

AYUB MEDICAL COLLEGE ABBOTTABAD

DEPARTMENT OF MEDICAL EDUCATION



MULTISYSTEM-I

3RD YEAR MBBS

BLOCK: H

DURATION: 4 WEEKS

FROM: 2023

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

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1. Module Committee:

| s.no | 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. Nisar Ahmed | Pharmacology | Module Coordinator |
| 5. | Dr. Azfar Kamal | Pharmacology | Co-Developer |

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



Resource Material

4. Organization of Module

4.1 Introduction:

Welcome to the Multisystem Module. As you can ascertain from the title it is a module which deals with the working and effects of various inter connected body systems which are unique in themselves and are dealt in detail in various other modules. The common factor in them is that they are innervated by the Autonomic Nervous System and also included will be the effect of our autocooids or local hormones and their novel working which makes us as diverse as we are or as similar as we are as a race. Going on in the module you will learn about Cancers, the bane of humanity and the ultimate power of the body to destroy all that is good for it. The known cures and ways of predicting their outcome and their progression and their end all are taught in this very informative module. Last but not the least Phytopharmacology or using an extract of a medicinal plant or its part, for internal or external use of human beings for diagnosis, treatment, mitigation, or prevention of any disease or disorder is also discussed briefly.

4.2 Rationale:

Learning about the autonomic nervous system and its diverse yet predictable working strengthens our understanding of bodily responses and symptoms in various pathological processes. While it's knowledge helps us to treat various presentations of disease and explain side or adverse effects of important groups of drugs. Learning how hereditary factors regulate our body and how they can be a basis of disease. A knowledge of how cancers can be managed and staged and treated is also essential in these times of rising incidence of Carcinogenic exposure.

The old art of Hickmat has been an essential part of alternative medicine in our part of the world and it's revival in Allopathy as Phtopharmacology is also essential for our knowledge and for making us a good health giver. Principles, concepts and skills gained in this module will help the students to make correlation of basic knowledge learnt in the theory classes with lab work and field visits and in future will give a background for making good and competent researchers and doctors.



5. Learning Objectives

| S. No | Themes | Duration |
|-------|---------------------------------|----------|
| 1 | Vomiting and blurred vision | 1 week |
| 2 | Palpitation, fainting and death | 1 week |
| 3 | Heredity and Cancers | 2 weeks |

5.1 General Learning Objectives

- 1) Explain the functional organization of Autonomic Nervous system (ANS)
- 2) Describe the basic and clinical pharmacology of drugs acting on the ANS
- 3) Describe anticancer drugs
- 4) Describe the basic and clinical pharmacology of Eicosanoids.
- 5) Describe the basic and clinical pharmacology of drugs used for common skin problems.
- 6) Describe the clinical uses of some popular herbal medications.
- 7) Describe single Gene Disorders, cytogenetic disorders and different mutations
- 8) Describe the molecular Genetics Diagnosis
- 9) Define neoplasia and nomenclature of tumors
- 10) Describe characteristics of benign and malignant tumors
- 11) Describe epidemiology of cancer
- 12) Describe carcinogens, their types and clinical aspects of neoplasia
- 13) Describe diagnosis of cancer, grading and staging of tumors
- 14) Describe pathways for tumor spread and tumor immunity
- 15) Describe the protocols and procedures of autopsy.
- 16) Describe Thanatology and its medicolegal implications.
- 17) Describe general principles of Toxicology and their role in medicolegal sciences.
- 18) Describe the fundamentals of Research Ethics

5.2 Specific Learning Objectives

| Theme-1 (Vomiting and Blurred vision) | | | | |
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| Subject | Topic | Learning Objectives | MIT | No. of hrs |
| Physiology | Functional organization of ANS- and overview | Describe the functional organization of ANS and its related neurotransmitters and receptors | LGF | 1 |
| Pharmacology | Introduction to the pharmacology of Autonomic Nervous System (ANS) | Enlist major autonomic neurotransmitters. | LGF | 1 |
| | | Enlist various types of cholinergic, adrenergic and dopaminergic Receptors discovered so far. | | |
| | | Describe the organ system Distribution of Autonomic eceptors. | | |
| | | Describe presynaptic receptors (autoreceptors and heteroreceptors). | | |
| | | Describe ionotropy, chronotropy and dromotropy. | | |
| Cholinomimetic drugs (Parasympatho-mimetic drugs) | | Classify cholinomimetic drugs. | LGF | 2 |
| | | Enlist the naturally-occurring cholinomimetic alkaloids. | | |
| | | Enlist major organophosphate compounds. | | |
| | | Enlist the organophosphates used as "Nerve gases". | | |
| | | Describe the pharmacokinetics of Cholinomimetics with emphasis on metabolism and duration of action. | | |
| | | Describe the mechanism of action of directly-acting and indirectly- | | |

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| | | acting Cholinomimmetics. | | |
| | | Describe the organ system effects of directly-acting and indirectly-acting Cholinomimmetics with special reference to their effects on receptors. | | |
| | | Describe the clinical uses of Cholinomimmetics. | | |
| | | Describe the Cholinomimmetics used in glaucoma and Alzheimer's disease. | | |
| | | Describe the use of Edrophonium to differentiate between cholinergic crisis and Myasthenic crises. | | |
| | | Describe the adverse effects of Cholinomimmetics. | | |
| | | Describe the clinical manifestations of organophosphate poisoning. | | |
| | | Describe the clinical manifestations of mushroom poisoning. | | |
| | | Explain the pharmacological rationale of prophylactic use of Pyridostigmine in situations where chemical warfare with nerve gases is anticipated. | | |
| | | Enlist the contraindications of Cholinomimmetics. | | |
| | Anti-Cholinergic drugs | Classify anticholinergic drugs (Parasympatholytics/Cholinoceptor blocking drugs). | LGF | 2 |
| | | Describe belladonna alkaloids with reference to their natural sources. | | |
| | | Describe the pharmacokinetics of antimuscarinic drugs with emphasis on metabolism and duration of action. | | |
| | | Describe the mechanism of action of antimuscarinic drugs. | | |
| | | Describe the organ system effects of antimuscarinic drugs with special reference to their effects on receptors. | | |

