

Ambedkar University Delhi

Course Outline

Monsoon Semester (July-December 2017)

School:	Undergraduate Studies			
Programme with title:	BA (Honours)			
Semester to which offered: (I/ III/ V)	V semester			
Course Title:	Neuropsychology Through Clinical Cases: possibilities and limits			
Credits:	4 Credits			
Course Code (new):	SUS1PS709			
Course Code (old):	P11			
Type of Course:	Compulsory	yes	Cohort	BA (H) Psychology
	Elective	yes	Cohort	BA (H) other than Psychology

For SUS only (Mark an X for as many as appropriate):

1. Foundation (Compulsory)
2. Foundation (Elective)
3. Discipline (Compulsory) X
4. Discipline (Elective)
5. Elective

Course Coordinator and Team: - (Adjunct Faculty)

Email of course coordinator:

Pre-requisites: None

Aim:

This paper will ground the complex psychological experiences and expressions of the human in the processes of the brain and the neural network. The paper shall give the student an in-depth understanding of the structure (both macro and micro) and function of the brain and the neural network and show through analysis of clinical cases and lesion studies how they are related to psychological states like learning, sleeping-dreaming, communication and emotion. However, the relation between the

neurological and the psychological is not 'one to one' or one of simple 'cause-effect'. The paper shall therefore generate an appreciation of the complexities, the multi-axial nature and the plasticity of neurological functions. It will show how simple and rigid ideas of neural localization are not representative of the inter-connectedness and inter-dependence of brain areas and functions.

Brief description of modules/ Main modules:

1. **Psychology and Neurology** - Is the study of psychology the same as the study of neurology? What is the neurology-based perspective on psychology? What insights into psychology does the study of neurology offer?

V.S.Ramachandran, "No mere ape", Introduction to *The Tell-tale Brain*

2. Foundations of Neuropsychology

- What is neuropsychology?
- The Information Processing Approach
- Studying the human mind
- Techniques used
- Brain scans
- Animal studies
- Methods of investigating the brain
- Psychological tests

3. Neurophysiology

- Neurons
- Parts of a neuron
- Neurotransmitters
- Effects of neurotransmitters
- Neurotransmitters and their effects
- Endorphins
- Disorders associated with neurotransmitters
- Glia cells
- Schwann cells
- Nerve impulse
- Synaptic transmission
- Nerve impulse
- Neuromuscular transmission.

5. Neuroanatomy

- The nervous system
- Parts of the central nervous system
- The brain
- The spinal cord

- Spinal nerves
- Blood brain barrier
- Peripheral nervous system
- Autonomic nervous system
- Sensory somatic nervous system
- Spinal nerves
- Cranial nerves
- How the nervous system works
- Problems with brain functioning

6. Cognition, Personality and Emotion

- Brain damage
- Emotion and moods
- Phineas Gage
- Frontal lobe
- Higher level functioning
- The Limbic system
- Neurotransmitters
- Emotions research.

7. Perception Disorders

- Hemispatial neglect
- Causes of hemispatial neglect
- Auditory perceptual disorder
- Agnosia
- Visual agnosia
- Types of visual agnosia
- Prosopagnosia
- Simultanagnosia
- Optic aphasia
- Hallucinogen persisting perception disorder.

8. Language

- a. Broca's area
- b. Wernicke's area
- c. Speech and language disorders
- d. Apraxia
- e. Aphasia

9. Dementia

10. Neuroplasticity and brain damage.

11. Reflections on Localization

Oliver Sacks, “The Mind’s Eye” [Chapter 7 of *The Mind’s Eye*]

12. Clinical Cases as Puzzles

What are the puzzles that accompany the (brain based) study of psychology? Four puzzles that challenge the prevailing model:

- (a) Phantom Limb Pain and Proprioceptive Memory
- (b) Ethics and Mirror Neurons
- (c) Aesthetic Appreciation and Music
- (d) Neurobiology of Dreams

V.S.Ramachandran, “Phantom Limbs and Plastic Brains”, from *The Tell-tale Brain*

-----, “The neurons that shaped civilization”

Oliver Sacks, “Keeping Time: Rhythm and Movement”, from *Musicophilia*

Solms and Turnbull, “Dreams and Hallucinations”, from *The brain and the inner world*

13. Limits of Localization (using Schizophrenia as a case)

14. Limits of Genetics (using Depression as a case)

15. Revisiting the Brain-Mind Divide from an integrated perspective

[Jean-Pierre Changeux](#) and [Paul Ricoeur](#), *What Makes Us Think?: A Neuroscientist and a Philosopher Argue about Ethics, Human Nature, and the Brain*

References:

- 1) Bruce Reitz. A Textbook of Physiological Psychology
- 2) Neil. R. Carlson. Foundations of Physiological Psychology.
- 3) Joel Morgan and Joseph Ricker. Textbook of Clinical Neuropsychology (Studies on Neuropsychology, Neurology and Cognition)
- 4) James Kalat. Biological Psychology.

Tentative Assessment schedule with details of weightage:

S.No	Assessment	Date/period in which Assessment will take place	Weightage
1	Class test	Aug 31-Sept 5	20%

2	Position paper	Sept 10-15	10%
3	Mid Semester Exam	Sept 30- Oct 5	20%
4	Term Paper	Oct 20-25	25%
5	End Semester Exam	Nov	25%