"Faisalabad Medical University"

Block H

3rd Year MBBS

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Block H Modules

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Multisystem Module I

Module Committee

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Multisystem Module I

Multisystem module deals with the working and effects of various inter connected body systems which are unique in them 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 autacoids 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 are good for it. The known cures and ways of predicting their outcome and their progression and their end.

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 adverse effects of important groups of drugs. Learning how hereditary factors regulate our body and how they can be a basis of disease. 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 its revival in Allopathy as Photopharmacology 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.

General learning outcomes

By the end of this module students would be able to:

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 medico legal implications.
17) Describe general principles of Toxicology and their role in medico legal sciences.
18) Describe the fundamentals of Research Ethics

THEMES

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

TEACHING HOURS ALLOCATION

S.No	Subject	Hours
1	Pharmacology	41
2	Pathology	36
3	Forensic medicine	23
4	Community medicine	5
5	Medicine	1
6	PRIME/Research	2
7	Family medicine	1
8	Physiology	1
	Total	**110**

Theme-1: Vomiting and Blurred Vision

Sr. No	Subject	Topic	Hours	Learning objectives	Teaching Strategy	Assess-ment
1	Physiology	Functional organization of ANS- And overview	1	Describe the functional organization of ANS and its related neurotrans-mitters and receptors	Interactive lecture	MCQs
2	Pharmacology	Introduction to the pharmacol-ogy of Auto-nomic Nervous System (ANS)	1	• Enlist major autonomic neurotransmitters • Enlist various types of cho-linergic, adrenergic and do-paminergic receptors dis-covered so far • Describe the organ system distribution of autonomic receptors • Describe presynaptic recep-tors (auto receeptors and heteroreceptors). • Describe inotropy, chrono-tropy and dromotropy.	Interactive lecture 1	MCQs
		Cholinomimetic drugs (Parasym-pathetic-mimetic drugs)	4	• Classify cholinomimetic drugs • Enlist the naturally-occurring cholinomimetic alkaloids • Enlist major organophosphate compounds. • Enlist the organophosphates used as“Nerve gases” • Describe the pharmacokinetics	Interactive lecture 2 SGD 1	MCQs

				of cholinomimetics with emphasis on metabolism and duration of action. • Describe the mechanism of action of directly-acting and indirectly-acting cholinomimetics. • Describe the organ system effects of directly-acting and indirectly-acting cholinomimetics with special reference to their effects on receptors. • Describe the clinical uses of cholinomimetics. • Describe the cholinomimetics 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 cholinomimetics. • 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 cholinomimetics.		

		Anticholinergic drugs (Parasym-patholytic)	2	• Classify anticholinergic drugs (Parasympatholyt-ic/Cholinoceptor-blocking drugs) • 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 ac-tion of antimuscarinic drugs • Describe the organ system ef-fects of antimuscarinic drugs with special reference to their effects on receptors. • Describe the clinical uses of Antimuscarinic drugs • Describe the drug treatment of organophosphate poisoning • Enlist cholinesterase regenerat-ing compounds. Describe "ag-ing" of the phosphorylated en-zyme complex and its clinical importance regarding the man-agement 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.	Interactive lectures 2	MCQs
		Ganglion-blocking Drugs	2	• Enlist major ganglion-blocking drugs. • Describe the mechanism of ac-tion of ganglion-blocking drugs • Describe the organ system ef-fects of ganglion-blocking drugs. • Enlist the clinical uses of gan-glion-blocking drugs. Enlist the adverse effects of gangli-on-blocking drugs.	SGD 1	MCQs

3	Forensic Medicine	Poison & related laws	1	• Define Toxicology • Define poison, drug and toxin • Describe the toxicity rating scale • Classify poisons • Enlist laws related to poisoning	Interactive lecture	MCQs
		Legal duties of a Registered Medical Practitioner in a case of poisoning		• Explain legal, ethical, and moral duties of Registered Medical Practitioner in a case of poisoning.		
		Fate of Poison		• Enumerate different routes of administration of poisons • Describe factors modifying the action of poisons • Enlist the route of excretion of Poisons		
		Diagnosis of poisoning in living and dead	1	• Describe the protocols of diagnosing poisoning in living and dead	Interactive lecture	MCQs
		Steps of management in a case of poisoning	1	• Describe general steps of management in a case of poisoning	Interactive lecture	MCQs
		Organophosphate Poisoning	1	• Describe the mechanism of action of commonly used organophosphate poisons. • Discuss fatal dose, fatal period, clinical presentation, management , postmortem findings and medico-legal importance of organophosphate poisoning	Interactive lecture	MCQs
4	Community medicine	Smoking	1	• Describe the global distribution and increase in trend of smoking • Discuss the causes of smoking • Discuss the effects of smoking on Health • Describe preventive and control measures	Interactive lecture	MCQs

		International Health	1	• Describe International health regulations and their importance • Describe preventive measures for travelers visiting disease endemic areas	Interactive lecture	MCQs
		Role of international health agencies in public health	1	• Enumerate international health agencies working in health sector • Discuss structure and function of WHO & UNICEF • Explain the roles of WHO & UNICEF in Pakistan	Interactive lecture	MCQs
5	PRIME/ Research	Research Ethics	1	• Define ethics in research • Discuss importance of research Ethics • Discuss principles of ethics • Describe the theories of ethics • Discuss research misconduct	Interactive lecture	MCQs
		Referencing	1	• Differentiate between references, citation & bibliography • Enlist different styles of referencing • Select appropriate referencing style for a research project	Interactive lecture	MCQs

Theme-2: (Palpitation, fainting and death)						
Sr #	**Subject**	**Topic**	**Hrs**	**Learning objectives**	**Teaching strategy**	**As-sess-ment**
1	Pharmacology	Sympatho-mimetic drugs	5	• 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). • 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. • 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	Interactive lectures 3 SGD 1	MCQs

				• sympathomimetics with Monoamineoxidase inhibiting drugs. • Describe the treatment of accidental overdose of adrenaline.		
		Sympatholytic drugs (Adrenoceptor antagonists)	4	• 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 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	Interactive Lectures 2 SGD 1	MCQs

				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		
2	Forensic medicine	Thanatology /Death	1	• Define death and its stages • Describe brain death and its criteria • Describe the role of EEG/ECG in certification of death. • Discuss apparent death/Suspended animation • Discuss Human tissue act. • Describe medico legal importance of death.	Interactive Lecture	MCQs

