

AYUB MEDICAL COLLEGE

ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION

NEUROSCIENCES II



4TH YEAR MBBS

BLOCK: J

DURATION: 7 WEEKS

SESSION: 2024

STUDENT NAME

DISCLAIMER

- Developing a study guide is a dynamic process and undergoes iteration according to the needs and priorities.
- This study guide is subjected to the change and modification over the whole academic year.
 - However, students are advised to use it as a guide for respective modules.
- It is to declare that the learning objectives (general and specific) and the distribution of assessment tools (both theory and practical) are obtained from Khyber Medical University, Peshawar. These can be obtained from:
<https://kmu.edu.pk/examination/guidelines>
- The time tables are for guiding purpose. It is to advise that final timetables are always displayed over the notice boards of each lecture hall.
 - Students are encouraged to provide feedback via coordinator

Contents

1. Module Committee:.....	2
2. What Is A Study Guide?.....	3
2.1 The study guide:.....	3
2.2 Module objectives.....	3
2.3 Achievement of objectives.....	3
3. Recommended List Of Icons	4
4. Organization of Module	5
4.1 INTRODUCTION:.....	5
4.2 RATIONALE:.....	5
4.3 ORGANIZATION:.....	5
4.4 TEACHING STRATEGIES:	6
5. Learning Objectives.....	7
5.1 General learning outcomes.....	7
a. Knowledge.....	7
b. Skills.....	8
c. Attitude	8
Specific Learning Objectives:	9
7. Examination and Methods of Assessment.....	34
a. Instruction:.....	Error! Bookmark not defined.
8. Learning Opportunities and Resources.....	36
Books:.....	36
Websites:	37
Articles:	38
9. Timetables.....	39
10. For inquiry and troubleshooting	48
11. Course Feedback Form.....	49

1. Module Committee:

s.n o	Name	Department	Role
1.	Prof. Dr. Umar Farooq	CEO & Dean	
2.	Prof. Dr. Irfan U. Khattak	Director DME	
Module Team			
3.	Prof. Dr. Haq Nawaz	Pharmacology	Block Coordinator
4.	Dr. M. Adeel Alam	Pharmacology	Module Coordinator
5.	Dr. Nisar Ahmed	Pharmacology	Team Member
6.	Dr. Faryal Mustafa	Pharmacology	Team Member
7.	Dr. Umair Jadoon	Forensic medicine	Team Member
8.	Dr. shagufta	Pathology	Team Member
9.	Dr. Awais	Community medicine	Team Member
10.	Dr. Ali Raza	Paediatrics	Team Member
11.	Dr. M. Adeel Mishwani	Orthopedics	Team Member
12.	Dr. Tauqeer Ahmed	Medicine	Team Member
13.	Dr. Baynazir Khan	Neurosurgery	Team Member
14.	Dr. Naveed	Anaesthesia	Team Member
15.	Miss. Zainab Khalid	Psychiatry	Team Member

2. What Is A Study Guide?

It is an aid to Inform students how student learning program of the module has been organized, to help students organize and manage their studies throughout the module and guide students on assessment methods, rules and regulations.

2.1 The study guide:

- Communicates information on organization and management of the module.
- This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings.

2.2 Module objectives.

- Provides a list of learning resources such as books, computer-assisted learning programs, weblinks, and journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's performance.

2.3 Achievement of objectives.

- Focuses on information pertaining to examination policy, rules and regulations.



3. Recommended List Of Icons



Introduction To Case



For Objectives



Critical Questions



Assessment

4. Organization of Module

4.1 INTRODUCTION:

With approximately more than 100 billion neurons in the central nervous system of a human being, Neurosciences have become a fascinating field of study for the medical students. Disorders related to Neuroscience, Psychiatry & Neurology cause significant disease burdens impacting the medical practice. Teaching medical students these subjects remains challenging as many consider the Neurosciences notoriously difficult to learn & Psychiatry to be irrelevant.

4.2 RATIONALE:

Under-graduate medical students often perceive Neurosciences to be complex, esoteric & formidable. Hence introducing various aspects of Neurosciences to the under-graduate medical students poses challenges to learner & teacher alike.

Therefore the overall goal of this module is to provide the foundation for understanding the impairments of sensation, action & cognition that accompany injury, disease or dysfunction in the central nervous system. This module will build upon the knowledge acquired through prior studies of cell molecular biology, general physiology & human anatomy as we focus primarily on the CNS. We have tried to cover the important clinical aspects, pathological features, therapeutics & medico-legal issues of the CNS disorders. In addition, the behavioral aspects of the nervous system, description of important drugs of abuse, toxins & poisons have also been laid down across the relevant Themes.

4.3 ORGANIZATION:

The module comprises of 09 themes based upon the most common clinical neurological presentations. Each theme has a clear learning objective. Major emphasis will be on imparting the relevant knowledge of each theme through lectures, discussions, patients' examination, laboratory & imaging investigations & their interpretation, case analysis, diagnosis & management plan will be devised under guidance & supervision of the relevant teaching faculty.

4.4 TEACHING STRATEGIES:

The content pertaining to this module will be delivered by a combination of various teaching plans. These include small group discussions (SGDs) & interactive sessions especially during practicals & wards, lectures & demonstrations in lecture halls, history taking, patients' examination (during OPD & ward rotations), laboratory investigations & test reports' interpretation. Entire curriculum will be imparted in this way.



5. Learning Objectives

5.1 General learning outcomes

a. Knowledge

At the end of this module, the year 4 students will be able to:

- 1) Describe anxiety disorders and their pharmacological management
- 2) Explain the concepts of Mood disorders and their pharmacological management
- 3) Explain psychotic disorders and their pharmacological management
- 4) Describe the pathophysiology and management of Dementias
- 5) Elaborate the pathophysiology, clinical features, management, and prevention of cerebrovascular diseases
- 6) Classify epilepsy and describe the pharmacological management of epilepsy in children and adults
- 7) Describe the types and protocols of anaesthesia and explain the drugs used as anaesthetics
- 8) Explain the pathology and clinical features of cerebellar diseases
- 9) Elaborate the clinical features and pharmacological management of Parkinson`s disease
- 10) Explain the clinical features and management of Motor neuron disease and Friedrich`s ataxia
- 11) Describe the pathology and management of head injury
- 12) Describe the pathogenesis, clinical features, and management of common CNS infections
- 13) Classify brain, spinal cord and peripheral nerves tumors, and describe their clinical features and management
- 14) Explain the pathophysiology, clinical features, investigations and management of Multiple sclerosis, transverse myelitis and Guillain Barre syndrome

15) Classify peripheral neuropathies and elaborate their etiologies and clinical presentations

16) Explain the clinical features and forensic approach to a patient with neurotoxic poisons.

17) Explain the forensic aspects of insanity and head injury.

b. **Skills**

Various skills related to the relevant subjects will be learned by the students during practicals, in small group discussions and at the bedside during clinical sessions.

c. **Attitude**

While not necessarily taught explicitly, students are expected to develop the following attitudes throughout the course:

1. Demonstrate teamwork, leadership, punctuality and good manners
2. Demonstrate humbleness and use socially acceptable language during academic and social interactions with colleagues and teachers.
3. Make ethically competent decisions when confronted with an ethical, social or moral problem related to Neuroscience module in professional or personal life

Specific Learning Objectives:

THEME – 1: DISTURBED SLEEP

S.NO	Subject	Learning Objectives	MIT	No of Hours
Psychiatry				
1.	Sleep disorders	Describe the types of sleep disorders	Lecture	01
		Explain the pharmacological and non-pharmacological management of sleep disorders		
		Describe the ways of improving healthy sleep		
2.	Non-organic insomnia	Define non-organic insomnia		
		Explain the management of non-organic insomnia		
3.	Sleep wake cycle disorders	Describe the concept of sleep-wake cycle disorder		
		Describe the pharmacological and non-pharmacological management of sleep-wake wake cycle disorder		
Pharmacology				
4.	Introduction to the Pharmacology of CNS	Describe basic terms like neurotransmitters, neuromodulator/neurotropic factors, withdrawal symptoms (abstinence syndrome), cross-tolerance, reverse tolerance (sensitization) and cross-dependence	Lecture	01
		Describe the blood-brain barrier and its clinical significance		
		Enlist the principal neurotransmitters and their receptors in the CNS		
		Describe voltage-gated, ligand-gated (ionotropic), ion channels and metabotropic receptors on the neuronal membrane		
		Classify the drugs acting on the CNS		
5.	Sedative-hypnotics (Minor tranquilizers)	Classify broadly the Sedative-Hypnotics	Lecture	02
6.	Benzodiazepines	Classify Benzodiazepines		
		Describe the pharmacokinetics of Benzodiazepines		
		Describe the mechanism of action of Benzodiazepines		
		Describe the pharmacological effects of Benzodiazepines		
		Describe the clinical uses of Benzodiazepines		

