

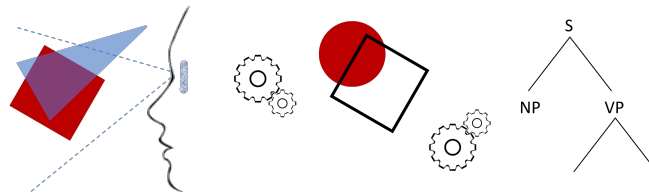
Minds, Brains, and Machines

COGS/PHIL 2160

Winter 2021 / York University

ABRIDGED SYLLABUS

Course Website: [REDACTED]



Course Director

PROF. KEVIN LANDE

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Teaching Assistant

Teaching Assistant

Course Description We have minds—with which we perceive, think, and use language. How do perceiving, thinking, and language work? More generally: How do minds work? How do you perceive the three-dimensional shape of a mug when all the eye gets is a two-dimensional array of light? How can you think about hypotheticals, such as what you would do if 30-50 feral hogs were to enter your yard? How can you understand lyrics and sentences that are like nothing you've heard before? Mental capacities like these are some of the most impressive and puzzling products of nature. The cognitive sciences—including psychology, neuroscience, linguistics, anthropology, evolutionary biology, artificial intelligence, and philosophy—use scientific experimentation and theory to explain how these mental capacities work. This course will serve both as an introduction to the cognitive sciences and as an introduction to philosophical issues in cognitive science. With the help of case studies, we will survey the foundational concepts and principles that make interdisciplinary scientific explanations of the mind possible. We will reflect on why these concepts and principles have proven to be necessary for studying the mind. We will consider the possibility of building machines with mental lives of their own. [Syllabus is subject to change.]

Goals

- Identify and apply the core concepts, principles, and experimental methods that make a scientific investigation of the mind possible.
- Understand why these core concepts and principles are necessary for studying the mind scientifically.
- Learn how to comprehend, critically evaluate, and write about cognitive scientific research—appraising methodology, empirical evidence, and argumentation.

Meetings

Lectures will be live, but recorded.

Lectures: M, W 10:30am @ [REDACTED]

Sections:

[REDACTED]	M Tut1	9:30am	@	[REDACTED]
	Tut2	11:30am	@	[REDACTED]
[REDACTED]	W Tut3	9:30am	@	[REDACTED]
	Tut4	11:30am	@	[REDACTED]

Special Accommodations We are committed to fairly accommodating students with disabilities. Please contact Prof. Lande and [Student Accessibility Services](#) as soon as possible, and we will all work together to find a fair accommodation. Accommodations for individual assignments must be requested well ahead of deadline.

Assignments

Due

Grade %

Papers (best 2 of 3)	2/5, 3/5, 4/2	40%
Quizzes (best 8 of 10)	Fridays at 5pm	40%
Final Exam	TBD (exam period)	20%

Readings

Please read all designated materials before the lecture for which they have been assigned.

Textbook: José Luis Bermúdez, *Cognitive Science: An Introduction to the Science of the Mind*, 3rd Ed. (2019). ISBN: 9781108440349.

Other Readings: All other readings will be made available on the course website.

Papers: Papers (max. 1,000 wds) will train you to read about a study, critically evaluate it, and communicate your understanding of it.

- Your grade will be based on your best two out of three papers.
- Assignments will be posted on the course website and should be submitted to Turnitin through the course website.
- You can extend paper deadlines up to 5 days total over the semester, no questions asked. Once these extensions are all used, late papers will not be accepted.

Quizzes: Multiple-choice and short-answer questions, together with open-ended written “reflection” on content of the previous week.

- **Due:** Fridays at 5pm, via eClass. Quiz opens on Thu at 5pm. 1 hour to complete the quiz upon starting it. Limited to 1 attempt.
- Open-book, but no collaboration.
- Lowest two quiz scores are dropped from the calculation of the final course grade.
- Late quizzes will not be accepted.