		Postmortem changes: Postmortem lividity	1	• Describe immediate, early and late-postmortem changes • Describe Post-mortem lividity and its Medico-legal aspects	Interactive lecture	MCQs
		Rigor mortis	1	• Define Rigor Mortis, its phases and mechanism of development • Describe factors influencing Rigor Mortis • Describe the conditions that simulate Rigor Mortis. • Describe medico legal importance of Rigor Mortis.	Interactive lecture	MC Qs
		Cooling of dead body (Algor Mortis)		• Define Algor Mortis • Enlist methods of recording the temperature of a dead body • Illustrate the PM cooling curve and describe the factors affecting it		
		Late PM changes (Putrefaction)	1	• Define putrefaction • Describe the sequence of changes that occur during putrefaction • Describe factors affecting Putrefaction. • Define Casper dictum. • Describe medico legal importance of putrefaction.	Interactive lecture	MC Qs
		Maceration	1	• Describe maceration, its features and Medico-legal importance • Describe its differentiating points from putrefaction	Interactive lecture	MC Qs
		Adipocere formation (Saponification)		• Define Adipocere formation, its features and Medico-legal importance		
		Mummification		• Define Mummification, its features and Medico-legal importance		
		Introduction to autopsy	1	• Define Autopsy • Enlist its types and objectives	Interactive lecture	MC Qs
		Modern autopsy suite		• Describe the components and requirements of Modern autopsy suite • Describe the precautions taken while		

				performing autopsy • Explain the hazards encountered during autopsy		
		Autopsy Protocol	2	• Describe pre-examination in Autopsy. • Describe the protocol of examination of clothes during autopsy. • Describe Autopsy incisions • Describe external and internal examination procedures during autopsy. • Describe the chain of custody	Interactive lectures 2	MC Qs
		Exhumation	1	• Define exhumation and discuss its protocol. • Enlist the precautions observed during exhumation • Discuss the procedure to collect samples during exhumation • Describe the time limit, limitations and scope of exhumation	Interactive lecture	MC Qs
		Embalming		• Define Embalming • Enlist the chemicals used for Embalming and its procedure		
		Examination of a skeletonized body/Fragmentary remains/Mutilated body	1	• Describe the protocol for autopsy of a skeletonized body/fragmentary remains/Mutilated body • Discuss the information that can be obtained by this examination	Interactive lecture	MC Qs
		Autopsy artifacts	1	• Describe autopsy artefacts and their effect on final opinion of post-mortem examination	Interactive lecture	MC Qs
		Negative autopsy		• Define negative autopsy and its causes	Interactive lecture	MC Qs
		Infanticide and Battered baby syndrome	2	• Define infanticide, its related laws and causes • Describe the Age of viability and its medico legal significance. • Describe the concepts of live born, still born and dead born child and their autopsy findings	Interactive lectures 2	MC Qs

				• Describe the protocol of infant autopsy • Define Hess's rule and Morrison's rule • Describe sudden infant death syndrome (SIDS) • Describe salient features of Battered baby syndrome		
3	Community Medicine	Child labor and child Abuse	1	• Define child labor • Describe its different types, effects and statistics • Describe government's`actions against child labor • Define IPEC 2011 (international program on elimination of child Labor • Define child abuse • Describe its various forms, effects and statistics • Describe the preventive strategies regarding child abuse	Interactive lecture	MC Qs
4	Medicine	General Management of poisons	1	• Describe approach to manage a poisoned patient in accident and emergency department	Interactive lecture	MC Qs

Theme-3: (Heredity and Cancers)

1	Pathology	Genetics	3	• Define the term mutation, hereditary, congenital, genotype, phenotype, nonmendelian Disorder	Interactive lectures 1 SGD 1	MCQs
		Mutation	3	• Describe various types of mutations • Describe trinucleotide-repeat Mutations • Enlist few examples of trinucleotide-repeat disorders • Describe mutations in mitochondrial genes	Interactive lecture 1 SGD 1	MCQs
		Transmission pattern of single Gene disorders	3	• Enumerate transmission patterns of single gene disorders • Describe biochemical and molecu-	Interactive lecture 1	MCQs

				lar basis of autosomal dominant disorders • Enlist few examples of autosomal dominant disorders • Describe biochemical and molecular basis of Autosomal Recessive disorder • Enlist few examples of Autosomal Recessive Disorder • Describe mechanism of transmission of X-Linked disorders • Enumerate examples of X-Linked disorders	SGD 1	
		Disorders associated with defects in structural proteins	1	• Discuss pathogenesis, morphology, clinical features of Marfan's syndrome Ethlers-Danlos syndrome	Interactive lecture 1	MCQs
		Biochemical and molecular basis of single gene disorders	1	• Discuss enzyme defects and their consequences, Lysosomal storage diseases, glycogen storage diseases • Describe defects in receptors and Transport system Familial hypercholesterolemia • Describe alterations in structure, functions or quantity of non-enzyme proteins • Describe genetically determined adverse reactions to drugs	Interactive lecture 1	MCQs
		Complex multigenetic disorders	1	• Describe multigenetic disorders with examples	Interactive lecture 1	MCQs
		Cytogenetic Disorders involving Autosomes	2	• Discuss Trisomy 21 and its molecular basis • Discuss its diagnostic clinical features	Interactive lectures 2	MCQs

		Molecular genetic diagnosis	1	• Describe the basic principles of various molecular techniques including PCR, FISH and Southern / Western blotting • Enumerate indications of these techniques	Interactive lecture 1	MCQs
		Introduction to Neoplasia	1	• Define the terms: neoplasia, neoplasm, oncology, tumor, benign tumor malignant tumor, anaplasia, metaplasia, differentiation and dysplasia.	Interactive lecture 1	MCQs
		Nomenclature of Tumors		• Describe the basic principle of nomenclature of tumors with respect to tissue of origin, benign and malignant nature		
		Characteristics of Benign and Malignant Tumors	1	• Describe characteristics of benign and malignant tumors • Differentiate between benign and malignant tumors • Describe characteristics of benign and malignant neoplasms in terms of differentiation, anaplasia, rate of growth, local invasion and metastasis	Interactive lecture 1	MCQs
		Epidemiology of Cancer	1	• Describe the epidemiology of cancer with respect to overall incidence of cancer and various host factors (age and hereditary) that predispose to cancer • Describe the epidemiology of cancer with respect to geographical and environmental factors that predispose to cancer	Interactive lecture 1	MCQs
		Molecular Basis of Cancer	1	• Describe the molecular/genetic basis of carcinogenesis • Describe genetic lesions in cancer • Define oncogene, proto-oncogen and oncoproteins.	Interactive lecture 1	MCQs
		Carcinogenesis	1	• Enumerate carcinogens • Describe the process of carcinogene-	Interactive lecture 1	MCQs