		Describe the adverse effects of Benzodiazepines		
		Describe the tolerance and dependence on Benzodiazepines		
		Describe the drug interactions of Benzodiazepines		
		Name the antidote (competitive antagonist) to Benzodiazepines		
		Enlist the inverse agonists to Benzodiazepines		
7.	Barbiturates	Classify barbiturates		
		Describe the mechanism of action and clinical uses of barbiturates		
		Describe the difference regarding the mechanism of action of Barbiturates in comparison to Benzodiazepines		
	Buspirone	Describe the mechanism of action and clinical use of Buspirone		
		Describe the merits and demerits of Buspirone in comparison to Benzodiazepines		
8.	Ramelteon	Describe the mechanism of action and clinical use of Ramelteon		
9.	CNS stimulants	Classify CNS stimulants	Lecture	01
10.	Psychomotor stimulants (Amphetamine, Methylphenidate)	Describe the mechanism of action, clinical uses, and adverse effects of Psychomotor stimulants		
11.	Respiratory analeptics (Doxapram, Nikethamide)	Describe the mechanism of action, clinical uses and adverse effects of Respiratory analeptics		
12.	Methyl xanthine/Theophylline, Caffeine, Theobromine)	Describe the mechanism of action, clinical uses and adverse effects of Methyl xanthine		
13.	Sibutramine	Describe the mechanism of action and clinical use of Sibutramine		
Forensic Medicine				
14.	Classification of neurotoxins	Define and classify neurotoxins	Lecture	01
	Cerebral Poisons- Somniferous Poisons Morphine Opium	Describe and enlist Somniferous poison.		
		Describe the mechanism of action for the Somniferous poison.		
		Describe different signs, symptoms and autopsy appearance in a typical of Somniferous poisons.		

	Heroin	Describe fatal dose, treatment, and diagnosis for the Somniferous poisons.		
		Describe medico-legal importance for the Somniferous poisons.		
15.	Inebriant Poisons Ethyl Alcohol Methyl Alcohol	Describe and enlist Inebriant poison.	Lecture	02
		Describe mechanism of action for the Inebriant poison.		
		Describe different sign, symptoms and autopsy appearance in a typical of Inebriant poisons.		
		Describe fatal dose, treatment, and diagnosis for the Inebriant poisons.		
		Describe medico-legal importance for the Inebriant poisons.		
16.	Sedative & Hypnotics Chloral hydrate Barbiturates	Describe and enlist sedative and hypnotics	Lecture	01
		Describe mechanism of action for the Sedative and hypnotics.		
		Describe different sign, symptoms and autopsy appearance in a typical of Sedative and hypnotics.		
		Describe fatal dose, treatment, and diagnosis for the Sedative and hypnotics.		
		Describe medico-legal importance for the Sedative and hypnotics.		
17.	Fuels, stimulants and hallucinogens Agrochemical poisons Kerosene Hallucinogens- LSD Stimulants- Amphetamines	Describe and enlist fuels, stimulants and hallucinogens.	Lecture	01
		Describe mechanism of action of fuels, stimulants and hallucinogens.		
		Describe different sign, symptoms and autopsy appearance in a typical case of fuels, stimulants and hallucinogens poisoning.		
		Describe fatal dose, treatment, and diagnosis of fuels, stimulants and hallucinogens.		
		Describe medico-legal importance of fuels, stimulants and hallucinogens.		
18.	Drug Dependence	Describe Drug dependence and its psychological effects.	Lecture	01
		Describe drug abuse and outline the procedure to investigate a case due to narcotics.		
PRIME/Medical Education				
19.	Emotional intelligence (EI)	Explain the concept of EI	Lecture	01
		Differentiate between EQ and IQ		
		Describe & Display appropriate emotional and social intelligence		
Community Medicine				

20.	Epidemiology	Define epidemiology	Lecture	01
		Explain the basic concepts of epidemiology		
21.	Study design	Classify and elaborate study designs	Lecture	03
22.	Screening	Explain the screening in epidemiology	Lecture	01
23.	Measures of mortality and morbidity	Explain the measures of morbidity and mortality	Lecture	01
24.		Risk estimation, Association bias, Confounding and interaction	Lecture	01
25.		Investigation of an epidemic	Lecture	01

THEME 2: DISTURBED MOOD AND BEHAVIOR

Psychiatry				
26.	Depressive disorders	Classify depressive disorders	Lecture	01
		Describe the etiology, clinical features and management protocols of different depressive disorders		
27.	Atypical depression and seasonal affective disorder	Describe the clinical presentation of atypical depression	Lecture	01
		Recognize the symptoms of atypical depression		
		Describe the management of atypical depression and seasonal affective disorders		
28.	Bipolar affective disorders	Describe the clinical features and management protocols of Bipolar affective disorders	Lecture	01
29.	Suicide	Describe the preventive measures of suicide	Lecture	01
30.	Anxiety disorders	Classify anxiety disorders	Lecture	01
		Differentiate between medical and psychiatric causes of anxiety		
		Differentiate between anxiety and phobia		
		Describe the pharmacological and non-pharmacological management of different anxiety disorders including relaxation techniques and breathing exercises		
31.	Dissociative disorders	Explain the different behavioral and neurological presentations of dissociative disorders	Lecture	01

		Describe the pharmacological and non-pharmacological management of dissociative disorders		
32.	Stress related disorders	Classify stress related disorders		
		Explain the concept of stress in stress related disorders		
		Explain the pharmacological and non-pharmacological management of stress related disorders		
33.	Somatoform disorders	Classify somatoform disorders	Lecture	01
		Describe the concept of medically unexplained symptoms		
		Counsel a patient with medically unexplained symptoms		
34.	Personality disorders	Classify personality disorders	Lecture	01
		Describe the clinical features, diagnostic criteria and management of personality disorder		
35.	Psychotic disorders	Differentiate between organic and non-organic psychosis	Lecture	01
		Explain the concept of psychosis		
		Classify psychotic disorders		
36.	Schizophrenias	Describe the clinical features, diagnostic criteria and management of Schizophrenias		
		Explain the role of psychotherapy and Electroconvulsive therapy in Schizophrenias		
		Describe the rehabilitations strategies with patients of Schizophrenias		
37.	Delusional disorders	Describe the types and management of delusional disorders		
		Describe the ways of differentiating delusional disorders from Schizophrenias		
38.	Substance abuse disorders	Describe the concept of drug dependence	Lecture	01
		Classify of drug abuse		
		Describe the principles of management of substance abuse		
		Explain the concept of harm reduction		
General Medicine				
39.	Alzheimer`s disease and Dementias	Explain the pathophysiology, clinical features and management of	Lecture	01

		Alzheimer`s disease		
		Describe the reversible and irreversible causes of Dementia		
Pharmacology				
40.	Depression	Describe the Monoamine hypothesis of depression	Lecture	02
41.	Antidepressants	Classify antidepressants		
42.	SSRIs (Selective Serotonin Reuptake Inhibitors)	Enlist SSRIs		
		Enlist the most selective SSRIs		
		Describe the pharmacokinetics, mechanism of action, clinical uses, adverse effects and drug interactions of SSRIs		
43.	TCAs (Tricyclic Antidepressants)	Enlist TCAs		
		Describe the mechanism of action, clinical uses, adverse effects and drug interactions of TCAs		
44.	MAOIs (Monoamine Oxidase Inhibitors)	Enlist MAOIs		
		Describe the pharmacokinetics, mechanism of action, clinical use, adverse effects and drug interactions of MAOIs		
		Describe Serotonin syndrome		
		Describe Hypertensive Cheese reaction		
		Describe St John`s Wort		
		Describe the procedure of switching-over from one category of antidepressants to another one		
		Describe "Augmentation" of antidepressant therapy		
		Describe Electroconvulsive Therapy (ECT) for depression		
45.	Psychoses (Schizophrenia and others)	Describe the Dopamine hypothesis of Schizophrenia		
46.	Antipsychotics (Anti-schizophrenic drugs)	Classify Antipsychotics	Lecture	03
		Describe the advantages of Atypical antipsychotics over the Typical (Classical/Traditional/Old) agents		
		Describe the mechanism of action of Antipsychotics		
		Describe the pharmacological effects of Antipsychotics		
		Describe the clinical uses of		

