

Developmental Cognitive Neuroscience

Overview

This course will introduce students to key concepts, brain imaging methods, and current research on brain and functional development. Key themes of discussion at each stage will be developmental trajectories and timing, representation, plasticity and normal and abnormal development. Particular emphasis will be placed on the use of noninvasive brain imaging methodologies such as fMRI, fNIRS, and EEG for probing the brain and function across development, from the prenatal period to adolescence. We will consider the potential of these technologies to discover biomarkers for psychiatric disorders such as ADHD, Autism, Dyslexia, all of which continue into adulthood but have their roots in early brain development. The study of development generally, and brain function specifically, is an interdisciplinary enterprise. Thus, readings will draw on research in psychology, neuroscience, and related disciplines. Readings will comprise empirical articles, review and opinion/perspective papers that will introduce students to methodology and research questions currently under investigation in development science. Students are encouraged to consider the role of research findings in policy issues. Each of the topics we cover is complex and could be the source of semester-long study in and of itself. For that reason, our intent is to give you an overview of the constructs and some sense of the theoretical, empirical, and application issues. The course content will be organized into 4 modules, the first two providing foundational knowledge about brain development and methods to probe and the last two focusing on self regulation, its typical development and how it can go awry in two common developmental disorders, ADHD and Autism.

As a final assignment, students will work in groups to develop a research proposal and present it addressing a question about development using one of the brain imaging methodologies discussed in class.

Modules	Module 1: Early brain development: December 10-11, 2018 Module 2: Tools of cognitive neuroscience: December 12-14, 2018 Module 3: Development of self regulation: December 15-17, 2018 Module 4: Disorders of self regulation: December 18-20, 2018 Written Exam: December 22, 2018 Number of participants for the course will be limited to forty.
You Should Attend If...	You are a young faculty or PhD student from Psychology, Cognitive Science, and related disciplines like neuroscience You are keen to learn about brain and cognitive development, developmental disorders
Fees	The participation fees for taking the course is as follows: Participants from abroad: US \$200 Industry/Research Organizations: Rs. 15000 Academic Institutions: Rs. 8000/- for faculty and 5000/- for students The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage. The fee also includes accommodation costs.

The Faculty



Prof. Chandan Vaidya, Georgetown University, Washington DC, USA

Dr. Chandan Vaidya is Professor and Chair in the Department of Psychology at Georgetown University, with appointments in the Interdisciplinary Program in Neuroscience at Georgetown University Medical Center and Children's Research Institute, Children's National Medical Center, Washington, DC. She received the Ph.D. in Developmental Psychology from Syracuse University, NY, USA and completed her post-doctoral training in Cognitive Neuroscience from Stanford University, CA, USA. Her research program focuses upon characterizing the functional neural architecture of adaptive mechanisms during the life span. Her research tools are multidisciplinary, comprising behavioral and structural and functional brain imaging.



Prof. Bhoomika Rastogi Kar, Centre of Behavioural and Cognitive Sciences, University of Allahabad, Allahabad

Dr. Bhoomika Rastogi Kar is a Professor & Head, Centre of Behavioural and Cognitive Sciences (CBCS), University of Allahabad. She received her PhD at the National Institute of Mental Health and Neurosciences (NIMHANS), Bangalore, in 2003. Her research interests include development of attention/control processes, cognitive-affective control, anxiety and adjustments in control, cognitive aging, bilingualism and cognitive control.

Course

Co-ordinator

**Prof. Bhoomika
Rastogi Kar**

Phone: 9935974823
E-mail: bhoomika@cbcs.ac.in

[http://www.gian.iitkgp.ac.in/
GREGN](http://www.gian.iitkgp.ac.in/GREGN)