Cognition - An Interdisciplinary Perspective

(Under the aegis of MHRD-Global Initiative for Academic Networks-GIAN)

August 13th – 21st, 2016 at IISER Mohali, Punjab

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Overview

The awareness of physical and social circumstances, the ability to have thoughts and feelings, to express these things to our fellow humans by language, and to store such information in memory - are considered to be the most intriguing functions of the human brain. "Cognition" is related to all mental abilities for the processing of information, applying knowledge and changing preferences. Cognition is an abstract property of advanced living organisms. Therefore, it is mostly studied by investigating various properties of the brain or studying the abstract mind at symbolic and sub-symbolic levels. These processes can be concrete or abstract, natural or artificial, conscious or unconscious. Due to these reasons, the properties of cognition are analyzed and approached from many different angles, using diverse approaches, in a variety of scientific, engineering, and social science disciplines. Thus, Cognitive Science is an interdisciplinary subject that deals with the study of the mind and its processes. It is a highly fascinating subject having applications in medicine and engineering. The aim of this course is to expose participants to the basic ingredients that go into the study of Cognition and also to initiate the notion of interdisciplinary nature of science in general and the high interdisciplinarity of the subject "Cognition" in particular, and its applicability to society.

Modules (Topics to be covered)	➢ **Neuroanatomy, Electrical properties of neurons, Neural signalling.** ➢ **Learning and memory, Object recognition and vision, Disorders related to vision.** ➢ **Language, Audition and Music, Disorders related to language.** ➢ **Cognitive Science, Imaging methods in Cognitive Neuroscience, Cognition in diseases.** ➢ **Attention and Neglect, Navigation.** ➢ **Reward and intelligence, Behaviour and Genetics, Demonstrations with model systems.** **Number of participants for the course will be limited to forty.**
Who should attend	▪ Senior masters and graduate students in science and engineering streams, post-doctoral fellows, Faculty from reputed academic institutions and technical institutions. ▪ Researchers from industry, public health personnel in service and government organizations including R&D laboratories, policy makers etc.
Course Fee	**Participants from abroad:** US$500 **Industry/Faculty:** Rs. 15,000/- **Students:** Rs. 10,000/- Fee includes local hospitality.

The Faculty

Prof. Mriganka Sur is the Paul E. Newton Professor of Neuroscience at Department of Brain and Cognitive Sciences, Massachusetts Institute of Technology, USA. His laboratory studies cortical development and plasticity.

Dr. Nandini Chatterjee Singh is a faculty in the National Brain Research Centre, Manesar, India. Her research interest lies in establishing the functional cortical circuits for speech and reading in multilingual populations.

Dr. Sridharan Devarajan is a faculty in the Centre for Neuroscience, Indian Institute of Science, Bangalore, India. His research interest is cognitive neuroscience.

Dr. Kavita Babu is a faculty in the Department of Biological Sciences, Indian Institute of Science Education and Research, Mohali, India. Her research interest is to understand the molecules that regulate synaptic function. She uses *C. elegans* as a model system.

Dr. Rajesh Ramachandran is a faculty in the Department of Biological Sciences, Indian Institute of Science Education and Research, Mohali, India. He is interested in understanding the molecular mechanisms underlying retinal regeneration using zebrafish as a model system.

Prof. Somdatta Sinha is a faculty in the Department of Biological Sciences, Indian Institute of Science Education and Research, Mohali, India. Her research interest is mathematical and computational biology.

Dr. Samarjit Bhattacharyya is a faculty in the Department of Biological Sciences, Indian Institute of Science Education and Research, Mohali, India. His research interest lies in understanding the protein trafficking in the central nervous system.

Local Coordinator

Prof. Kapil Paranjape

Course Coordinator

Dr. Samarjit Bhattacharyya

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