		Antipsychotics		
		Describe the drug interactions of Antipsychotics		
		Describe the adverse effects of Antipsychotics		
		Explain the drug treatment of extrapyramidal syndrome		
47.	Bipolar affective disorder (Manic Depressive illness)	Describe the concept of “mood-stabilization” in Bipolar affective disorder (Manic Depressive illness)		
48.	Mood-stabilizing drugs	Enlist Mood-stabilizing drugs	Lecture	01
49.	Lithium carbonate	Describe the pharmacokinetics, mechanism of action, clinical uses, adverse effects and drug interactions of Lithium carbonate		
50.	Alcohols	Describe alcoholism	Lecture	01
		Describe the pharmacokinetics of Ethanol		
		Describe the mechanism of action of Ethanol		
		Describe the pharmacological effects of Ethanol		
		Describe the clinical uses of Ethanol		
		Describe the adverse effects of Ethanol		
		Describe Disulfiram-like reaction with example of drugs causing it		
		Describe the management of Ethanol intoxication		
		Describe the management of Ethanol withdrawal symptoms		
		Describe the treatment of alcoholism		
		Describe briefly Methanol poisoning		
		Describe the antidote for Methanol poisoning		
51.	Opioids (Morphine, Diamorphine, Codeine, Pethidine, Methadone, Pentazocine, Buprenorphine, Dextromethorphan)	Differentiate between Opioids and Opiates	Lecture	02
		Describe the term “narcotic”		
		Describe the source of Opium		
		Enlist the “brain’s own Morphine” (endogenous Opioids)		
		Classify Opioids		
		Enlist Opioids with mixed agonist-antagonist properties		

		Enlist Opioids with partial agonist activity		
		Describe the pharmacokinetics, mechanism of action, pharmacological effects, clinical uses, adverse effects and drug interactions of Opioids		
		Describe the use of opioids as palliative care in terminal illness		
		Describe opioid rotation		
		Describe the treatment of Opioid over dosage		
		Describe the Opioid antagonists (antidotes)		
		Describe Opioid dependence		
		Describe the management of Opioid dependence		
		Describe the contraindications of Opioids		
		Enlist the drugs used for pain in opioid addicts		
52.	Tramadol	Describe the mechanism of action and clinical use of Tramadol		
53.	Drugs of abuse	Describe substance abuse, drug dependence, addiction and habituation	Lecture	01
		Describe the Dopamine hypothesis of addiction		
		Enlist the drugs causing addiction		
		Enlist the non-addictive drugs of abuse		
		Describe "Club drugs"		
		Enlist the drugs having high-risk of addiction (scored 5 on the list of relative-risk of addiction)		
		Enlist the drugs having moderate-risk of addiction (scored 4 on the list of relative-risk of addiction)		
		Describe the drug treatment of Nicotine, Alcohol, Cannabis and Opioid abuse		
		Describe the drug abuse in sports with examples		
Forensic Medicine				
54.	Insanity and relationship to criminal charges	Define insanity.	Lecture	01
		Classify insanity and explain its sub-types		

		Describe relationship of insanity with criminal charges.		
		Describe different pleas and its legal exception based on unsoundness of mind.		
		Describe McNaghten rules, Durham's rule and Impulse along with its application and criticism.		
		Differentiate between true and feigned insanity		
55.	Forensic Psychiatry	Define and describe Forensic Psychiatry.	Lecture	01
		Describe different terms used in Forensic Psychiatry: a) Affect b) Confabulation c) Delirium d) Delusion e) Fugue f) Hallucination g) Illusion h) Intelligent Quotient i) Lucid Interval j) Neurosis k) Psychopath l) Psychosis m) Stupor n) Twilight states		
56.	Mental health act	Define mental disorders based on mental health act	Lecture	01
		Describe procedure of admission and discharge of mentally ill patient based on mental health act		
		Describe procedure of handling a wandering lunatic		
57.	Will	Define testamentary capacity	Lecture	01
		Enlist conditions required for a valid Will		
		Describe the role of a doctor in taking a Will from a sick person		
58.	Civil and criminal responsibility of mentally ill patients	Explain the concept of civil and criminal responsibility of mentally ill patients		
Community Medicine				

59.	Mental health	Describe classification of mental health illnesses	Lecture	01
		Define mental health		
		Discuss global perspectives and epidemiology of mental health disorders		
		Discuss risk factors leading to mental health problems		
		Discuss prevention and control of mental health disorders		
60.	Drug abuse and Alcoholism	Describe the global distribution and increase addiction to drug abuse and alcoholism	Lecture	01
		Discuss causes of drug abuse and alcoholism		
		Discuss the effects of alcoholism on mental health		
		Describe preventive and control measures of drug abuse and Alcoholism		
PRIME/Medical Education				
61.	Conflict resolution	Explain the prerequisites for conflict resolution as a leader	Lecture	01
		Show the ability to solve problems regarding difficult patients/attendant.		
PRIME/Research				
62.	Biostatistics: Introduction	Describe the significance of biostatistics in health and epidemiology	Lecture	01
63.	Data and variable types	Define and classify variables	Lecture	01
64.	Sampling	Define sampling	Lecture	01
		Discuss types of sampling		
65.	Biases in epidemiological studies	Define Bias	Lecture	01
		Discuss different types of biases		
		Discuss how bias can be prevented		

THEME-3: UNILATERAL WEAKNESS AND INABILITY TO SPEAK

Pathology				
66.	Hypoxia, ischemia and infarction	Define hypoxia, ischemia and infarction, and describe its morphology and consequences in the context of CNS involvement	Lecture	01
67.	Intracranial hemorrhage	Describe the etiology, risk factors and morphology of intracranial hemorrhage		

68.	Strokes syndromes	Describe the etiology, risk factors, morphology, and clinical and radiological features of stroke	Lecture	01
69.	Subarachnoid hemorrhage (SAH)	Explain the etiology, risk factors and clinical features of SAH		
General Medicine				
70.	Stroke	Describe the risk factors of stroke	Lecture	01
		Explain the types of strokes		
		Describe the clinical features, radiological features, and management of a patient with intracerebral bleed		
		Describe the clinical features, radiological features, and management of a patient with stroke due to an infarction		
Community Medicine				
71.	Non-communicable diseases: Strokes	Discuss the epidemiological determinants of stroke in community	Lecture	01
		Discuss the prevention and rehabilitation of strokes	Lecture	01
Neurosurgery				
72.	Topic	Describe the neurosurgical management of stroke and Subarachnoid hemorrhage	Lecture	01
PRIME/Research				
73.	Measures of central tendency	Classify measures of central tendency	Lecture	01
		Calculate measures of central tendency		
		Interpret and signify the results		
		Describe the advantages and disadvantages of different measures		
74.	Measures of dispersion	Classify measures of dispersion	Lecture	01
		Calculate measures of dispersion		
		Interpret the results of measures of dispersion		
		Explain the advantages and disadvantages of measures of dispersion		
		Explain the use of different measures in specific circumstances		
75.	Normal distribution	Define normal distribution	Lecture	01
		Describe normal distribution		
		Calculate and graphically represent normal distribution		
		Explain its use & significance in relation to data		

		Describe percentile and interquartile range		
		Calculate and depict percentile and interquartile range		
		Explain use and significance of these in different situations		
76.	Confidence Interval, Confidence level, Standard error	Define confidence level and interval	Lecture	01
		Describe confidence level and interval		
		Calculate confidence level and interval		
		Explain their use and significance in different situations		
77.	P value, critical region, rejection region, alpha beta errors	Define P value, critical region, rejection region, α β errors	Lecture	01
		Describe P value, critical region, rejection region, α β errors		
		Calculate P value, critical region, rejection region, α β errors		
		Describe their use and significance in different situations		

THEME-4: LOSS OF CONSCIOUSNESS AND FITS

General Medicine				
78.	Seizures	Define seizures	Lecture	01
		Differentiate between a seizure and syncope		
		Classify epilepsy		
		Explain the pathophysiology, clinical features, risk factors, investigations and treatment of Tonic-Clonic epilepsy		
		Explain the pathophysiology, clinical features, investigations and treatment of absence seizures		
		Explain the pathophysiology, clinical features, investigations and treatment of psychomotor epilepsy		
		Explain the management of a patient with status epilepticus		
Pediatrics				

79.	Epilepsy	Explain the pathophysiology, clinical features, risk factors, investigations and treatment of Tonic-Clonic epilepsy in children	Lecture	01
		Explain febrile convulsions and its management		
		Describe Infantile spasm and its management		
Anesthesia				
80.	Introduction to the subject	Define anesthesia	Lecture	04
		Describe different types of anesthesia		
81.	General anesthesia	Describe the methods of induction of anesthesia		
82.	Neuroaxis block	Describe the following terms: <ul style="list-style-type: none"> ● Spinal block ● Epidural block ● Caudal block ● Combined spinal /Epidural 		
83.	Regional anesthesia	Describe the following terms: <ul style="list-style-type: none"> ● Nerve block ● Single shot ● Continuous infusion ● Local infiltration 		
84.	Pre-operative evaluation and risk assessment	Explain the purpose of preoperative evaluation		
		Perform risk assessment of patient undergoing general anesthesia		
		Describe the steps of history taking in preoperative evaluation for anesthesia		
		Describe the plans of general and regional anaesthesia techniques		
		Describe the ASA classification for pre-operative risk assessment		
85.	Monitoring in anesthesia	Describe the non-invasive and invasive techniques of patients` monitoring for the following parameters during general anesthesia <u>Non-invasive:</u> <ol style="list-style-type: none"> a. Oxygenation b. Hemodynamics c. Temperature d. Electrical activity 		

