Syllabus

The Philos. Foundations of Cognitive Science - 6110

Last update 03-08-2023

<u>HU Credits:</u> 3

<u>Responsible Department:</u> Cognitive and Brain Sciences

<u>Academic year:</u> 0

<u>Semester:</u> 1st Semester

<u>Teaching Languages:</u> Hebrew

<u>Campus:</u> E. Safra

<u>Course/Module Coordinator:</u> Oron Shagrir

<u>Coordinator Email:</u> oron.shagrir@gmail.com

<u>Coordinator Office Hours:</u> Sunday 16:00-17:00

<u>Teaching Staff:</u>
 Dr. Cahen Arnon

<u>Course/Module description:</u>
  Cognitive Science is an interdisciplinary endeavor that encompasses (among

others) psychology, neuroscience, philosophy, linguistics, and computer science to uncover the relationships between brains, minds, and behavior. The course will introduce students to the philosophical and scientific background that lead to the emergence of cognitive science as the dominant contemporary approach to the mind. It will also introduce students to topics in the study of language, learning, perception, action, and thought from a variety of different disciplines and methodologies, with special emphasis on the relationships and mutual contributions of the major participating disciplines within cognitive science.

Course/Module aims:
  This course will encourage students to think critically about the relationships between the philosophy of mind and the cognitive sciences. Students will be challenged to draw connections between empirical findings and both traditional philosophical questions and theoretical questions within the cognitive sciences. We will focus on evidence that illuminates and challenges our pre-theoretic notions of the mind and findings that fall short of their claims to shed light on such notions.

Learning outcomes - On successful completion of this module, students should be able to:
  ⬜ Students will be able to describe and discuss philosophical approaches to a variety of topics raised in contemporary debates about the mind.
⬜ Students will learn to appreciate the significance of neuroscientific and psychological approaches to understanding philosophical problems.
⬜ Students will gain an understanding of the relationship between particular empirical findings in cognitive science and relevant philosophical questions.
⬜ Students will be able to construct and reconstruct philosophical arguments.
⬜ Students will be able to assess philosophical arguments for validity and soundness.
⬜ Students will learn to raise and answer objections to philosophical arguments.
⬜ Students will become familiar with various theories that attempt to solve the mind-body problem and the challenges associated with each of them.
⬜ Students will come to understand why consciousness is thought to be a problem for a scientific theory of the mind.

Attendance requirements(%):
  None. But the final exam will be based on the material presented in lectures.

Teaching arrangement and method of instruction: Lecture and weekly exercise.

Course/Module Content:

Class 1: Introduction
Class 2: Behaviorism. Philosophical and psychological
Class 3: Beyond behaviorism
Class 4: Functionalism, causal and machine
Class 5: Turing and the computer model of the mind
Class 6: AI
Class 7: Physical Symbol Systems
Class 8: Connectionism
Class 9: Mental architecture
Class 10: Modularity
Class 11: Levels of explanation and the integration challenge
Class 12: Integration and reduction
Class 13: Mechanistic integration
Class 14: Catch-up and Summary

<u>Required Reading:</u>
 Textbook:
Jos© Luis Berm÷dez 2010: Cognitive Science: An Introduction to the Science of the Mind. Cambridge University Press.

 <u>Additional Reading Material:</u>
  Additional Readings, selection from:
Miller (2003) ⬜ The Cognitive Revolution: A Historical Perspective
Gilbert Ryle (1949) ⬜ Excerpts The Concept of the Mind.
Watson (1913) ⬜ Psychology as the Behaviorist Views it
Skinner (1951) ⬜ Selections from ⬜Science and Human Behavior⬜
Tolman (1948) ⬜ Cognitive Maps in Rats and Men
Lashley (1951) ⬜ The Problem of Serial Order in Behavior
Skinner (1951) ⬜ Selections from ⬜Science and Human Behavior⬜
Chomsky (1959) ⬜ Review of Skinner⬜s Verbal Behavior
Searle (1972) ⬜ Chomsky⬜s Revolution in Linguistics
Ned Block (1996) ⬜ Functionalism.
Turing (1950) ⬜ Computing Machinery and Intelligence
Newell and Simon (1976) ⬜ Computer Science as Empirical Inquiry
Searle (1980) ⬜ Minds Brains and Programs
Searle (1990) ⬜ Is the Brain⬜s Mind a Computer Program?
Dennett (1984) ⬜ Cognitive Wheels: The Frame Problem of AI
Rumelhart (1989) ⬜ The Architecture of Mind: A Connectionist Approach
McLelland, Rumelhart and Hinton (1986) ⬜ The Appeal of Parallel Distributed Processing
Fodor (1985) ⬜ Pr©cis of 'Modularity of Mind'

Carruthers (2008) ☐ Pr©cis of ☐The Architecture of the Mind: Massive Modularity and the Flexibility of Thought☐
Fodor and Pylyshyn (1988) ☐ Connectionism and Cognitive Architecture: A Critical Analysis
Churchland and Sejnowski (1988) ☐ Perspectives on Cognitive Neuroscience
Churchland and Churchland (1992) ☐ Intertheoretic Reduction: A Neuroscientist's Field Guide
Marr (1982) ☐ Chapter 1 of ☐Vision☐
Craver (2007) ☐Chapter 5 of ☐Explaining the Brain☐
Cummins (2000) ☐ ☐How Does it Work?" vs. "What Are the Laws?": Two Conceptions of Psychological Explanation
Craver & Tabery (2015) ☐ Mechanisms in Science

Grading Scheme:
  Written / Oral / Practical Exam 70 %
  Submission assignments during the semester: Exercises / Essays / Audits / Reports / Forum / Simulation / others 30 %

Additional information: