



Code	Subject Title	Cr. Hrs	Semester
APSY-310	Neuroscience in Psychology	3	VI
Year	Discipline		
3	Applied Psychology		

Course Objectives

Brain and Behaviour is a course that will explore the underlying cellular mechanisms that enable a human to solve and respond to particular problems encountered in its natural environment. It is designed to be an introductory course focusing on the relationship between the nervous system and behavior. Given the incredible advances in understanding various aspects of brain function and the relationship between the brain and our subjective experience, the serious student of human behavior can no longer enjoy the luxury of ignoring “all that biology stuff”. It is hoped that after completion of this course, the student will possess a good understanding of structure and function of brain.

Course Contents

Introduction

Brief historical background. Important contributors and their concepts

Current trends in the field of Behavioral neuroscience.

Contribution of various areas and related disciplines.

Nervous System

Neurons and Glial cells.

The neuron: neuronal characteristics, types, transmission and communication systems.

Neuro anatomical directional terms and planes of reference.

Embryonic development of the Nervous System.

Major structures of Nervous System, their functions and connections.

Neurochemistry

Introduction, Synaptic transmission.

Characteristics of neurotransmitters, Neuro modulators and Neuro hormones

Major Neurotransmitter

Dopamine

Nor Epinephrine

Serotonin

Acetylcholine

GABA

Glycine, peptides (opiates)

Motivation

Definition and basic physiological concepts.

Major types of motivational behaviors.

Homeostasis.

Involvement of brain areas and Neurotransmitters in motivational behavior.

Isotonic regulation, temperature regulation, thermostat etc.

Aggression and its types



Sleep and circadian rhythms (types and basic function).
Eating (types and disorders)
Weight, Glucose and Metabolic Regulation.

Emotions

Definition and basic concepts
Manifestation of emotion
Three basic aspects: Experiential; Cognitive; Behavioral.
Cultural differences in emotions
Hormonal changes in emotions.
Theoretical and other issues in emotions.

Memory and Amnesia

Definition and basic concepts.
Biological systems.
Developing organism and types of memory.
Abnormalities due to disruption in brain areas.
Memory disorders (Korsakov, Alzheimers Disease, Parkinson Disease etc.)

Drug Addiction

Basic concepts.
Drug addiction.
Drug abuse
Drug dependence and its types.
Brain areas involved in addiction
Addictive substances/classification
Neurobiological theories of addition.

Communication

Basic concepts.
Factors in the Development of speech.
Speech abnormalities, Speech disorders.
Brain areas in Speech.
Lateralization and speech.

Neurological Disorders

Epilepsy, Cerebral Palsy, Multiple Sclerosis.
Psychiatric disorders with organic/ biochemical etiology: Mood Disorder, Anxiety Disorders, and Schizophrenia, Mental Retardation.

Brain Damage

Causes of brain damage: CVA, Head injury, Infections
Psychological implications of brain damage

Clinical Neuropsychology

Introduction to Neuropsychology
Role of a Neuropsychologist
Neuropsychological assessment techniques



Recommended Books:

- Beatty, J. (2000). *The Human Brain*-Essentials of Behavioral Neuroscience, University of California: Sage Publications, Inc.
- Beaumont, G. (1990). *Understanding Neuropsychology*, OUP.
- Greenwood. (1997). *Neuropsychological Rehabilitation*, Psychology Press.
- Smock, T. (1999). *Physiological Psychology*, Prentice-Hall, USA.
- Squire, L. (1990). *Neuropsychology of Memory*, Guilford Press, USA.
- Pinel, J. (1997). *Bio-Psychology*, 3rd Edition, Allyn & Bacon.
- Pincus, J. (1985). *Behavioural Neurology*, OUP.
- Wilson, B. (1999). *Neuropsychological Rehabilitation*. Oxford University Press.
- Journals

The Neuroscientist

Reviews at the Interface of Basic and Clinical Neurosciences

Pedagogy

Lectures, Tutorials, student presentations, class discussions, invited lectures

Sessional Work: Assignments and Quizzes

Relevant assignment on subject matter and class quizzes to assess application of knowledge

BS (4 Years) for Affiliated Colleges



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From topics related to APSY-310