		<ul style="list-style-type: none"> e. Neuromuscular activity f. Circulation <p><u>Invasive:</u></p> <ul style="list-style-type: none"> a. Oxygenation b. Hemodynamics c. Temperature d. Cardiac output e. Central venous pressure f. Circulation 		
Pharmacology				
86.	Anti-seizure drugs (Anti-epileptics)	Classify anti-seizure drugs Enlist the "Broad-spectrum" anti-epileptics (Valproate and Lamotrigine)	Lecture	03
87.	Carbamazepine	Describe the mechanism of action, clinical uses, adverse effects and drug interactions of Carbamazepine		
88.	Phenytoin	Describe the pharmacokinetics of Phenytoin with reference to the phenomenon of zero-order kinetics		
		Describe the mechanism of action, clinical uses, adverse effects and drug interactions of Phenytoin		
89.	Valproate	Describe the mechanism of action, clinical uses, adverse effects and drug interactions of Valproate		
90.	Ethosuximide	Describe the mechanism of action, clinical uses and adverse effects of Ethosuximide		
91.	Phenobarbitone	Describe briefly the historic role of phenobarbitone in the management of epilepsy		
92.	Benzodiazepines	Name the benzodiazepines used in the management of epilepsy		
93.	Lamotrigine, Topiramate and others	Name the new antiepileptic drugs		
		Describe the mechanism of action, clinical uses and adverse effects of Lamotrigine and Topiramate		
		Describe the use of antiepileptics during pregnancy		
		Describe drug interaction of antiepileptics with oral contraceptive pills		
94.	Status epilepticus	Describe the management of status epilepticus		

95.	General anesthetics	Describe the stages of general anesthesia	Lecture	02
		Describe balanced anesthesia		
		Classify General anesthetics		
96.	Inhaled anesthetics (N ₂ O, Halothane, Isoflurane, Sevoflurane, Desflurane)	Describe the pharmacokinetics of Inhaled anesthetics		
		Discuss the clinical significance of Blood: Gas partition coefficient of Inhaled anesthetics		
		Describe the mechanism of action of Inhaled anesthetics		
		Define MAC50 (minimum Alveolar Concentration- 50%)		
		Describe the significance of MAC50		
		Describe the pharmacological effects of Inhaled anesthetics		
		Describe the adverse effects of Inhaled anesthetics		
		Describe second gas effect		
		Describe diffusion hypoxia		
		Describe Malignant hyperthermia and its management		
		Describe the properties of an ideal inhaled anesthetics		
97.	IV anesthetics (Thiopentone, Propofol, Etomidate, Ketamine, Midazolam, Fentanyl)	Describe the mechanism of action, clinical use and adverse effects of Intravenous anesthetics		
		Describe re-distribution of Thiopentone		
		Define neuroleptanalgesia and neuroleptanaesthesia		
		Describe dissociative anesthesia		
		Name the anesthetic agent that causes dissociative anesthesia		
		Describe TIVA (Total Intravenous Anesthesia) technique		
98.	Pre-anesthetic medications	Describe Pre-anesthetic medications		
		Describe the drugs used as Pre-anesthetic medications		
99.	Obstetric analgesia	Describe the drugs for obstetric analgesia		
Forensic Medicine				
100.	Deliriant Poisons ● Dhatura	Describe and enlist Deliriant poisons.	Lecture	02
		Describe mechanism of action of the		

	<ul style="list-style-type: none"> Hyocyamus nigra Cannabis indica 	Deliriant poisons. Describe different sign, symptoms and autopsy appearance in a typical of Deliriant poisons. Describe fatal dose, treatment, and diagnosis of the Deliriant poisons. Describe medico-legal importance of the Deliriant poisons.		
PRIME/Research				
101.	Z test & it's application, Types / shapes of frequency distribution	Define & Describe 'z' test Describe its use in different statistical settings Calculate 'z' test Explain its application in hypothesis testing Interpret and apply to clinical settings Discuss various shapes of frequency distribution Describe the applications of parametric and non-parametric tests	Lecture	02

THEME-5: TREMORS

Pathology				
102.	Neurodegenerative disorders: <ul style="list-style-type: none"> Alzheimer's disease Parkinson's disease Huntington's Disease and Spinocerebellar ataxias Motor Neuron disease	<ul style="list-style-type: none"> Describe the etiology, risk factors, morphology and clinical features of Alzheimer's disease Describe the etiology, risk factors, morphology and clinical features of Parkinson's disease Describe the etiology, risk factors, morphology and clinical features of Huntington's disease Describe the clinical features of spinocerebellar ataxias Describe the etiology, risk factors, morphology and clinical features of Motor Neuron Disease	Lecture	05
General Medicine				
103.	Parkinson's disease	Describe the etiology, risk factors, clinical features and management of Parkinson's disease	Lecture	01
104.	Motor Neuron Disease	Describe the types, clinical presentation and management of Motor neuron disease	Lecture	01

Pharmacology				
104.	Drugs for Parkinsonism	Classify drugs for Parkinsonism	Lecture	02
105.	Levodopa (with Carbidopa)	Describe the pharmacokinetics, mechanism of action, adverse effects, contraindications and drug interactions of Levodopa		
		Discuss the rationale of combining Carbidopa (or Benserazide) with Levodopa		
		Describe the on-off phenomenon		
		Describe the end-of-dose akinesia		
		Describe "drug holidays" for Levodopa		
106.	Bromocriptine	Describe the mechanism of action, clinical uses and adverse effects of Bromocriptine		
107.	Selegiline	Describe the mechanism of action and clinical uses of Selegiline		
		Describe the differentiating point regarding the use of Selegiline as antiparkinsonian drug and its use as an antidepressant drug		
108.	Apomorphine	Describe the mechanism of action and clinical use of Apomorphine		
109.	Drug-induced Parkinsonism	Enlist the drugs causing Parkinsonism-like symptoms		
		Enlist the drugs used in the management of drug-induced Parkinsonism		
		Describe the rationale of avoiding Levodopa in drug-induced Parkinsonism		
Pediatrics				
110.	Cerebellar ataxias	Describe the clinical features and management of Friedreich's Ataxia	Lecture	01
Prime/Research				
111.	"t" test & its application	Define & Describe 't' test	Lecture	02
		Explain its use in different statistical settings		
		Calculate 't' test		
		Describe its application in hypothesis testing		
		Interpret and apply to clinical settings		
		Calculate degree of freedom		
112.	Chi-square test & its application	Describe 'x ² ' test	Lecture	01
		Describe its use in different statistical settings		

		Calculate 'x2' test		
		Explain its application in hypothesis testing		
		Interpret and apply to clinical settings		
113.	Correlation, regression	Describe Correlation & Regression	Lecture	01
		Interpret and apply to clinical settings		
114.	Practical Problems in biostatistics	Discuss practical problems encountered in the application of biostatistics and SPSS	Lecture	01

THEME-6: HEADACHE

Pathology				
115.	Meningitis	Explain the etiology, clinical features, investigations and complications of acute pyogenic meningitis	Lecture	01
		Explain the etiology, clinical features, investigations and complications of Tuberculous meningitis		
116.	Encephalitis	Explain the etiology, clinical features, investigations and complications of viral encephalitis	Lecture	01
117.	Brain abscess	Explain the etiology, clinical features, investigations and complications of brain abscess		
118.	Cerebral Toxoplasmosis	Explain the etiology, clinical features, investigations and complications of Cerebral Toxoplasmosis	Lecture	01
119.	Tumors of CNS	Describe the classification of brain tumors on the basis of primary and secondary origin and benign and malignant	Lecture	03
120.	<ul style="list-style-type: none"> ● Gliomas ● Embryonal neoplasms ● Meningioma ● Other neoplasms 	<ul style="list-style-type: none"> ● Describe the classification, gross and microscopic morphology and clinical features of Gliomas ● Describe the classification, gross and microscopic morphology and clinical features of embryonal neoplasms of brain ● Describe the gross and microscopic morphology and clinical features of Meningioma ● Enlist brain neoplasms other than gliomas, meningioma and 		