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| | | Describe the clinical uses of antimuscarinic drugs. | | |
| | | Describe the drug treatment of organophosphate poisoning. | | |
| | | Enlist cholinesterase regenerating compounds. | | |
| | | Describe “aging” of the phosphorylated enzyme complex and its clinical importance regarding the management of organophosphate poisoning. | | |
| | | Describe the drug treatment of mushroom poisoning. | | |
| | | Describe the adverse effects of antimuscarinic drugs. | | |
| | | Describe atropine fever. | | |
| | | Name the antidote for atropine poisoning. | | |
| | | Describe the contraindications of antimuscarinic drugs. | | |
| | Ganglion Blocking Drugs | Enlist major ganglion-blocking drugs. | LGF | 1 |
| | | Describe the mechanism of action of ganglion-blocking drugs. | | |
| | | Describe the organ system effects of ganglion-blocking drugs. | | |
| | | Enlist the clinical uses of ganglion-blocking drugs. | | |
| | | Enlist the adverse effects of ganglion-blocking drugs. | | |
| Forensic Medicine | Poison and Related Laws Legal Duties of a registered medical practitioner in a case of poisoning | Define a poison Describe laws related to poisoning or drug use. Explain legal, ethical, and moral duties of Registered Medical Practitioner in a case of poisoning. | LGF | 1 |
| | Fate of Poison Diagnosis of poisoning in living and dead | Enumerate different routes of administration of poisons. Describe Biotransformation. Enlist the route of excretion of Poisons Describe the protocols of diagnosing poisoning in living and | LGF | 1 |

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| | | Dead | | |
| | Antidotes | Define and classify antidotes Describe the mechanism of action of different antidotes | LGF | 1 |
| | Steps of management in case of poisoning | Describe general steps of management in a case of poisoning | LGF | 1 |
| | Organophosphate group | Describe the mechanism of action of commonly used organophosphate poisons. | LGF | 1 |
| | | Describe the characteristics finding for organophosphate group in postmortem examination. | | |
| | | describe different signs and symptoms for organophosphate group. | | |
| | | Describe the medico-legal importance for organophosphate group. | | |
| | | Explain fatal dose, fatal period, and treatment for organophosphate poisons. | | |
| Community medicine | Smoking | Describe the global distribution and increase of smoking | LGF | 1 |
| | | Discuss the causes of smoking | | |
| | | Discuss the effects of smoking on Health | | |
| | | Describe preventive and control Measures | | |
| | International Health | Describe International health regulations and their importance | LGF | 1 |
| | | Describe preventive measures for travelers visiting disease endemic areas | | |
| | Role of international health agencies in public health | Enumerate international health agencies working in health sector | LGF | 1 |
| | | Discuss structure and function of WHO & UNICEF | | |
| | | Explain the roles of WHO & UNICEF in Pakistan | | |
| PRIME/ Research | Research Ethics | Define ethics in research | LGF | 1 |

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| | | Discuss importance of research Ethics | | |
| | | Discuss principles of ethics | | |
| | | Describe the theories of ethics | | |
| | | Discuss research misconduct | | |
| | Referencing | Differentiate between references, citation & bibliography | LGF | 1 |
| | | List different styles of referencing | | |
| | | Select appropriate referencing style for a research project | | |
| Theme-2: (Palpitation, fainting and death) | | | | |
| Pharmacology | Sympathomimetic drugs | Classify sympathomimetic drugs according to the spectrum of adrenoceptors they affect and on the basis of their mode of action (directly-acting and indirectly-acting). | LGF | 2 |
| | | Define Catecholamines with examples. | | |
| | | Describe the pharmacokinetics of sympathomimetic drugs with emphasis on their metabolism. | | |
| | | Describe the mechanism of action of sympathomimetics. | | |
| | | Describe the organ system effects of sympathomimetics with special reference to their effects on receptors. | | |
| | | Compare the effects of Adrenaline, Noradrenaline, Phenylephrine and Isoprenaline on heart rate and blood pressure. | | |
| | | Describe the clinical uses of sympathomimetics. | | |
| | | Describe the drug treatment of Anaphylactic shock. | | |
| | | Describe the dose-dependent effects of Dopamine and its clinical importance. | | |