				sis • Describe the hallmarks of cancer cells and process involved • Describe the role of p53		
		Types of Carcinogens	3	• Discuss properties of chemical Carcinogens • Describe direct and indirect chemical carcinogens and their mechanism of action • Describe the mechanism of radiation carcinogenesis • Enumerate viral and bacterial Carcinogens • Describe mechanism of carcinogenesis by viral and microbial oncogenes	Interactive lecture 1 SGD 1	MCQs
		Clinical Aspects of neoplasia	3	• Define cachexia • Describe the clinical features of neoplasia including effects of tumor on host cancer cachexia • Describe the clinical significance of Paraneoplastic syndromes • Describe clinical syndromes with respect to causal mechanism and major forms of underlying cancer	Interactive lecture 1 SGD 1	MCQs
		Diagnosis of Cancer	1	• Describe morphologic, biochemical and molecular methods employed for diagnosis of cancer	Interactive lecture 1	MCQs
		Pathways for tumor spread	1	• Describe the pathways for spread of tumors like local invasion and metastasis	Interactive lecture 1	MCQs
		Grading and Staging of tumors	1	• Describe grading and staging Tumors	Interactive lecture 1	MCQs
		Tumor immunity	1	• Discuss host defenses against tumors • Describe tumor antigens and anti-tumor effect mechanisms • Describe tumor surveillance and Immune evasion by the tumors	Interactive lecture 1	MCQs
2	Pharmacology	Anticancer drugs	4	• Describe terms like cell cycle- specific drugs and cell cycle-nonspecific drugs. • Describe the role of P-glycoprotein In relation to the development of resistance to cytotoxic drugs • Classify anticancer drugs.	Interactive lectures 4	MCQs

				• 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 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 stomac • Describe cancer treatment modalities (primary induction, adjuvant, neoadjuvant and maintenance chemotherapy) • Describe the antidotes of Methotrexate, Cyclophosphamide andDoxorubicin toxicity.		
		Eicosanoids- Prostaglandins	1	• Classify eicosanoids. • Describe the mechanism of action of Prostaglandins. • Describe the organ system effects of Prostaglandins. • Describe the clinical uses of Prosta-	Interactive lecture 1	MCQs

				glandins. • Describe the prostaglandins used in the management of glaucoma. • Describe the pharmacologic effects of Thromboxane's2.		
		Dermato-logic prepara-tions	1	• Describe dermatologic formula-tions like creams, ointments, gels, lotions, pastes ,powders, tinctures and wet dressings. • Describe the choice of dermatolog-ic formulation with reference to the nature of the lesion.	Interactive lecture 1	MCQs
		Drug treatment of scabies		• Enlist the drugs used for the treat-ment of Scabies • Describe the method of application of Permethrin, Crotamiton and Ben-zylbenzoate for treating scabies.		
		Drug treat-ment of Acne vulgaris	1	• Enlist the drugs used for treating Acne (including antibiotics and hor-monal agents). • Describe the mechanism of action and adverse effects of Benzoylperox-ide, Tretinoin and Isotretinoin. • Describe the teratogenicity of Isotretinoin.	Interactive lecture 1	MCQs
		Drug treatment of Psoriasis		• Enlist the drugs used for treating Psoriasis. • Describe the teratogenicity of Aci-tretin		
		Herbal medica-tions	1	• Describe the terms like herbal medi-cations, botanicals and nutritional supplements with special reference to drug regulatory factors. • Describe the pharmacologic effects and intended uses of Garlic (Allium-sativum) • Describe the drug interactions of Garlic with Warfarin and Aspirin. • Describe the possible medicinal use of Kalonji (Nigella sativa). • Describe the pharmacologic effects and intended uses of Ginseng. • Describe the drug interactions of Ginseng with antipsychotic and hy-poglycemicmedications. • Describe the intended clinical uses of Coenzyme Q10.	In-ter-ac-tive lec-ture 1	MCQs

				• Describe the drug interactions of Coenzyme with Warfarin.		
3	Community Medicine	Cancers	1	• Enlist the common cancers prevalent in Pakistan • 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	Interactive lecture 1	MCQs
4	Family medicine	Cancer screening	1	• Identify red-flags in patient which need referral for cancer screening • Explain the psychosocial impact of disease on patient and their families	Interactive lecture 1	MCQs

PATHOLOGY PRACTCALS				
Topics	**Duration (hrs)**	**Learning objectives**	**Teaching strategy**	**Assessment tool**
Lipoma	1.5	• Identify the morphological changes occurring in lipoma	Skill lab	OSPE
Squamous cell Carcinoma	1.5	• Identify morphological changes of Squamous cell carcinoma	Skill lab	OSPE
Fibroadenoma	1.5	• Enlist points of identification of gross and microscopic features of fibroadenoma of breast	Skill lab	OSPE
Karyotyping	1.5	• Demonstrate preparation of Karyogram • Identify gender on the basis of Karyogram • Identify common numerical chromosomal abnormalities onKaryogram	Skill lab	OSPE
PHARMACOLOGY PRACTICALS				
Introduction to experimental Pharmacology (effect of soft drugs on rabbit's Eye) Effects of Parasympathomimetic drug (e.g. Pilocarpine) on rabbit's eye	1.5	• Demonstrate measuring the pupil size. • Demonstrate corneal reflex. • Demonstrate light reflex. Demonstrate the effect of Pilocarpine on the size of the pupil in the test eye in comparison with the control eye. • Demonstrate the effect of Pilocarpine on the colour of the 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.	Skill lab	OSPE

Effects of Sympathomimetic drug(e.g., Ephedrine) on rabbit's eye	1.5	• Demonstrate the effect of Ephedrine on the size of the pupil in the test eye in comparison with the control eye. Demonstrate the effect of Ephedrine on the color of 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.	Skill lab	OSPE
Effects of Parasympatholytic drug (e.g.,Tropicamide) on rabbit's eye	1.5	• 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 color 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.	Skill lab	OSPE

