

UNIVERSITY OF MADRAS
B.Sc. DEGREE COURSE IN PSYCHOLOGY
SYLLABUS WITH EFFECT FROM 2020-2021

BPY-DSC02

CORE-II: BIOLOGICAL PSYCHOLOGY I

Instr.Hrs.: 6
Credits : 4

Year : I
Semester: I

Course Learning Outcome

After completion of the Biological Psychology I course, the student will be able to:

1. Explain the research methods and perspectives of biopsychology and the reciprocal relationship between brain and behavior
2. Illustrate the anatomy and function of the neural cell
3. Relate how neurons communicate with each other
4. Name the divisions of the nervous system, its chief structure and functions
5. Outline the role of Endocrine glands and Hormones in influencing Human Behaviour

UNIT I: BIOLOGICAL FOUNDATIONS OF BEHAVIOUR

Introduction: Meaning of Biological Psychology- Viewpoints to explore Biology of Behaviour – Approaches that relate brain and behaviour – Levels of analysis - Correlating brain anatomy with behaviour - Recording brain activity - Effects of brain damage - Effects of brain stimulation

UNIT II: NEURONS- BASIC UNIT OF NERVOUS SYSTEM

Basic features of the Nervous System: An overview, Meninges, Ventricular system and production of cerebrospinal fluid. Cells of the Nervous System: Neurons, Supporting cells, The blood-brain barrier – Neural Communication: An overview, Measuring electrical potentials of axons. The Membrane Potential: Balance of two forces, The Action Potential, Conduction of the action potential.

UNIT III: COMMUNICATION BETWEEN NEURONS–SYNAPTIC TRANSMISSION

Communication between Neurons: Structure of synapses, Neurotransmitter: meaning- types, Release of the Neurotransmitter: Activation of receptors- Postsynaptic potentials- Termination of postsynaptic potentials.

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UNIT IV: STRUCTURE & DIVISIONS OF THE NERVOUS SYSTEM

Nervous System: Development of the central nervous system, Brain: The forebrain, The hind brain, midbrain & forebrain, Division of Nervous System: Central Nervous System, The Peripheral Nervous System- Spinal nerves, Cranial nerves, The Autonomic Nervous system – Sympathetic and Parasympathetic.

UNIT V: HORMONES AND THE BRAIN

Hormonal actions- General principles of hormonal actions, Hormonal action on cellular mechanisms- Hormonal influence on growth and activity, Feedback control mechanisms in regulating secretion of hormones, Endocrine glands and its specific hormones: Pituitary- Pineal- Thyroid- Parathyroid-Pancreas- Adrenal- Gonads

REFERENCES

1. Carlson, N.R. (2007). *Foundations of physiological psychology*. New Delhi, India: Pearson India Education Services Pvt Ltd.
2. Kalat, J.W. (2011). *Biopsychology*. Delhi, India: Cengage Learning India Private Limited.
3. Pinel, J. (2007). *Biopsychology*. New Delhi, India: Pearson India Education Services Pvt Ltd.
4. Purves, D., Brannon, E., Huettel, S.A., LaBar, K.S., Platt, M.L., &Woldorff, G.M. (2008). *Principles of cognitive neurosciences*. Sunderland, MA: Sinauer Associates, Inc. Publishers.

WEB RESOURCES

1. Brain anatomy- Learn biopsychology Science quickly and easily – www.udemy.com
2. Medical neuroscience- www.udemy.com
3. Synapses, neurons and brains- www.udemy.com