		<ul style="list-style-type: none"> embryonal cell neoplasms Enlist the metastatic brain neoplasms 		
Pharmacology				
121.	Migraine and Cluster headaches	<p>Classify drugs used for the treatment of Migraine and Cluster headaches</p> <p>Enlist the drugs used for the prophylaxis of Migraine and Cluster headaches</p>	Lecture	01
122.	Triptans (Sumatriptan and others)	Describe the mechanism of action, clinical use and adverse effects of Sumatriptan		
123.	Ergot alkaloids	Enlist Ergot alkaloids		
		Describe the pharmacological effects of Ergot alkaloids		
124.	Ergotamine	Describe the mechanism of action, clinical use and adverse effects of Ergotamine		
125.	Neuralgias (Neuropathic pain)	Describe the drug treatment of neuralgias (Trigeminal, post-herpetic and others)		
Forensic Medicine				
126.	Head Injury	Describe head injury in relation to scalp and skull injuries.	Lecture	03
		Classify different varieties of skull fractures.		
		Explain commonest site of skull fracture.		
		Describe mechanism of cerebral injury including coup and counter coup mechanism.		
		Describe injuries to cranial content and its medicolegal importance.		
		Describe intracranial hemorrhages and its types in detail as per medicolegal point of view.		
		Describe the medicolegal aspects of Punch drunk syndrome		
General Medicine				
127.	Meningitis	Explain the etiology, pathogenesis, clinical presentation, investigations and management of Acute pyogenic meningitis	Lecture	01
		Explain the etiology, pathogenesis, clinical presentation, investigations and		

		management of Tuberculous meningitis		
128.	Encephalitis	Explain the etiology, pathogenesis, clinical presentation, investigations and management of viral encephalitis		
Community Medicine				
129.	Rabies	Explain the etiology, clinical presentation of a patient with Rabies	Lecture	01
		Describe post-exposure prophylaxis of Rabies		
Family Medicine/ Community medicine				
130.	Rabies prophylaxis	Describe the types of wounds inflicted by rabid dog bite	Lecture	01
		Explain the types of active and passive immunisation for Rabies post-exposure prophylaxis		
		Describe the indications of Rabies vaccine and immunoglobulins		
Pediatrics				
131.	Meningitis	Explain the etiology, pathogenesis, clinical presentation, investigations and management of Acute pyogenic meningitis in children and neonates	Lecture	01
132.	TBM	Explain the etiology, pathogenesis, clinical presentation, investigations and management of Acute pyogenic meningitis in children	Lecture	01
Psychiatry				
133.	Chronic daily headache	Differentiate between neurological and psychological headache (chronic tension headache)	Lecture	01
		Identify the red signs in patients with headache		
		Describe the principles of management of acute and chronic headaches		
Prime/ Research				
134.	Data analysis	Use MS Excel for data analysis	Lecture	01
		Use SPSS for data analysis		
		Use Endnote for reference management		
		Compile, analyze and write a dissertation		

Theme 7: PARAPELGIA

Pathology

135.	Multiple sclerosis and other demyelinating disorders of CNS	Explain the pathogenesis, morphology and clinical features of multiple sclerosis	Lecture	01
		Describe the morphology of the following: <ul style="list-style-type: none"> • Acute demyelinating encephalomyelitis • Acute necrotizing hemorrhagic encephalitis 		
Forensic Medicine				
136.	Neurotoxins: Spinal Poisons	Describe and enlist spinal poison.	Lecture	01
		Describe mechanism of action for the spinal poison.		
		Describe different sign, symptoms and autopsy appearance in a typical case of spinal poisons.		
		Describe fatal dose, treatment, and diagnosis for the spinal poisons.		
		Describe medico-legal importance for the spinal poisons.		
		Describe vertebral and spinal injuries		
137.	Snake bite neurotoxins	Describe different sign, symptoms and autopsy appearance in a typical case of snake bite poisons.		
138.	Botulism toxins	Describe different sign, symptoms and autopsy appearance in a typical case of botulism		
General Medicine				
139.	Multiple sclerosis	Explain the pathophysiology, clinical features and management of Multiple sclerosis	Lecture	01
140.	Transverse myelitis	Describe the etiology, pathophysiology, clinical features and management of Transverse myelitis	Lecture	01
141.	Caries spine	Explain the pathophysiology, clinical features, investigations and management of Caries spine		
Orthopedics				
142.	Traumatic paraplegia	Describe the general management of a patient with traumatic paraplegia	Lecture	01
Neurosurgery				
143.	Traumatic paraplegia	Describe the general management of a patient with traumatic paraplegia	Lecture	01
	Spinal tumor	Describe the types, clinical features and	Lecture	01

		surgical management of spinal tumors		
--	--	--------------------------------------	--	--

THEME-8: NUMBNESS AND TINGLING

Pathology				
144.	Patterns and types of peripheral nerves injury	Describe the patterns and types of neuronal injury	Lecture	02
145.	Acute and chronic demyelinating neuropathies	Describe the pathophysiology and clinical features of Guillain Barre syndrome Explain the pathophysiology of Chronic demyelinating polyneuropathies		
146.	Myasthenia Gravis	<ul style="list-style-type: none"> Describe the pathophysiology and clinical features of Myasthenia Gravis 	Lecture	01
147.	Tumors of Peripheral nerves	Enlist the tumors of peripheral nerves Describe the clinical features, of Neurofibromatosis	Lecture	01
Pharmacology				
148.	Local anesthetics (Lignocaine and others)	Classify Local anesthetics Enlist the Local anaesthetics used for surface anaesthesia Enlist the Local anesthetics used for infiltration anesthesia, nerve block, spinal anesthesia and epidural anesthesia Describe EMLA (Eutectic Mixture of Local Anesthetics) and its clinical use Describe the pharmacokinetics of Local anesthetics Describe the mechanism of action of Local anesthetics Describe the pharmacological effects of Local anesthetics on nerves Describe the differential blockade of peripheral nerves by Local anesthetics Describe the pharmacological effects of Local anaesthetics on other excitable membranes Describe the clinical uses of Local anaesthetics Describe the major advantages of adding Adrenaline to Lignocaine for infiltration anaesthesia	Lecture	01

		Calculate the quantity of Adrenaline/ml in the traditionally used combinations of Adrenaline and Lignocaine (i.e. 1:200,000 & 1: 80,000)		
		Describe the adverse effects of Local anaesthetics		
Forensic Medicine				
149.	Neurotoxins: Peripheral poison	Describe and enumerate peripheral poisons.	Lecture	01
		Describe mechanism of action for the peripheral poisons.		
		Describe different sign, symptoms and autopsy appearance in a typical of peripheral poisons.		
		Describe fatal dose, treatment, and diagnosis for the peripheral poisons.		
		Describe medico-legal importance for the peripheral poisons.		
General Medicine				
150.	Guillain Barre syndrome	Explain the pathophysiology, clinical features and management of Guillain Barre syndrome	Lecture	02
151.	Neuropathies	Describe the causes, types, distribution and clinical features of different neuropathies		
152.	Myasthenia Gravis	Explain the pathophysiology, clinical features and management of Myasthenia Gravis		
		Describe the clinical features, types and management of Neurofibromatosis		
Pediatrics				
153.	Hereditary neuropathies	Describe the types, clinical features and management of hereditary neuropathies	Lecture	01
Orthopedics				
154.	Peripheral nerve injury	Describe the types and management of peripheral nerve injury	Lecture	01
		Explain entrapment neuropathies		
		Describe the risk factors, clinical features and management of Carpal tunnel syndrome		

Skills**PRACTICAL WORK**

S.NO	Topics	LEARNING OBJECTIVES	No of Hours
Pathology			
155.	CSF	1. Describe the chemical, cytological composition of CSF 2. Estimate the following analysis of CSF: <ul style="list-style-type: none"> ● Chemistry ● Cytology ● Gram stain ● Microbiology 	04
156.	Histopathological specimens of brain tumors	Identify the gross structure and microscopic features of: <ul style="list-style-type: none"> ● Meningioma ● Glioma/Astrocytoma 	04
Pharmacology			
157.	Depression	Formulate a prescription for a newly diagnosed case of depression	02
158.	Epilepsy	Formulate prescriptions for patients with Tonic-Clonic and Petit-mal epilepsy	02
159.	Migraine headache	Formulate prescription for a patient with migraine headache	02
160.	Parkinsonism	Formulate prescription for a patient with parkinsonism	02
Forensic Medicine			
160.	Somniferous poisons	Recognition of Opium and Heroin	02
161.	Inebriant poisons	Recognition of Ethyl Alcohol and its examination	02
162.	Fuel	Recognition of Kerosene oil	01
163.	Deliriant	Recognition of Dhatura and Cannabis	01
164.	Spinal poison	Recognition of Nux Vomica seeds	02
Community Medicine			
165.	Data	To learn Data presentation (pie chart, Venn diagram, Scatter plot)	02
166.	Data	To study Application and interpretation of statistical data.	02
167.	Data	Data interpretation (normal distribution, skewed distribution, bi & poly modal distribution, standard normal curve)	04

Hours Distribution				
S. No	Discipline	No. of hours		Total
		Theory	Practical/ field visits	
1.	Pathology	18	08	26
2.	Pharmacology	23	08	31
3.	Forensic Medicine	17	08	25
4.	Community Medicine	13	X	13
5.	Family Medicine	01	X	01
6.	General Medicine	10	X	10
7.	Eye	16	X	16
8.	ENT	20	X	20
9.	Pediatrics	05	X	05
10.	Psychiatry	10	X	10
11.	Neurosurgery	03	X	03
12.	Anaesthesia	04	X	04
13.	Orthopedics	02	X	02
14.	PRIME	24	X	24
15.				
	Total	118	32	150

7. Examination and Methods of Assessment

The year-4 will be assessed in 5 blocks.

