

IS GEN THE ESSENTIALS OF NEURO SCIENCE COURSE

September 12th, 2025

8am to 5:30pm

Auditorium, University College
of Medicine & Dentistry, UoL

September 13th, 2025

8am to 5pm

Auditorium, Shalamar Medical &
Dental College



Dr. Syed Ather Enam
Sitara-i-imtiaz

MD, PhD, FRCSI, FRCSC, FRCSG, FACS

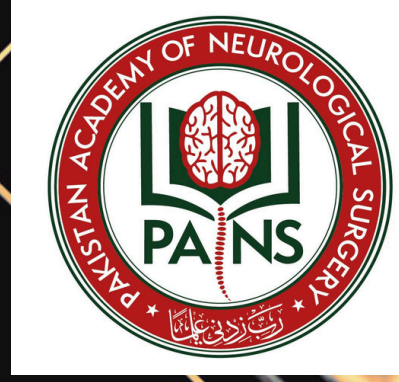
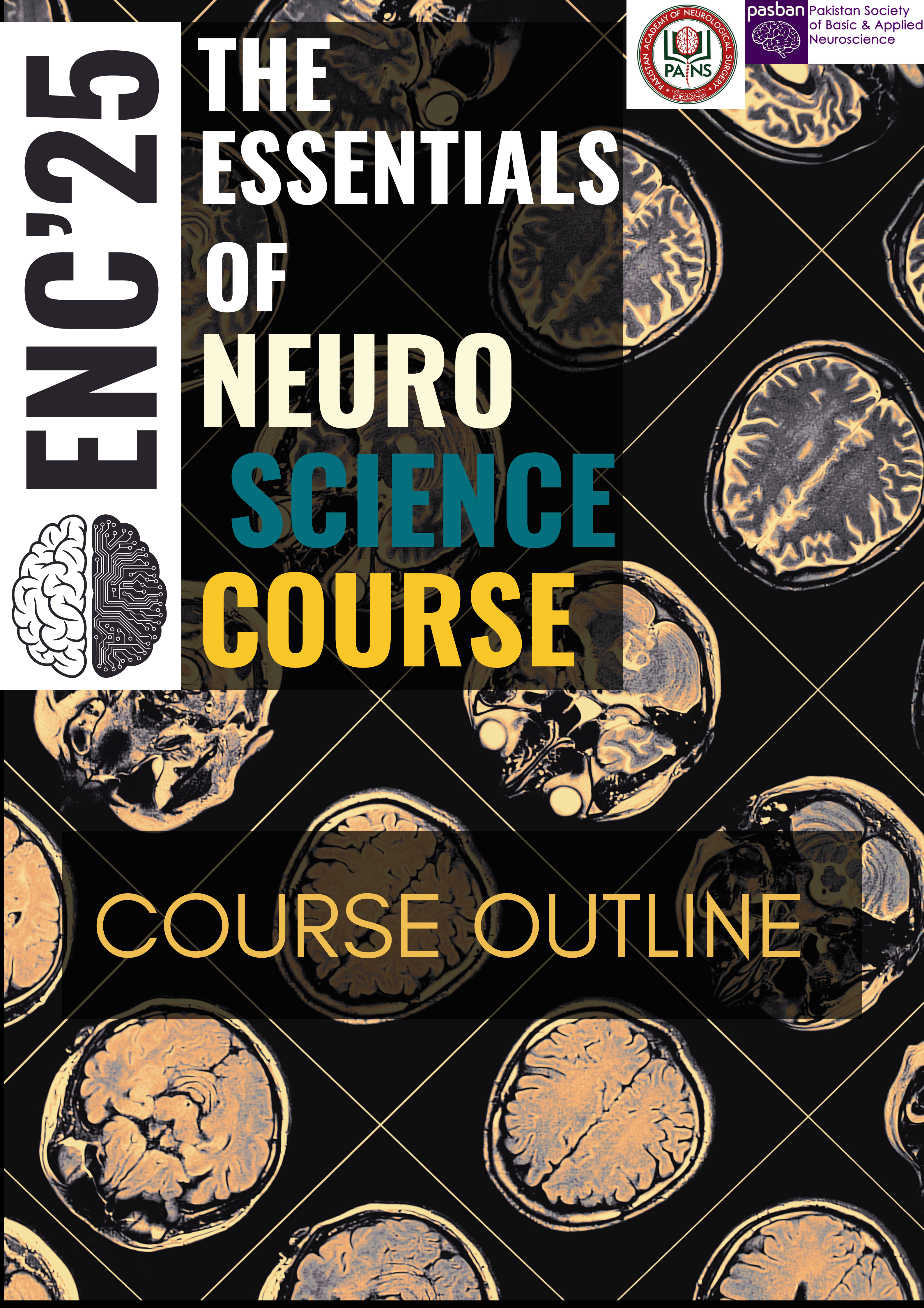
Professor of Neurosurgery