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| | | Describe the sympathomimetic drugs used in the management of glaucoma. | | |
| | | Describe the role of mannitol and acetazolamide in the treatment of Glaucoma | | |
| | | Describe the adverse effects of sympathomimetics. | | |
| | | Describe hypertensive cheese Reaction | | |
| | | Enlist the foods with high Tyramine content. | | |
| | | Describe the drug interactions of sympathomimetics with Monoamine oxidase inhibiting drugs. | | |
| | | Describe the treatment of accidental overdose of adrenaline. | | |
| | Sympatholytic drugs (Adrenoceptor antagonists) | Classify sympatholytic drugs (adrenoceptor antagonists) on the basis of spectrum of adrenoceptors they affect. | | |
| | | Name the prototype α -blocker. | | |
| | | Name the α -blocker having more specificity for prostate muscle. | | |
| | | Describe the mechanism of action of α -blockers. | | |
| | | Describe the organ system effects of α -blockers with special reference to their effects on receptors. | | |
| | | Describe the phenomenon of epinephrine reversal. | | |
| | | Describe the clinical uses of α -blockers. | | |
| | | Describe the adverse effects of α blockers. | | |
| | | Name the prototype β -blocker. | | |
| | | Enlist the β -blockers with intrinsic sympathomimetic activity (partial agonist activity). | | |
| | | Enlist the β -blockers with | | |

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| | | membrane stabilizing activity (Na channel-blocking activity). | | |
| | | Enlist the β -blockers which have proved to be inverse agonists. | | |
| | | Enlist the β -blockers which are relatively safe in chronic stable heart failure. | | |
| | | Enlist the β -blockers which are relatively safe in asthmatic patients. | | |
| | | Describe the pharmacokinetics of propranolol. | | |
| | | Describe the mechanism of action of β -blockers. | | |
| | | Describe the organ system effects of β -blockers with special reference to their effects on receptors. | | |
| | | Describe the clinical uses of β -blockers. | | |
| | | Describe β -blockers used in the management of glaucoma. | | |
| | | Describe stage fright and name the β -blocker used for its management. | | |
| | | Describe the adverse effects of β -blockers. | | |
| | | Name the antidote for β -blockers' toxicity. | | |
| | | Enlist the contraindications of β -blockers. | | |
| | | Describe the limitations of beta-blockers in patients with Diabetes Mellitus, Hyperlipidemias, Bronchial Asthma and peripheral arterial disease. | | |
| | | Enlist mixed adrenoceptor antagonists (Labetalol and Carvedilol). | | |
| | | Describe the clinical uses of mixed adrenoceptor antagonists. | | |
| Forensic medicine | Thanatology/Death | Describe death. | LGF | 1 |

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| | | Describe phases of death. | | |
| | | Define brain death. | | |
| | | Describe the criteria of brain death. | | |
| | | Describe the role of EEG/ECG in death. | | |
| | | Explain apparent death. | | |
| | | Describe human tissue act. | | |
| | | Describe medicolegal importance of death. | | |
| | Postmortem changes | Define Post Mortem changes. | LGF | 1 |
| | | Classify Post-mortem changes. | | |
| | | Describe immediate, early and late changes of post-mortem. | | |
| | | Describe Post-mortem lividity. | | |
| | | Describe the steps to report changes due to post-mortem Lividity | | |
| | Rigor mortis | Define Rigor Mortis. | LGF | 1 |
| | | Describe the mechanism of formation of Rigor mortis | | |
| | | Describe the special features of Rigor Mortis. | | |
| | | Describe time consumed to develop Rigor mortis. | | |
| | | Describe chemical basis of Rigor Mortis. | | |
| | | Describe factors affecting Rigor Mortis. | | |
| | | Describe the conditions that simulate Rigor Mortis. | | |
| | | Describe procedure of its confirmation. | | |
| | | Describe medico legal importance of Rigor Mortis. | | |
| | Cooling of dead body (Algor Mortis) | Define Algor Mortis? | LGF | 1 |
| | | Describe different methods of recording the temperature of dead body. | | |
| | | Describe the PM body cooling curve? | | |
| | | Describe the formula/calculation | | |

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| | | used for time since death. | | |
| | Late P.M. changes & putrefaction | Define putrefaction? | LGF | 1 |
| | | Describe the process of Putrefaction | | |
| | | Describe stages of putrefaction. | | |
| | | Describe order of progression in putrefaction. | | |
| | | Describe factors affecting Putrefaction. | | |
| | | Describe Casper dictum. | | |
| | | Describe medicolegal importance of putrefaction. | | |
| | Adipocere formation (Saponification) | Define Adipocere formation. | LGF | 1 |
| | | Describe features of Adipocere formation. | | |
| | | Discuss medicolegal importance of Adipocere formation. | | |
| | Mummification | Define Mummification. | LGF | |
| | | Describe features of Mummification. | | |
| | Embalming | Define Embalming. | | |
| | | Enlist the chemical used for Embalming. | LGF | |
| | | Describe the procedure for Embalming. | | |
| | | Describe the used of Embalming | | |
| | Introduction to autopsy | Define Autopsy | | 1 |
| | | Define the modified continental system and compare it with other medicolegal systems in the world. | | |
| | | Classify types of Autopsy. | | |
| | | Describe the role of Autopsy in Criminal offences. | | |
| | | Describe section 174 and 176 of the Criminal Procedure Code (CrPC), 1973 | | |
| | Modern autopsy suite | Describe the components of modern autopsy suite | LGF | 1 |
| | | Describe the precautions taken while working in modern autopsy suites | | |
| | | Explain the hazards encountered in | | |

