INTEGRATED MODULAR COURSE

STUDENT'S STUDY GUIDE

MBBS YEAR III

2023-2024

BAQAI MEDICAL COLLEGE

BAQAI MEDICAL UNIVERSITY

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SPIRAL II

NEUROSCIENCES
MODULE – II

(Duration: 5 Weeks)

MODULAR COMMITTEE FOR NERVOUS SYSTEM MODULE

1.	**Dr. Sarah Azhar (Pathology)**
2.	**Dr. Nazia Jameel (Community Medicine)**
3.	**Dr. Faraz Saleem (Pharmacology)**
4.	**Dr. Rafay A. Siddiqui (Forensic Medicine)**
5.	**Ms. Maria Rahim (Research)**
6.	**Dr. Azra Shaheen (Behavioral Sciences)**
7.	**Dr. Nikhat Ahsan (Gynae / Obs.)**
8.	**Dr. Bushra Rabbani (Medicine)**
9.	**Dr. S. M. Abdullah Bukhari (Surgery)**
10.	**Dr. Talal Taheer (Medical Education)**

Module Number	Module Name	Dates	Duration	Module In charge	Assessment Date & Pattern
1.	Nervous System Module	Begins: 25th September, 2023 Ends: 26th October, 2023	5 weeks	Dr. Sarah Azhar	(Subject to minor changes) MCQs, SEQs & OSPE

ASSESSMENT TOOLS:

1. Formative assessment
    - Quiz (face to face or online)

2. Summative assessment
    - MODULAR EXAM:
        - A single modular exam will be held at the end of module which will include all the subjects taught in the module.
        - Module will be assessed by MCQ, SEQ and OSPE.

DEPT. OF PATHOLOGY

LEARNING OBJECTIVES OF NERVOUS SYSTEM

MODULE - II

(3rd year MBBS)

By the end of Nervous System module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Patterns of injury in the Nervous System	Lecture #1	1	List the causes of Injuries to nervous system. Discuss the pattern of response of the cellular constituents of the nervous system to various forms of injury. List the symptoms and signs related to injuries.
Cerebrovascular Diseases I	Lecture #2	1	List the causes of cerebrovascular diseases. Discuss the pathogenesis List the morphological patterns of hypoxia, cerebral ischemia (focal & global) and cerebral infarction.
Cerebrovascular Diseases II	Lecture #3	1	List the causes of intracranial haemorrhage. Discuss the pathogenesis of intracranial hemorrhage, aneurysms & vascular malformations, traumatic parenchymal and vascular cerebral injuries. Differentiate between epidural and subdural hematoma. List the symptoms and signs.
Infections of the Nervous System - I	Lecture #4	1	List the various infectious agents of the nervous system. Describe the pathogenesis and related morphology of epidural and subdural infections. Compare aseptic meningitis, acute bacterial meningitis and chronic meningitis.
Infections of the Nervous System - II	Lecture #5	1	Discuss the pathophysiology and related morphological findings of parenchymal infections of CNS i.e., Viral Encephalitis, Brain abscess, Fungal Encephalitis Meningoencephalitides and Prion diseases
Neuro-degenerative Diseases & Dementia	Lecture #6	1	List the different neurodegenerative diseases of brain. Discuss the causes, pathogenesis & morphology of Alzheimer disease. Discuss the pathophysiology, clinical and morphological features of Parkinsonism. Explain the pathology and diagnosis of Huntington disease and spinocerebellar degenerations.
Edema, Herniation & Hydrocephalus	Lecture #7	1	List the causes of generalized cerebral edema, vaso-genic edema, cytotoxic edema & focally expanding mass lesions. List the causes of Hydrocephalus. Discuss the pathogenesis & morphology of Hydrocephalus causing disorders. Compare and Contrast Edema & Hydrocephalus. Differentiate different types of herniation, i.e., Sub-falcine (cingulate), Trans-tentorial (uncinate) & Tonsillar herniation.

Primary diseases of Myelin	Lecture #8	1	List the causes of primary diseases of myelin. Discuss the pathogenesis & morphology of Multiple Sclerosis, other Acquired Demyelinating diseases.
Tumors of Central Nervous System- I	Lecture #9	1	Classify the tumours of CNS. Define and classify Glioma. Compare Astrocytoma, Oligo-Dendroglioma and Ependymoma based on their etiology, pathogenesis and morphology.
Tumors of Central Nervous System- II	Lecture #10	1	Discuss poorly differentiated neoplasms of CNS i.e., Medulloblastoma, Meningioma & other metastatic tumors with their pathogenesis and morphology.
Disorders and Demyelinating Diseases of Peripheral Nervous System	Lecture #11	1	List the causes of peripheral Neuropathy. Describe the causes, pathogenesis & morphology of Guillain-Barré Syndrome. Explain Segmental Demyelination and Axonal Degeneration Classify demyelinating disorders. Discuss demyelinating disorders on the basis of their pathogenesis, morphology and clinical features
Tumors of Peripheral Nervous System	Lecture #12	1	Classify the tumors arising from peripheral nervous system. Discuss the causes, pathogenesis and morphology of Schwannoma, Neuro-fibroma, and Malignant Peripheral Nerve Sheath Tumor.

