Jinnah Medical & Dental College

Nervous System Module 1 &Nervous System& Psychiatry Module 2

Study Guide

MBBS
2022-23

"Knowledge has a beginning but no end"

- Geeta Iyengar

VISION

To set local and global standards for quality patient outcomes – creating a culture of excellence to promote a transformative experience for the 21st century clinicians, educators, and researchers to benefit all humanity.

MISSION

To develop well-rounded academicians, thinkers, clinicians, and researchers by strengthening a global view, broadening intellectual foundations and teach effective communication. It is our aspiration to cultivate creative and critical thinking skills for problem solving, sensitive to cultural and ethical values and responsibilities. Our graduates will be role models and society leaders.

Team Members of Neuroscience Module I &II 2022-23

Name	Committee	Department
Professor Dr. Muhammad Baqir Soomro	Member	Anatomy
Professor Dr. Shahid Ahsen	Member	Biochemistry
Professor Dr. Sadaf Fatima	Member	Physiology
Professor Dr. Sanower Ali	Member	Community Medicine
Professor Dr. Bushra Rafique	Member	Pediatrics
Professor Dr. Harani	Member	Pathology& Microbiology
Professor Dr. Aneel Kumar	Member	Psychiatry
Professor Dr. Samia Perwaiz Khan	Member	Pharmacology
Professor Dr. Farooq Umer	Member	Neuro Surgery
Professor Dr. Ishaq Ghauri	Member	Neurology
Dr. Sanober Umer	Member	Radiology
Dr.Zeelaf Shahid Associate Director	Member	Medical Education

Introduction

Greetings and a very warm welcome to medical students in the Neurosciencesmodules. This module has been developed to impart integrated teaching as a part of modular curriculum in Jinnah Medical & Dental College, Karachi. Nervous system moduleI (2nd year)is covered in 7 weeksand Nervous system & PsychiatrymoduleII (4th year) covered in 8weeks.The nervous system is the part of human body that coordinates behavior and transmits signals between different body areas. Stroke, headache and nerve and root lesion are majors of neurological disorders in urban and rural settings of Pakistan. Overall burden of Neurological diseases in Pakistan is 4-5%. In the nervous system & Psychiatry modules basics of Nervous system with clinical correlation is focused. Autonomous and Peripheral nervous system is dealt in detail in this module.

Rationale

It is designed to provide students with not onlyknowledge about basics ofNeurosciencesbut also develop their ability to apply information to solve clinical problems.

JMDC CURRICULUM SEQUENCE: MBBS 1-5 YEARS

Year																						
1	**Module 1**	**EOM**	**Module 2**	**EOM**	**Module 3**	**EOM**	**Module 4**	**EOM**	**Module 5**										**EOM* Exam of Module**			
	Foundation-1 8 weeks		Blood-1 4 weeks		Locomotor-1 8 weeks		Respiratory-1 4 weeks		CVS-1 4 weeks													
	PAKISTAN STUDIES & ISLAMIAT																					
2	**Module 6**	**EOM**	**Module 7**	**EOM**	**Module 8**	**EOM**	**Module 9**	**EOM**	**Module 10**	**EOM**	**Module 11**				**EOM**	**Module 12**			**EOM**			
	GIT-1 4 weeks		Head & Neck-1 5 weeks		Neurosciences-1 7 weeks		Special Senses 3 weeks		Endocrine-1 5 weeks		Reproductive-1 4weeks					Urinary-1 5weeks						
	Communication Skills Patient Safety & Infection Control Professionalism & Ethics																					
3	**Module 13**	**EOM**	**Module14**	**EOM**	**Module15**	**EOM**	**Module16**	**EOM**	**Module17**				**EOM**	**Module 18**			**EOM**					
	Foundation 2 10 weeks		Blood-2 5weeks		Locomotor-2 4 weeks		Respiratory-2 4 weeks		CVS-2 5 weeks					GIT-2 7weeks								
	Clinical Rotations (Each Batch) WT* = Ward test																					
	Communication Skills Patient Safety & Infection Control Professionalism & Ethics																					
R1	**Medicine 2 weeks**	**WT**	**Psychiatry 2weeks**	**WT**	**Surgery 2 weeks**	**WT**	**Orthopedics 2 weeks**	**WT**	**OBS/ GYN 2 weeks**	**WT**	**Pediatrics 2 weeks**	**WT**	**Eye 2 weeks**	**WT**	**Ent 3 weeks**	**WT**						
R2	**Medicine 2 weeks**		**Psychiatry 2weks**		**Surgery 2 weeks**		**Orthopedics 2weeks**		**OBS/ GYN 2 weeks**		**Pediatrics 2 weeks**		**Eye 2 weeks**		**Ent 3 weeks**							
4	**Module 19**	**EOM**	**Module 20**	**EOM**	**Module 21**	**EOM**	**Module 22**	**EOM**	**Module 23**	**EOM**	**Module 24**	**EOM**	**Module 25**	**EOM**	**Module 26**	**EOM**	**Module 27**		**EOM**			
	Nervous Sys & Psychiatry 2 8 weeks		H & N & SP Senses 2 (Eye) 4 weeks		H & N & SP Senses 3 (ENT) 4 weeks		Endocrinology 2 4 weeks		Repro 2 6 weeks		Urinary 2 4 weeks		Derma 2 weeks		Orthopedics 2 weeks		Rehab 2 weeks					
	Lectures Eye/ENT																					
	Clinical Rotations (Each Batch)																					
	Communication Skills Patient Safety & Infection Control Professionalism & Ethics																					
R1	**Medicine 3 weeks**	**WT**	**Psychiatry 3 weeks**	**WT**	**Surgery 3 weeks**	**WT**	**Ortho pedics 3 weeks**	**WT**	**OBS/ GYN 3 weeks**	**WT**	**Pediatrics 3 weeks**	**WT**	**Eye 3 weeks**	**WT**	**Ent 3 weeks**	**WT**						
R2	**Medicine 3weeks**	**WT**	**Surgery 3weeks**	**WT**	**Eye 3weeks**	**WT**	**Ent 3weeks**	**WT**														
	LECTURES R*= Rotation**																					
5	**Medicine**		**Surgery**		**OBS/Gynae**		**Pediatrics**															
	Clinical Rotations																					
	Communication Skills Patient Safety & Infection Control																					
R1	**Medicine 4 weeks**		**Surgery 4 weeks**		**OBS/ GYN 4 weeks**		**Pediatrics 4 weeks**															
R2	**Medicine 5 weeks**		**Surgery 5 weeks**		**OBS/ GYN 5 weeks**		**Pediatrics 5 weeks**															

Final Exam

Students Assessment

There will be an end of module/rotation test after completion of module/clinical posting which will comprise the following components: -

i. Written Assessment

The theory paper will have components of one – best type multiple – choice questions (MCQs).

ii. Practical / lab examination:

This will comprise Objective Structured Clinical Examination (OSCE) The OSCE will have both observed and non-observed stations. The end of clinical posting will be of 2 hours duration. This will comprise the following components:

The OSPE/ OSCE will be conducted in batches. The students will be having different patterns of OSPE/OSCE in the subject of both Basic & Clinical Sciences.

Summary of marks of each module exam

Theory (BCQs) = 100 marks

OSPE (10 stations) = 100 marks

Total = 200 marks

Internal Assessment:

• Continuous monitoring of attendance and practical assessment in short groups By

Mini CEX, DOPS and logbooks.

• It may be in the form of MCQs (BCQs), Ward tests, and OSCE.

• Internal assessment carries 20% weightage

Course Evaluation:

Course evaluation will be obtained through a feedback form which will be posted on the JMC website

Mandatory Policy:

Eligibility for sitting in Professional Examinations is as follows:

- 75% overall Class Attendance
- 75% Attendance all Clinical Wards with passing marks in all Clinical Ward Tests.
- Minimum 40% aggregate marks on all Internal Examinations (Module Tests, Midterm, Pre-Professional Examinations)
- MBBS 1st Year: Complete all Professional Communication assignments with passing marks
- MBBS 1st & 2nd Year: Obtain passing marks in Behavioral Sciences & Research Module assessments
- MBBS 2nd Year: Presentation in Journal club at least twice in a year
- MBBS 4th & Final Year: CPC Presentation at least once in a year
- Skills Labs: Must be completed with passing marks
- Research Paper must be completed before MBBS 4 Professional Examination

Failure to Meet the Eligibility Requirements:

- A Student failing to meet the above listed eligibility for sitting in the professional examination will not be allowed to sit in 1st attempt of the Professional Examination.
  The college has the right to withhold all students who however, not met the eligibility requirements from sitting in the 1st attempt.
- Such students who have been withheld from sitting in the 1st attempt of the Professional exam because of failure to meet the eligibility requirements will be allowed only to sit in the retake of that examination.
  It is expected that deficiency in requirements of Professional communication assignments, Behavioral Sciences & Research Module assessments, journal Club presentations, CPC, Skills Labs must be made up and fulfilled before a student will allowed to sit in the retake exam.

Details of Attendance policy

The CR is responsible to bring attendance sheets from Student Affairs Office to each class. At the end of class, the attendance sheet must be signed and returned by the faculty member to the Student Affairs Office. No attendance sheets from students will be accepted. These attendances will be compiled together as follows:

LECTURE ATTENDANCE = # Lectures Attended / Total # of Lectures

PRACTICAL ATTENDANCE = # Practical's Attended / Total # of Practical's

TUTORIAL ATTENDANCE = # Tutorials Attended / Total # of Tutorials

NOTE: All tutorials will be conducted by a Senior Faculty Member (AP or above), assisted by a Junior Faculty Member (Lecturer)

FINAL CLASS ATTENDANCE =

$$\frac{\%\text{Lecture Attendance} + \%\text{Tutorial Attendance} + \%\text{Practical Attendance}}{3}$$

Teaching / Learning Methods

The teaching learning sessions of this module will be of diverse types:

a. Large group interactive sessions (LGIS)
b. Small group teaching will include tutorials and, case – based learning session.
c. Problem – based learning sessions.
d. Practical session will comprise sessions on early exposure to clinical methods and practical laboratory demonstrations.
e. Seminars: on different topics, in which students will make oral presentations on different aspects of the allocated topic.
f. Self-directed learning sessions: This is the time during which students are expected to revise what they have learnt in the class, clear their concepts by consulting different textbooks, reference material and prepare their assignments and projects.