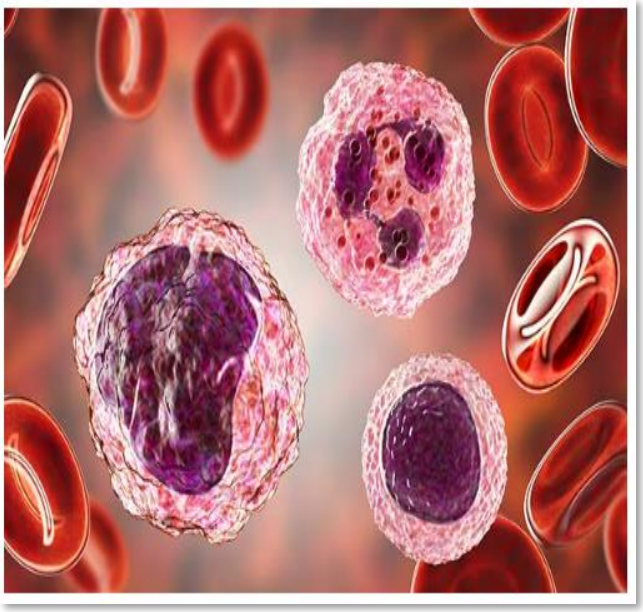
Effects of Local anaesthetic (e.g.,Proparacaine) on rabbit's eye	1.5	• Describe the mechanism of action of Proparacaine regarding its effects on the eye. • Demonstrate the effect of Proparacaine on the size of the pupil in the test eye in comparison with the control eye. • Demonstrate the effect of Proparacaine on the color 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.	Skill lab	OSPE
To identify an unknown drug on rabbit's eye	1.5	• Demonstrate the effect of the unknown drug on the size of the pupil in the test eye in comparison with the control eye. • Demonstrate the effect of the unknown drug on the color 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.	Skill lab	OSPE

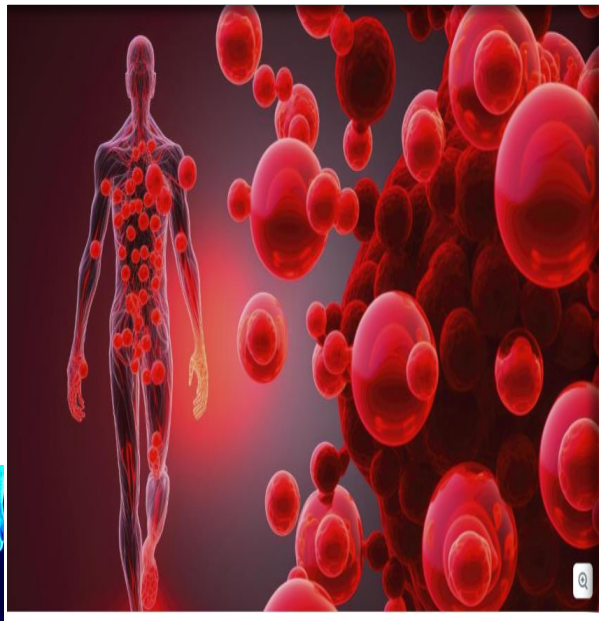
		• Interpret the results. • Identify the unknown drug.		
Experiment on isolated piece of rabbit's ilimu Antagonism between Acetylcholine and atropine	1.5	• Differentiate between Qualitative and Quantitative experiments. • Recognize various parts of Tissue Organ Bath and describe their functions • Describe 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. 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.	Skill lab	OSPE
Antagonism between histamine and antihistamine	1.5	• 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	Skill lab	OSPE

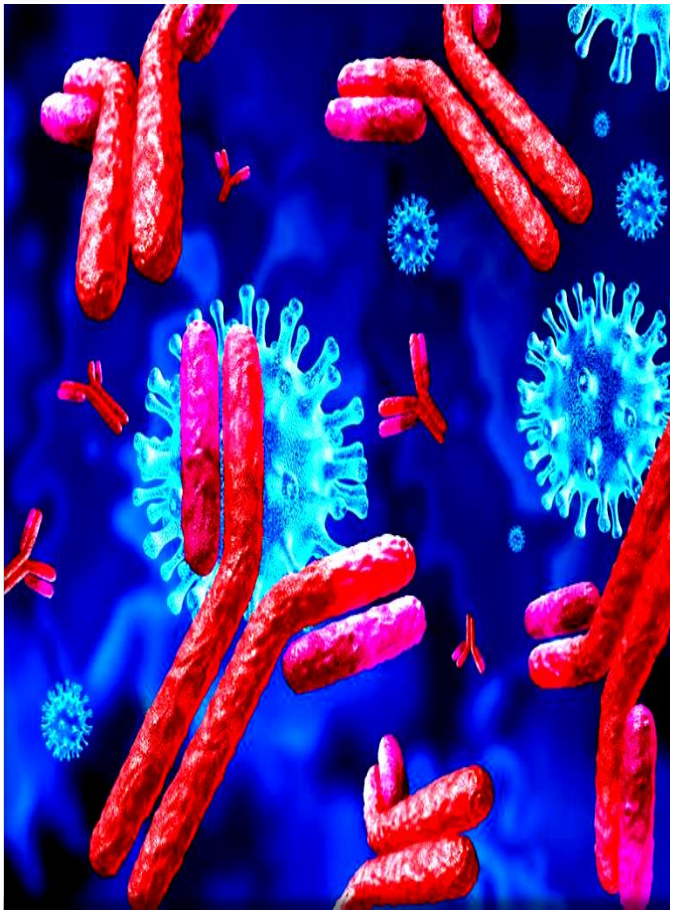
		• Construct tables and graphs for Inference of the results.		
Ceiling effect for parasympathomimetic drug(Acetylcholine)	1.5	• Demonstrate ceiling effect for Acetylcholine on the isolated piece of rabbit's ileum by adding proper doses of the drug into the inner organ bath. • Interpret the recording of 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.	Skill lab	OSPE
Ceiling effect for histamine	1.5	• Demonstrate ceiling effect for Histamine on the isolated piece ofrabbit's ileum by adding proper doses of the drug into inner organ path • Interpret the recordings ofhistamine induced ileal activityon 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.	Skill lab	OSPE
To identify an unknown drug on rabbit's ileum with the help of two known antagonists	1.5	• 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. • 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.	Skill lab	OSPE

		• Interpret the recording of drug-induced ileal activity on the revolving drum • Construct tables and graphs for inference of the results.		
FORENSIC MEDICINE PRACTICALS				
Autopsy report	1.5	• Construct a full autopsy report including all components after thorough examination.	Skill lab	OSPE
Toxicology Sample collection and report analysis	1.5	• Explain the procedures, organs needed, and preservatives used in sample collection and interpret the toxicology report	Skill lab	OSPE
Thanatology	1.5	• Identify and describe various models of post-mortem changes	Skill lab	OSPE
Stomach wash	1.5	• Perform stomach wash on a Manikin	Skill lab	OSPE

