

Optional Course

LS 507—NEUROPHYSIOLOGY [2 credits]

SK Jha

S No	Topic	Contact Hours
1.	Neuron, glia, structure and function general; ionic distribution, transmembrane potential, membrane, lipids, myelination, channels, receptor, action potential generation, propagation, synapse, neurotransmitter release, axoplasmic transport	8
2.	Neurotransmitter synthesis and its regulation, receptor type, properties, second messengers	2
3.	Coding of information, sensation, adaptation, denervation hypersensitivity, sensitization;	2
4.	Reflex, properties, types: myotatic reflex, conditioned and unconditioned reflex, learning, motor control and decerebrate rigidity, injury to brain	4
5.	Development and evolution of brain, organization of nervous system anatomy, cyto-architecture; brainstem, cerebrum, cerebellum, reticular formation, cortex; spinal cord, vertebral column, CSF, blood brain barrier; touch, pain, heat, itch etc	5
6.	Methods to study, sympathetic and parasympathetic nervous system; ascending and descending tracts	3
7.	Gross to cellular study stimulation. lesion, unit studies, anatomical, histological, biochemical, micro-dialysis, micro-iontophoresis, molecular studies, in vivo and in vitro cell culture studies	2

Suggested reading:

1. Principles of Neural Science by Eric R. Kandel, James Harris Schwartz, Thomas M. Jessell
2. Fundamental Neuroscience by Larry R. Squire
3. The Central Nervous System: Structure and function by Per Brodal