Main Content Areas

Anatomy

- General organization of Nervous system, different types of nerve tissue cells
- Development of Brain and Spinal cord & anomalies
- Gross External features of spinal cord
- Histology of spinal cord
- Internal features of spinal cord I- (Ascending tracts)
- Internal features of spinal cord II- (Descending tracts)
- Development of forebrain (Embryology)
- Development of midbrain & hindbrain
- Blood supply of spinal cord and clinical
- manifestations of ischemia
- Gross anatomy of Cerebellum
- Histology of Cerebellum
- Diencephalon I- Thalamus
- Diencephalon II- Sub thalamus, Hypothalamus & Epithalamus
- Limbic system & Reticular formation
- Basal ganglia & its nuclei
- Histology of cerebrum
- White matter of cerebrum -I (Projection fibers and Internal capsule)
- White matter of cerebrum- II (Commissural & Association fibers)
- Blood supply of brain
- Meninges of brain & spinal cord
- Dural venous sinuses
- Autonomic nervous system

Biochemistry

- Lipids of the nervous system: Chemistry of Brain Lipids
- Blood Brain Barrier
- Cerebrospinal fluid
- Introduction of Neurotransmitters
- Acetylcholine & Dopamine
- Serotonin & GABA
- Neurodegenerative diseases of CNS
- Role of free radicals & Vitamins in CNS disorders

Physiology

- Neurons membrane, generation & propagation of nerve impulse
- Synapse, properties of synapses
- Sensory receptors and neuronal circuits
- Somatic sensations
- Physiology of pain – I & headache
- Physiology of pain II- Brain analgesic system
- Muscles proprioceptors (muscle spinal & Golgi tendon organ)
- Spinal cord and reflexes

- Function of brain stem
- Motor cortex, pyramidal tract, Upper and lower Motor Neurons
- Cerebellum and its functions
- Vestibular system and maintenance of equilibrium
- Functions of diencephalon
- Limbic system
- Basal ganglia and its nuclei
- Physiology of sleep & sleep disorders
- Learning and memory
- CSF: formation, circulation & function
- Autonomic Nervous System
- Speech &its disorders

Community medicine

- Poliomyelitis & Prevention
- Tetanus & Prevention
- Leprosy & Prevention
- Stroke & Prevention
- Rabies & Prevention
- Snake bite & prevention
- Introduction to mental health
- Substance Abuse

Pediatrics

- Cerebral Palsy and mental retardation
- Common CNS infections in children
- Upper and lower motor neuron lesions
- Seizures in Children

Pathology

- Patterns of nerve injury, Cerebral Oedema & Raised ICP
- Traumatic injuries to CNS
- Cerebrovascular Diseases: (Hypoxia, Ischemia, Infarction)
- Hypertensive Cerebrovascular disease (CVD), intracranial haemorrhage and
- malformations
- Infections
- Neurodegenerative Diseases
- Brain tumours
- Diseases of skeletal muscles-I
- Diseases of skeletal muscles-II

Neurology

- Investigation of neurological disorders
- Lesion localization
- Lesions of cranial nerve

- Approach to coma
- Approach to headache & Primary headaches (Trigeminal autonomic cephalalgias)
- Clinical presentation of different primary headaches
- Secondary headaches
- Epilepsy and status epilepticus
- Cerebrovascular Accidents (Stroke) – I
- Cerebrovascular Accidents (Stroke) – II
- Acute CNS infections
- Chronic CNS infections
- Approaches to movement disorders
- Multiple sclerosis (MS) and other demyelinated diseases
- Approach to neuropathies and Guillain-Barre syndrome (GBS)
- Myasthenia Gravis
- Dementia
- Muscular dystrophies
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Pharmacology

- Sedatives & hypnotics: I & II
- Drug used in Migraine
- Drugs used in General anaesthesia: I & II
- Drugs used in Local anaesthesia
- Drugs used in Epilepsy
- Drugs used in Psychosis
- Drugs used in Depression
- CNS Stimulants and Hallucinogens
- Drugs used in Parkinson's
- Drugs of Abuse & Alcohol

Neuro Surgery

- Hydrocephalus
- Traumatic spinal cord injury
- Traumatic brain injury
- Raised Intracranial Pressure (ICP)
- Brain tumors
- Spinal tumors
- Compressive myelopathy

Radiology

- CT Scan Brain
- MRI Brain
- Neuro-radiology of brain tumors, head injury and hydrocephalus

- Psychiatry
- Introduction to Mental Health, and Biopsychosocial model & Non-pharmacological
- Intervention
- Counseling& Psychotherapy
- Breaking bad news
- Anxiety disorders- I; Introduction, types & etiology
- Anxiety disorders- II; differentiating points, diagnosis & management
- Depressive disorders
- Bipolar Affective disorder
- Somatic and Medically Unexplained Symptoms
- Schizophrenia and related disorders
- Disorders of Addictive Behaviour / Alcohol & Other Substance use
- Psychosexual disorders
- Introduction to childhood psychiatric disorders
- Introduction to old age psychiatric disorders, Delirium and Dementia

GENERAL LEARNING OBJECTIVES:

By the end of this module, the students will be able to:

Anatomy

- Explain General organization of Nervous system, different types of nerve tissue cells
- Discuss Development of Brain and Spinal cord & anomalies
- DescribeGross External features of spinal cord
- Explain Histology of spinal cord
- Discuss Internal features of spinal cord I- (Ascending tracts)
- DescribeInternal features of spinal cord II- (Descending tracts)
- Explain Development of forebrain (Embryology)
- DiscussDevelopment of midbrain & hindbrain
- Explain Blood supply (arterial supply & venous drainage) of spinal cord and clinical
- manifestations of ischemia
- DiscussGross anatomy of Cerebellum
- Explain Histology of Cerebellum
- DescribeDiencephalon I- Thalamus
- Explain Diencephalon II- Sub thalamus, Hypothalamus & Epithalamus

- DiscussLimbic system & Reticular formation
- DescribeBasal ganglia & its nuclei
- Explain Histology of cerebrum
- DescribeWhite matter of cerebrum -I (Projection fibers and Internal capsule)
- DescribeWhite matter of cerebrum- II (Commissural & Association fibers)
- Explain Blood supply of brain
- DiscussMeninges of brain & spinal cord
- DescribeDural venous sinuses
- Explain Autonomic nervous system

Biochemistry

- DiscussLipids of the nervous system: Chemistry of Brain Lipids
- Explain Blood Brain Barrier
- DescribeCerebrospinal fluid
- Discuss Neurotransmitters
- ExplainAcetylcholine & Dopamine
- DiscussSerotonin & GABA
- DescribeNeurodegenerative diseases of CNS
- ExplainRole of free radicals & Vitamins in CNS disorders
- DiscussNeurons membrane, generation & propagation of nerve impulse
- ExplainSynapsis, properties of synapses
- DescribeSensory receptors and neuronal circuits
- DiscussSomatic sensations
- ExplainPhysiology of pain – I & headache
- DescribePhysiology of pain II- Brain analgesic system
- Discuss Spinal cord and reflexes
- ExplainMuscles proprioceptors (muscle spinal & Golgi tendon organ)
- DiscussSomatosensory cortex
- DescribeFunction of brain stem
- ExplainCerebellum and its functions
- DescribeVestibular system and maintenance of equilibrium
- DiscussFunctions of diencephalon
- ExplainLimbic system
- DiscussBasal ganglia and its nuclei
- Describe Motor cortex, pyramidal tract, Upper and lower Motor Neurons
- ExplainPhysiology of sleep & sleep disorders
- DiscussLearning and memory
- ExplainCSF: formation, circulation & function
- DiscussAutonomic Nervous System
- DiscussSpeech &its disorders

Community medicine

- Poliomyelitis & Prevention
- Tetanus & Prevention
- Leprosy & Prevention
- Stroke & Prevention
- Rabies & Prevention

- Snake bite & prevention
- Introduction to mental health
- Substance Abuse

Pediatrics

-

Pathology

- Patterns of nerve injury, Cerebral Oedema & Raised ICP
- Traumatic injuries to CNS
- Cerebrovascular Diseases: (Hypoxia, Ischemia, Infarction)
- Hypertensive Cerebrovascular disease (CVD), intracranial haemorrhage and
- malformations
- Infections
- Neurodegenerative Diseases
- Brain tumours
- Diseases of skeletal muscles-I
- Diseases of skeletal muscles-II

Neurology

- Investigation of neurological disorders
- Lesion localization
- Lesions of cranial nerve
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- Clinical presentation of different primary headaches
- Secondary headaches
- Epilepsy and status epilepticus
- Cerebrovascular Accidents (Stroke) – I
- Cerebrovascular Accidents (Stroke) – II
- Acute CNS infections
- Chronic CNS infections
- Approaches to movement disorders
- Multiple sclerosis (MS) and other demyelinated diseases
- Approach to neuropathies and Guillain-Barre syndrome (GBS)
- Myasthenia Gravis
- Dementia
- Muscular dystrophies