By the end of nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Cerebro-vascular diseases	Tutorial	2.25	Comprehend a given a clinical scenario
Infections Of CNS	Tutorial	2.25	Differentiate between different types of infective encephalitis based on the given scenarios. Comprehend the lab findings. Differentiate between different types of infective meningitis based on the given scenarios. Comprehend the lab findings.

DEPT. OF PHARMACOLOGY & THERAPEUTICS

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE - II

(3rd year MBBS)

By the end of nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME HOURS	LEARNING OBJECTIVES
LOCAL ANESTHETICS	LECTURE # 1	1	• Define anesthesia. • Define Local anesthetics. • Classify local anesthetics withexamples. • Explain mechanism of actionof Lidocaine. • List the pharmacokineticproperties of Lidocaine. • List the common side effectsand contraindications of Lidocaine. • List the drug interactions of Lidocaine.
GENERAL ANESTHETICS I (INHALED)	LECTURE # 2	1	• Define general anesthesia. • Classify General anesthetics • Discuss stages of Anesthesia (1to 4). • Discuss patient protocol for Anesthesia selection. • Explain mechanism of action of inhaled anesthetics. (Halothane, NO2, Isoflurane) • List the pharmacokineticproperties of these drugs • List the pharmacological effects of these drugs on various organ systems. • List the common adverse effects and contraindications of these drugs.

GENERAL ANESTHETICS II (INTRAVENOUS)	LECTURE # 3	1	• Classify intravenous anesthetics • Explain mechanism of action of Propofol and Ketamine. • List the pharmacokinetic properties of Propofol and Ketamine. • List the common adverse effects of Propofol and Ketamine. • List the contraindicationsof Propofol and Ketamine.
SEDATIVE-HYPNOTICS	LECTURE # 4	1	• Classify Benzodiazepines and Barbiturates according to duration of action. • Explain the mechanism of action of Benzodiazepines (Diazepam)and Barbiturates (Phenobarbital) • List the pharmacokinetics properties of these drugs. • List the clinical uses of these drugs • List the adverse effects and contraindications of these drugs
ANTI- DEPRESSANTS	LECTURE # 5	1	• Outline pathophysiology of depression. • Classify antidepressants onbasis of their mechanism of action. • List the pharmacokineticsproperties of Fluoxetine, Venlafaxine,Imipramine, and Phenelzine. • List the clinical uses of • List the adverse effectscontraindications of these drugs

DRUGS USED IN EPILEPSY	LECTURE # 6	1	• Define and classify seizures. • Classify anti-epileptic drugs. Explain mechanism of Phenytoin, Carbamazepine and Valproic acid. • List the pharmacokineticsproperties of these drugs. • Correlate the clinical usesof these anti-epileptics with the type of seizures. • List the adverse effects andcontraindications of these drugs
ANTI- PARKINSON DRUGS	LECTURE # 7	1	• Classify Anti Parkinson'sdrugs. • Explain mechanism of action of Levodopa-Carbidopa, Benztropine Bromocriptine. • List the pharmacokineticsproperties of these drugs. • List the adverse effects and contraindications of these drugs.
DRUGS USED TO TREAT NEURODEGENERATIVE DISORDERS	LECTURE # 8	1	• Classify the drugs used totreat Alzheimer's disease, multiple sclerosis and Amyotrophic lateral sclerosis (ALS). • Explain the mechanism ofaction of Rivastigmine, Interferon-beta, Riluzole. • List the pharmacokineticsproperties of these drugs. • List the adverse effects of thesedrugs

