



**MEMORY AND THE MIND:
LEARNING AND REPRESENTING STRUCTURES IN THE BRAIN AND MIND**

JUNE 22 - 26, 2009, BUDAPEST, HUNGARY



Course Director:

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BRIEF COURSE DESCRIPTION

The fundamental philosophy of this summer school is to demonstrate that some basic principles of structure learning can provide a unifying framework for explaining human cognition both in simple as well as in the most complex domains of behavior. In addition, the course will present how these basic principles of behavior could be implemented in the neural hardware of the brain, thereby addressing the issue of how to bridge scientifically the gap between mind and body. To achieve this, lectures will progress via domains of gradually increasing abstraction that humans deal with starting from the perceptual domain of vision, through language, concepts, numbers and finally to conscious thinking.

The course will be organized around the following three key modules:

- 1) The first module will focus on the structure of the outside world of visual scenes, languages, numbers, and abstract categories. The lectures will highlight the common features and structurally significant differences between the different domains.*
- 2) In the second module, the lectures will focus on what is known about the emergence of internal representations of these domains: models of visual learning, language learning, number learning, concept learning, and emergence of consciousness will be introduced and critically evaluated. In this module, we will review the dominant theories of learning in each of the domains and evaluate how our conclusions in Module 1 can be related to these learning models.*
- 3) The third module will deal with the feasibility of implementing in the brain the models reviewed in the second module. The lectures in this module will discuss the likely candidates of cortical representations of vision, space, language, numbers, and consciousness.*

The principal format of the course will be seminars given by the core faculty. There will be a discussion session after each module where participants will be encouraged to formulate a coherent view based on the lectures. Participants will be expected to critically evaluate competing views represented by a series of papers. In addition, when possible, there will be computer demonstrations of the relevant concepts. Since all the core faculty come from the broad area of brain and cognitive sciences, and represent a somewhat similar philosophy, we also plan to broaden the discussion of these topics by organizing round table discussions with representatives of disciplines that are in secondary connection with the main topic of the course. These guest discussants will come from areas such as psychoanalysis, history and arts, and they will provide their view on whether we learn a canonical representation of the structure of our experience and how it is represented in our brain. We also plan a round-table where the dichotomy of learning versus innately coded representations will be discussed. There will be a final project, in which students will be required to carry out a mini-research project in small groups. The group will select a particular issue and develop their own opinion whether it can be fit in the emerging view on structure learning and if so, how.

The Summer University was established in 1996 and is aiming to involve a high-level international faculty (including CEU faculty), and excellent advanced doctoral students, junior or post-doctoral researchers, teachers and professionals as participants. While application from all over the world is encouraged, continued priority is given to applicants from Central and Eastern Europe, the former Soviet Union and countries experiencing emerging democracies worldwide. Applicants from these countries, when admitted on merit, will be eligible for scholarship, while those from developed countries will usually be expected to pay fees.

CEU Summer University

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Request application form: sunreq@ceu.hu

Apply online: <https://online.ceu.hu/osun>

(from mid-November)

Skype: [ceu-sun](https://www.skype.com/name/ceu-sun)

Application deadline: February 16, 2009

For further academic information on the course and on eligibility criteria and funding options please visit the course web site at

<http://www.sun.ceu.hu/memory>

Non-discrimination policy statement

Central European University does not discriminate on the basis of – including, but not limited to – race, color, national and ethnic origin, religion, gender or sexual orientation in administering its educational policies, admissions policies, scholarship and loan programs, and athletic and other school-administered programs.