Pharmacology

- Sedatives & hypnotics: I & II
- Drug used in Migraine
- Drugs used in General anaesthesia: I & II
- Drugs used in Local anaesthesia
- Drugs used in Epilepsy
- Drugs used in Psychosis
- Drugs used in Depression
- CNS Stimulants and Hallucinogens
- Drugs used in Parkinson’s
- Drugs of Abuse & Alcohol

Neurosurgery

- Hydrocephalus
- Traumatic spinal cord injury
- Traumatic brain injury
- Raised Intracranial Pressure (ICP)
- Brain tumors
- Spinal tumors
- Compressive myelopathy

Psychiatry

RADIOLOGY

CT Scan Brain

Recommended Reading Material

Anatomy

A. GROSSANATOMY
1. K.L. Moore, ClinicallyOrientedAnatomy
2. Richard L. Drake, Gray's anatomy for students

B. HISTOLOGY
1. B. Young J. W. Health Wheather'sFunctionalHistology
2. di Fiore's Atlas of histology and functional correlations

C. EMBRYOLOGY
1. Keith L. Moore. The Developing Human
2. Langman'sMedical Embryology

Biochemistry

TEXT BOOKS
1. Harper's Illustrated Biochemistry
2. Lippincott's Illustrated reviews of Biochemistry
3. Lehninger'sPrinciplesof Biochemistry
4. Biochemistry byDevlin

Physiology

A. TEXTBOOKS
1. Textbook of Medical Physiology by Guyton and Hall
2. Human Physiology by Lauralee Sherwood
3. Berne &Levy Physiology
4. Best &Taylor Physiological Basis of Medical Practice

B. REFERENCEBOOKS
1. Ganong's Review of Medical Physiology

Community Medicine

- Public Health and Community Medicine by Shah Ilyas Ansari, 8th Edition
- Park's Textbook of Preventive and Social Medicine by K Park 24th Edition Epidemiology and Biostatistics:
- Epidemiology by Leon Gordis, Fifth Edition
- Basic Statistics for the Health Sciences by Jan W. Kuzma, Fifth Edition.

Pediatrics

- Illustrated textbook of Pediatrics (Tom Lissauer)
- Textbook of Pediatrics (PPA)
- The Harriet Lane Handbook of Pediatrics
- Drug doses by Frank Shann (2021)

Pathology

- Basis of Pathology by Robbins &Cotran
- Review of Microbiology by Livingston

Pharmacology

- Katzung. Basic & Clinical Pharmacology. 14th Edition.
- Katzung& Trevor's. Pharmacology. 12th Edition.
- Rang & Dales. Pharmacology.

Neurology

- Davidson's Principles and Practice of Medicine
- MacLeod's clinical examination 13th edition
- Bedside techniques of clinical examination edition 4
- Additional learning resources

  https://www.medscape.com

  https://www.uptodate.com/login

Neurosurgery

- Clinical Examination of Surgery by Norman Browse
- Short Practice of Surgery by Baily's and Love
- Washington manual of Surgery
- Surgery on call

Nervous system Module 1

Organization

Time requirements:

- Anatomy 71Hours
- Physiology 72 Hours
- Biochemistry 44Hours

Hours

Nervous system & PsychiatryModule II

Organization

Time requirements:

- Community Medicine Hours
- Pathology & Microbiology 33Hours
- Pharmacology Hours
  Medicine Hours
- SurgeryHours
- Radiology Hours

Hours

Total = Hours

Neurosciences-1

Module

ANATOMYLECTURES

S. NO.	LEARNING OBJECTIVES By the end, the students should be able to	Content	TEACHING Activity Duration	ASSESSMENT
1.	• Explain the general components of nervous system • Discuss the division of nervous system into CNS, ANS & PNS • Discuss the structural/ cellular organization of nervous system **(K)**	General organization of Nervous system, different types of nerve tissue cells (Neurons & Neuroglia)	LGIS 50 Mins	MCQs
2.	• Describe the formation of primary & secondary vesicles and flexures • Relate the components of ventricular system with the cavities of secondary vesicles. • Describe the differentiation of the layers from neuro-epithelium in primitive spinal cord. • Describe derivation of alar & basal plates, neuron and neuroglia cells • Discuss positioning of spinal cord • Describe the congenital anomalies of spinal cord viz. Spina bifida occulta, spinal bifida cystica,Myeloschisis **(K)**	Development of Brain and Spinal cord & anomalies (Embryology)	LGIS 50 Mins	MCQs

3.	• Discuss the extent (starting & terminating point) of spinal cord • Describe the gross features of spinal cord and its blood supply • Discuss the regional enlargements of spinal cord **(K)**	Gross External features of spinal cord	LGIS 50 Mins	MCQs
4.	• Compare the sections at different segmental levels (cervical,thoracic) **(K)**	Describe the distribution and components of gray and white matter in spinal cord.	LGIS 50 Mins	MCQs
5.	• Discuss the internal features of spinal cord, gray(groups) & white(columns) matter. • Discuss 1st ,2nd & 3rd order neurons of sensory pathway. • Discuss in detail the ascending (sensory) tracts of the spinal cord and their lesions **(K)**	Internal features of spinal cord I- (Ascending tracts)	LGIS 50 Mins	MCQs
6.	• Discuss in detail the descending (motor) tracts of the spinal cord and their lesions **(K)**	Internal features of spinal cord II- (Descending tracts)	LGIS 50 Mins	MCQs
7.	• Discuss the process of development of forebrain and its anomalies **(K)**	Development of forebrain	LGIS 50 Mins	MCQ's
8.	• Discuss the process of development of midbrain & hindbrain and their anomalies **(K)**	Development of midbrain & hindbrain	LGIS 50 Mins	MCQs
9.	• Describe the Vertebral Systems of arteries • Describe the area of spinal cord supplied by different branches. • Discuss the role of radicular and feeder arteries. • Describe the venous drainage of spinal cord • Describe the clinical consequences of ischemia of spinal cord **(K)**	Blood supply (arterial supply & venous drainage) of spinal cord and clinical manifestations of ischemia	LGIS 50 Mins	MCQs
10.	• Describe the gross anatomy of the cerebellum location, structural & functional • Division(lobes)and its blood supply • Describe the folia, tracts and nuclei of cerebellum • Discuss the clinical conditions associated with cerebellar dysfunction **(K)**	**Gross anatomy of Cerebellum**	LGIS 50 Mins	MCQs
11.	• Describe the layers of cerebellar cortex. • Describe the cellular organization in each layer. **(K)**	**Histology of Cerebellum**	LGIS 50 Mins	MCQs
12.	• Describe the gross features, boundaries and division of diencephalon and its blood supply • Describe the gross features and relations of Thalamus. • Discuss the nuclei, connections and functions of thalamus	**Diencephalon I- Thalamus**	LGIS 50 Mins	MCQs

	• Discuss the clinical conditions associated with thalamus **(K)**			
13.	• Describe the location, relations, components and structure of subthalamus, • hypothalamus & epithalamus. • Discuss their nuclei, connections and functions. • Discuss the lesions of sub thalamus, hypothalamus & Epithalamus **(K)**	**Diencephalon II- Sub thalamus, Hypothalamus & Epithalamus**	LGIS 50 Mins	MCQs
14.	• Describe the various parts of limbic system • Describe the hippocampal formation • Discuss the disorders of limbic system **(K)**	**Limbic system & Reticular formation**	LGIS 50 Mins	MCQs
15.	• Describe the location and components of basal ganglia and their blood supply • Discuss their connections and functions • □ Discuss the lesions of basal ganglia **(K)**	**Basal ganglia & its nuclei**	LGIS 50 Mins	MCQs
16.	• Describe the layers of cerebral cortex. • Discuss the variation of layers in different cortical regions. • Describe the types of neurons and fibres distributed in different layers **(K)**	**Histology of cerebrum**	LGIS 50 Mins	MCQs
17.	• Discuss the basic concepts of white matter of cerebrum. • Describe the location, parts, connections and relations of internal capsule and its blood • supply • Discuss the common lesion associated with the internal capsule **(K)**	**White matter of cerebrum -I (Projection fibres and Internal capsule)**	LGIS 50 Mins	MCQs
18.	• Discuss the commissural fibres and their connections • Describe corpus callosum and its parts • Explain the association fibres and their connections • □ Discuss the common lesions associated with commissural and association fibres **(K)**	**White matter of cerebrum- II (Commissural & Association fibres)**	LGIS 50 Mins	MCQs
19.	• Discuss the carotid and vertebral systems of vessels • List the branches arising from them • Describe the formation of circle of Willis. • Discuss the area of supply of the 3 cerebral arteries. • Tabulate the veins of brain and their area of drainage. • Discuss the clinical manifestations of ischemia of brain **(K)**	**Blood supply of brain**	LGIS 50 Mins	MCQs

20.	• List the meninges of brain & spinal cord • Describe the Dural layers, folds, extensions and spaces (subdural etc.) • Discuss pia mater and its modifications (ligamentum denticulate, telachoro idea). • Describe the arachnoid mater, subarachnoid space and cisterns. • Describe the blood and nerve supply of meninges. **(K)**	**Meninges of brain & spinal cord**	LGIS 50 Mins	MCQs
21.	• Describe the location, relations, and drainage of Dural venous sinuses of brain. • Describe the contents of cavernous sinus and extra cranial communication. • Discuss the clinical importance of different sinuses. **(K)**	**Dural venous sinuses**	LGIS 50 Mins	MCQs
22.	• Describe the divisions of ANS (sympathetic & parasympathetic) • Describe the components of sympathetic nervous system (thoracolumbar outflow: lateral Gray horn, paravertebral sympathetic chain, prevertebral ganglia and plexuses) • Describe the varied fate of preganglionic and post ganglionic fibres. • Discuss the components of parasympathetic part of nervous system (craniosacral outflow: cranial nerve nuclei and sacral spinal segments) • List the parasympathetic ganglia • Describe the pathways of pre and postganglionic parasympathetic fibres. • Differentiate the 2 system on the basis of structure and function **(K)**	**Autonomic nervous system**	LGIS 50 Mins	MCQs

