



Prepared By Dr. Amna Halima.

**Faculty Members of Anatomy Department Bacha Khan Medical College Mardan.**

- **Professor Dr. Usman Ali. HOD Anatomy Deptt.**
- **Assistant Prof Dr. Wajid Akbar.**
- **Assistant professor Dr. Amna Halima**

**Neurosciences-1A Year-2(MBBS)****Total Weeks-5****Themes**

- 1) Numbness and tingling--- 1 week
- 2) Paraplegia----- 1 week
- 3) Syncope----- 1 week
- 4) Hemiplegia / Aphasia----- 1 week
- 5) Tremors----- 1 week

**LIST OF ABBREVIATIONS**

<b>Anat-L</b>	Anatomy Lecture	<b>MNS</b>	Motor nervous system
<b>Anat-SGD</b>	Small Group Discussion in Anatomy	<b>OSPE</b>	Objectively Structured Practical Examination
<b>Bio-L</b>	Biochemistry Lecture	<b>Path-L</b>	Pathology Lecture
<b>CMed</b>	Community Medicine	<b>PBL</b>	Problem Based Learning
<b>CSF</b>	Cerebrospinal Fluid	<b>Phar-L</b>	Pharmacology Lecture
<b>CT</b>	Computerized Tomography	<b>Phy-L</b>	Physiology Lecture
<b>DSL</b>	Directed Self Learning	<b>Phy-P</b>	Physiology Practical
<b>FDT</b>	Film/Demonstration/Tutorial	<b>Phy-SGD</b>	Small Group Discussion in Physiology
<b>FMed</b>	Forensic Medicine	<b>RAD-L</b>	Radiology Lecture
<b>Histo-L</b>	Histology Lecture	<b>SDL</b>	Self-Directed learning
<b>Histo-P</b>	Histology Practical	<b>SAQs</b>	Short Essay Questions
<b>IPS</b>	Islamiyat/Pak Studies	<b>SGD</b>	Small Group Discussion
<b>Med-L</b>	Medicine Lecture	<b>SLRC</b>	Self-Learning Resource Centre
<b>PRIME</b>	Professionalism and communication skills, Research, Identity formation, Management and leadership, Ethics		

## General learning outcomes

At the end of this module, the 2<sup>nd</sup> year MBBS students will be able to:

- 1) Explain the gross and microscopic structural and functional features of peripheral nerves, spinal cord and brain.
- 2) Describe the development of forebrain, midbrain and hindbrain
- 3) Describe the blood supply and venous drainage of brain and spinal cord
- 4) Explain the organization, structure and functions of cerebellum and basal ganglia
- 5) Explain the structure, formation and drainage of cerebrospinal fluid in the brain and spinal cord

## Pacific Learning objectives

### Theme-1 (numbness and tingling)

Subject	Competency	Topic	Learning objectives	Teaching Format	Assessment Plan
Gross anatomy	KNOWLEDGE	Overview of nervous system	Describe the general features of neurons and its classification	LGF/ Lecture	MCQs SEQS. OSPE
			Differentiate between central and peripheral nervous system.	LGF/ Lecture	
			Describe the general features of brain (forebrain, midbrain and hindbrain) and Spinal Cord.	-SGD. -DSL	
Embryology		Forebrain, midbrain and hindbrain	Describe the development of primary and secondary brain vesicles. Enlist the derivatives of the brain vesicles and development of prosencephalon, mesencephalon and rhombencephalon. Discuss congenital anomalies associated with each region of brain	LGF. Lectures.	
<b>Practical</b>					
Histology	Skills	Transverse section of spinal cord (cervical level) -1	64	Identify the slide of transverse section of cervical spinal cord under the microscope	Demonstration to Small Groups. OSPE.

**Theme-2 (Paraplegia)**

Gross anatomy	K N O W  L E D G E	Externals features of Spinal Cord	Describe the shape, grooves and sulci and extension of spinal cord. Enlist the segments of spinal cord. Difference between white and grey matter of spinal cord	LGF Lectures	MCQs SEQs. OSPEs.	
		Grey Matter of Spinal Cord	Describe the distribution of spinal cord into horns	LGF. Lectures		
			Differentiate between anterior, lateral and posterior horns	SGD.		
			Describe the distribution of sensory and motor neuron within the grey matter	LGF. DSL		
			Explain formation of Rexed lamina of spinal cord	LGF. Lectures		
		White matter of spinal cord	Enumerate the ascending tracts			
			Explain the origin, pathway and termination of dorsal column medial lemniscal system Explain the origin, pathway and termination of pyramidal and extra pyramidal tracts			
Embryology		Spinal cord	Discuss the development of alar and basal plate and its derivatives	LGF. Lecture		
Histology		Spinal cord	Identify the light microscopic transverse section of spinal cord at cervical, thoracic, lumbar and sacral regions	Lectures		OSPE
			Draw and label the transverse section of spinal cord at different levels			
<b>Practical</b>						
Histology	S K I L L	Transverse section of thoracic segment of spinal cord-2	Identify the slide of transverse section of thoracic segments of spinal cord under the microscope		SGD.	

**BACHA KHAN MEDICAL COLLEGE MARDAN**

**Theme- 3 (Syncope)**

Gross anatomy	Medulla	Enlist the components of brain stem and external features of brainstem	Lectures	MCQs SEQs
		Describe the transverse section of medulla at the level of sensory decussation, motor decussation and inferior Olivary nuclei	LGF	OSPE
		Enumerate the cranial nerves nuclei present within the medulla		
	Pons	Describe the transverse section of pons at the level of cranial and caudal parts	LGF	
		Enumerate the cranial nerves nuclei present within the pons		
	Midbrain	Describe the transverse section of pons at the level of superior colliculus and inferior colliculus	LGF	
		Enumerate the cranial nerves nuclei present within the midbrain		
Histology lecture and Practical	T/S lumbar spinal cord-3	Identify the slide of transverse section of Lumbar segment of spinal cord under the microscope	SGD	OSPE Identificati on of slides

**Theme-4 (Hemiplegia)**

Gross anatomy	Cerebrum Grey matter of cerebrum White matter of cerebrum	Division of cerebrum into different lobes Distribution of grey matter in cerebral hemispheres , its surfaces, sulci and gyri Enumerate the types of white matter fibers Differentiate between association, projection and commissural fibers	Lectures LGF SGD	OSPE MCQs SEQs
	Diencephalon	Structure and important nuclei of Thalamus and Hypothalamus	Lectures LGF SGD	
	Blood supply of brain	Describe the formation of circle of Willis		
Histology Lecture and Practicle	Cerebral cortex	Identify the cerebral cortex on light microscope		
		Enlist the different histological layers of cerebral cortex		
Histology Lecture and Practical	Cerebral cortex	Identify the histological layers of cerebral cortex under the microscope	SGD	OSPE

**BACHA KHAN MEDICAL COLLEGE MARDAN**

**Theme- 5 (Tremors)**

Gross anatomy	Basal nuclei	Enumerate the components of basal nuclei Describe the structure and relation of corpus striatum, red nucleus and substantia nigra	LGF. Lectures.	MCQs  SEQs
	Cerebellum	Describe the general features of cerebellum	LGF Lectures	OSPE
		Name the lobes of cerebellum and discuss its anatomical and physiological classification	SGD.	
		Enumerate the intracerebellar nuclei of cerebellum	LGF	
		Describe the input and output of cerebellum	DSL	
Histology	Histology of cerebellum	Enlist the different histological layers of cerebellar cortex	LGF Lecture	
Histology Practical	Cerebellar cortex	Identify the histological layers of cerebellar cortex under the microscope	SGD	OSPE