OPEN ELECTIVE

Course Name – COGNITIVE NEUROSCIENCE

Course Code –

Course Objectives: Understanding of the basic principles of cognitive neuroscience and interdisciplinary relationships. Building an intellectual framework for biological facts, psychological concepts, and philosophical theories related to the brain.

Learning Outcome: Students will acquire new knowledge and understanding of human brain and behaviour, cellular and genetics aspects of behaviour, cognitive development, neural control of attention, language acquisition and language processing, learning and memory, and cognitive functions like thought and consciousness. The basic elementaryexposure to the subject will stimulate students to undertake further research in this challenging area.

UNIT-I: The biology of cognition: Cognitive Development, Spatial Cognition, Attention, Language and Communication. ThePrefrontal Cortex and Executive Brain Functions.

UNIT-II: Cognitive functions: Hemisphere Control, Lateralization and Language, Split Brain, McGurk Effect Wernicke-Geschwind Model, Attention Deficit Disorder.

UNIT-III: Learning, memory, and cognition: Biology of Learning, Localized Representations of Memory, Alzheimer's Disease Memory and Forgetting, Learning and Memory Loss after Damage to the Hippocampus.

UNIT-IV: Sleep and cognition: Sleep, REM Sleep, Dreams, Functions of Sleep, Sleep and Energy Conservation Sleep and Memory, Functions of REM Sleep, Biological Perspectives on Dreaming.

UNIT-V: Memory: Types of Memory-Short-Term and Long-Term Memory, Working Memory, Memory Loss, Pattern Recognition, Word Association, Number and Shape Recognition.

REFERENCES:

1. From Molecules to Networks: An Introduction to Cellular and Molecular Neuroscience byJohn H. Byrne. Ruth Heidelberg and M. Neal Waxham
2. Neuroscience-Eds. Dale Purves et. al. (3rd Edn)-Sinauer Associates, Inc.-2004
3. Principles of Neural Science-4th Edn-Eds. Kandel, Schwartz and Jessell- McGrawHill Companies-2000
4. Cognitive Science: An introduction to the science of Mind. J. Bermudez (2010) CambridgeUniversity Press
5. The Cognitive Neuroscience of Memory: An introduction Ed. Eichenbaum, Howard 2012 2ndedition Oxford University Press