ANATOMY TUTORIALS / DEMONSTRATIONS

S.NO.	LEARNING OBJECTIVES By the end of module, the students should be able to	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Describe the gross anatomy of skull • Discuss the sutures of skull • Discuss different views (normal) of skull • Discuss the division of the cranial cavity • Describe the boundaries, bony prominences and foramina of the anterior cranial fossa **(K)**	**Skull as whole, vault of skull + Anterior cranial fossa**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
2.	• Describe the boundaries, bony prominences and foramina of the middle & posterior cranial fossa **(K)**	**Middle & Posterior cranial fossa**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
3.	• Discuss the lesions of anterior & posterior nerve roots • Elaborate the lesions of ascending & descending tracts • □ Discuss the mechanism	**Spinal cord lesions, transection & spinal shock**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE

	&consequences of Tabes dorsalis, spinal shock syndrome, BrownSequard syndrome, poliomyelitis, syringomyelia **(K)**			
4	• Discuss the formation and parts of brainstem. • Describe the gross anatomical features of Medulla Oblongata and its blood supply • Discuss in detail the internal features of Medulla Oblongata. • Discuss the cranial nerves emerging from Medulla Oblongata. • □ Discuss the clinical importance of Medulla Oblongata **(K)**	**Brainstem I- Medulla Oblongata**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
5.	• Describe the location of Pons • Discuss the external & internal features of Pons and its blood supply • Discuss the relation of Pons with 4th ventricle • Discuss the cranial nerves emerging from Pons • Discuss the clinical conditions associated with Pons **(K)**	**Brainstem II-Pons**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
6.	• Describe the location of midbrain • Discuss the external & internal features of midbrain with its supply • Discuss the relation of Pons with cerebral aqueduct • Describes the cranial nerves emerging from midbrain • Discuss the clinical conditions associated with midbrain **(K)**	**Brainstem III -Midbrain**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
7.	• Discuss the gross anatomical features of cerebrum (surfaces, borders, poles, lobes, sulci & gyri) • Describe the blood supply of cerebrum **(K)**	**Gross anatomy of Cerebrum (external features, surfaces, gyri & sulci)**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
8.	• Describe different functional areas of cerebral cortex (motor, sensory, auditory, visual) • □ Discuss the lesions of the functional cortical areas of cerebral cortex **(K)**	**Functional cortical areas of cerebrum & their lesions**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
9.	• Describe the ventricles of brain • Discuss the location, boundaries and relations of lateral ventricles and its blood supply • Discuss the clinical conditions associated with lateral ventricles **(K)**	**Ventricular system I- Lateral ventricle**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE

10.	• Describe the structure and location of 3rd and 4th ventricles, and cerebral aqueduct • Briefly discuss the normal CSF secretion, circulation & blood brain barrier • Discuss the applied anatomy of ventricles of brain and CSF flow **(K)**	**Ventricular system II- 3rd& 4thventricles and CSF circulation**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
11.	• Mention the names of all the cranial nerves in sequence • List the locations of the cranial nerve nuclei (I to VI) • Discuss their distribution • Describe the main effects of lesions of cranial nerves **(K)**	**Cranial nerves (I to VI)**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
12.	• List the location of the cranial nerve nuclei (VII to XII) • Discuss their distribution • Describe the main effects of lesions of VII to XII cranial nerves **(K)**	**Cranial nerves (VII to XII)**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
13.	• Discuss the location and lesions of the functional cortical areas of cerebellar cortex **(K)**	Functional cortical areas of cerebellum	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
14.	• Discuss the ventricular system included lateral, 3rd and 4th ventricles with CSF circulation **(K)**	Ventricular system and CSF circulation	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
15.	• Discuss the ventricular system included lateral, 3rd and 4th ventricles with CSF circulation **(K)**	**Ventricular system and CSF circulation**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
	• Discuss the various cut sections of spinal cord and associated lesion **(K)**	**Spinal cord and its cut sections (Demonstration on Sectra)**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
	• Describe the formation of circle of Willis • Discuss its branches **(K)**	**Blood supply of brain and formation of circle of Willis**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE

HISTOLOGYPRACTICALS

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Describe the structure of neuron & neuroglia • List the types of neuron & neuroglia • List the functions of neuron & neuroglia • Discuss the formation of blood brain barrier • Identify the histological sections of neuron & neuroglia under light microscope **(S)**	**Structure of neuron & neuroglia**	Demonstrations 90 mins	OSPE
2.	• Discuss the histological features of spinal cord, spinal nerve & ganglia • Identify the histological features of spinal cord, spinal nerve & ganglia under light microscope **(S)**	**Spinal cord, spinal nerve & ganglia**	Demonstrations 90 mins	OSPE
3.	• Discuss the histological features of cerebellum; its layers, cells & nuclei • Identify the histological features of cerebellar cortex under light microscope **(S)**	**Microscopic anatomy of cerebellar cortex**	Demonstrations 90 mins	OSPE
4.	• Discuss the histological features of cerebrum; its layers, cells & nuclei • Identify the histological features of cerebral cortex under light microscope **(S)**	**Microscopic anatomy of cerebral cortex**	Demonstrations 90 mins	OSPE

BIOCHEMISTRYLECTURES

S.NO.	LEARNING OBJECTIVES By the end of module, the students should be able to	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Classify brain lipids with examples • Explain the chemistry of brain lipids • Describe the chemical composition and functions of myelin • Discuss the clinical significance of lipid storage diseases • List the common Neurodegenerative diseases • Discuss the common mediators of Neurodegenerative diseases **(K)**	**Lipids of the nervous system: Chemistry of Brain Lipids**	LGIS 50 Mins	MCQ's
2.	• Define and give the biochemical composition of the Blood Brain Barrier	**Blood Brain Barrier**	LGIS 50 Mins	MCQ's

	• Explain the functions of the Blood Brain Barrier • Explain the impact of Blood Brain Barrier disruption • Discuss the clinical disorders associated with Blood Brain Barrier disruption **(K)**			
3.	• Describe the chemical composition of CSF • Discuss the biochemical functions of CSF • Explain the mechanism of production, route of flow and re-absorption of CSF • Explain the procedure of lumbar puncture • Interpret the laboratory investigations of CSF in different diseases (K)	**Cerebrospinal fluid**	LGIS 50 Mins	MCQ's
4	• Define Neurotransmitters • Classify Neurotransmitters with examples • Describe the mechanism of action and functions of Neurotransmitters • Classify receptors of Neurotransmitters • Explain the synthesis and degradation pathways of Neurotransmitters • Discuss the disorders associated with Neurotransmitter **(K)**	**Introduction of Neurotransmitters**	LGIS 50 Mins	MCQ's
5.	• Describe the chemical structure of Acetylcholine and Dopamine • Describe the metabolism of Acetylcholine and Dopamine • Explain the mechanism of action and functions of Acetylcholine & Dopamine • Discuss the receptors of Acetylcholine and Dopamine • Explain the clinical disorders associated with Acetylcholine and Dopamine **(K)**	**Acetylcholine & Dopamine**	LGIS 50 Mins	MCQ's
6.	• Describe the chemical structure of Serotonin and GABA • Describe the metabolism of Serotonin and GABA • Explain the mechanism of action and functions of Serotonin and GABA • Discuss the receptors of Serotonin and GABA • Explain the clinical disorders associated with Serotonin and GABA **(K)**	**Serotonin & GABA**	LGIS 50 Mins	MCQ's
7.	• List the common Neurodegenerative diseases • Discuss the common mediators of Neurodegenerative diseases • Discuss the biochemical changes in Neurodegenerative diseases • Describe the biochemical phenomenon of ageing **(K)**	**Neurodegenerative diseases of CNS**	LGIS 50 Mins	MCQ's

8.	• Explain the role of free radicals in Neurodegenerative diseases • List the free radicals causing degenerative diseases • List the sources of free radicals • Explain the mechanism of free radical injury • Describe the role of free radicals in diseases • Classify the antioxidants with examples • Discuss the process of oxidative stress response • Discuss the biochemical importance of vitamins in neurological disorders • Discuss the sources, biochemical role and daily requirements of vitamins B1, B6, B9, B12 and • folic acid • Explain the deficiency diseases related to these vitamins **(K)**	**Role of free radicals & Vitamins in CNS disorders**	LGIS 50 Mins	MCQ's

BIOCHEMISTRY TUTORIALS/ DEMONSTRATIONS

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Discuss the clinical importance of Acetylcholine & Dopamine • Interpret clinical conditions correlated with their laboratory investigations **(K)**	**Neurotransmitters-1 Acetylcholine & Catecholamine**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE
2	• Discuss the clinical importance of Serotonin & GABA • Interpret clinical conditions correlated with their laboratory investigations **(K)**	**Neurotransmitters-2 Serotonin & GABA**	SGD 90 min + Demonstrations 90 mins	MCQ's OSPE
3.	• Discuss the clinical importance of Cerebrospinal fluid • Interpret clinical conditions correlated with their laboratory investigations **(K)**	**Cerebrospinal fluid**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE

4.	• Discuss the clinical importance of neurodegenerative diseases • Interpret clinical conditions correlated with their laboratory investigations **(K)**	**Neurodegenerative diseases of CNS**	SGD 90 mins + Demonstrations 90 mins	MCQ's OSPE