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| | | modern autopsy suites | | |
| | Autopsy Protocol | Describe pre-examination in Autopsy. | LGF | 1 |
| | | Describe the protocol of examination of clothes, and external examination in autopsy. | | |
| | | Classify and describe different autopsy incisions. | | |
| | | Describe internal examination in an autopsy. | | |
| | | Describe the procedure to collect different autopsy samples. | | |
| | | Describe the chain of custody. | | |
| | | Describe the steps of writing an autopsy report | | |
| | | Describe autopsy procedure for death due to heat and cold. | | |
| | Exhumation | Define exhumation. | | |
| | | Describe authorisation of autopsy surgeon for exhumation. | | |
| | | Describe protocol of exhumation. | | |
| | | Describe time limit for exhumation. | | |
| | | Describe the precautions for exhumations. | | |
| | | Describe the procedure to collect samples. | | |
| | | Describe the limitations of exhumations. | | |
| | | Describe the scope of exhumation. | | |
| | Skeletonized body | Describe the steps of examination of a skeletonized body to assess its race, age, sex and stature | LGF | 1 |
| | | Describe the protocol for autopsy of a skeletonized body | | |
| | | Describe cause of death in such cases. | | |
| | | Describe nature of injury and type of weapon used in such cases. | | |
| | | Describe time since death in such cases. | | |
| | Negative autopsy | Define negative autopsy. | LGF | 1 |
| | | Describe causes of the negative autopsy. | | |

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| | | Describe concealed trauma. | | |
| | Autopsy artifacts and hazards | Describe autopsy artifacts. | LGF | 1 |
| | | Describe the importance of forensic artifacts. | | |
| | | Describe effect of artifacts on the opinion of post-mortem report. | | |
| | Infanticide | Describe infanticide and its related law. | LGF | 1 |
| | | Describe the Age of viability and its medico legal significance. | | |
| | | Describe the concept of live birth and separate existence. | | |
| | | Describe the Hydrostatic test and its importance. | | |
| | | Explain Cause of death, i.e. acts of commission and acts of omission | | |
| | | Describe sudden infant death syndrome (SIDS) | | |
| | Maceration | Define maceration. | | |
| | | Describe features of maceration. | | |
| | | Discuss differentiation point for maceration | LGF | |
| | | Discuss medicolegal importance of maceration. | | |
| | Autopsy of an infected body | Describe the protocols for autopsy of the infected dead body | LGF | 1 |
| | | Describe the precautions required for autopsy of an infected dead body | | |
| | | Enlist the diseases transferred from during autopsy of infected dead body. | | |
| | Autopsy of fragmentary remains | Describe autopsy of a fragmentary remains and mutilated body. | | |
| | | Discuss the protocols adopted for autopsy of fragmentary remains | | |
| | | Describe the samples needed for autopsy of fragmentary remains. | | |
| | General management of poisons | Describe approach to manage a poisoned patient in accident and emergency department | LGF | 1 |
| Community Medicine | Child labor and Child Abuse | Define child labor | LGF | 1 |

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| | | Describe different types of child labor and its effects | | |
| | | Describe statistics of child labor | | |
| | | Describe governments` actions against child labor | | |
| | | Define IPEC 2011 (international program on elimination of child Labor | | |
| | | Define child abuse | | |
| | | Describe different forms of child abuse and its effects | | |
| | | Describe statistics of child abuse | | |
| | | Describe the preventive strategies regarding child abuse | | |
| Theme-3: (Heredity & Cancers) | | | | |
| Pathology | Genetics Introduction | Define the term mutation, hereditary, congenital, genotype, phenotype, codon, Mendelian Disorder. | LGF | 1 |
| | Mutations | Identify various mutations, repeat mutations and mutations in mitochondrial genes. | LGF | 1 |
| | Transmission pattern of single Gene disorders | Classify and diagnose patterns of single gene disorders. Identify x linked, autosomal dominant and recessive disorders. | LGF | 1 |
| | Biochemical and molecular basis of single gene disorders | Recognize enzyme defects with consequences and determine adverse reactions to drugs in genetics. | LG F | 1 |
| | Multigenetic Disorders and autosomy | Identify cases of multigenetic disorders and explain patterns and features of trisomy 21. | LGF | 1 |
| | Molecular genetic diagnosis | Identify the basic principles used in various molecular techniques including PCR, FISH and Southern/Western blotting | L G F | 1 |
| | Introduction to Neoplasia | Describe and specify the terms: neoplasia, neoplasm, oncology, tumor, benign tumor, malignant tumor, anaplasia, metaplasia, | LGF | 1 |

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| | | differentiation and dysplasia. | | |
| | Nomenclature of Tumors | Identify and enumerate the nomenclature of tumors with respect to tissue of origin. | LGF | 1 |
| | Characteristics of Benign and Malignant Tumors | Illustrate the characteristics of benign and malignant tumors in respect to anaplasia, rate of growth, local invasion and metastasis. | LGF | 1 |
| | Epidemiology of Cancer | Identify the epidemiology with incidence, host factors and predisposing factors. | L G F | 1 |
| | Molecular Basis of Cancer | Depict the molecular/genetic basis of tumor, lesion, oncogenesis, prooncogenesis and predisposing factors. | LGF | 1 |
| | Carcinogenesis and its types | Classify types of carcinogens, hallmark of cancers and its process involved, bacterial, viral, chemical and microbial oncogenes involved in pathogenesis. | LGF | 1 |
| | Clinical Aspects and diagnosis of cancers | Characterize clinical features of neoplasia, including its effects on host, cachexia, clinical significance of preneoplastic syndromes. | LGF | 1 |
| | Pathways for tumor spread | Identify pathways for spread of tumors, its morphology, biochemical, molecular basis of methods implied for diagnosis and spread. | LGF | 1 |
| | Grading and Staging of tumors | Recognize and distinguish grades and stages of tumors. | LGF | 1 |
| | Tumor immunity | Categorize host defences against tumors with its antigens and antitumor mechanism and surveillance. | LGF | 1 |
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| Pharmacology | Anticancer drugs | Describe terms like cell cycle-specific drugs and cell cycle- nonspecific drugs. | LGF | 2 |
| | | Describe the role of P-glycoprotein in relation to the development of resistance to cytotoxic drugs. | | |

