

1	<b>Course code</b>	JNS 202
2	<b>Course Title (credits)</b>	<b>Introduction to Neurobiology</b>
3	<b>Credits:</b>	3 credits
4	<b>Course Coordinator (include participating faculty)</b>	Sheeba Vasu and James Chelliah
7	<b>Objectives (goals, type of students for whom useful, outcome etc)</b>	The objective of this course is to introduce basic neurobiology to students who may have an interest in pursuing Neuroscience as a research area or simply interested in nervous system function.
8	<b>Course contents</b>	<p>History of neuroscience, Structure and function of components of the nervous system (neurons and glia); Evolutionary origins of the nervous system .</p> <p>Origin of membrane potential; Passive electrical properties of neuronal membranes;</p> <p>Factors affecting ionic current, Action potential generation and propagation; Features of ion channels</p> <p>Intercellular communication by neurons – chemical – synaptic properties; neurotransmitters; receptors; neuromodulation; neuromuscular junction; neuron-neuron signals; neuron-glia signals. Intercellular communication – electrical</p> <p>Developmental genetics of the nervous system: neural induction and patterning; genetic switches controlling nervous system development and function.</p> <p>Study of sensory pathways: Vision; Olfaction; taste; Hearing; Touch</p> <p>Study of motor circuit function</p> <p>Neuronal plasticity – synaptic, networks, behaviour</p> <p>Neural basis of complex behaviours – learning, memory, sleep, fear</p> <p>Hereditary nervous system disorders - Mapping and molecular cloning of the human Huntington’s Disease gene; Animal models of Huntington’s Disease; Parkinsons disease</p> <p>Genetic tools for the study of nervous system: Reverse genetics: transgenic and knock-out animal strategies and their use in neuroscience; Screens for identification of genes critical for nervous system function; Modern tools for in-vivo and real time analysis of nervous system function.</p>
9	<b>Evaluation /assessment (evaluation components with weightage) (Note: Equal weightage should be given to mid- and end-semester exams)</b>	<p>a. End-sem examination- 35 %</p> <p>b. Mid-sem examination -35 %</p> <p>c. Assignments/paper presentation, etc (if any): 30 % (2 assignments)</p>
10	<b>Suggested readings</b>	<p>Principles of Neural Science; Eric R. Kandel, James H. Schwartz, Thomas M. Jessell. McGraw-Hill Companies; 4th edition</p> <p>Neuroscience ; M. Bear, et al (2006); 3rd Ed. Lippincott Williams &amp; Wilkins</p> <p>Neuroscience; Purves, D. et al. (2008); 4th Ed. Sinauer Associates.</p>