BIOCHEMISTRY PRACTICALS

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Explain the procedure of Lumbar Puncture (LP) • Identify the chemical tests and bio-techniques to detect analytes in CSF • Identify the parts of LP needle • Interpret the laboratory report in different CNS diseases • Interpret clinical conditions correlated with their laboratory investigations **(S)**	**Lumbar Puncture**	Demonstration 90 mins	OSPE
2	• Identify the procedure & bio-technique to detect glucose in CSF • Estimate glucose in CSF • Interpret the laboratory report of glucose in CSF • Interpret clinical conditions correlated with their laboratory investigations **(S)**	**CSF Glucose Estimation**	Demonstration 90 mins	OSPE
3.	• Identify the procedure & bio-technique to detect proteins in CSF • Estimate proteins in CSF • Interpret the laboratory report of proteins in CSF • Interpret clinical conditions correlated with their laboratory investigations **(S)**	**CSF Protein Estimation**	Demonstration 90 mins	OSPE
4.	• Identify the procedure & bio-technique to detect chloride in CSF • Estimate chloride in CSF • Interpret the laboratory report of chloride in CSF • Interpret clinical conditions correlated with their laboratory investigations (S)	**CSF Chloride Estimation**	Demonstration 90 mins	OSPE

PHYSIOLOGY LECTURES

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Elaborate the structure and functions of a neuron • Discuss the classification & functions of nerve fibres • Describe the threshold & initiation of action potential in neuronal cells • Describe the propagation of nerve impulse/ saltatory conduction **(K)**	**Neurons membrane, generation & propagation of nerve impulse**	LGIS 50 Mins	MCQ's
2.	• Describe the properties of chemical and electrical synapses **(K)**	**Synapsis, properties of synapses**	LGIS 50 Mins	MCQ's
3.	• Discuss the classification of sensory receptors • Describe the functions & properties of different types of receptors • Explain the properties of different types of neuronal circuit **(K)**	**Sensory receptors and neuronal circuits**	LGIS 50 Mins	MCQ's
4.	• Explain the general organization of somatic sensation: tactile and position senses • Discuss the dorsal-column medial lemniscal pathway • Discuss the anterolateral pathway • Describe the mechanism of thermal receptors & their excitation **(K)**	**Somatic sensations**	LGIS 50 Mins	MCQ's
5.	• Discuss the types of pain (slow & fast) and their characteristics • Explain the mechanism of stimulation of pain receptors • Discuss the clinical abnormalities of pain: hyperalgesia, headache & its causes **(K)**	**Physiology of pain – I & headache**	LGIS 50 Mins	MCQ's
6.	• Explain the analgesic system of brain • Discuss the opiate system of brain • Describe visceral & referred pains **(K)**	**Physiology of pain II- Brain analgesic system**	LGIS 50 Min	MCQ's
7.	• Describe the motor function of spinal cord • Discuss the mechanism of flexor reflex, crossed extensor reflex, scratch reflex, postural & • locomotive reflexes • Discuss spinal cord transection & spinal shock (Brown Sequard syndrome) **(K)**	**Spinal cord and reflexes**	LGIS 50 Mins	MCQ's

8.	• Explain the structure & function of muscle spindle • Discuss the muscle, stretch reflex & its clinical applications • Explain the mechanism of Golgi tendon reflex& its significance in controlling motor activities **(K)**	**Muscles proprioceptors (muscle spinal & Golgi tendon organ)**	LGIS 50 Mins	MCQ's
9.	• Discuss the orientation of various areas of cortex and their associated function • Describe the layers of somatic sensory cortex and their functions **(K)**	**Somatosensory cortex**	LGIS 50 Mins	MCQ's
10.	• Explain the role of brain stem nuclei in controlling motor functions • Discuss the vital and non- vital functions of brain stem (respiratory, cardiac, vasomotor centres • & coughing, sneezing & vomiting reflexes) **(K)**	**Function of brain stem**	LGIS 50 Mins	MCQ's
11.	• Explain the functions of cerebellum & its associated disorders • Discuss the afferent and efferent pathways of cerebellum **(K)**	**Cerebellum and its functions**	LGIS 50 Mins	MCQ's + OSPE
12.	• State the names of the parts of vestibular system • Explain the functions of the vestibular system • Discuss the role of utricle & saccule in static equilibrium • Discuss the role of semicircular ducts in angular acceleration **(K)**	**Vestibular system and maintenance of equilibrium**	LGIS 50 Mins	MCQ's
13.	• Discuss the function of thalamus and its nuclei **(K)**	**Functions of diencephalon**	LGIS 50 Mins	MCQ's
14.	• Describe the functions of limbic system • Discuss the role of hypothalamus in limbic system • Discuss the importance of reward and punishment centres • Elaborate the role of hippocampus and amygdala • Discuss the effects of Kluver-Bucy syndrome **(K)**	**Limbic system**	LGIS 50 Mins	MCQ's
15.	• Explain the functions of caudate & putamen pathways • List the functions of specific neurotransmitters of basal ganglia system • Explain the disorders associated with basal ganglia (hypokinetic and hyperkinetic) **(K)**	**Basal ganglia and its nuclei**	LGIS 50 Mins	MCQ's

16.	• Explain the functions of pyramidal tract • List the functions of specific cortical areas • Differentiate between upper & lower motor neuron lesions (UMN & LMN) **(K)**	**Motor cortex, pyramidal tract, Upper and lower Motor Neurons**	LGIS 50 Mins	MCQ's
17.	• Explain the functions of pyramidal tract • List the functions of specific cortical areas • Differentiate between upper & lower motor neuron lesions (UMN & LMN) **(K)**	**Physiology of sleep & sleep disorders**	LGIS 50 Mins	MCQ's
18.	• Explain the physiology of slow wave sleep & rapid eye movement (REM)sleep • Explain the basic theories of sleep &origin of brain waves **(K)**	**Physiology of sleep & sleep disorders**	LGIS 50 Mins	MCQ's
19.	• Determine the role of cerebral cortex in higher intellectual functions • Classify the different types of memories **(K)**	**Learning and memory**	LGIS 50 Mins	MCQ's
20.	• Describe the mechanism of CSF formation, its circulation & functions **(K)**	**CSF: formation, circulation & function**	LGIS 50 Mins	MCQ's
21.	• Describe the functions of sympathetic & parasympathetic nervous system **(K)**	**Autonomic Nervous System**	LGIS 50 Mins	MCQ's
22.	• Explain the physiology of speech and associated disorders	**Speech &its disorders**	LGIS 50 Mins	MCQ's

PHYSIOLOGY PRACTICALS

S. NO.	LEARNING OBJECTIVES	Content	TEACHING Activities (Duration)	ASSESSMENT
1.	• Elicit superficial reflexes viz. Corneal reflexes, • Abdominal reflexes & Plantar reflexes • Describe their significance in different neurological • disorders **(S)**	**Examination of Superficial reflexes**	Demonstration 90 mins	OSPE
2.	• Perform deep reflexes • Describe their significance **(S)**	**Examination of Deep reflexes**	Demonstration 90 mins	OSPE

3.	• Perform cerebellar function tests • Identify disorders of cerebellar function **(S)**	**Cerebellar function tests**	Demonstration 90 mins	OSPE
4.	• Determine the body temperature by using oral mercury • thermometer **(S)**	**Body temperature**	Demonstration 90 mins	OSPE
5.	• Interpret brain waves with the help of power lab **(S)**	**EEG**	Demonstration 90 mins	OSPE
6.	• Perform different tests for examination of the cranial nerves **(S)**	**Examination of Cranial Nerves (V, VII, IX, X)**	Demonstration 90 mins	OSPE

Week 4

End of Module

Urinary system Module 1 Test Theory

Urinary system Module 1 Test OSCE

Neuroscience-2

Module

Community Medicine Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• Describe poliomyelitis and its epidemiology • Classify different types of poliomyelitis • Discuss its control & prevention • Explain Global Polio Eradication Initiative **(K)**	**Poliomyelitis & Prevention**	LGIS 50mins	MCQs
2.	• Describe Tetanus & its Epidemiology • Classify its types • Explain its control & prevention **(K)**	**Tetanus & Prevention**	LGIS 50mins	MCQs
3.	• Describe Leprosy & its Epidemiology • Classify the different types of Leprosy • Discuss its control & prevention • Explain the national Leprosy control Program **(K)**	**Leprosy & Prevention**	LGIS 50mins	MCQs

4.	• Describe Stroke & its epidemiology • Explain the risk factors of Stroke • Discuss its control & prevention **(K)**	**Stroke & Prevention**	LGIS 50mins	MCQs
5.	• Describe Rabies & its epidemiology • Discuss its control & prevention **(K)**	**Rabies & Prevention**	LGIS 50mins	MCQs
6.	• Classify Snakes • Identify the characteristic features of different types of Snake Venom • Discuss epidemiology of snake bite • Explain the management of snake bite • Discuss the preventive measures of snake bite **(K)**	**Snake bite & prevention**	LGIS 50mins	MCQs
7.	• Describe Mental Health • List mental health problems • Discuss recommendations by World Health Report 2001 for Mental Health. • Explain prevention and control of mental health problems **(K)**	**Introduction to mental health Introduction to mental health**	LGIS 50mins	MCQs
8.	• Describe Substance abuse & its epidemiology • Identify the criteria of drug addiction • Classify psycho-active drugs • Describe the phases of Drug addiction • Explain the control & Prevention of substance abuse **(K)**	**Substance Abuse**	LGIS 50mins	MCQs