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| | | Classify anticancer drugs. | | |
| | | Describe general adverse effects of anticancer drugs. | | |
| | | Describe the mechanism of action of alkylating agents. | | |
| | | Describe the clinical uses and adverse effects of Busulfan and Cyclophosphamide. | | |
| | | Describe the mechanism of action, clinical uses and adverse effects of Cisplatin. | | |
| | | Describe in general the mechanism of action of antimetabolites. | | |
| | | Describe the mechanism of action, clinical uses, adverse effects and contraindications of Methotrexate, Azathioprine, 6-Mercaptopurine and 5-Fluorouracil. | | |
| | | Describe the drug interaction of Azathioprine and 6-Mercaptopurine with Allopurinol. | | |
| | | Describe the natural source of plant alkaloids Vinblastine and Vincristine. | | |
| | | Describe the mechanism of action, clinical uses and adverse effects of Vinblastine and Vincristine. | | |
| | | Describe the mechanism of action, clinical uses and adverse effects of Doxorubicin, Daunorubicin, Dactinomycin and Bleomycin. | | |
| | | Enlist the anticancer mechanism of action and uses of hormonal agents like Tamoxifen, Flutamide, Goserelin and Aminoglutethimide. | | |
| | | Enlist the drugs of choice for ALL, AML, CLL, CML, Hodgkin's disease, Non-Hodgkin's lymphoma, Ca breast, Ca lung, Ca prostate and Ca stomach. | | |
| | | Describe cancer treatment modalities (primary induction, adjuvant, neo- | | |

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| | | adjuvant and maintenance chemotherapy) | | |
| | | Describe the antidotes of Methotrexate, Cyclophosphamide and Doxorubicin toxicity. | | |
| | Herbal medications | Describe the terms like herbal medications, botanicals and nutritional supplements with special reference to drug regulatory factors. | L G F | 2 |
| | | Describe the pharmacologic effects and intended uses of Garlic (<i>Allium sativum</i>). | | |
| | | Describe the drug interactions of Garlic with Warfarin and Aspirin. | | |
| | | Describe the possible medicinal use of Kalonji (<i>Nigella sativa</i>). | | |
| | | Describe the pharmacologic effects and intended uses of Ginseng. | | |
| | | Describe the drug interactions of Ginseng with antipsychotic and hypoglycemic medications. | | |
| | | Describe the intended clinical uses of Coenzyme Q10. | | |
| | | Describe the drug interactions of Coenzyme Q10 with Warfarin. | | |
| | | Describe the pharmacological effects and clinical uses of Ginkgo | | |
| | | Describe the pharmacological effects and intended uses of Milk Thistle (<i>Silbum Marianum</i>) | | |
| | | Describe the pharmacological effects, adverse effects and drug interaction of ST. John's Wort (<i>Hypericum Perforatum</i>) | | |
| | | Describe the pharmacological effects, clinical uses and drug interactions of Glucosamine | | |
| Community Medicine | Cancers | Enlist the common cancers prevalent in Pakistan | LGF | 1 |
| | | Describe the burden and | | |

| | | | | |
|-----------------|------------------|--|-----|---|
| | | epidemiology of common cancers prevalent globally and in Pakistan | | |
| | | Describe the prevention and control of cancers | | |
| | | Describe various governmental programs and strategies for the prevention of cancers | | |
| Family medicine | Cancer screening | Identify red-flags in patient which need referral for cancer screening | LGF | 1 |
| | | Explain the psychosocial impact of disease on patient and their families | | |
| | | Describe the indications, rationale and common diseases which require routine cancer screening | | |

PRACTICAL WORK

| Discipline | Topic | LOs | Hours |
|--------------|---|---|-------|
| Pathology | Lipoma | Identify the morphological changes occurring in lipoma and enlist the points of identification | 2 |
| | Squamous cell carcinoma | Identify morphological changes of squamous cell carcinoma and enlist the points of identification | 2 |
| | Fibro adenoma | Identify morphological changes of Fibro adenoma and enlist the points of identification | 2 |
| | Karyotyping | Demonstrate karyotyping on Karyogram, identify gender and chromosomal abnormalities on karyogram | 2 |
| Pharmacology | Introduction to experimental Pharmacology (experiments on isolated piece of rabbit's Ileum) | Differentiate between Qualitative and Quantitative experiments. | 2 |
| | | Recognize various parts of Tissue Organ Bath and describe their functions. | |
| | | Describe the ingredients and their quantities required for preparing | |

| | | | |
|--|---|--|---|
| | | the Tyrode's Solution. | |
| | | Describe the technique of slaughtering of rabbit and removal of a piece of ileum. | |
| | | Describe the fixation of piece of ileum in the inner organ bath. | |
| | | Enumerate the causes of tissue death. | |
| | Ceiling effect for Parasympathomimetic drug (Acetylcholine) | Demonstrate ceiling effect for Acetylcholine on the isolated piece of rabbit's ileum by adding proper doses of the drug into the inner organ bath. | 2 |
| | | Interpret the recording of acetylcholine-induced ileal activity on the revolving drum. | |
| | | Demonstrate washing of the inner organ bath for the subsequent doses of Acetylcholine. | |
| | | Construct tables and graphs for inference of the results. | |
| | Antagonism between acetylcholine and atropine | Demonstrate surmountable antagonism between acetylcholine and atropine on piece of rabbit's ileum by adding proper doses of the drugs into the inner organ bath. | |
| | | Interpret the recording of acetylcholine- and Atropine-induced ileal activity on the revolving drum. | |
| | | Construct tables and graphs for inference of the results. | |
| | Ceiling effect for Histamine | Demonstrate ceiling effect for Histamine on the isolated piece of rabbit's ileum by adding proper doses of the drug into the inner organ bath. | 2 |
| | | Interpret the recording of Histamine -induced ileal activity on the revolving drum. | |
| | | Demonstrate washing of the inner organ bath for the subsequent doses of Histamine. | |
| | | Construct tables and graphs for | |