- 1) Block-1 (Neurosciences-2 module) will be assessed in **paper-J**.
- 2) Block-2 (GIT and hepatobiliary module-2 will be assessed in **paper-K**.
- 3) Block-3 (Renal-2, Endocrine and Reproduction-2 module) will be assessed in **paper-L**.
- 4) Block-4 (ENT module) will be assessed in **paper M-1**.
- 5) Block-5 (Eye module) will be assessed in **paper M-2**.
- 6) Each written paper consists of 120 MCQs except for ENT & Eye papers which includes 90 MCQs each.
- 7) Internal assessment will be added to final marks in KMU.
- 8) For ENT (M-1 module) and Eye (M-2 module), the marks allocated for each OSCE station will be 5, while the rest of the modules are allotted 6 marks per OSCE station.
- 9) Practical assessment will be in the form of OSPE/OSCE which will also include embedded viva stations.
- 10) The details of each section are given in the tables below.

Assessment Plan for 4th Year MBBS

Theory paper	Modules	Theory marks	Internal assessment theory (10%)	OSPE/OSPE	Internal assessment OSPE/OSPE (10%)	TOTAL MARKS
Paper J	Neurosciences-2	120	13	120	13	266
Paper K	GIT-2	120	13	120	13	266
Paper L	Renal-2 and Endocrine and Reproduction	120	14	120	13	267
Paper M-1	ENT	90	10	75*	8	183
Paper M-2	EYE	90	10	75*	8	183
Research**						35
Total Marks		480	53	500	67	1200

*For ENT (M-1 module) and Eye (M-2 module), the marks allocated for each OSCE station will be 5, while the rest of the modules are allotted 6 marks per OSPE/OSCE station.

**Research viva of 20 marks will be conducted in paper-L. However, the rest of the 15 marks will be decided by the concerned department internally for the contribution of the students in research project/thesis.

Paper-J (Neurosciences-2)

MCQs

Subject	Total MCQs
Pharmacology	20
Pathology	22
Forensic medicine	18
Community medicine	27
PRIME	02
Medicine	11
Psychiatry	09
Neurosurgery	02
Pediatrics	05
Anaesthesia	03
Family medicine	01
Total	120

OSPE/OSCE

Subject	Viva stations	Total OSPE/OSCE stations	Total stations
Pharmacology	2	3	5
Pathology	2	2	4
Forensic medicine	2	2	4
Community medicine	2	3	5
Medicine (Neurological examination)	X	1	1
Psychiatry (counselling)	x	1	1
Total	8	12	20

* A minimum of 20 stations will be used in final exams. Total marks will be 120 (6 marks for each station).



8. Learning Opportunities and Resources

Books:

Pharmacology

- 1) Basic & Clinical Pharmacology, 14th edition
- 2) Goodman Gilman's The Pharmacological Basis of Therapeutics, 13th edition
- 3) Lippincott Illustrated Reviews Pharmacology, 7th edition

Pathology

- 1) Robbins & Cotran, Pathologic Basis of Disease (10th Edition)

Paediatrics

- 1) Nelson textbook of Pediatrics, 21st edition
- 2) Textbook of Pediatrics, Pakistan Pediatrics Association
- 3) Basis of Pediatrics, Pervez Akbar khan, Ninth edition

Psychiatry

- 1) Shorter Oxford Textbook of Psychiatry, 7th Edition, by Paul Harrison, Phillip Cowen, Tom Burns, Mina Fazel
- 2) First Aid for the USMLE Step-1, 2021, By Tao Le, Vikas Bhushan, Mathew Sochat
- 3) Kaplan USMLE Step-2, CK Lecture Notes (2021), Internal Medicine
- 4) Davidson's Principles & Practice of Medicine, 23rd Edition

PRIME/Research

- 1) Essentials of research design and methodology. (Geoffery Marczyk)
- 2) The essentials of clinical epidemiology (Robert H)

Medicine

- 1) Davidson's Principles and Practice of Medicine
- 2) Kumar and Clark's Clinical Medicine

Community Medicine

1) Park K. Park's Textbook for Preventive & Social Medicine. 23rd Edition. Bhanot Publishers: Jabalpur; 2015

2) Ansari I. Textbook of Community Medicine

Forensic Medicine

1) Principles and practice of Forensic Medicine by Naseeb R awan

2) Text book of Forensic Medicine and Toxicology by Nagesh Kumar G Rao.

3) Paraikhs textbook of medical jurisprudence and toxicology

Orthopedics

1) Campbell's operative orthopedics (14th edition)

2) Miller's review of orthopedics (8th Edition)

3) Manual of peripheral nerve injury (6th Edition)

4) Neurological aspects of spinal cord injury

5) Essentials of spinal cord injury

Neurosurgery

1) Handbook of Neurosurgery, Edition 20. Author . Greenberg

Anaesthesia

1) Morgan and Mikhail's Clinical Anesthesiology (6th Edition)

2) Oxford Handbook of Anesthesia (4th Edition)

3) Smith and Aitkenhead's Textbook of Anesthesia (6th Edition)

Websites:

Pathology

Lectures by Dr. Najeeb, Pathology Outlines

Psychiatry

www.rcpsych.ac.uk

www.acpsych.org

www.thelancet.com

www.ncbi.nlm.nih.gov/pmc/articles/PMC2395346/

Forensic Medicine

PFSA Guidelines :<https://pfsa.punjab.gov.pk>

Mental Health Act 2017: <http://kpcode.kp.gov.pk>

PRIME

<https://libguides.usc.edu/writingguide/academicwriting>

Orthopedics

BMC Neuroscience Journal

Neurobot / Computational Neuroscience Blog

<https://pubmed.ncbi.nlm.nih.gov/31608497/>

<https://pubmed.ncbi.nlm.nih.gov/28904214/>

<https://pubmed.ncbi.nlm.nih.gov/26854934/>

<https://pubmed.ncbi.nlm.nih.gov/1042886/>

<https://pubmed.ncbi.nlm.nih.gov/32161255/>

<https://pubmed.ncbi.nlm.nih.gov/22384852/>

Anaesthesia

<http://resources.wfsahq.org/anaesthesia-tutor>

<http://www.bjaanaesthesia.org>

<http://www.wildcatanaesthesia.com>

Articles:

PRIME

Koponen J, Pyörälä E, Isotalus P. Communication skills for medical students: Results from three experiential methods. *Simulation & Gaming*. 2014 Apr;45(2):235-54.

Anaesthesia

Anaesthesia tutorial of the Week

Anaesthesiology News

American Society of Anaesthesiology

Psychiatry

The Nature of Clinical Depression: Symptoms, Syndromes & Behaviour Analysis by Jonathan W Kanter, Andrew M Busch, Crystal E Weeks & Sara J Landes

9. Timetables

AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 1: Theme 01 (Disturbed Sleep)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM	
Mon	Practical		HOSPITAL DUTY	Psychiatry L1 Sleep Disorders Dr. Tahir Hussain Shah	PRAYER BREAK		ENT L1 Anatomy & Physiology of oral cavity Dr. Sohail Malik	Pharmacology L1 Introduction to CNS Pharmacology Dr. Mahwish	
	A:Pharma B:Forensics C:Patho D: Community						Eye L1 Standards of vision & blindness Dr. Zulfiqar	Forensic Medicine L1 Neurotoxins Dr. Sadia	
Tue	A:Community B:Pharma C:Forensic D: Patho		HOSPITAL DUTY	Pharmacology L2 Anxiolytics & Hypnotics Dr. Afsheen Siddiqi			Practical		
Wed	Pharmacology L3 Anxiolytics & Hypnotics Dr. Afsheen	Forensic Medicine L2 Sedatives Hypnotics Dr. Salma	HOSPITAL DUTY	ENT L2 Anatomy & Physiology of pharynx Dr. Tahir Haroon			A: Patho B: Community medicine C: Pharmacology D: Forensic Medicine		
Thurs	Pharmacology L4 CNS stimulants Dr. Mehwish Gul	Forensic Medicine L3 Fuels, Stimulants, hallucinogens Dr. Omair	HOSPITAL DUTY	Eye L2 Pupil reflexes & drugs for common eye conditions Dr. Zulfiqar			A: Forensics B: Patho C: Community D: Pharma		
Fri	Forensic medicine L4 Drug dependence Dr. Omair	Forensic medicine L5 Inebriant poisons Dr. Omair	HOSPITAL DUTY	PRIME (DME) Emotional Intelligence Dr. Junaid Khan			Half Day		

