



Data of courses form

Lecturer's name: Péter Érdi

Position: Henry R. Luce Professor of Complex System Studies

Organisation: Kalamazoo College

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Title of the course: Cognitive Neuroscience

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

COGNITIVE NEUROSCIENCE

"Cognitive neuroscience is an academic field concerned with the scientific study of biological substrates underlying cognition, with a specific focus on the neural substrates of mental processes. It addresses the questions of how psychological/cognitive functions are produced by the brain..." Wikipedia

A suggested textbook:

Gazzaniga, M. S., Ivry, R. B. & Mangun, G. R. (2009). *Cognitive Neuroscience: The biology of the mind* (3d ed.). New York: W.W.Norton.

1. BACKGROUND and METHODS

A brief history of cognitive neuroscience.. Methods of Cognitive Neuroscience. Neuroanatomy Neurophysiology. Neurology. Cognitive Psychology. Computational Models.

<http://www.scribd.com/doc/8200469/The-Brain-Story>

Cellular mechanisms of cognition. Electrical excitability.

<http://www.scholarpedia.org/article/Neuron>

2-3. COGNITIVE PROCESSES and PHENOMENA

Sensation and perception.

http://geza.kzoo.edu/~erdi/bcs/cognuer3_ch05.ppt

Learning and memory: concepts and models.

Brief history. Skill memory. Sensory, short term and working memory. Long-term memory.

Emotional learning

<http://geza.kzoo.edu/~erdi/bscs/>

[lecture01.pdf, lecture02.pdf, lecture04.pdf, lecture06.pdf, lectrue23.pdf,](#)

http://en.wikipedia.org/wiki/Long-term_memory

4. CONTROL PROCESSES

Attention and consciousness

www.klab.caltech.edu/cns120/Handout/koch-tsuchiya-07.pdf

Multi-scale modeling of schizophrenia

<http://geza.kzoo.edu/~erdi/mun-lec.pdf>

Background information on the web (optional):

<http://people.kzoo.edu/~perdi/>

Short CV

Kalamazoo College

Henry R. Luce Professor of Complex System Studies,
Dept. Physics, Dept. Psychology and
Center for Complex System Studies

Department of Biophysics, KFKI Research Institute for Particle
and Nuclear Physics, Hungarian Academy of Science: head
1998-2002 Szechenyi Professor, Dept. History and Philosophy
of Sciences, Eötvös University

Important publications:

[Érdi P & Tóth J: Mathematical Models of Chemical Reactions.](#) Manchester Univ. Press., 1989. Princeton Univ. Press., 1989.

[Arbib MA, Érdi P and Szentágothai J: Neural Organization: Structure, Function Dynamics.](#) MIT Press, A Bradford Book, 1997

Érdi P: Complexity Explained. Springer Verlag, 2007

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Any other comments or requests: [Empty rectangular box]