

Introduction to Yogic Neuroscience

Preamble:

The field of Neuroscience has gone through rapid advances in the past twenty years. With the development of modern imaging methods, it is now possible to non-invasively find out about the brain function to the level of detail that was not possible in the past. Just by looking at brain scans, it is now possible to predict what a person is seeing, thinking or dreaming. However, despite the abundance of data and information in this area, there have been relatively few breakthroughs in this field, particularly those related to personal transformation or alleviation of disorders related to the mind. This is due to the lack of a credible theory using which all the observations about brain function may be synthesized into a simple and manageable yet profound body of knowledge.

The science of Yoga and Ayurveda may be able to provide a framework for theoretical knowledge missing in the field of Neuroscience. Historically, the science of Yoga and Ayurveda sprang from reproducible first person observations of mental phenomenon leading to a theory of life and consciousness. Traditionally, this theory has been verified by people using first person methods until this field of knowledge began to decay due to lack of interest and unavailability scholars dedicated to study and maintain this knowledge. With the resurgence of Yoga at an international level and with the advancement in Neuroscience, the time is ripe to explore the synergies between these fields and find out of the theories in field of Yogic and Ayurvedic sciences can steer the future developments in the area of Neuroscience.

This course aims to give an introduction to the field of Yogic science and Neuroscience to explore synergies between these two areas. The course aims at a first-person understanding of the Yogic sciences in a way that learners can apply the knowledge in their daily lives.

Course Objectives:

At the end of the course, the student should:

- Gain an appreciation for the interdisciplinary study of Yoga and contemporary Neuroscience.
- Gain a theoretical appreciation of the Yogic practices from an interdisciplinary perspective.
- Be able to apply the Yogic practices in their own lives base on the theoretical understanding developed in the course.

Course Plan:

S.No.	Topic	Theory	Practical
Module 1: Anatomy and Physiology			
1	Introduction, Human Anatomy, Neuroanatomy, Systems, Nervous System, Human Brain Mapping	3	
2	Yogic Anatomy - Asana, Pancha Koshas, Impact of asanas on systems		3

3	Yogic Physiology; Deha Shuddhi- Neti, Kapalbhathi, Dhauti		2
4	Prakriti Analysis		2
Module 2: Learning, Memory and Personality			
5	Memory, Cognitive Biases	2	
6	Yogic Psychology; Prana Shuddhi		3
7	Dharana Based Practices		2
Module 3: Beyond Personality			
11	Beyond Personality: Mirror Neurons, Neuroplasticity	1	
12	Beyond Personality: Yogic perspectives	1	
13	Chitta Shuddhi		2
	Total	7	14

Evaluation Components: This is a Pass/Fail course. Objective quizzes for testing recall of terminology. Journaling of practices and psychological and behavioural changes to observe growth trajectory. 90% attendance mandatory to pass the course.

Reference Texts:

- Principles of Neural Sciences, Siegelbaum, Steven A., and A. James Hudspeth. Edited by Eric R. Kandel, James H. Schwartz, and Thomas M. Jessell. Vol. 4. New York: McGraw-hill, 2000.
- The Anatomy of Hatha Yoga: A Manual for Students Teachers and Practitioners by H. David Coulter
- Raja yoga, Swami Vivekananda
- Yoga and Ayurveda: Self-Healing and Self-Realization 2013 by David Frawley
- The Psychology of Yoga: Integrating Eastern and Western Approaches for Understanding the Mind by Georg Feuerstein

Course Instructors: Sri Adinarayan and Rahul Garg.

Adinarayanan is the founder of Anaadi Foundation, a public charitable organization dedicated to self-unfoldment of individuals. He was formerly Assistant Professor, Department of Information Technology and Coordinator of the Department of Cultural Education, Amrita University Coimbatore. He has an MS in Computer Engineering from North Carolina State University and was with the Software Industry before moving into academics. At Amrita University and elsewhere he has reached out to more than ten thousand students through his Computer Science, Mahabharata, Yoga and Cultural Education based courses. He has spent more than 100 days in Mouna Tapasya for the well being of all and as a means of first person research into consciousness. Anaadi Foundation's Himalayan Yatra and Vikasa Leadership Retreat are quite popular among the youth.

Rahul Garg is a faculty in the department of CSE with a research interest in the areas of Yoga, and Neuroimaging.