Blood & Immunology II







Module Committee

Chairperson curriculum committee	Dr. Humaira Gulnaz	HOD Anatomy
Curriculum coordinator	Dr. Ayesha Ayub	In charge HPERD
Block coordinator	Dr Zuneera Misbah	APWMO Forensic Department
Module Coordinator	Dr Aniqa Saeed	APWMO Pathology Department

Academic Team Members

Pharmacology	Dr. Saima Kanwal	Sr. Demonstrator
Pathology	Dr. Aniqa Saeed	APWMO
Forensic Medicine	Dr. Zuneera Misbah	APWMO
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Medicine	Dr. Zaheer Ahmed	Sr. Registrar
Prime/ Research	Dr. Sinha	PG Resident
Physiology	Dr. Abdul Basit	Associate professor
Pediatrics	Dr. Sumaira Hassan	Sr Registrar

Introduction:

The blood and immunology module II is designed to integrate various aspects of hematology and immunology providing a comprehensive understanding through a combination of basic science, clinical skills and applied knowledge.

Rationale:

This module will include different aspects of physiology, hematology, immunology which shows how these areas are interconnected in the context of health and disease.

List of Themes

Themes	Duration
Pallor and Fatigue	1 week
Fever	1 week
Bleeding	1 week

General Learning outcomes

At the end of this module, the 3rd year students would be able to:
By the end of Blood & Immunology II Module, 3rd year MBBS students will be able to:

1. Describe the pathophysiology and diagnosis of different types of anemia.
2. Explain the pathogenesis of different hematological malignancies.
3. Discuss the diagnostic approach to malignant hematological disorders.
4. Discuss the pathophysiology and diagnosis of bleeding disorders.
5. Explain the immune system of the body and its components.
6. Describe the mechanism of defense from infection.
7. Explain hypersensitivity and allergy.
8. Discuss the rationale for immunomodulation and its impact on improving the therapeutic dynamics of autoimmune disorders and malignancies.
9. Describe the drugs for treating various types of anemia.
10. Write prescription for the prevention and treatment of iron-deficiency anemia.
11. Describe the application of blood groups in Forensic work
12. Describe the examination of blood stains
13. Describe the medico legal importance of blood as trace evidence
14. Describe the EPI schedule of Pakistan and the basic principles of Immunization.
15. Describe the most prevalent anemia's that affect the population of Pakistan, and the risk factors for vulnerable population.
16. Describe the most prevalent blood borne infections that affect the population of Pakistan, and the appropriate preventive strategies including safe blood practices

Teaching Hours allocation

S. No	Subjects	Hours
1	Pathology	43.5
2	Pharmacology	8.5
3	Forensic medicine	7
4	Community medicine	11
5	Medicine	3
6	Physiology	3
7	Pediatrics	1
8	PRIME/Medical Education and Research	2+1
	Total	**80**

Theme 1: Pallor and Fatigue

Sr no	Subject	Topic	Learning objective	Teaching strategy	Hrs	As-sessment
1	Physiology	Red blood cells	• Discuss the steps of erythro-poiesis with correlation to red cell indices and its clinical implications	Interactive lecture	1	MCQs
2	Pathology	Anemia	• Define Anemia.	Interactive lecture	1	MCQs
		Blood loss	• Classify Anemias according to underlying mechanism • Describe the pathogenesis of Blood loss Anemias	Interactive lecture 1 SGD 1	3	MCQs
		Hereditary spherocy-tosis	• Explains the pathogenesis of hereditary spherocytosis • Describe morphological changes in peripheral smear of HS patient • Diagnose a case of HS	Interactive lecture	1	MCQs
		Sickle cell Anemia	• Discuss the morphology of RBCs in sickle cell anemia • Describe the etiology and pathogenesis of SA • Diagnose a case of SA	Interactive lecture	1	MCQs
		Thalasse-mia	• Define Thalassemia • Describe the conditions con-tributing to the pathogenesis of beta- thalassemia	Interactive lecture 1 SGD 1	3	MCQs

			• Explain the genetics of thalassemia • Describe the morphological changes of Thalassemia physically and on peripheral smear • Diagnose a case of alpha and beta thalassemia			
		Glucose 6 Phosphate Dehydrogenase deficiency	• Classify G6PD • Explain the pathogenesis of G6PD deficiency with reference to oxidative injury of RBCs • Describe the morphology of RBCs in G6PD deficiency • Diagnose a case of G6PD deficiency	Interactive lecture	1	MCQs
		Paroxysmal nocturnal hemoglobinuria	• Describe the pathophysiology of paroxysmal nocturnal hemoglobinuria • Diagnosis a case of PNH	Interactive lecture	1	MCQs
		Immune hemolytic Anemias	• Classify immune hemolytic anemias • Describe the etiological mechanism of warm and cold antibody immune hemolytic anemias • Explain the diagnostic workup of immune hemolytic anemia	Interactive lecture	1	MCQ
		Iron deficiency Anemia	• Describe the pathophysiological mechanism of iron deficiency anemia • Describe the clinical course and morphological changes in IDA	Interactive lecture 1 SGD 1	3	MCQs

			• Enlist lab investigations for the diagnosis of IDA			
		Megalo-blastic Anemia	• Describe Megaloblastic anemia • Describe its pathogenesis with respect to vitamin B12 and folic acid • Describe the morphological changes in RBCs, WBCs and platelets in MA. • Diagnose the cause of MA	Interactive lecture 1 SGD 1	3	MCQs
		Aplastic Anemia	• Enlist causes of Aplastic anemia • Describe the pathophysiology of Aplastic anemia • Diagnose a case of Aplastic anemia	Interactive lecture	1	MCQs
		Polycythemia vera	• Describe the pathophysiology of polycythemia vera • Describe the clinical course and morphological features of Polycythemia vera • Diagnose a case of Polycythemia vera	Interactive lecture	1	MCQs
3	Pharmacology	Drugs used in Anemia	• Classify the drugs used in anemia • Describe pharmacokinetics of iron • Describe the various oral and parenteral formulations of iron • Describe the adverse effects of iron therapy • Describe the drug treatment of	Interactive lecture 1	1	MCQs

