



Data of courses form

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Title of the course: Introduction to Cognitive Science

Short syllabus of the course, with topics addressed in each lecture:

1. WHAT IS COGNITIVE SCIENCE?

- Cognitive science as the interdisciplinary studies of mind and intelligence.
- The prehistory of cognitive science (The reaction against behaviorism in psychology; Algorithms and computation; Linguistics and the formal analysis of language; Information processing models in psychology)

Readings:

A very good summary can be found at:

<http://plato.stanford.edu/entries/cognitive-science/>

G. Miller: [The cognitive revolution: a historical perspective](http://www.cs.princeton.edu/~rit/geo/Miller.pdf)

www.cs.princeton.edu/~rit/geo/Miller.pdf

<http://plato.stanford.edu/entries/behaviorism/>

<http://geza.kzoo.edu/~erdi/cogsci/1.pdf>

The brain-mind-computer trichotomy: hermeneutic approach

<http://geza.kzoo.edu/~erdi/leckek/epaic.pdf>

John von Neumann <http://geza.kzoo.edu/~erdi/neum-lec.pdf>

2. KNOWLEDGE REPRESENTATION: LOGIC, RULES, SYMBOLS and ...

<http://geza.kzoo.edu/~erdi/cogsci/1log.pdf>

<http://geza.kzoo.edu/~erdi/cogsci/1rule05.pdf>

ELIZA <http://en.wikipedia.org/wiki/ELIZA>

Physical symbol systems

Newel and Simon: symbol manipulation

[The physical symbol system: Status and prospects](#) (paper by Nils Nilsson, 2007; from *50 Years of AI*)

<http://geza.kzoo.edu/~erdi/cogsci/pssh.pdf>

Mental models

http://www.tcd.ie/Psychology/other/Ruth_Byrne/mental_models/index.htm

Inductive and deductive

<http://geza.kzoo.edu/~erdi/cogsci/ind-ded.pdf>

3. ARTIFICIAL NEURAL NETWORKS, PARALLEL DISTRIBUTED PROCESSING. COGNITIVE MODELING

McCulloch-Pitts neurons

<http://www.mind.ilstu.edu/curriculum/modOverview.php?modGUI=76>

Connectionism: <http://www.sciencedirect.com/>

Perceptron (preview): <http://geza.kzoo.edu/~erdi/cogsci/lab/PERC/>

Using neural nets to recognize handwritten digits:

<http://neuralnetworksanddeeplearning.com/chap1.html>

<http://geza.kzoo.edu/~erdi/cogsci/cog-mod.pdf>

Cognitive Systems: Natural and Artificial

http://www.vernon.eu/ACS/ACS_02.pdf

4. OUTLOOK

Group discussion: <http://geza.kzoo.edu/~erdi/cis-cog/ep.pdf>

THE CURRICULUM in prospective:

- NEUROSCIENCE
- PHILOSOPHY
- PSYCHOLOGY
- INTERDISCIPLINARY ASPECSTS

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