DRUGS FOR BIPOLAR DISORDER	LECTURE # 9	1	• Outline pathophysiology ofbipolar disorder. • Classify the drugs used for bipolar disorder. • Explain mechanism ofaction of Lithium. • List the pharmacokineticsproperties of Lithium. • List the common adverseeffects and contraindications of Lithium.
OPIOID AGONISTS AND ANTAGONISTS	LECTURE # 10	1	• Classify opioid agonists and antagonists. • Explain mechanism of action of Morphine and Codeine. • Correlate clinical uses of Morphine and Codeine. • List the pharmacokinetics properties of Morphine and Codeine. • List the common adverseeffects and contraindications of these drugs.
DRUGS OF ABUSE	LECTURE # 11	1	• Define Drug Abuse • Classify Drugs Of Abuse • Enumerate various stepsof the management of various drugs of abuse.
ANTI PSYCHOTIC DISORDERS	LECTURE # 12	1	• Outline pathophysiology of psychotic disorder. • Classify anti-psychotic drugs. • Explain mechanism of action of Chlorpromazine, Haloperidol and Fluphenazine. • List the pharmacokinetics properties of these drugs. • List the clinical uses ofdrugs • List the common adverse effects and contraindications of thesedrugs.

LEARNING OBJECTIVES OF TUTORIALS

By the end of each Tutorial, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME HOURS	LEARNING OBJECTIVES
Epilepsy & Anesthesia	TUTORIAL# 1	2.25 HOURS	• Define Status Epilepticus. • List drugs used to treat Status Epilepticus. • Discuss the pharmacodynamics and pharmacokinetics of Ethosuximide,Gabapentin and Lamotrigine. • List pre-anesthetic medications. • Discuss the role of anti-cholinergic and benzodiazepines as pre-anestheticmedications. • Explain the pharmacological management of the given cases.
Anxiety disorders & Depression	TUTORIAL# 2	2.25 HOURS	• Define serotonin syndrome. • List the common drug-interactions associated with the use of anti- depressants. • Discuss the pharmacodynamics andpharmacokinetics of Lorazepam. • Write down the prescriptions of the givencases.
Parkinson's disease & Opioids	TUTORIAL# 3	2.25 HOURS	• Discuss the pharmacodynamics and pharmacokinetics of Entacapone and Selegeline. • Discuss the sign and symptoms of Opiatewithdrawal syndrome. • List the drugs used to treat Opiatewithdrawal syndrome. • Discuss the pharmacodynamics andpharmacokinetics of Methadone, Naloxone and Nalbuphine. • Explain the pharmacological managementof the given cases.
Introduction to powders	TUTORIAL# 4	2.25 HOURS	• Define Powders. • List the ingredients of powders. ` • Classify Powders with examples. • List the advantages and disadvantages ofpowders.

LEARNING OBJECTIVES OF PRACTICALS
(SKILL BASED LEARNING)

TOPIC	MODE OF TEACHING	TIME HOURS	LEARNING OBJECTIVES
Preparation and dispensing of simple powder & compound powder	PRACTICAL # 1	2.25 HOURS	• Define simple & compound powder along with examples • Demonstrate the steps of preparation anddispensing of simple & compound powder. • List the uses of Phenobarbitone powder., Pilocarpine powder,Hyoscine Hydro Bromide powder
Demonstration of the effects of local anesthetic on leg of frog	PRACTICAL# 2	2.25 HOURS	• Differentiate between surface anesthesiaand infiltrative anesthesia. • Demonstrate the effects of local anesthetic i.e. Lidocaine 2% as surfaceanesthetic and infiltrative anesthetic onleg of frog.

DEPT. OF FORENSIC MEDICINE

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE – II

(3rd year MBBS)

By the end of Nervous System module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Forensic Psychiatry I	Lecture#1	1	Describe salient features of Mental Health Ordinance 2001. Diagnose & Certify Mental Illness. Learn about Mental Retardation / Mental Sub-normality or Deficiency ---- Psychosis & Neurosis. Detail Restraint of the Mentally ill (Insane) person
Forensic Psychiatry II	Lecture#2	1	Explain different Subjective Disorders like Delusion, Hallucination, Illusion, Obsession, Impulse Recognize Motives of Feigned insanity. Discuss Civil & Criminal Responsibilities of the insane person

By the end of Nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Introduction to Toxicology I	Practical#1	2.25	Define Toxicology & Poison Classify Poisons based on Medico-legal ground
Introduction to Toxicology II	Practical#2	2.25	Describe dangerous drugs act List the Duties of a Doctor / MLO in a suspected case of Poisoning
Metallic Poisons I	Practical#3	2.25	List the Uses of all the above Heavy Metals. Describe the Mechanism of Action of all these. List the Treatment options for Acute Poisoning as well as Chronic Poisoning of all.
Metallic Poisons II	Practical#4	2.25	Diagnose the Chronic Signs & Symptoms of all. Diagnose the Acute Signs & Symptoms of all these Poisonings
Corrosives I	Practical#5	2.25	Classify Corrosives Describe the Mechanism of Action
Corrosives II	Practical#6	2.25	List the Uses & Misuses Differentiate between Organic and Inorganic acids Diagnose Carbolism & Carboluria