Pharma: Prescription for depression Community: Identification and interpretation of charts
 Patho: Composition of CSF Forensics: Recognition of Opium and Heroine

Module Coordinator

AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module: Neuroscience II, Week No. 2: Theme 02 (Disturbed Mood and Behavior)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Practical		HOSPITAL DUTY	HOSPITAL DUTY	PRIME/Research (Community medicine) Epidemiology Prof.Dr. Saleem Wazir	PRAYER BREAK	ENT L3 Acute Pharyngitis Dr. Tahira Sajid	Forensic Medicine L6 Inebriant poisons Dr. Omair
	A:Pharma B:Forensics C:Patho 1 D: Community						Eye L3 Visual pathway & visual field defects Dr. Zulfiquar	PRIME/Research (Community medicine) Screening, measures of mortality and morbidity Prof. Dr. Saleem Wazir
Tue	A:Community B:Pharma C:Foresic D: Patho		HOSPITAL DUTY	Psychiatry L2 Depressive disorders Dr. Tahir Shah				
Wed	Psychiatry L3 Bipolar affective Disorders Dr. Tahir Hussain Shah	Pharmacology L5 Antidepressants Dr. Saad Mufti	HOSPITAL DUTY	ENT L4 Chronic Pharyngitis Dr. Muhammad Asif	Practical			
	A: Patho B: Community medicine C: Pharmacology D: Forensic Medicine							
Thurs	Forensic Medicine L7 Forensic Psychiatry Dr. Salma	Psychiatry L4 Suicide & Anxiety Dr. Tahir	HOSPITAL DUTY	Eye L4 OCT & VF Dr. Amir	A: Forensics B: Patho C: Community D: Pharma			
Fri	Forensic Medicine L8 Insanity Dr. Omair	Pharmacology L6 Antidepressants Dr. Saad Mufti	HOSPITAL DUTY	Pharmacology L7 Mood stabilizers Dr. Maha Aziz	Half Day			

Pharma: Prescription for epilepsy
Patho: Microbiology; Gram stain

Community: Application of statistical test on a scenario
Forensics: Recognition of ethyl alcohol and its examination

Module Coordinator

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 3: Theme 03 (Right sided weakness and inability to Speak)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Practical		HOSPITAL DUTY	Psychiatry L5 Dissociative Disorders Dr. Tahir Hussain Shah	PRAYER BREAK		ENT L5 Quinsy Dr. Farida Khan	Forensic medicine L9 Mental Health Act Dr. Nighat Seema
	A:Pharma B:Forensics C:Patho D: Community						Forensic medicine L10 Will Dr.Nighat Seema	Eye L5 FFA & ultrasonography Dr. Amir
Tue	A:Community B:Pharma C:Foresic D: Patho		HOSPITAL DUTY	ENT L6 Chronic Tonsilitis Dr. Sohail Malik				Practical
Wed	Psychiatry L6 Somatoform disorders Dr. Tahir Hussain Shah	Pharmacology L9 Antipsychotics Dr. Saima Bukahri					A: Patho B: Community medicine C: Pharmacology D: Forensic Medicine	
Thurs	Psychiatry L7 Psychotic Disorders Dr. Tahir Hussain Shah	Pharmacology L10 Antipsychotics Dr. Saima Bukahri	HOSPITAL DUTY	Eye L6 Optic & Eye Dr. Zulfiqar			A: Forensics B: Patho C: Community D: Pharma	
Fri	Psychiatry L8 Personality disorders Dr. Tahir Hussain Shah	Community Medicine L1 Epidemiology Dr. Umar Farooq	HOSPITAL DUTY	Pharmacology L11 Alcohol Dr. Maha	Half Day			

Pharma: Prescription for migraine
Patho: Histopathological specimen of meningioma

Community: Interpretation of data
Forensics: Recognition of kerosene oil

Module Coordinator

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 4: Theme 04 (Loss of consciousness and fits)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Practical		HOSPITAL DUTY	Psychiatry L9 Substance abuse disorders Dr. Tahir Hussain Shah	PRAYER BREAK	ENT L7 Oral ulceration Dr. Tahir Haroon	Community Medicine L2 Study Design Dr. Umar Farooq	
	A:Pharma B:Forensics C:Patho D: Community							
Tue	A:Community B:Pharma C:Foresic D: Patho		HOSPITAL DUTY	Pharmacology L12 Opioids Dr. Wajid Ali		Eye L7 Refractive errors Dr. Zulfiqar	Community Medicine L3 Drug Abuse & Alcoholism Dr. Muneeba	
Wed	Pharmacology L13 Opioids Dr. Wajid Ali	Pharmacology L14 Drug of abuse Dr. Azfar	HOSPITAL DUTY	ENT L8 Trauma to palate & oropharynx Dr. Tahira Sajid		Practical		
	A: Patho B: Community medicine C: Pharmacology D: Forensic Medicine							
Thurs	Pathology L1 Hypoxia, Ischemia, Intracranial hemorrhage Dr. Shabana	Community Medicine L4 Study Design Dr. Umar Farooq	HOSPITAL DUTY	Eye L8 Correction of refractive errors Dr. Zulfiqar	A: Forensics B: Patho C: Community D: Pharma			
Fri	Pathology L2 Stroke syndrome (SAH) Dr. Shugufta	General Medicine L1 Stroke Dr. Saqib Saeed	HOSPITAL DUTY	Community medicine L5 Strokes (epidemiological determinants) Dr. Awais	Half Day			

Pharma: Prescription for epilepsy

Community: Identification of data

Patho: Histopathological specimen of Gliomas

Forensics: Recognition of Dhatura, Cannabis, Nux vomica seeds

Module Coordinator

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 5: Theme 05 (Tremors)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Neurosurgery L1 Stroke & SAH Dr. Ahsan Aurangzeb	Community medicine L6 Strokes (prevention & rehabilitation) Dr. Awais	HOSPITAL DUTY		ENT L9 Carcinoma of oral cavity Dr. Muhammad Asif	<u>PRAYER BREAK</u>	Neurosurgery L2 Traumatic Paraplegia Dr. Abdul Aziz	Community Medicine L7 Study Design Dr. Umar Farooq
Tue	Neurosurgery L3 Paraplegia (Spinal tumor) Dr. Benazir	General Medicine L2 Seizures Dr. Jawad Hussain	HOSPITAL DUTY		Eye L9 D/Dx lid bumps, chalazion, stye Dr. Danish		Pediatrics L1 Epilepsy Dr. Tuseef Ahmed	PRIME/DME Conflict resolution Dr. Ayesha Rafiq
Wed	Pharmacology L15 Antiepileptic drugs Dr. Nisar	Anesthesia L1 Introduction/ Types Dr. Tariq	HOSPITAL DUTY		ENT L10 Approach to a patient with sore throat Dr. Farida Khan		Anesthesia L2 Anesthetic drugs Dr. Riffat Latif	Pharmacology L16 Antiepileptic drugs Dr. Nisar
Thr	Pharmacology L17 Antiepileptic drugs Dr. Nisar	Anesthesia L3 Anesthetic drugs Dr. Riffat Latif	HOSPITAL DUTY		Eye L10 Tumors of eyelids Dr. Danish		Community Medicine L8 Epidemiology (Screening) Dr. Umar Farooq	Pharmacology L18 General Anesthetics Dr. Faheem
Fri	Pharmacology L19 General Anesthetics Dr. Faheem	Forensic Medicine L11 Delirium Poisons Dr. Sadia	HOSPITAL DUTY		Prime research Measures of dispersion Prof. Dr. Saleem Wazir		Half Day	

Module Coordinator

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 6: Theme 06 (Headache)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Forensic medicine L12 Delirium poisons Dr. Sadia	Anesthesia L4 Local anesthetics Dr. Naeed	HOSPITAL DUTY		ENT L11 Anatomy & Physiology of Salivary glands Dr. Sohail Malik	<u>PRAYER BREAK</u>	Pharmacology L20 Local anesthetics Dr. Adeel Alam	PRIME/Research (Community medicine) Measures of central Tendency Prof. Dr. Saleem Wazir
Tue	Pathology L3 Neurodegenerative disorders Dr. Shabana	Pathology L4 Alzheimer's Disease Dr. Shugufta	HOSPITAL DUTY		EYE L11 Management of lid bumps, trichiasis, entropion & ectropion Dr. Danish		General Medicine L3 Alzheimer disease and dementias Dr. Saqib Saeed	Prime/Research Normal distribution Community Medicine Prof. Dr. Saleem Wazir
Wed	Pathology L5 Parkinson's Disease Dr. Shabana	General Medicine L4 Parkinsonism Dr. Saqib Saeed	HOSPITAL DUTY		ENT L12 Non-neoplastic disorders of salivary glands Dr. Tahir Haroon		Community Medicine L9 Morbidity & Mortality Dr. Umar Farooq	Community Medicine L10 Mental Health Dr. Muneeba
Thr	Pharmacology L21 Anti-Parkinson's Drugs Dr. Faryal	Pathology L6 Huntington's Disease Dr. Shugufta	HOSPITAL DUTY		EYE L12 Ptosis Dr. Danish		PRIME/research Z score Community medicine Prof. Dr. Saleem Wazir	Pharmacology L22 Anti-Parkinsonian Dr. Faryal
Fri	Community Medicine L11 Epidemiology (Risk estimation) Dr. Umar Farooq	Pediatrics L2 Cerebellar ataxia Dr. M Ali Raza	HOSPITAL DUTY		Prime/ Research Confidence interval Prof. Dr. Saleem Wazir		Half Day	

