARTMENT OF PHILOSOPHY
Undergraduate Course Outline 2021-22

Philosophy 3450F: Philosophy of Neuroscience



Fall Term 2021-2022	Instructor: Jacqueline Sullivan
Mondays: 9:30-11:20 a.m.	Office: Rotman Institute, 7170 WIRB
Wednesdays: 9:30-10:30 a.m.	Office Hours: TBD
Room: SSC 3028	jsulli29@uwo.ca
	TAs: TBD

COURSE DESCRIPTION

During the past three decades neuroscience has made major strides in advancing our understanding of the brain and nervous system, consciousness, cognition and behavior. Such advances have prompted interest in neuroscience among philosophers of mind and philosophers of science, leading to the creation of two new philosophical research areas: "neurophilosophy" and "philosophy of neuroscience". Neurophilosophers are interested in questions such as: Are mental states nothing over and above brain states? How does the brain enable subjective and emotional experiences, higher-order consciousness, sensation, perception and cognition? What kinds of claims about traditional philosophical issues such as the mind-brain relationship, free will, mental illness and human morality can be made on the basis of neuroscientific data? What are the implications of neuroscience for the law? What are the ethical implications of enhancing or altering human brain function? Philosophers of neuroscience, in contrast, are concerned with questions like: What kinds of assumptions inform neuroscientific research? What makes for good or reliable neuroscientific experiments? What kinds of considerations should inform the development of classification systems for understanding cognition or mental illness?

In this course we will address each of these questions. The course should be of interest to students majoring in philosophy, psychology, cognitive science and/or neuroscience.

TEXTS

A combination of philosophical and scientific (i.e., methodological, research and review

papers/chapters) articles extracted from philosophical and scientific journals, books, textbooks, and anthologies will be made available to students as PDF files on OWL.

OBJECTIVES

Students who successfully complete this course will have a basic understanding of specific

SUPPORT SERVICES

Registrarial Services http://www.registrar.uwo.ca
Student Support Services https://student.uwo.ca/psp/heprdweb/?cmd=login
Services provided by the USC http://westernusc.ca/services/
Student Development Centre http://www.sdc.uwo.ca/

Students who are in emotional/mental distress should refer to Mental Health@Western http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help. Immediate help in the event of a crisis can be had by phoning 519.661.3030 (during class hours) or 519.433.2023 after class hours and on weekends.

SELF- REPORTED ABSENCE FORM

Students who experience an unexpected illness or injury or an extenuating circumstance (48 hours or less) that is sufficiently severe to temporarily render them unable to meet academic requirements (e.g., attending lectures or labs, writing tests or midterm exams, completing and submitting assignments, participating in presentations) should self-declare using the online Self-Reported Absence portal. This option should be used in situations where the student expects to resume academic responsibilities within 48 hours or less.
The following conditions are in place for self-reporting of medical or extenuating circumstances: http://westerncalendar.uwo.ca/PolicyPages.cfm?Command=showCategory&PolicyCategoryID=1&SelectedCalendar=Live&ArchiveID=#SubHeading_322

that he dubbed "free won't". We will move on to consider the use of neuroscientific evidence in legal contexts. Increasingly, neuroscientific evidence is being admitted into the courtroom in the context of criminal cases in order to mitigate punishment of the accused. We will read several papers on the admissibility of neuroscientific evidence into the courtroom. We will then consider a paper by Adina Roskies in which she urges caution with respect to admitting evidence from functional magnetic resonance imaging (fMRI) experiments into the courtroom and we will briefly discuss some of the limitations of fMRI that she identifies in her paper. We will end the section with a paper by neuroscientist Joshua Greene, which draws a set of conclusions about human moral judgements and their neural underpinnings on the basis of a set of experiments that his research team conducted.

Free will and moral responsibility

Oct 4 (M): Adina Roskies (2006), "Neuroscientific Challenges to Free Will and Moral Responsibility." *Trends in Cognitive Sciences* 10(9): 419-423.