			iron toxicity • Describe the various oral and parenteral preparations of cyanocobalamin (vit b12) • Describe the clinical use of cyanocobalamin (vit: b12) • Describe the clinical use of folic acid • Describe the pharmacological rationale of combining cyanocobalamin with folic acid and iron • Describe the role of granulocyte colony stimulating factors (filgrastim) and granulocyte monocyte colony stimulating factors in the treatment of leucopenia. • Describe the role of thrombocyte colony stimulating factor (oprelvekin) in the treatment of thrombocytopenia			
4	Forensic Medicine	Forensic Evidence	• Describe Trace Evidence • Classify Trace Evidence. • Define Locard's Exchange principle	Interactive lecture	1	MCQs
		Blood Group systems	• Enlist different blood groups systems • Describe the Medico-legal importance of blood	Interactive lecture	1	MCQs
5	Community Medicine	Epidemiology of Nutritional Anemias	• Differentiate between diseases of blood, blood forming organs and blood borne infections • Describe the population at risk	Interactive lectures 2	2	MCQs

			of nutritional anemia in Pakistan. • Explain effective public health strategies for prevention of different types of anemias in a community in Pakistan • Describe risk factors for different nutritional Anemias. • Describe effective public health strategies for prevention of different types of anemias in Pakistan			
5	Paediatrics	Thalassemia	• Describe classification, laboratory investigation and management of Thalassemia	Interactive lecture	1	MCQs
6	Medicine	Sickle cell Anemia	• Discuss the pathophysiology, investigations and management of sickle cell anemia.	Interactive lecture	1	MCQs

Theme 2: Fever						
Sr #	**Subject**	**Topic**	**Learning objective**	**Teaching strategy**	**Hrs**	**As-sess-ment**
1	Physiology	White blood cells	• Classify different types of white blood cells, polymorphs, lym-phocytes and plasma cells and their disorders	Interactive lecture	1	MCQs
2	Pathology	Acute Mye-logenous leukemias	• Classify acute myelogenous leukemias according to Fab. • Describe the pathophysiology of AML • Describe the morphological fea-tures of AML • Diagnose a case of AML	Interactive lecture	1	MCQs
		Chronic Mye-logenous leukemias	• Explain the pathophysiology of CML • Describe the peripheral blood findings in CML • Diagnose a case of CML	Interactive lecture	1	MCQs
		Myelodys-plastic Syndrome (MDS)	• Enlist Types of MDS • Describe iits causes, patho-genesis and morphology. • Interpret blood and bone bar-row changes in patient with MDS • Explain symptoms and diagnos-tic strategies for patient with MDS	Interactive lecture	1	MCQs
		Lymphoid Neoplasms	• Enlist lymphoid neoplasms • Classify lymphoid neoplasms according to WHO classification	Interactive lecture	1	MCQs
		Acute lymphocytic leukemia	• Describe the pathophysiology of acute lymphocytic leukemia	Interactive lecture	1	MCQs

			• Describe the morphological features of ALL • Diagnose a case of ALL			
		Chronic lymphocytic leukemia	• Describe the patho-physiology of chronic lymphocytic leukemia • Describe the distinguishing morphological features of CLL • Explain the diagnostic workup for a case of CLL	Interactive lecture	1	MCQs
		Plasma cell disorders	• Describe the pathogenesis of multiple myeloma • Describe the molecular genetics involved in multiple myeloma • Discuss the types of multiple myeloma • Enlist its clinical features	Interactive lecture	1	MCQs
		Hodgkin's lymphoma Non Hodgkin's lymphoma	• Classify Hodgkin's lymphoma • Describe it's etiology and pathogenesis • Describe the morphological changes and clinical course of the disease • Enlist Non-Hodgkin's lymphomas • Describe the basic pathologic classification of NHL (WHO classification). • Describe the predisposing factors of developing NHL including infectious agents associated with development of specific lymphomas	Interactive lecture	1	MCQs

			• Describe the morphologic features of lymph nodes involved in Non-Hodgkin lymphoma • Enlist the lab investigations required for diagnosis of NHL			
		Immunology	• Define Immune System & Immunology • Enlist the types of immunity • Describe the characteristics, origin and functions of cells of immune system • Compare innate and acquired immunity • Compare the mechanism of active and passive immunity	Interactive lecture	1	MCQs
		Humoral Immunity	• Describe the basic concepts of MHC • Describe the structure of MHC class i & ii • Describe the biological activities of MHC • Explain the mechanism of humoral immunity. • Differentiate between humoral and cell mediated immunity	Interactive lecture	1	MCQs
		Cell mediated immunity	• Explain the cellular basics of immune response. • Describe cell mediated components of cell mediated immunity (CMI) • Explain types of cells in CMI system • Describe T-cell activation and	Interactive lecture	1	MCQs

			diversity • Illustrate schematic representation of T cell activation and diversity • Differentiate between primary and secondary immune response			
		Immunogens and Immunoglobulins	• Describe antigen and antibodies • Differentiate b/w monoclonal and polyclonal antibodies • Classify immunoglobulins • Illustrate structure (diagram) of immunoglobulin A • Describe important functions of immunoglobulins • Explain the procedure of neutralization of toxins, microbes and viruses by antibodies • Illustrate class switching of immunoglobulins • Explain transfer of immunity from mother to fetus and from mother to infant during breastfeeding	Interactive lecture	1	MCQs
		Allergy and Hypersensitivity	• Describe the basic concept of hypersensitivity reaction • Compare immediate and delayed hypersensitivity reactions • Explain mechanism of different types of hypersensitivity reactions with examples.	Interactive lecture	1	MCQs
		Immune Tolerance	• Define immunotolerance • Describe the mechanism of	Interactive lecture	1	MCQs

			immunologic tolerance • Explain the role of immune system in protecting human body • Distinguish between types of immunotolerance • Explain the mechanism of graft rejection and graft vs host disease.			
		Autoimmune diseases	• Describe autoimmunity • Describe pathogenesis of autoimmune diseases • Enumerate organ specific & systemic autoimmune diseases • Define the types of grafts • Explain the mechanism of rejection of allogenic-grafts • Describe grafts vs host diseases.	Interactive lecture	1	MCQs
		Immunodeficiency diseases	• Describe immunodeficiency • Differentiate between autoimmune and immunodeficiency diseases • Classify congenital and acquired immunodeficiency diseases. • Describe the pathogenesis of HIV	Interactive lecture	1	MCQs
		Complement	• Describe complement. • Describe components of the complement system • Describe the synthesis of complements • Describe pathways of activation	Interactive lecture	1	MCQs

			and inactivation of complement • Describe important functions of each component of complement system • Describe the diseases associated with deficiency of the complement proteins			
3	Pharmacology	Immune modulator drugs	• Classify immunomodulating drugs • Describe the role of corticosteroids as immunosuppressant agents. • Describe mechanism of action of immunophilin ligands • Describe clinical uses and adverse effects of immunophilin ligands • Describe mechanism of action of enzyme inhibitors. • Describe clinical uses and adverse effects of enzyme inhibitors. • Describe mechanism of action of cytotoxic agents as immunosuppressents • Describe clinical uses and adverse effects of cytotoxic agents • Describe mechanism of action of immunosuppressive antibodies used as immunosuppressant • Describe clinical uses and adverse effects of immunosuppressive antibodies	Interactive lectures 2 SGD 1	4	MCQs