Module Coordinator

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 7: Theme 07 (Paraplegia)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Pathology L7 Motor Neuron Disease Dr. Shabana	General Medicine L5 MND Dr. Saqib Saeed	HOSPITAL DUTY		ENT L13 Sialolithiasis & Sialectasis Dr. Tahira Sajid	<u>PRAYER BREAK</u>	Forensic medicine L13 Head Injury Dr. Salma Shazia	Prime/Research Community Medicine P value, rejection errors Prof. Dr. Saleem Wazir
Tue	Pathology L8 Meningitis Dr. Shagufta	General Medicine L6 Meningitis & Encephalitis Dr. Tauqir Ahmad	HOSPITAL DUTY		EYE L13 Proptosis Dr. Zulfiquar		Pediatrics L3 Meningitis Dr. M Ali Raza	Prime/Research Z-test and its applications Prof. Dr. Saleem Wazir
Wed	Pathology L9 Encephalitis, brain abscess Dr. Shabana	Forensic medicine L14 Head Injury Dr. Salma Shazia	HOSPITAL DUTY		ENT L14 Neoplasms of salivary glands Dr. Muhammad Asif		Pathology L10 Cerebral toxoplasmosis Dr. Shagufta	Prime/ Research T-test and applications Prof. Dr. Saleem Wazir
Thr	Pediatrics L4 TBM Dr. M Ali Raza	Community Medicine L12 Epidemiology (investigation of an epidemic) Dr. Umar Farooq	HOSPITAL DUTY		EYE L14 Preseptal & orbital cellulitis Dr. Zulfiquar		Psychiatry L10 Chronic headache Dr. Tahir Shah	Prime/Research (Community Medicine) t-test Prof. Dr. Saleem Wazir
Fri	Pharmacology L23 Anti migraine Dr. Jamila Sahir	Prime/Research Chi square test Community medicine Prof. Dr. Saleem Wazir	HOSPITAL DUTY		Pathology L11 Tumors of CNS (Gliomas) Dr. Shabana		Half Day	

Module Coordinator

TIMETABLE OF 4th YEAR MBBS CLASS FOR THE SESSION 2024

Module Name Neuroscience II, Week No. 8: Theme 08 (Numbness and tingling)

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	Forensic Medicine L15 Head injury Dr. Salma	Pathology L12 Embryonal Neoplasms Dr. Shagufta	HOSPITAL DUTY		ENT L15 Complications of salivary gland surgeries Dr. Farida Khan	<u>PRAYER</u> <u>BREAK</u>	Community medicine L13 Rabies Dr. Adnan	Prime/Research Correlation, regression Prof. Dr. Saleem Wazir
Tue	Pathology L13 Meningioma Dr. Shabana	Pathology L14 Multiple Sclerosis &demyelinating disease Dr. Shugufta	HOSPITAL DUTY		EYE L15 Thyroid Eye Disease Dr. Zulfiqar		General Medicine L7 Multiple Sclerosis Dr. Jawad	Forensic medicine L16 Neurotoxins Dr. Salma
Wed	General Medicine L8 Transverse Myelitis & Carries Spine Dr. Jawad	Orthopedics L1 Traumatic paraplegia Dr. Adeel	HOSPITAL DUTY		ENT L16 Dysphagia & Plummer Vinson Syndrome Dr. Sohail Malik		Pathology L15 Peripheral nerve injuries Dr. Shabana	Family Medicine (Community medicine) L1 Rabies prophylaxis Dr. Adnan Rashid
Thr	Pathology L16 Acute & Chronic Demyelinating Neuropathies Dr. Shugufta	Pathology L17 Myasthenia gravis Dr. Shabana	HOSPITAL DUTY		EYE L16 Myasthenia Gravis & Migraine Dr. Zulfiqar		General Medicine L9 Neuropathies, Myasthenia gravis, GBS Dr. Jawad	PRIME Research Simple Sampling Prof. Dr. Saleem Wazir
Fri	General Medicine L10 Neuropathies, Myasthenia gravis, GBS Dr. Jawad	ENT L17 Pharyngeal & Esophageal pouches Dr. Tahir Haroon			PRIME Research Biostatistics (Community Medicine) Prof. Dr. Saleem Wazir		Half Day	

Module Coordinator _____

Days	8:00-9:00 AM	9:00-10:00 AM	10:00-11:00 AM	11:00-12:00 PM	12:00-12:45 PM	12:45-1:15 PM	1:15-2:00 PM	2:00-3:00 PM
Mon	ENT L18 Oropharyngeal Tumors Dr. Tahira Sajid	Orthopedics L2 Peripheral nerve injuries Dr. Shoaib Zardad	HOSPITAL DUTY		ENT L19 Hypopharyngeal Tumors Dr. Muhammad Asif	<u>PRAYER</u> <u>BREAK</u>	Pathology L18 Tumors of peripheral nerves Dr. Shagufta	PRIME/research Practical Problems in Biostatistics Prof. Dr. Saleem Wazir
Tue	Pediatrics L5 Hereditary neuropathies Dr. Tuseef Ahmed	Forensic medicine L17 Neurotoxins Dr. Salma	HOSPITAL DUTY		ENT L20 Tumors of Esophagus Dr. Farida Khan		Prime/Research Data analysis Community Medicine Prof. Dr. Saleem Wazir	SDL
Wed	Prime/Research Data analysis Community medicine Prof. Dr. Saleem Wazir		HOSPITAL DUTY					
Thr			HOSPITAL DUTY					
Fri			HOSPITAL DUTY				Half Day	

10. For inquiry and troubleshooting



Please contact:

- 1) **Dr. Haq Nawaz**
Professor Department of Pharmacology & Therapeutics,
Ayub Medical College, Abbottabad
Contact No. +923459627240
Email. drhnawaz@hotmail.com

- 2) **Dr. Adeel Alam**
Assistant Professor
Department of Pharmacology & Therapeutics
Ayub Medical College, Abbottabad
Contact No. +923333514408
Email. adeelalam2@gmail.com

11. Course Feedback Form

CourseTitle: _____

Semester/Module _____ Dates: _____

Please fill the short questionnaire to make the course better.

Please respond below with 1, 2, 3, 4 or 5, where 1 and 5 are explained.

THE DESIGN OF THE MODLUE

- | | | | |
|--|----------------------------|----------------------------|---|
| A. Were objectives of the course clear to you? | Y <input type="checkbox"/> | N <input type="checkbox"/> | |
| B. The course contents met with your expectations | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| C. The lecture sequence was well-planned | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| D. The contents were illustrated with | | | 5. Adequate examples <input type="checkbox"/> |
| l. Too few examples | | | |
| E. The level of the course was | | | 5. Too high <input type="checkbox"/> |
| l. Too low | | | |
| F. The course contents compared with your expectations | | | 5. Too empirical <input type="checkbox"/> |
| l. Too theoretical | | | |
| G. The course exposed you to new knowledge and practices | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| H. Will you recommend this course to your colleagues? | | | 5. Very strongly <input type="checkbox"/> |
| l. Not at all | | | |

THE CONDUCT OF THE MODLUE

- | | | | |
|--|---|--------------------------|--|
| A. The lectures were clear and easy to understand | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| B. The teaching aids were effectively used | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| C. The course material handed out was adequate | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| D. The instructors encouraged interaction and were helpful | | | 5. Strongly agree <input type="checkbox"/> |
| l. Strongly disagree | | | |
| E. Were objectives of the course realized? Y | N | <input type="checkbox"/> | <input type="checkbox"/> |

F. Please give overall rating of the course

90% - 100% ()

60% - 70% ()

80% - 90% ()

50% - 60% ()

70% - 80% ()

below 50% ()

Please comment on the strengths of the course and the way it was conducted.

Please comment on the weaknesses of the course and the way it was conducted.

Please give suggestions for the improvement of the course.

Optional - Your name and contact address:

Thank you!!