Oct 6 (W): Benjamin Libet, (1999) "Do we have free will?" *Journal of Consciousness Studies 6, No. 8-9, pp. 47-57.*
Watch a modern version of the Libet Experiment: https://www.youtube.com/watch?v=IQ4nwTTmcgs&t=10s
Libet Experiment Explained & Criticized: https://www.youtube.com/watch?v=OjCt-L0Ph5o
Optional readings, but potentially relevant to Paper Assignment #3:
Adina Roskies (2012). How does the neuroscience of decision-making bear on our understanding of responsibility and free will? *Current Opinion in Neurobiology* 22(6), 1022-1026.
[Also may be of interest Benjamin Libet, Anthony Freeman and Keith Sutherland, "Editor's Introduction: The Volitional Brain: Towards a Neuroscience of Free Will", *Journal of Consciousness Studies* 6, No. 8-9, pp. izxxiii.]

Oct 11 (M): Thanksgiving Holiday

Oct 13 (W): Libet Lecture
Paper Assignment #3 Distributed

On the admissibility of neuroscientific evidence in the courtroom

Oct 18 (M): Jones, OD, Wagner, AD, Faigman, DL, & Raichle, ME (2013). Neuroscientists in court. *Nature Reviews Neuroscience*, 14(10), 730–736.

- Jeffrey Burns, Russell Swerdlow (2003) "Right Orbitofrontal Tumor With Pedophilia Symptom and Constructional Apraxia Sign", *Archive of Neurology* 60: 437-440.

Paper Assignment #2 Due

Oct 20 (W): Adina Roskies (2008). "Neuroimaging and inferential distance: The Perils of Pictures" *Neuroethics* 1(1): 19-30.

- Baron, E. & Sullivan, J. (2018). "Judging Mechanistic Neuroscience: A Preliminary Conceptual-Analytic Framework for Evaluating Scientific Evidence in the Courtroom. *Psycholog*

emphasize the relevance of investigating the impact of variables such as race, sex and socioeconomic status on cognition and mental illness for the generalizability of results in cognitive neuroscience. We will also read a paper that I wrote (Sullivan 2017) on the kind of collaboration required in neuroscience to move discovery into the neural bases of cognition and the causes of mental illness forward.

We will end the term with a discussion about the ethics of changing your brain and thus changing your mind by considering different forms of neural enhancement (Farah 2012) and the purported therapeutic benefits hallucinogens (Barrett & Griffiths 2018).

<u>Sensation, Sensory Representations and the Brain:</u>

Oct 27 (W): Kathleen Akins (1996), "Of Sensory Systems and the Aboutness of Mental States" *Journal of Philosophy* 93(7): 337-372.

<u>The Neuroscientific Study of Cognition and Mental illness</u>

Nov 1 (M)- Nov 5 (W): Reading Week

Nov 8 (M): Francken, J.C. and M. Slors (2014). "From commonsense to science and back: The use of cognitive concepts in neuroscience". *Consciousness and Cognition* 29: 248-258.
Paul Churchland (1981), "Eliminative Materialism and the Propositional Attitudes", *Journal of Philosophy* 78(2): 67-90. – I will begin the lecture by briefly talking about Churchland's argument but the main focus of this lecture will be Francken & Slors paper
Paper Assignment #3 due
Paper Assignment #4 distributed

Nov 10 (W): Cuthbert, B. & Insel, T. (2013) Toward the future of psychiatric diagnosis: the seven pillars of RDoC. *BMC Medicine* 11: 136.

<u>The Importance of Diversity and Collaboration in Neuroscience</u>

Nov 15 (M): [**This lecture will be recorded and place online rather than in person]**

- Dotson, Vonetta and Duarte, Audrey. (2020). "The Importance of Diversity in Cognitive Neuroscience" *Annals of the New York Academy of Sciences* 1464:181–191.
- Farah, M. (2019). Biological Psychiatry and Socioeconomic Status. *Biological Psychiatry* 86: 877-878.

Nov 17 (W):cel.isa Ne.M0.Cadea(t)Ebed1(ho)7(iY)8.83 -1.15no6.9 (h)Tc 0.004y-Nov 1
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Neural Enhancement

Nov 24 (W): Martha J. Farah (2012). "Neuroethics: The Ethical, Legal and Societal Impact of Neuroscience. *Annual Review of Psychology* 63: 571-91.

Hallucinogens, Mystical Experiences and Neural Correlates

Nov 29 (M): Barrett, F. & Griffiths, R. (2018). "Classic Hallucinogens and Mystical Experiences: Phenomenology and Neural Correlates", *Cur*