			• Describe mechanism of action of monoclonal antibodies • Describe clinical uses and adverse offects Of Monoclonal antibodies • Describe mechanism of action of immunostimulant drugs • Describe clinical uses and adverse effects of immunostimulant drugs • Describe the advantages and disadvantages of various combinations of immunomodulating drugs			
4	Prime/Research	Academic writing and Plagiarism	• Emphasize the role of academic writing in research • Explain the role of “grammarly” for use in academic writing • Define plagiarism • Enlist plagiarism detection software	Interactive lectures 2	2	MCQs
5	Forensic Medicine	Forensic lab procedures	• Discuss forensic lab procedures · Forensic histopathology · Naked eye examination · Histological examination · Chromatography · Spectroscopy · Electrophoresis	Interactive lecture	1	MCQs
6	Community Medicine	Immunization	• Define Immunity • Explain types of immunity • Describe immunizing agents • Explain the hazards of immun-	Interactive lecture	1	MCQs

			ization • Explain the cold chain in the context of immunization			
		Vaccination	• Explain the importance of vaccination in the control of infectious diseases • Describe the basic principles of vaccination • Enlist the main types of vaccine and illustrate them with examples • Describe vaccines that are associated with adverse reactions • Explain the difference between live attenuated and inactivated vaccines • Describe the role of vaccines in preventing disease. • Differentiate between vaccination and immunization • Describe the strategies used from Community medicine's perspective to promote vaccination in communities. (EPI) • Explain various programs of vaccination in Pakistan with particular reference to EPI • Describe the factors responsible for success and failure of vaccination Programs in Pakistan.	Interactive lecture	1	MCQs
		Epidemiology of blood borne diseases and infections	• Enlist the important blood borne diseases in Pakistan as prioritized by the National Institute of Health (NIH)	Interactive lecture	1	MCQs

			• Describe the global burden of blood borne diseases & compare with Pakistan • Describe important blood borne pathogens • Explain the evidence based public health practices to reduce transmission of blood borne infectious disease • Explain the evidence based best practices and procedures for safe blood transfusion and prevention of needle stick injury			
7	Medicine	Myeloproliferative Disorders (MPD)	• Classify Myeloproliferative neoplasms. • Describe the investigations & management steps of CMI.	Interactive lecture	1	MCQs

Theme 3: Bleeding						
Sr #	**Subject**	**Topic**	**Learning objective**	**Teaching strategy**	**Hrs**	**Assessment**
1	Physiology	Platelets	• Enumerate the causes of thrombocytopenia. • Explain the intrinsic and extrinsic pathways of coagulation	Interactive lecture	1	MCQs
2	Pathology	Bleeding disorders & hemorrhagic diathesis Thrombocytopenia and Von Willebrand disease (VWD)	• Enlist causes of thrombocytopenia • Describe the pathogenesis of immune thrombocytopenic purpura • Enlist thrombotic microangiopathies • Explain the diagnostic plan for ITP • Classify VW Diseases • Enlist investigations required for diagnosis of VWD	Interactive lecture	1	MCQs
		Hemophilia Disseminated Intravascular Coagulopathy (DIC)	• Describe the pathogenesis of Hemophilia A and B • Describe the clinical course of the disease. • Enlist the laboratory investigation for diagnosing a case of hemophilia • Enlist major disorders associated with DI • Explain the pathophysiology of DIC	Interactive lecture	1	MCQs

		Transfusion Medicine	• Explain the morphological changes in DIC • Explain the diagnostic criteria of DIC • Describe various blood component preparations • Enlist indications for different blood components • Describe transfusion reactions associated with blood transfusion			
3	Pharmacology	Anti-Plasmin (Antifibrinolytic) drugs	• Describe mechanism of action of anti- Plasmin (antifibrinolytic) drugs • Describe their clinical uses and adverse effects	Interactive lecture	1	MCQs
		Drug treatment of Hemophilia	• Describe the drug treatment for various types of Haemophilias • Describe the role of desmopressin in the treatment of haemophilia	Interactive lecture	1	MCQs
4	Forensic Medicine	Blood stains	• Describe the steps of examination of a suspected blood stain	Interactive lecture	1	MCQs
5	Medicine	Platelets (ITP)	• Describe clinical features, investigations and management of a patient with immune Thrombocytopenia	Interactive lecture	1	MCQs
6	Prime/Medical Education	Principles of Medical Ethics	• Explain the pillars of medical ethics	Interactive lecture	1	MCQs

		Confidentiality	• Explain the privacy and confidentiality of the patients and its medico-legal and cultural aspects • Exhibit confidentiality of colleagues and patients • Appropriately use of social media			

PRACTICAL WORK (THEME 1: PALLOR AND FATIGUE)						
Sr #	**Subject**	**Topic**	**Learning objective**	**Teaching strategy**	**Hrs**	**As-sess-ment**
1	Pathology	Normal complete blood count Abnormal peripheral smear in different anemias	• Differentiate between different blood cell lineages. • Differentiate between a normal and an abnormal RBC • Identify different shapes of RBCs. • Identify common types of anemias on the basis of RBCs morphology	Skill lab	1.5	OSPE
2	Pharma-cology	Iron deficiency Anemia	• Write prescription for a patient at risk of developing iron-deficiency anemia • Write chart order for treating an in-door patient with iron-deficiency anemia	Skill lab	1.5	OSPE
3	Community Medicine	Visit to blood bank of a tertiary care hOSPEtal	• Explain safe blood transfusion practice • Enlist common pathogens that cause bloodborne infections which may be acquired from unsafe blood transfusion practices. • Enlistist the most common transfusion reactions seen in a blood bank in a local teaching hOSPEtal in pakistan • Communicate with health care staff effectively • Describe the standard op-	Field visit	3	Journal