DEPT. OF COMMUNITY MEDICINE

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE - II

(3rd year MBBS)

By the end of Nervous System module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Stroke prevention	Lecture # 1	1	1. Describe the prevalence, burden, and impact of stroke on individuals and communities 2. List modifiable and non-modifiable risk factors for stroke Discuss the primary and secondary prevention strategies for stroke
Neurological diseases in children	Lecture # 2	1	1. List prevalent neurological diseases in children Discuss the strategies, interventions and practices for the prevention of neurological diseases in children
Parkinson's disease prevention	Lecture # 3	1	1. Discuss the epidemiology of Parkinson’s disease. 2. List the risk factors for Parkinson’s disease 3. Describe the prevention strategies for Parkinson’s disease
Mental health	Lecture # 4	2.25	1. Define mental health 2. List risk factors of mental illness 3. Discuss common mental health problems in Pakistan Describe prevention strategies for mental health problems

DEPT. OF RESEARCH & EVIDENCE BASED MEDICINE

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE - II (3rd year MBBS)

By the end of nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Topic Selection and Literature Search	Small group teaching	2.25	Apply the steps of literature search Utilize the techniques of literature search
Introduction & Literature Review Write up – I	Small group teaching	1	Prepare an appropriate introduction section
Introduction & Literature Review Write up - II	Small group teaching	2.25	Examine available literature to write a comprehensive literature review

PEARLS

LEARNING OBJECTIVES OF FOUNDATION MODULE - II (3rd year MBBS)

By the end of foundation module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Conflict resolution - I	Lecture	1	Describe conflicts in the context of educational change.
Conflict resolution - II	Lecture	1	Recommend strategies to manage conflicts. • Describe the skills needed to manage conflicts.

DEPT. OF BEHAVIORAL SCIENCES

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE - II

(3rd year MBBS)

By the end of nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Society, Culture & Health	Lecture # 1	1	Cultural beliefs, attitudes, values, social class, Myths, stigma sick role and illness, Health belief models
Treatment Adherence	Lecture # 2	1	Doctors' factors Patients' factors Drug factors How to improve compliance.
Depression	Lecture # 3	1	Distinguish between sadness and depression Diagnostic criteria of Major depression Causes of depression Treatment of depression

DEPT. OF SURGERY

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE - II

(3rd year MBBS)

By the end of nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Traumatic Brain injury(A)	Lecture # 1	1	To be familiar with the physiology of cerebral blood flow and the pathophysiology of raised intracranial pressure Classification of head injury Indications of Ct scan in head trauma Glasgow coma scale
Traumatic Brain injury(B)	Lecture # 2	1	To understand the following: Fractures: skull base Fractures: skull vault Extradural hematoma Subdural Hematoma Subarachnoid Haemorrhage Cerebral contusions
Hydrocephalus	Lecture # 3	1	To understand hydrocephalus and its surgical management

DEPT. OF MEDICINE

LEARNING OBJECTIVES OF NERVOUS SYSTEM MODULE - II

(3rd year MBBS)

By the end of nervous system module, the students of 3rd year MBBS will be able to:

TOPIC	MODE OF TEACHING	TIME (hours)	LEARNING OBJECTIVES
Stroke	Lecture # 1	1	• Define and classify strokes: Differentiate between ischemic and hemorrhagic strokes • Identify the common signs and symptoms of stroke, including motor deficits, sensory deficits, speech disturbances, and visual changes. • Interpret neuroimaging studies: Understand the role of CT scans and MRI in diagnosing and characterizing different types of strokes. • Describe the principles of acute stroke management.
Acute Bacterial Meningitis	Lecture # 2	1	• Identify the typical clinical manifestations of acute bacterial meningitis. • Describe the most common bacterial pathogens responsible for acute bacterial meningitis. • Explain the appropriate diagnostic tests used to confirm acute bacterial meningitis. • Discuss the significance of cerebrospinal fluid (CSF) analysis, including cell count, protein, and glucose levels. • Describe the principles of treatment for acute bacterial meningitis, including the use of antibiotics.
Parkinson's Disease	Lecture # 3	1	• Understand and describe what Parkinson's disease is, its clinical manifestations. • Identify the prevalence of PD and common risk factors associated with the development of the disease. • Recognize the hallmark clinical features of PD. Understand the diagnostic criteria and methods used to confirm PD. • Discuss the pharmacological approaches used to manage PD symptoms.