

DISCIPLINE SPECIFIC ELECTIVE COURSE : 27

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course (if any)
		Lecture	Tutorial	Practical/ Practice		
DSE 27 Neuropsychology	4	3	0	1	Class XII Passed	Nil

Learning Objectives

- Develop an understanding of basic concepts of neuropsychology, including its emergence and theories.
- Comprehensive knowledge of the structural and neuropsychological deficits of various neurodevelopmental and neurocognitive disorders.
 - Know basic principles of neuropsychological tests and assessments.
- Learn the principles and goals of neuropsychological rehabilitation to address cognitive impairments.

Learning Outcomes

The student will be able to:

- To articulate key concepts and emergence of neuropsychology, including the brain hypothesis and lateralization theories.
- To recognize and describe structural and neuropsychological deficits of various neurodevelopmental and neurocognitive disorders.
- To know the basic applications of neuropsychological assessments.
- To understand theories and methods of neuropsychological rehabilitation.

Syllabus DSE 27

Unit I: Introduction to Neuropsychology

(8 Hours)

Connection between structure and functions of brain; emergence of neuropsychology; localization and

lateralization of brain functions; contribution of neuropsychology; neuropsychology in India.

Unit II: Neuropsychological Disorders

(12 Hours)

Neurodevelopmental Disorders: structural & neuropsychological deficits of Autism Spectrum Disorder and Attention Deficit/Hyperactivity Disorder.

Neurocognitive Disorders: structural & neuropsychological deficits of Dementia and Parkinson's Disorder.

Unit III: Neural Pathways & Neurotransmitter Hypotheses

(12 Hours)

Neural Pathways of Schizophrenia, Depression, Emotion – Papez Circuit; Social Brain Hypothesis; Mirror Neuron System; Dopamine hypothesis and Serotonin hypothesis.

Unit IV: Neuropsychological Assessment and Rehabilitation

(13 Hours)

Neuropsychological Assessment – Introduction, principles, scope and indicators.

Neuropsychological Rehabilitation – Introduction, principles and goals; Neural plasticity; Cognitive Intervention Models: general stimulation approach, functional compensation model, behavioural approaches; diaschisis; Methods: Cognitive retraining, Neurofeedback and Neuromodulation (Transcranial Magnetic Stimulation).

Tutorial Component : Nil

Practical Component: (30 Hours)

List of Suggested Practical Activities:

- Administration of neuropsychological tests (MMSE/AIIMS Neuropsychological Battery/NIMHANS Neuropsychological Battery)
- Interpreting neuropsychological profiles of various brain dysfunctions.
- Analysis of case studies in neuropsychological rehabilitation (e.g. memory disorders, language impairment, visuospatial problems, disorders of reading etc.)
- Movie/Documentary analysis of individuals living with neurological impairment.
- Documenting life stories of individuals and families living with neurological impairment (e.g. Alzheimer, Dementia, Parkinson's, Traumatic Brain Injury etc.)
- Visit to rehabilitation centres/clinics/hospitals

Essential / recommended Readings:

Boyle, G. J., Golden, C. J., Stein, D. J., & Stern, Y. (2023). *The SAGE Handbook of Clinical Neuropsychology: Clinical Neuropsychological Assessment and Diagnosis*.

Johnstone, B., & Stonnington, H. H. (2009). *Rehabilitation of neuropsychological disorders: A practical guide for rehabilitation professionals*. Psychology Press.

Joseph, R. (1990). *Neuropsychology, neuropsychiatry, and behavioral neurology*.

Springer Science & Business Media.

- Klomjai, W., Katz, R., & Lackmy-Vallée, A. (2015). *Basic principles of transcranial magnetic stimulation (TMS) and repetitive TMS (rTMS)*. *Annals of physical and rehabilitation medicine*, 58(4), 208-213.
- Kolb, B. & Whishaw, I.Q. (2007). *Fundamentals of human neuropsychology* (6th ed). New York: Worth Publishers.
- Lezak, M.D. (1995). *Neuropsychological assessment*. New York: Oxford University Press.
- Rains, G. D. (2001). *Principles of human neuropsychology*. McGraw Hill Higher Education.
- Reddy, K. J. (2024). *Essentials of Neuropsychology: Integrating Eastern and Western Perspectives*. Taylor & Francis.
- Wilson, B. A., Gracey, F., Evans, J. J., & Bateman, A. (2009). *Neuropsychological rehabilitation: Theory, models, therapy and outcome*. Cambridge University Press.
- Zillmer, E. A., Spiers, M.V & Culbertson, W.C. (2008). *Principles of neuropsychology*. Thompson Wadsworth USA.

Suggested Readings:

- Halligan, P.W., Kischka, U., & Marshall, J. C. (2003) *Handbook of clinical neuropsychology*. Oxford University Press.
- Morgan, J.E., Joseph H.R. (2017). *Textbook of clinical neuropsychology*. Taylor & Francis.
- Rajeswaran, J. (2012). *Neuropsychological rehabilitation: principles and applications*. (First Edition), Elsevier.
- Raskin, S. A., & Mateer, C. A. (1999). *Neuropsychological management of mild traumatic brain injury*. Oxford University Press.
- Walsh, K. (2003). *Neuropsychology- A clinical approach* (4th ed.). Edinburgh: Churchill Livingstone.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.