Section Participation: Beyond showing up, you will benefit from actively participating in your tutorial sections.

Academic Integrity Academic dishonesty, including plagiarism, will be taken extremely seriously. Potential penalties include, but are not limited to, failure of the assignment and/or failure of the course. Students are expected to be familiar with York's policy regarding academic integrity: [Link](#).

Tentative Schedule

Quizzes due Fridays @ 5pm on eClass (open Thursdays @ 5pm; 1 hr. to complete; 1 attempt)

<i>Concepts</i>			
1	M 1/11	Sciences of the mind	Full syllabus; Kanwisher video
	W 1/13	From behavior to mental states (No quiz this week)	• Bermúdez, <i>Cognitive Science</i> (2019) [henceforth “CS”]: pages 12–22
2	M 1/18	Rules: Constructing language	• CS: 22-28 • Yang, <i>The Infinite Gift</i> (2006): Ch. 2
	W 1/20	Representations: Reconstructing the world	• CS: 28-34 • Land and McCann, “Lightness and Retinex Theory” (1971): 1-4 • La Brecque, “Retinex: Physics and the Theory of Color Vision” (1988) • Key terms
3	M 1/25	Processes, form, & information	• CS: 38-53; Land and McCann: 4-6
	W 1/27	Levels of explanation	• CS: 53-65 • Land and McCann: 6-8 •
4	M 2/1	Neural structures	• CS: 65-76, 80-95
	W 2/3	Neural functioning First Paper Due 5pm 2/5	CS: 229-256; Wurtz, “Recounting the Impact of Hubel and Wiesel” (2009)
<i>Frameworks</i>			
5	M 2/8	Computation	• Crane, <i>The Mechanical Mind</i> (2003): 83-104 • Lande, “Do You Compute?” (2019)
	W 2/10	Physical symbol systems	• CS: 96-123
<i>Reading week: no readings</i>			
6	M 2/22	Connectionism	• CS: 123-149
	W 2/24	Probabilistic inference	• CS: 171–186 • Ma, “Probability is Everywhere” (2002)
7	M 3/1	Bayesian mind	• Griffiths et al., “Bayesian Inference” (2012)
	W 3/3	Modularity Second Paper Due 5pm 3/5	• CS: 203-229
<i>Intersections</i>			
8	M 3/8	Causal cognition	• Pearl, “The Ladder of Causation” (2018)
	W 3/4	Causal inference in humans and other animals	• Blaisdell et al., “Causal Reasoning in Rats” (2006) • Waldmann et al., “Beyond the Information Given: Causal Models in Learning and Reasoning” (2006)
9	M 3/15	The development of causal inference	• Carey, “Representations of <i>Cause</i> ” (2009) • CS: 286-293
	W 3/17	Causation, essentialism, and bias	• Leslie, “Carving Up the Social World with Generics” (2014)
10	M 3/22	Causal attribution and moral judgments	• Alicke et al., “Causal Conceptions in Social Explanation and Moral Evaluation: A Historical Tour” (2015)
	W 3/24	Computational theory of causal inference	• Gopnik & Glymour, “Causal Maps and Bayes Nets” (2002)
11	M 3/29	AI: Machine learning	• CS: 307-333 • Knight, “If AI’s So Smart, Why Can’t It Grasp Cause and Effect?” (2020) • Knight, “An AI Pioneer Wants His Algorithms to Understand the ‘Why’”
	W 3/31	AI: Machines, models, and society Third Paper Due 5pm 4/2	• O’Neil, <i>Weapons of Math Destruction</i> (2016): Ch. 1 • Hu, “Disparate Causes” (2019): I & II • Hu, “Direct Effects” (2020)
12	M 4/5	TBD (To Be Determined)	
	W 4/7	Course retrospective (No quiz this week)	• Re-read course description, goals, and schedule.
	TBD	FINAL EXAM	