PathologyLectures

S No	**Learning Objectives** By the end of the session, students will be able to:	**Content Areas**	**Learning Activity (Duration)**	**Assessment**
1.	• Discuss the pathophysiology of reactions of Neurons, Glial tissue, Astrocytes, and • Microglia to injury • Define cerebral oedema; discuss its types and etiological factors • Discuss the pathogenesis, morphology and clinical presentation of cerebral oedema, • hydrocephalus and raised intracranial pressure • List and discuss the pathogenesis and morphology of different types of brain herniation **(K)**	**Patterns of nerve injury, Cerebral oedema & Raised ICP**	LGIS 50mins	MCQs

2.	• Define traumatic vascular injury • Discuss the patterns of vascular injury in the CNS • Define epidural and subdural hematoma • Discuss the aetiology, pathogenesis, and clinical presentation of epidural and subduralhematoma **(K)**	**Traumatic injuries to CNS**	LGIS 50min	MCQs
3.	• Define cerebrovascular diseases • Classify types of ischemic and vascular injury to brain • Discuss the risk factors, pathogenesis, localization, morphology and clinical course of global and focal cerebral ischemia • Discuss the pathogenesis and morphology of various infarcts in the brain and spinal cord **(K)**	**Cerebrovascular Diseases: (Hypoxia, Ischemia, Infarction)**	LGIS 50min	MCQs
4.	• Discuss effects of hypertension on CNS, types of CVD associated with hypertension, and hypertensive intra-parenchymal haemorrhage • Discuss the aetiology, pathogenesis, morphology and clinical course of intracranial Haemorrhages • Discuss hypertensive cerebrovascular disease & hypertensive encephalopathy • Discuss intracranial haemorrhage including intraparenchymal haemorrhage, Cerebral amyloid angiopathy, SubarachnoidHaemorrhage and Ruptured Saccular Aneurysms • Discuss vascular malformation including arteriovenous malformations, Cavernous malformations and Capillary telangiectasias **(K)**	**Hypertensive Cerebrovascular disease (CVD), intracranial haemorrhage and malformations**	LGIS 50min	MCQs OSPE
5.	• Define meningitis and encephalitis • Discuss common Central Nervous System infections including acute (pyogenic) bacterial • infections, acute aseptic viral infections, chronic bacterial meningo-encephalitis, and • fungal meningo-encephalitis • Define brain abscess • Discuss the pathogenesis, morphology and diagnosis of brain abscess **(K)**	**Infections**	LGIS 50min	MCQs
6.	• Define neurodegenerative diseases • List the important neurodegenerative diseases • Discuss relationship between proteins and neurodegenerative diseases • Discuss the molecular genetics and pathogenesis of Alzheimer disease • Discuss important morphologic features, clinical presentation and diagnostic criteria ofAlzheimer disease • Discuss the molecular genetics and pathogenesis of Parkinson disease • Discuss important morphologic features and clinical presentation and diagnostic criteria ofParkinson disease **(K)**	**Neurodegenerative Diseases**	LGIS 50min	MCQs

7.	• Classify CNS tumours according to WHO classification • List genetic mutations, pathogenesis, morphology and clinical features of brain tumours • including all types of Glioma, Ependymoma, Medulloblastoma and Meningioma • Discuss the metastatic tumours to brain **(K)**	**Brain tumours**	LGIS 50min	MCQs
8.	• Discuss diseases of neuromuscular junction with special reference to pathophysiology and • clinical features of Myasthenia gravis, Lambert-Eaton Myasthenic Syndrome & Botulism • Define Skeletal Muscle Atrophy • Discuss important features of Type I & II muscle fiber types • Discuss the pathogenesis and diagnostic profile of inflammatory neuropathies including • dermatomyositis and Polymyositis • Discuss inherited diseases of skeletal muscle including X- linked muscular dystrophy with • dystrophic mutation/ Duchenne and Becker Muscular Dystrophy **(K)**	**Diseases of skeletal muscles-I**	LGIS 50min	MCQs
9.	• Discuss pathophysiology and clinical features of Inflammatory Neuropathy i.e. • Guillain-Barré Syndrome (Acute Inflammatory Demyelinating Polyneuropathy) • Discuss pathophysiology and clinical features of Poliomyelitis • Discuss pathophysiology and morphology of Prion diseases **(K)**	**Diseases of skeletal muscles-II**	LGIS 50min	MCQs

Pathology Tutorials

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• List the most common organisms that cause CNS infection in different age groups • Discuss CSF findings of bacterial meningitis, tuberculous meningitis, viral and fungal • meningoencephalitis **(K)**	**Infection of Brain & Meninges & CSF interpretation**	SGDs 1hour	MCQs

Pediatrics Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• Define cerebral palsy • List its causes • Describe the topographic classification of cerebral palsy • Discuss the associated conditions in cerebral palsy • Explain the management of cerebral palsy **(K)**	**Cerebral Palsy and mental retardation**	LGIS 50min	MCQs
2.	• Enumerate common pathogens of CNS infections in various ages • List the common signs and symptoms of CNS infections • Interpret the CSF reports of cases with CNS infections • Describe management of CNS infections and their complications **(K)**	**Common CNS infections in children**	LGIS 50min	MCQs
3.	• Differentiate between the symptoms and signs of upper and lower motor neuron lesions • Identify the common conditions associated with Acute flaccid paralysis (AFP) [Polio,GBS,transverse myelitis and traumatic neuritis] • Identify the common conditions associated with upper motor neuron lesions • Discuss the importance of Polio eradication program in Pakistan **(K)**	**Upper and lower motor neuron lesions**	LGIS 50min	MCQs
4.	• Identify various types of fits based on data provided • List causes of seizures in children • Define febrile seizures & childhood epilepsy • Discuss management of acute seizures **(K)**	**Seizures in Children**	LGIS 50min	MCQs

NeurosurgeryLectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment

1.	• Define Hydrocephalus • List common symptoms and signs of acute hydrocephalus in children • List common symptoms and signs of normal pressure hydrocephalus in adults • Define communicating and non-communicating hydrocephalus • Describe the difference in the treatments of these conditions **(K)**	**Hydrocephalus**	LGIS 1hour	MCQs
2.	• Discuss the initial management of spinal injury **(K)**	**Traumatic spinal cord injury**	LGIS 1hour	MCQs
3.	• Describe the initial assessment of a patient with head injury **(K)**	**Traumatic brain injury**	LGIS 1hour	MCQs
4.	• Identify the symptoms and signs of raised ICP • Describe the evaluation of a patient with raised ICP with reference to Space OccupyingLesion (SOL) **(K)**	**Raised Intracranial Pressure (ICP)**	LGIS 1hour	MCQs
5.	• Define brain tumours • Classify brain tumours • List their causes & clinical features • Name the investigations related to brain tumours • Discuss the management plan and complications of brain tumours • List their causes & clinical features • Name the investigations related to brain tumours • Discuss the management plan and complications of brain tumours **(K)**	**Brain tumours**	LGIS 1hour	MCQs
6.	• Define spinal tumours • Classify spinal tumours • List the causes & clinical features of spinal tumours • Name the investigations related to spinal tumours • Discuss the management plan of spinal tumours **(K)**	**Spinal tumours**	LGIS 1hour	MCQs
7.	• Define compressive myelopathy • List the causes of compressive myelopathy • Discuss its clinical features • State the investigations for this condition • Discuss its management **(K)**	**Compressive myelopathy**	LGIS 1hour	MCQs

NeurologyLectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• List various neuro-imaging techniques • Enumerate uses of various neurophysiological investigations [Electro myelogram (EMG), Nerve Conduction Study (NCS), and Electroencephalogram (EEG)] • Discuss the indications, contraindications and process for lumbar puncture • Interpret CSF reports of common conditions **(K)**	**Investigation of neurological disorders**	LGIS 50min	MCQs
2.	• Localize the likely site/s of a lesion in the nervous system based on patient's symptoms and signs • List the differential diagnosis based on detailed history, clinical presentation and complete examination findings **(K)**	**Lesion localization**	LGIS 50min	MCQs
3.	• List the causes of cranial nerve pathologies • Diagnose common cranial nerve lesions that would explain loss of nerve function • Relate cranial nerve deficits to damage of adjacent unrelated structures **(K)**	**Lesions of cranial nerve**	LGIS 50min	MCQs
4.	• Discuss pathophysiology of coma & altered mental status • Assign Glasgow Coma Scale (GCS) score to a given case scenario • Discuss assessment findings associated with coma & altered mental status • Discuss management of coma & altered mental status **(K)**	**Approach to coma**	LGIS 50min	MCQs
5.	• Classify headaches • Define primary headache syndrome • Differentiate among different patterns of headache • □ Describe the process of history taking of a patient with headache **(K)**	**Approach to headache & Primary headaches (Trigeminal autonomic cephalalgias)**	LGIS 50min	MCQs
6.	• Diagnose migraine and tension headache based on written data provided • Discuss management plans for migraine, tension headache and cluster headache **(K)**	**Clinical presentation of different primary headaches**	LGIS 50min	MCQs
7.	• Discuss differential diagnosis and appropriate diagnostic evaluation for common causes of • secondary headaches • List the red flag signs of secondary headache • the classic presentations of Trigeminal neuralgia • Differentiate between common clinical findings seen in Trigeminal neuralgia and otherfacial pain syndromes	**Secondary headaches**	LGIS 50min	MCQs

