

Semester	JAN 2022
Open to semester	14,22
Course code	BI6472
Course title	Design Principles of Nervous Systems
Credits	2 /2
Course Coordinator & participating faculty (if any)	Aurnab Ghose
Nature of Course	Lectures
Pre-requisites	Neurobiology I (BIO316/BIO668)
Objectives (goals, type of students for whom useful, outcome etc)	<p>The course intends to discuss general organising principles of nervous systems. We will treat nervous systems as physical devices that perform specific functions and try to intuit the underlying design principles by 'reverse engineering'. The goal is to understand the general principles that allow nervous systems to function and the constraints within which nervous systems have evolved. We will consider simple nervous systems (like that of the worm) to intermediate insect nervous systems and larger mammalian brains to understand common organisational principles.</p> <p>A basic understanding neural organisation and function is required to attempt the 'reverse engineering' approach hence Neurobiology I is a pre-requisite.</p>
Course contents (details of topics /sections with no. of lectures for each)	<p>What are nervous systems good for? What drives the evolution of bigger brains? Principles of neural information processing The organisation of connectivity in nervous systems How nervous systems learn</p>
Evaluation /assessment	<p>End-Sem Examination-% Mid-Sem Examination-% Others-Continuous evaluation in the form of assignments/quizzes and presentations. No formal midsemester and end-semester examinations.%</p>
Suggested readings (with full list of authors, publisher, year, edn etc.)	<ol style="list-style-type: none"> 1. Primary literature (distributed during the course) 2. An Introduction to Nervous Systems, Ralph Greenspan, CSHL Press 3. Neuroscience, Dale Purves et al., Oxford University Press

	4. Principles of Neural Science, Eric Kandel et al., McGraw-Hill
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