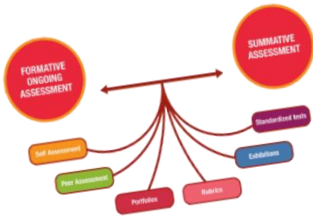
| | | | |
|--|--|---|---|
| | | inference of the results. | |
| | Antagonism between Histamine and antihistamine | Demonstrate surmountable antagonism between Histamine and antihistamine on piece of rabbit's ileum by adding proper doses of the drugs into the inner organ bath. | |
| | | Interpret the recording of Histamine- and antihistamine-induced ileal activity on the revolving drum. | |
| | | Construct tables and graphs for inference of the results. | |
| | To identify an unknown drug on rabbit's ileum with the help of two known antagonists | Demonstrate ceiling effect for the known agonist drug (Acetylcholine or Histamine) on the isolated piece of rabbit's ileum by adding proper doses of the drug into the inner organ bath. | 2 |
| | | Demonstrate surmountable antagonism between the agonist drug and the unknown antagonists (Atropine and antihistamine) on piece of rabbit's ileum by adding proper doses of the drugs into the inner organ bath. | |
| | | Interpret the recording of drug-induced ileal activity on the revolving drum. | |
| | | Construct tables and graphs for inference of the results. | |
| | Introduction to experimental Pharmacology (effects of drugs on rabbit's Eye) | Demonstrate measuring the pupil size. | 2 |
| | | Demonstrate corneal reflex. | |
| | | Demonstrate light reflex. | |
| | Effects of Parasympathomimetic drug (e.g., | Demonstrate the effect of Pilocarpine on the size of the pupil in the test eye in comparison with the control eye. | |
| | Pilocarpine) on rabbit's eye | | |
| | | Demonstrate the effect of Pilocarpine on the colour of the | 2 |

| | | | |
|--|---|--|---|
| | | conjunctiva in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Pilocarpine on the corneal reflex in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Pilocarpine on the light reflex in the test eye in comparison with the control eye. | |
| | Effects of Sympathomimetic drug (e.g., Ephedrine) on rabbit's eye | Demonstrate the effect of Ephedrine on the size of the pupil in the test eye in comparison with the control eye. | 2 |
| | | Demonstrate the effect of Ephedrine on the colour of the conjunctiva in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Ephedrine on the corneal reflex in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Ephedrine on the light reflex in the test eye in comparison with the control eye. | |
| | Effects of Parasympatholytic drug (e.g., Tropicamide) on rabbit's eye | Demonstrate the effect of Tropicamide on the size of the pupil in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Tropicamide on the colour of the conjunctiva in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Tropicamide on the corneal reflex in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Tropicamide on the light reflex in the test eye in comparison with the control eye. | |
| | Effects of Local anaesthetic (e.g., | Describe the mechanism of action of Proparacaine regarding its | 2 |

| | | | |
|--|---|--|---|
| | Proparacaine) on rabbit's eye | effects on the eye. | |
| | | Demonstrate the effect of Proparacaine on the size of the pupil in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Proparacaine on the colour of the conjunctiva in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Proparacaine on the corneal reflex in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of Proparacaine on the light reflex in the test eye in comparison with the control eye. | |
| | To identify effect of an unknown drug on rabbit's eye | Demonstrate the effect of the unknown drug on the size of the pupil in the test eye in comparison with the control eye. | 2 |
| | | Demonstrate the effect of the unknown drug on the colour of the conjunctiva in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of the unknown drug on the corneal reflex in the test eye in comparison with the control eye. | |
| | | Demonstrate the effect of the unknown drug on the light reflex in the test eye in comparison with the control eye. | |
| | | Interpret the results. | |
| | | Identify the unknown drug. | |
| | Visit to Pharmacology Museum | Identify the different plants and their parts used as a source of important drugs(e.g, Hyscyamus niger, Digitalis purpurea, Papver somniferum etc) | 2 |
| | | Recognize the various preparations of common drugs used in clinical practice. | |

| | | | |
|-------------------|------------------------------|--|---|
| | | Observe the diagrammatic illustrations of mechanism of action of different drugs | |
| Forensic medicine | Autopsy report | Construct a full autopsy report including all components after thorough examination. | 2 |
| | Toxicology Sample collection | Explain the procedures, organ needed, and preservation used in sample collection. | 2 |
| | Toxicology Report Analysis | interpret the toxicology report received and then incorporate it in final opinion. | 2 |
| | Thanatology | Identify and describe various models of post-mortem changes | 2 |
| | Stomach wash | Perform stomach wash on a Manikin | 2 |

| Hours Distribution | |
|---------------------------|---------------------|
| Theory | |
| Discipline | No. of hours |
| Physiology | 01 |
| Pathology | 16 |
| Pharmacology | 14 |
| Forensic Medicine | 21 |
| Community Medicine | 05 |
| Family Medicine | 01 |
| PRIME | 02 |
| Total | 60 |
| Practical/ SGDs | |
| Pathology | 08 |
| Pharmacology | 22 |
| Forensic Medicine | 10 |
| Total | 40 |



6. Examination and Methods of Assessment:

The year-3 will be assessed in 3 blocks.