	(K)			
8.	• Define epilepsy & status epileptics • Discuss pathophysiology of seizures • Classify epilepsy • Classify types of seizures clinically • List most common causes of seizures • Discuss pharmacological treatment of epilepsy and the management of status epilepticus **(K)**	**Epilepsy and status epilepticus**	LGIS 50min	MCQs
9.	• Define the terms stroke, Cerebrovascular Accidents (CVA) & Transient Ischemic Attack (TIA) • Describe causes of stroke • Distinguish ischemic stroke (cerebral infarct) from haemorrhagic stroke (intracerebral haemorrhage) in terms of aetiology and pathology • Discuss assessment findings associated with stroke of different arterial territories (anterior and posterior circulation) • Identify the signs & symptoms related to TIA **(K)**	**Cerebrovascular Accidents (Stroke) - I**	LGIS 50min	MCQs
10.	• Discuss the management plan of Cerebrovascular Accidents (acute treatment andsecondary prevention) • Discuss the complications of Cerebrovascular Accidents **(K)**	**Cerebrovascular Accidents (Stroke) - II**	LGIS 50min	MCQs
11.	• Describe the clinical features & investigations of acute CNS infections • Summarize the characteristics of their causative organisms • Interpret the CSF studies in a patient with acute CNS infection • Describe the possible complications of acute CNS infection if left untreated • Explain the treatment plan for acute CNS infections • Differentiate b/w acute and chronic CNS infections based on data provided **(K)**	**Acute CNS infections**	LGIS 50min	MCQs
12.	• List the common chronic CNS infections • Discuss clinical presentation of CNS TB and CNS fungal infections • Discuss the management & complications of Chronic CNS infection • Interpret the CSF studies in a patient with chronic CNS infection **(K)**	**Chronic CNS infections**	LGIS 50min	MCQs

13.	• Describe the presentation of patients with movement disorders • □ Discuss the pathogenesis and clinical features of Parkinson's disease (PD) • Discuss approach to a patient with PD • Summarize the differential diagnosis of Parkinson's disease • Outline the principles of drug management of Parkinson's disease • □ Discuss the clinical presentation and treatment of Wilson's disease **(K)**	**Approaches to movement disorders**	LGIS 50min	MCQs
14.	• List the common CNS and PNS demyelinate diseases • Describe common anatomical locations of MS plaques, and parts of the CNS that are • particularly prone to developing lesions • Discuss the epidemiology and pathogenesis of MS • Discuss the clinical presentation, workup, differential diagnosis and management of MS **(K)**	**Multiple sclerosis (MS) and other demyelinated diseases**	LGIS 50min	MCQs
15.	• Name the laboratory studies that are useful in the diagnosis of peripheral neuropathy (atleast two) • List the most common inherited neuropathies • Differentiate between axonal and de-myelinated neuropathy • State the most common cause of neuropathy • Diagnose hereditary peripheral neuropathies based on pathologicalfindings • Formulate an approach to the evaluation and differential diagnosis of a patient withperipheral neuropathy • Describe the clinical presentation and pathological findings of the GBS • Discuss its pathogenesis • Describe two of its key laboratory abnormalities • Interpret the CSF analysis in GBS • Discuss the management and complications of GBS **(K)**	**Approach to neuropathies and Guillain-Barre syndrome (GBS)**	LGIS 50min	MCQs
16.	• Describe the pathophysiology of Myasthenia gravis • Explain its clinical presentation & investigations • Discuss its long-term management • Discuss the management of Myasthenia Crisis **(K)**	**Myasthenia Gravis**	LGIS 50min	MCQs
17.	• State the causes, clinical presentation and investigations of dementia • List the differential diagnosis of dementia • Describe the principles of its management **(K)**	**Dementia**	LGIS 50min	MCQs

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
18.	• Define Muscular dystrophies • Classify their types • List the causes of Muscular dystrophies • □ Discuss their genetics & clinical features **(K)**	**Muscular dystrophies**	LGIS 50min	MCQs

Pharmacology Lectures

1.	• Classify the drugs used as Sedatives & Hypnotics • Discuss their basic & clinical pharmacology **(K)**	Sedatives & hypnotics: I & II	LGIS 1hour	MCQs
2.	• List the drugs used in migraine • Discuss their basic & clinical pharmacology **(K)**	Drug used in Migraine	LGIS 1hour	MCQs
3.	• Discuss the drugs used as pre-aesthetic medications • Classify the drugs used as General anaesthetics • Discuss their basic & clinical pharmacology **(K)**	Drugs used in General anaesthesia: I & II	LGIS 1hour	MCQs
4.	• List the drugs used in local anaesthesia • Classify the drugs used as local anaesthetics • Discuss their basic & clinical pharmacology **(K)**	Drugs used in Local anaesthesia	LGIS 1hour	MCQs
5.	• Classify the drugs used in epilepsy **(K)**	Drugs used in Epilepsy	LGIS 1hour	MCQs
6.	• Classify antipsychotic drugs according to different aspect • Discuss their basic & clinical pharmacology **(K)**	Drugs used in Psychosis	LGIS 1hour	MCQs
7.	• Classify the Antidepressant drugs • Discuss their basic & clinical pharmacology **(K)**	CNS Stimulants and Hallucinogens	LGIS 1hour	MCQs
8.	• Classify CNS stimulants and hallucinogens • Discuss their basic & clinical pharmacology **(K)**	CNS Stimulants and Hallucinogens	LGIS 1hour	MCQs
9.	• Classify the anti-Parkinson's drugs • Discuss their basic & clinical pharmacology **(K)**	**Drugs used in Parkinson's**	LGIS 1hour	MCQs
10.	• List the drugs of abuse • Discuss their basic & clinical pharmacology **(K)**	Drugs of Abuse & Alcohol	LGIS 1hour	MCQs

Pharmacology Tutorials

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• Classify drugs for sedatives & hypnotics • Discuss their basic & clinical pharmacology **(K)**	Sedatives & Hypnotic	SGDs 1hour	MCQs
2.	• Classify drugs for Migraine • Discuss their basic & clinical pharmacology **(K)**	Drugs used in Migraine	SGDs 1hour	MCQs
3.	• Classify drugs for General & Local Anesthesia • Discuss their basic & clinical pharmacology **(K)**	Drugs used in General & Local Anaesthesia	SGDs 1hour	MCQs
4.	• Classify drugs for Epilepsy • Discuss their basic & clinical pharmacology **(K)**	Drugs used in Epilepsy	SGDs 1hour	MCQs
5.	• Classify drugs for Depression • Discuss their basic & clinical pharmacology **(K)**	Drugs used in Depression	SGDs 1hour	MCQs
6.	• Classify drugs for CNS Stimulants & Hallucinogens • Discuss their basic & clinical pharmacology **(K)**	CNS Stimulants & Hallucinogens	SGDs 1hour	MCQs
7.	• Classify drugs for Parkinson's • Discuss their basic & clinical pharmacology **(K)**	Drugs used in Parkinson's	SGDs 1hour	MCQs

RADIOLOGY LECTURES

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• Describe the role of radiographic imaging studies in diagnosis and management of stroke • patients • Identify the following on a CT film: • Normal cranial and neurological anatomy • Skull fracture • Extra-cerebral blood • Intracranial blood • Appearance of both haemorrhagic and ischemic strokes **(K)**	**CT Scan Brain**	LGIS 50min	MCQs
2.	• Identify the radiological features of normal and diseased spine and vertebral column **(K)**	**MRI Brain**	LGIS 50min	MCQs
3.	• Describe the role of the diagnostic radiological modalities in the evaluation of patients withbrain tumour, head injury and hydrocephalus • List the advantages and limitations of the following diagnostic tools used in the evaluationof brain tumours: i. Plain skull radiograph ii. Plain spine radiograph iii. CT scan of head or spine **(K)**	**Neuro-radiology of brain tumours, head injury and hydrocephalus**	LGIS 50min	MCQs

PSYCHIATRY LECTURES

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	• Define the concept of health and mental health • Describe positive mental health • Differentiate between Psychiatry and Psychology • Define the role of biological, psychological and social factors in custom continuation and • healing of illness • Discuss the management of illness • Describe the role of personality, attitudes, attributes, impact of family society, social • factors and cultures on the aetiology, presentation and the management of illness **(K)**	**Introduction to Mental Health, and Biopsychosocial model & Non-pharmacological intervention**	SGDs 1hour	MCQs
2.	• Define counselling • Discuss attending and listening, verbal techniques and role of empathy in healing of illness • Discuss the role of counselling, informational care and handling difficult patients and theirfamilies • Differentiate among counselling, psychotherapy and active listening • Differentiate among various types of psychotherapies/counselling • Differentiate among empathy, sympathy and apathy • Describe the prerequisites of counselling/ psychotherapy • Differentiate between boundary and barrier • Describe the basic rules of counselling • Explain rules and boundaries setting of counselling • Enumerate some basics dos and don'ts of counselling **(K)**	**Counselling & Psychotherapy**	SGDs 1hour	MCQs
3.	• List the application of biopsychosocial model in communicating with patient & his family • Discuss the methods to address the concerns and emotional reactions of patients • Discuss disclosure models of breaking bad news and management of the related issues **(K)**	**Breaking bad news**	SGDs 1hour	MCQs
4.	• Define normal and abnormal anxiety • Describe the presentation of anxiety disorders • Discuss their etiological theories • Distinguish the essential features of generalized anxiety disorder (GAD), panic attacks and • panic disorder, phobias (Specific, Agoraphobia and Social Phobia), Obsessive compulsive disorder (OCD), Acute stress reaction and post traumatic stress disorder (PTSD) **(K)**	**Anxiety disorders-I; Introduction, types & aetiology**	SGDs 1hour	MCQs
5.	• Discuss the clinical features and aetiology of PTSD and Acute stress reaction • Explain the causes of PTSD, Acute Stress Disorder and Obsessive-Compulsive Disorder • Describe the management of these disorder **(K)**	**Anxiety disorders-II; differentiating points, diagnosis & management**		