Sakarkhanum & Hussain Ebrahim Family Chair

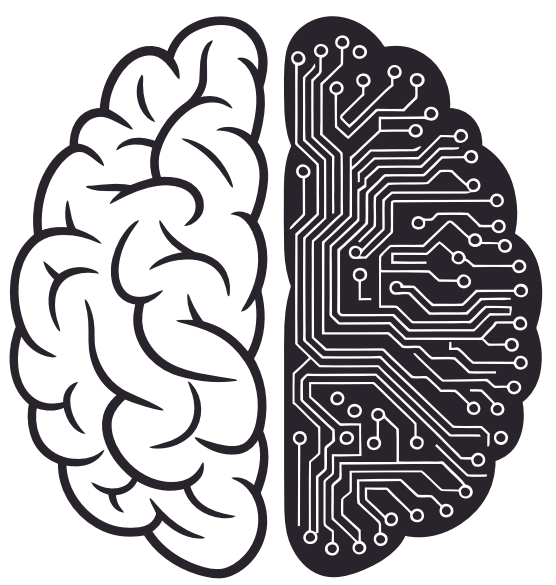
Director, Centre for Regenerative Medicine and Stem Cell Research

Director, Centre of Oncological Research in Surgery

Scientific Director, Juma Research Laboratories



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THE ESSENTIALS OF NEURO SCIENCE COURSE

COURSE OUTLINE

DAY 1

12TH SEPTEMBER 2025

7:00-7:15	Registrations		Module 1: Neuron to Nervous System
7:15-7:40	Introduction		
7:40-8:40	Book Launch		
8:40-9:40	Lecture I-A: Overall Design of the Nervous System General layout of the human nervous system, surface anatomy of brain and function, fiber tracts, spinal cord, spinal reflex, and brainstem.		
9:40-9:45	Breather		
9:45-10:45	Lecture I-B: Nervous System at the Cellular Level Neuron, glia, myelin, cell membrane, neural and glial cytoskeleton, axoplasmic transport, histology of cerebral cortex		
10:45-10:55	Quiz 1		
10:55-11:10	Q/A and Discussion		
11:10-11:30	Tea Break		
11:30-12:30	Lecture II-A: Electrical Properties of Neurons Resting membrane potential, ion channels and transporters, Nernst equation and Goldman-Hodgkin-Katz voltage equation, action potential and myelin	Module 2: The Chatting Neurons	
12:30-1:30	Lunch and Namaz Break		

DAY 1

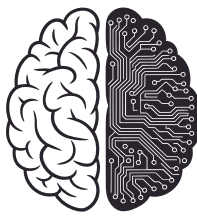
12TH SEPTEMBER 2025

1:30-2:30	Lecture III-B: Cerebellum and Reticular Activating System Anatomy of cerebellum, deep cerebellar nuclei, cerebellar circuit, reticular activating system anatomy and function, circadian rhythm, vestibulocochlear system	Module 2: The Chatting Neurons
2:30-2:40	Quiz 2	
2:40-2:55	Q/A and Discussion	
2:55-3:00	Breather	
3:00-4:00	Lecture III-A: Basal Ganglia and Thalamus Basal ganglia and components, motor control by basal ganglia, anatomy and function of thalamus, basal ganglia and thalamus in disease	Module 3: Deep In The Brain
4:00-4:05	Breather	
4:05-5:05	Lecture III-B: Cerebellum and Reticular Activating System Anatomy of cerebellum, deep cerebellar nuclei, cerebellar circuit, reticular activating system anatomy and function, circadian rhythm, vestibulocochlear system	
5:05-5:15	Quiz 3	
5:15-5:30	Q/A and Discussion	
END OF DAY 1		

DAY 2

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8:00-8:30	Recap of Day 1		Module 4: Understanding Memory, Behaviour, and Emotions
8:30-9:30	Lecture IV-A: Neurobiology of Memory Types of memory, dementia, habituation and sensitization, long term potentiation and depression, molecular correlates of memory, dendritic spines, synaptic plasticity		
9:30-9:35	Breather		
9:35-10:35	Lecture IV-B: Neurobiology of Behavior and Emotions Limbic System, types of emotion, amygdala, neurophysiology of pain, neurotransmitters of emotion, hypothalamus olfactory and gustatory, pain		
10:35-10:45	Quiz 4		
10:45-11:00	Q/A and Discussion		
11:00-11:20	Tea Break		
1:20-12:20	Lecture V-A: CNS Development I Neural tube formation, congenital abnormalities, homeobox genes, embryonic induction, neuronal migration, neurotrophic factors	Module 5: The Amazing Story of Brain Development	
12:20-12:25	Breather		