- 1) Block-1 (Foundation 2 and Infection and Inflammation modules) will be assessed in **paper-G**.
- 2) Block-2 (Multisystem, blood and MSK modules) will be assessed in **paper-H**.
- 3) Block-3 (CVS and Respiratory module) will be assessed in **paper-I**.
- 4) Each written paper consists of 120 MCQs.
- 5) Internal assessment will be added to final marks in KMU.
- 6) In OSPE, each station will be allotted 6 marks, and a total of 120 (+10% marks of internal assessment) marks are allocated for each OSPE/OSCE examination.
- 7) Practical assessment will be in the form of OSPE/OSCE which will also include embedded viva stations. The details of each section are given in the tables given below.

Table-1: Total Marks Distribution 3rd Year MBBS

| Assessment Plan of 3rd Year MBBS | | | | | | |
|--|-------------------------------------|---------------------|---|------------------|---|--------------------|
| Theory paper | Modules | Theory marks | Internal assessment theory (10%) | OSPE/OSPE | Internal assessment OSPE/OSPE(10%) | Total Marks |
| Paper G | Foundation-II | 120 | 14 | 120 | 14 | 268 |
| | Inf.&Inflamm.I | | | | | |
| Paper H | Multisystem I Blood II MSK-II | 120 | 13 | 120 | 14 | 267 |
| Paper I | CVS-II | 120 | 13 | 120 | 12 | 265 |
| | Respiratory-II | | | | | |
| Total Marks | | 360 | 40 | 360 | 40 | 800 |

Paper-H (Multisystem, Blood and MSK)

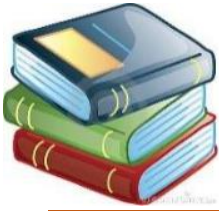
MCQs

| Subject | Multisystem-1 module | Blood and Immunology-2 | Musculoskeletal (MSK)-2 module | Total MCQs |
|-----------------------|---------------------------------|-----------------------------------|---|-------------------|
| Pharmacology | 12 | 03 | 05 | 20 |
| Pathology | 16 | 22 | 13 | 51 |
| Forensic medicine | 09 | 02 | 09 | 20 |
| Community medicine | 03 | 04 | 03 | 10 |
| ENT | | | 01 | 01 |
| Eye | | | 01 | 01 |
| PRIME | | | 01 | 01 |
| Research | | | 05 | 05 |
| Medicine | 01 | 02 | 02 | 05 |
| Orthopedics | | | 02 | 02 |
| Pediatrics | | 01 | 03 | 04 |
| Total | 41 | 35 | 44 | 120 |

OSPE

| Subject | OSPE/OSCE | Viva stations | Total* |
|---|-----------|---------------|-----------|
| Pharmacology | 5 | 2 | 7 |
| Pathology | 3 | 2 | 5 |
| Forensic medicine | 2 | 2 | 4 |
| Community medicine | 0 | 2 | 2 |
| Paeds (history and physical examination) | 1 | 0 | 1 |
| Medicine (history and physical examination) | 1 | 0 | 1 |
| Total | 12 | 8 | 20 |

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



7. Learning Opportunities and Resources

a. Books:

Pharmacology

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

Paediatrics

- Nelson textbook of Pediatrics, 21st edition
- Textbook of Pediatrics, Pakistan Pediatrics Association
- Basis of Pediatrics, Pervez Akbar Khan, Ninth edition

Prime/Research

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

Medicine

- Davidson's Principles and Practice of Medicine
- Kumar and Clarks Clinical Medicine

Forensic Medicine

- 1-Principles and practice of Forensic Medicine by Naseeb Rawan
- 2-Text book of Forensic Medicine and Toxicology by Nagesh Kumar G Rao.
- 3-Prakhs textbook of medical jurisprudence and toxicology

Pathology

Text Books

- Robbins Pathologic Basis of Disease

Reference Books:

- Walter & Israel's General Pathology"

Harsh Mohan's "Textbook of Pathology".

Pathology Illustrated

Stefan Silbernagl's "Color Atlas of Pathophysiology"

Muir's Textbook of Pathology

Textbook for Microbiology

Jawetz, Melnick&Adelberg's "Medical Microbiology"

b. Reference Books:

Levinson's "Medical Microbiology & Immunology"

Sherris Medical Microbiology

Lippincott's Illustrated Reviews: Microbiology

c. Website:

Forensic Medicine

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

Prime

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

d. Articles:

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

8. Timetables

AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2023

Multisystem Module, Week 1: Theme 01 (Vomiting & Blurred Vision) & 02 (Palpitation, Fainting, & Death)

| Days | 9:00-9:50 am | 10:00-10:50 am | 11:00-11:50 am | 12:00-12:50 pm | 01:00-01:50 pm |
|-------|---|---|--|---|--|
| Mon | Functional organization of ANS Physiology L1 Dr. Raisa Naz | Anti-Cholinergics & Ganglion Blocking Drugs Pharmacology L3 Dr. Afsheen Siddiqui | Transmission Pattern of Single Gene Disorders Pathology L2 Dr. Fiaz Ahmed | Drug Abuse Community Medicine L2 Dr. Muneeba Mushtaq | SDL |
| Tue | Anti-Cholinergics & Ganglion Blocking Drugs Pharmacology L4 Dr. Afsheen Siddiqui | Organophosphate Group Forensic Medicine L1 Dr. Salma Shazia | Autopsy Forensic Medicine L2 Dr. Inayat Ullah | Mutations Dr. Fiaz Pathology L3 | SDL |
| Wed | Modern Autopsy Suite Forensic Medicine L3 Dr. Salma Shazia | Biochemical & Molecular Basis of Single gene Disorders Pathology L4 Dr. Fiaz Ahmed | International health Community Medicine L3 Dr. Rizwana | Autopsy protocol Forensic Medicine L4 Dr. Omair | SDL |
| Thurs | Autopsy protocol Forensic Medicine L5 Dr. Omair | Sympathomimetics Pharmacology L5 Dr. Sumbal Tariq | Complex Multigeneic & Cytogenetic Disorders Pathology L5 Dr. Fiaz Ahmed | Autopsy protocol Forensic Medicine L6 Dr. Omair | Smoking Community Medicine L4 Dr. Muneeba Mushtaq |
| Fri | Sympathomimetics Pharmacology L6 Dr. Sumbal Tariq | Exhumation Forensic Medicine L7 Dr. Omair | Sympatholytics Pharmacology L7 Dr. Haq Nawaz | Skeletonized body Forensic Medicine L8 Dr. Omair | HALFDAY |

AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2023

Multisystem Module, Week 2: Theme 02 (Palpitation, Fainting, & Death) & Theme 03 (Heredity & Cancers)

| Days | 9:00-9:50 am | 10:00-10:50 am | 11:00-11:50 am | 12:00-12:50 pm | 01:00-01:50 pm |
|-------|---|--|---|--|---|
| Mon | Negative Autopsy Forensic Medicine L9 Dr. Salma Shazia | Sympatholytics Pharmacology L8 Dr. Haq Nawaz | Molecular Genetic Diagnosis Pathology L6 Dr. Fiaz Ahmed | Autopsy Artifacts and Hazards Forensic Medicine L10 Dr. Inayat Ullah | Referencing PRIME (Community Med) L4 Dr. Zeeshan |
| Tue | Infanticide Forensic Medicine L11 Dr. Salma Shazia | Introduction to Neoplasia Nomenclature of Tumors Pathology L7 Dr. Shagufta | Autopsy of an infected body Forensic Medicine L12 Dr. Omair | Eicosanoids, prostaglandins, & anti- histamines Pharmacology L9 Dr. Jamila Sahir | Reference manager PRIME (Community Med) L5 Dr. Zeeshan |
| Wed | Eicosanoids, prostaglandins, & anti-histamines Pharmacology L10 Dr. Jamila Sahir | Autopsy of fragmentary remains Forensic Medicine L13 Dr. Omair | Characteristics of Benign & Malignant Tumors Pathology L8 Dr. Shagufta | Embalming, Adipocere formation & Mummification Forensic Medicine L14 Dr. Nighat Seema | Epidemiology of Cancers, Molecular Basis of Cancers Pathology L9 Dr. Shagufta |
| Thurs | Carcinogenesis Pathology L10 Dr. Shagufta | Thanatology Forensic Medicine L15 Dr. Nighat Seema | Postmortem Changes Forensic Medicine L16 Dr. Inayat Ullah | Types of Carcinogens Pathology L11 Dr. Shagufta | Phytopharmacology Pharmacology L11 Dr. Faryal Mustafa |
| Fri | Rigor Mortis Forensic Medicine L17 Dr. Nighat Seema | Clinical Aspects of Neoplasia & its diagnosis Pathology L12 Dr. Shagufta | Anti-Cancer Drugs Pharmacology L12 Dr. Nisar Ahmed | Algor Mortis Forensic Medicine L18 Dr. Omair | HALFDAY |

L: Sequence of lectures of a discipline.

AYUB MEDICAL COLLEGE ABBOTTABAD

TIMETABLE OF 3RD YEAR MBBS CLASS FOR THE SESSION 2023

Blood & Immunology module II

| Days | 9:00-9:50 am | 10:00-10:50 am | 11:00-11:50 am | 12:00-12:50 pm | 01:00-01:50 pm |
|------|--|---|---|--|----------------|
| Mon | Late Post-Mortem changes & Putrefaction Forensic Medicine L19 Dr. Omair | Pathways for Tumor Spread Pathology L13 | Anti-Cancer Drugs Pharmacology L13 Dr. Nisar Ahmed | Maceration Forensic Medicine L20 | |

9. For inquiry and troubleshooting



Please contact

drsumbaltariq@yahoo.com

adeelalam2@gmail.com

10. Course Feedback Form

Course Title: _____

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 CONDUCT OF THE MODLUE

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

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 | | <input type="checkbox"/> |
| l. Strongly disagree | 5. Strongly agree | |
| C. The lecture sequence was well-planned | | <input type="checkbox"/> |
| l. Strongly disagree | 5. Strongly agree | |
| D. The contents were illustrated with | | <input type="checkbox"/> |
| l. Too few examples | 5. Adequate examples | |
| E. The level of the course was | | <input type="checkbox"/> |
| l. Too low | 5. Too high | |
| F. The course contents compared with your expectations | | <input type="checkbox"/> |
| l. Too theoretical | 5. Too empirical | |
| G. The course exposed you to new knowledge and practices | | <input type="checkbox"/> |
| l. Strongly disagree | 5. Strongly agree | |

H. Will you recommend this course to your colleagues?

1. Not at all

5. Very strongly

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!!