6.	• Describe the diagnostic criteria for mood disorders (Depressive disorder) • Identify common risk factors for mood disorders • Discuss their management • Discuss Self-harm, and Suicide and its risk factors **(K)**	**Depressive disorders**	SGDs 1hour	MCQs
7.	• Describe the diagnostic criteria and types of bipolar affective disorder • Identify the common risk factors and co-morbid for bipolar affective disorder • Discuss the management of bipolar affective disorder **(K)**	**Bipolar Affective disorder**	SGDs 1hour	MCQs
8.	• Discuss the assessment of medically unexplained symptoms according to their severity • Explain the approach for establishing an appropriate diagnosis • State the management of these condition including a stepped approach • Describe the diagnostic approach for patients with fits/attack (Epilepsy vs Convulsion disorder) **(K)**	**Somatic and Medically Unexplained Symptoms**	SGDs 1hour	MCQs
9.	• Explain the concept of Psychosis and its presentation, and prevalence of various psychotic • disorders • Diagnose Acute Psychotic disorders, schizophrenia, and Delusional disorders based on • given criteria • Discuss the principles of treatment of schizophrenia and other psychotic disorders • Describe their etiological factors and prevalence **(K)**	**Schizophrenia and related disorders**	SGDs 1hour	MCQs
10.	• Define Addiction • Discuss the behavioural issues related to addiction • Differentiate among tolerance, excessive use, abuse/misuse, dependence, withdrawal and • intoxication • Classify drugs of addiction • Discuss briefly the effects of alcohol and other illicit drugs on the body (cannabis, opioids, • cocaine, amphetamines and LSD) • Describe the modes of action of alcohol and other illicit drugs • Explain the psychological, emotional, physical and social insults of these drugs • Describe delirium tremens • Describe the impact of suddenly stopping the use of addictive drugs Discuss the difference of harm minimization and drug eradication **(K)**	**Disorders of Addictive Behaviour / Alcohol & Other Substance use**	SGDs 1hour	MCQs

11.	• Discuss different types of psychosexual disorders • Describe their characteristic features, aetiology and prevalence • Explain principles of management of these conditions **(K)**	**Psychosexual disorders**	SGDs 1hour	MCQs
12.	• Discuss the presentation of various childhood psychiatric disorders, i.e. Attention deficit • hyperactive disorder (ADHD), Autism Spectrum Disorder, Depressive disorder and Mental • Retardation • Categorize mental health disorders (such as emotional disorders, behaviour disorders) in • children and adolescents • Discuss the factors impacting childhood mental and emotional health • Describe the use of multimodal treatment **(K)**	**Introduction to childhood psychiatric disorders**	SGDs 1hour	MCQs
13.	• Describe the variations in presenting psychiatric symptoms in this age group • Explain the high likelihood of co-morbidity in this age group • Diagnose common psychiatric illnesses in the geriatric group • Describe the use of multimodal treatment in old age patients • Name standardized assessment tools and their use in measuring cognitive impairment • Formulate the differential diagnosis of a patient presenting with cognitive impairmentsuggestive of dementia • Compare features of dementia versus delirium • Formulate the clinical assessment and differential diagnosis of an elderly patient withdelirium • Explain the salient features of delirium and dementia **(K)**	**Introduction to old age psychiatric disorders, Delirium and Dementia**	SGDs 1hour	MCQs

Week 4

End of Module

Neuroscience 2 Test Theory

Neuroscience2 Test OSCE

Medical Education Lectures/Workshop

S.NO	Learning Objectives (domain) At the end of session, student will be able to:	Content Areas	Teaching Activity (Duration)	Assessment
1.	**Introduction to Medical Education** • Appreciate the journey of medical education from learning biomedical to clinical science. **(K)**	• Plan of medical education in college • Organization of undergraduate medical curriculum • Integrated Curriculum	LGIS 50 mins	–
2.	**Skills of Succeeding in a Medical College – 1** • Describe the methods of learning knowledge in a medical college. **(K)**	• Difference in teaching and learning in school / college and a medical institution • Learning knowledge • Learning skills	LGIS 50 mins	–
3.	**Problem – based Learning** • Describe the basis of problem – based learning. **(K)** • Follow the process / steps of problem – based learning session. **(S)**	• Basics of problem-based learning • Process / steps of problem – based learning • Practical demonstration of PBL session	Workshop (2 hours)	–
4.	**Medical Professionalism** • Describe the basics of medical professionalism and outline the behavioral descriptors of students. **(K)**	• History of medical professionalism • Principals of medial professionalism • Behaviors required from medical students	LGIS 50 mins	–

Learning resource: How to succeed at medical school,Dason Evans & Jo Brown, 2009

TIME TABLES

Jinnah Medical & Dental College

MBBS 2 (Batch 24)

NEUROSCIENCES MODULE – WEEK 1

Venue: LH102

MON May 9	8:30-9:20 ANATOMY Nervous System & Nervous Tissue	9:25-10:15 PHYSIOLOGY Neuron Membrane Potential Dr. Sassi		10:45-12:15 ANATOMY DEMONSTRATION Skull & Anterior Cranial Fossa ABC-Dissection Hall DEF-LH1102	LUNCH BREAK	SELF STUDY / EXTRA CURRICULAR ACTIVITIES	1:45-3:15 ANATOMY DEMONSTRATION Middle & Posterior Cranial Fossa ABC-LH102 DEF-Dissection Hall
TUES May 10	8:30-10:00 ANATOMY DEMONSTRATION External Features of Spinal Cord ABC-Dissection Hall DEF-LH102			10:30-11:20 PHYSIOLOGY Synapse Properties Dr. Sara	11:25-12:15 BIOCHEMISTRY Brain Lipids Chemistry (Glycolipids)		1:45-3:15 ANATOMY DEMONSTRATION Internal Features of Spinal Cord & Histology ABC-LH102 DEF-Dissection Hall
WED May 11	8:30-9:20 ANATOMY Ascending Tracts	9:25-10:15 PHYSIOLOGY Sensory Receptors & Neuronal Circuits Dr. Sara		10:45-12:15 JOURNAL CLUB			1:45-3:15 PHYSIOLOGY PRACTICAL Superficial Reflexes ABC- ANATOMY DEMONSTRATION Spinal Cord Blood Supply & Clinical Correlates DEF-Dissection Hall
THURS May 12	8:30-9:20 ANATOMY Descending Tracts	9:25-10:15 BIOCHEMISTRY Blood Brain Barrier		10:45-11:35 ANATOMY Spinal Cord Development	11:40-12:30 BIOCHEMISTRY Cerebrospinal Fluid / Lumbar Puncture		1:45-3:15 PHYSIOLOGY PRACTICAL Superficial Reflexes DEF- ANATOMY DEMONSTRATION Spinal Cord Blood Supply & Clinical Correlates ABC-Dissection Hall
FRI May 13	8:30-9:20 PHYSIOLOGY CSF Dr. Sassi	9:25-10:00 MEDICAL EDUCATION H&N Module Test Discussion Dr. Sara		10:15-11:45 ANATOMY DEMONSTRATION Medulla Oblongata (Internal & External Features) ABC-Dissection Hall PHYSIOLOGY PRACTICAL Deep Reflexes DEF-WET LAB	12:00-1:30 ANATOMY DEMONSTRATION Medulla Oblongata (Internal & External Features) DEF-Dissection Hall PHYSIOLOGY PRACTICAL Deep Reflexes ABC-DRY LAB		SELF STUDY

Jinnah Medical & Dental College

MBBS 4 (Batch 22) 2022

EYE/ENT- NEUROPSYCHIATRY MODULE – WEEK 1

Venue: Monday/Tuesday – JMDC LH103 Wed-Saturday – JMCH LH 1

	8:30–9:20	9:25-10:15		10:45-11:35	11:40-1:00	1:30-3:00		
MON Feb 7	PATHOLOGY Nerve Injury, Cerebral Edema & Raided ICP	PHARMACOLOGY Sedative Hypnotics: Benzodiazepines	TEA BREAK	COMMUNITY MEDICINE Introduction to Mental Health	RESEARCH MODULE Timeline	RESEARCH MODULE Project Work		
TUES Feb 8	PATHOLOGY Traumatic CNS Injuries	MEDICAL EDUCATION New Assessment Modalities Dr. Zeelaf		PHARMACOLOGY Sedative Hypnotics: Barbiturates	RESEARCH MODULE Revision	RESEARCH MODULE Project Work		
WED Feb 9	9:00-9:50	9:55-10:45		11:00-1:00		1:15-2:30		2:30-3:10
	CLINICAL PATHOLOGICAL CONFERENCE Introduction	ENT Surgical Anatomy, Ear Physiology & Symptomatology	TEA BREAK	CLINICAL WORK Rotation 1.1		LUNCH BREAK	PBL Neuro 1.1 1-Surgery-Surgery SR 2-Ob/Gyn-Ob/Gyn SR 3-Medicine-Medicine SR 4-Pediatrics-Peds SR	SELF STUDY
THURS Feb 10	MEDICINE (NEUROLOGY) Neurological Disorders Investigations	MEDICINE (NEUROLOGY) Lesion Localization		CLINICAL WORK Rotation 1.1			PBL Neuro 1.2 1-Surgery-Surgery SR 2-Ob/Gyn-Ob/Gyn SR 3-Medicine-Medicine SR 4-Pediatrics-Peds SR	SELF STUDY
FRI Feb 11	PSYCHIATRY Introduction to Mental Health	NEUROSURGERY Introduction to Neuro Critical Care		CLINICAL WORK Rotation 1.1		SELF STUDY		
SAT Feb 12	MEDICINE (NEUROLOGY) Cranial Nerve Lesions	EYE Ophthalmology History Taking		CLINICAL WORK Rotation 1.1		1:15-2:05 POST PBL Neuro 1.3 Medicine	SELF STUDY	

BUSES PROVIDED BY JMDC WILL LEAVE MEDICARE CAMPUS AT 8:15 AM SHARP FOR KORANGI CAMPUS

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