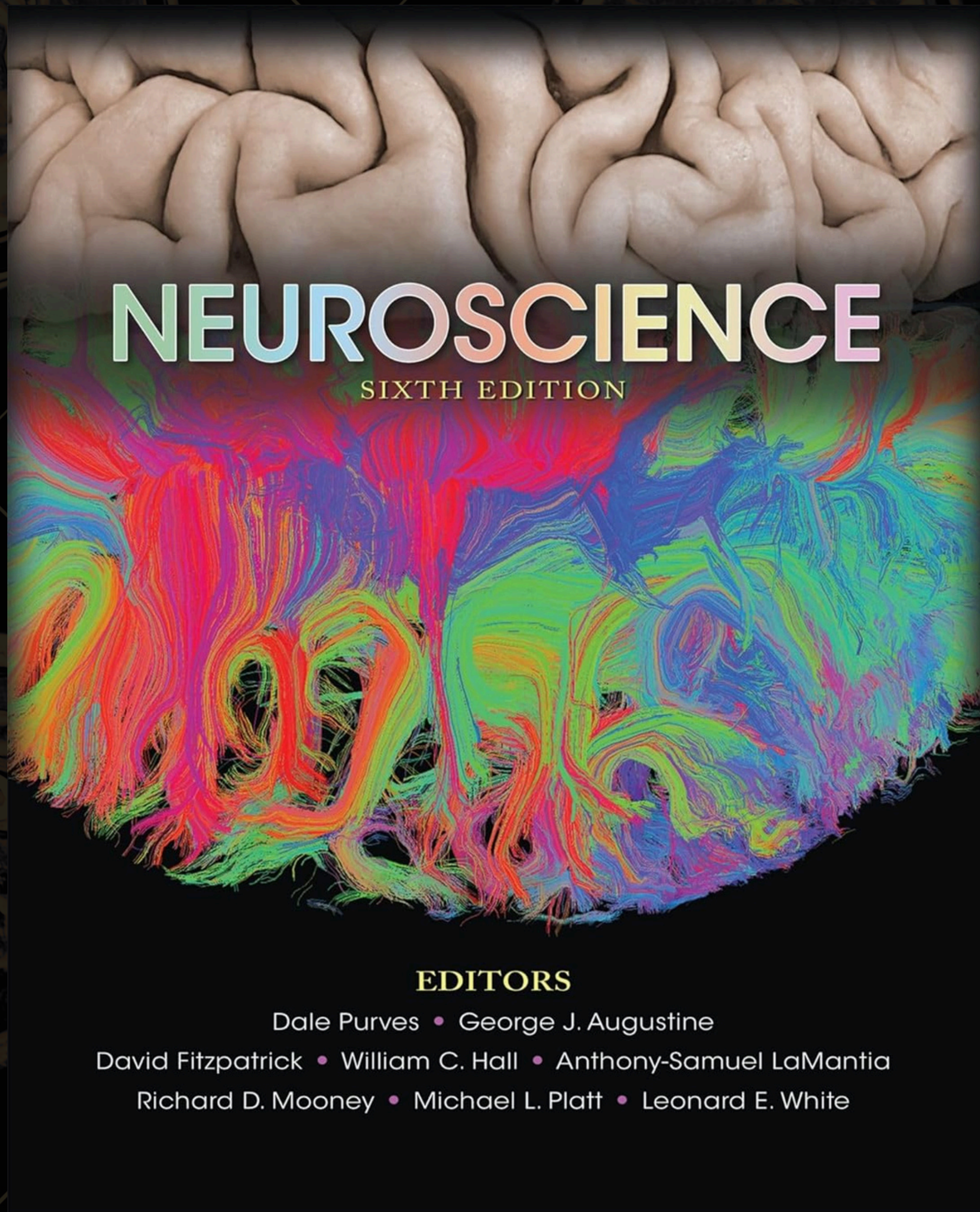
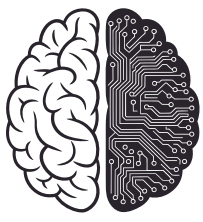
DAY 2

13TH SEPTEMBER 2025

12:25-1:25	Lecture V-B: Evolution of Human Brain Single cell to multicellular organism, Simple nervous system, growth of brain, comparison of brain of mammals, primates and genus Homo.	Module 5: The Amazing Story of Brain Development
1:25-1:35	Quiz 5	
1:35-1:50	Q/A and Discussion	
1:50-2:00	Break	
2:00-3:00	Lecture VI-A: Cognition and Communication Neural basis of language, aphasias, visual system, from image on the retina to simple perception and cognition, association cortex and cognition.	Module 6: What is Special about the Human Brain
3:00-3:05	Breather	
3:05-4:05	Lecture VI-B: Awareness and Consciousness Neuroanatomy of attention and planning, neural basis of intelligence, thoughts about awareness and consciousness.	
4:05-4:15	Quiz 6	
4:15-4:30	Q/A and Discussion	
4:30-5:00	CLOSING CEREMONY AND SHIELD DISTRIBUTION	

BOOK REFERENCE FOR THE COURSE

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Neuroscience 6th Edition.

Edited by Dale Purves, George J. Augustine, David Fitzpatrick,
William C. Hall, Anthony-Samuel LaMantia, Richard D. Mooney,
Michael L. Platt, and Leonard E. White, Oxford University Press,
October 2017,
ISBN: 9781605353807

**WE ARE GRATEFUL TO OUR
COLLABORATORS FOR THEIR
SUPPORT!**



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