			erating procedures of blood transfusion			
THEME 2: FEVER						
1	Pathology	Normal white cell smear	• Describe causes of leuko-cytosis • Differentiate among differ-ent types of white blood cells under microscope	Skill lab	1.5	OSPE
2	Forensic Medicine	Microscopic examination of animal and human blood	• Perform microscopic ex-amination of animal and human blood.	Skill lab	1.5	OSPE
		Collection and preservation of biological material	• Collect and preserve bio-logical samples like blood, urine, swabs, semen, sali-va etc	Skill lab	1.5	OSPE
3	Community Medicine	Visit to basic health care unit (EPI centre)	• Observe administration of different vaccines as part of expanded program of immunization (epii) sched-ule of Pakistan at the vac-cination center • Enlist and explain the route of administration and mechanism of storage and maintenance of cold chain of each vaccine in The EPI schedule (support with im-ages where possible) • Enlist the different compo-nents of each vaccine in the EPI schedule including the adjuvants, preserva-tives and explain their rel-evance to the vaccine.	Field visit	3	Journal

			• Differentiate between live attenuated vaccines, conjugate vaccines, subunit vaccines, and toxoid vaccines in the EPI schedule and their mode of action • Identify the contraindications for vaccination that may present an additional risk • Describe the organ gram of EPI center • Explain the role of EPI center. • Observe the process of vaccination			
THEME 3: BLEEDING						
1	Pathology	Coagulation tests	• Interpret Prothrombin time and activated partial thromboplastin time • Interpret bleeding time and clotting time	Skill lab	1.5	OSPE

MSK II Module

Module Committee:

Chairperson Curriculum Committee	Prof. Dr. Humaira Gulnaz	Chair undergraduate curriculum committee &HOD Anatomy
Curriculum Coordinator	Dr. Ayesha Ayub	Curriculum coordinator and In Charge HPERD
Block Coordinator	Dr. Zuneera Misbah	APWMO Forensic Medicine &Toxicology Department
Module Coordinator	Dr. Madiha Rehman	Sr. Demonstrator Forensic Medicine &Toxicology Department
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Pathology	Dr. Aneeqa	APMO ,Pathology Department
Pharmacology	Dr. SaimaKanwal	Sr. Demonstrator Pharmacology Department
Community Medicine	Dr. Anum Randhawa	Sr. Demonstrator, Community Medicine Department
Medicine &Family Medicine	Dr. Zaheer	Senior Registrar Medicine Department
Pediatric Medicine	Dr. Sumaira Hassan	Senior Registrar Peadriatic Department
Dermatology	Dr. Asma Tariq	Senior Registrar Dermatology
Orthopedics	Dr. Imran	SMO, Orthopedics Department
Radiology	Dr. Abdul Rauf	AP Radiology Department
EYE	Dr. M. Muneeb	Senior Registrar Ophthalmology Department
ENT	Dr. Bilal Khan	SR ENT Department
Prime / Research	Dr. Sinha	PGR Psychiatry Department
Anatomy	Dr. Uzma	AP Anatomy Department
Physiology	Dr. Basit	Associate Professor, Physiology Department

MSK II Module

Welcome to the msk ii module! This module will cover the clinical aspects of musculoskeletal system, including pharmacological management of related disorders, pathological changes in various conditions, medico-legal considerations in patient care, and basic medical and orthopedic information regarding muscles and bone.

Rationale

By mastering the basic concepts regarding musculoskeletal system in the field of pharmacology, pathology, medico-legal, orthopedic and medicine, the students will be well equipped to tackle the demands of clinical practice and ready to learn high quality patient care in musculoskeletal domain.

Teaching Hours Allocation

Sr. #	Subject	Hours
1	Pathology	43
2	Pharmacology	17
3	Forensic Medicine	22
4	Community Medicine	4
5	Pediatrics	6
6	Medicine	5
7	Orthopedics	5
8	Radiology	1
9	Family Medicine	1
10	Eye	1
11	ENT	2
12	PRIME/Research	2+6=8
13	Anatomy	1
14	Physiology	1
	Total	**117**

Sr. #	Themes	Duration 5 Weeks
1	Aching Bones	2 Weeks (1st& 2nd Week)
2	Joint Stiffness	1 Week (3rd Week)
3	Muscle Weakness &Trauma	1 Week (4th Week)
4	Skin Rash & Itching	1 Week (5th Week)

Learning Objectives

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

Knowledge

Reinforcement

- Explain important anatomical and physiological characteristics of musculo-skeletal system

Pathology

- Explain essential pathological concepts of diseases involving
  - Joints
  - Bones
  - Muscles
  - Cartilages
  - Soft tissues
  - Skin

Pharmacology

- Describe the clinical applications of nsaids in the treatment of musculoskeletal disorders
- Describe the basic and clinical pharmacology of drugs affecting bone and mineral homeostasis
- Describe the basic and clinical pharmacology of drugs used to treat gout and rheumatoid arthritis
- Describe the basic and clinical pharmacology of skeletal muscles relaxants
- Describe the drugs used for dermatological disorders.

Community medicine

- Classify accidents and injuries, burden of rtas, prevention and control strategies of rtas
- Define poliomyelitis and discuss the epidemiology, prevention, and control of poliomyelitis
- Define ergonomics, principles of ergonomics, epidemiology of msk disorders and their prevention
- Discuss burden and prevention of osteoporosis, osteomalacia and rickets

Forensic medicine

- Define and classify wounds
- Describe types of hurt according to qisas and diyat act
- Describe firearm and explosives injuries
- Describe rtas, railway & aircraft injuries
- Describe the medico legal aspects of wounds

Medicine

- Describe osteoporosis and osteomalacia and develop its management plan
- Discuss rheumatoid arthritis and ankylosing spondylitis
- Discuss myopathiesorthopedic
- Describe types of fracture and explain the open fractures
- Explain the emergency treatment of an injured limb.
- Identify and describe common benign and malignant bone tumours.
- Describe common ligamentous, tendon injuries and common spinal frac-

tures

Dermatology

- Describe the pathological lesions of skin and their clinical presentation with differential diagnosis.

Radiology

- Interpret normal x-rays andx-rays showing structural deformities

Paeds

- Explain bone pains and aches in children
- Discuss congenital/hereditary myopathies

Eye

- Describe the basic anatomy of eye

Ent

- Discuss anatomy ofear, nose, para nasal sinuses and oral cavity

Prime*:*

Communication skills

- Dealing with patients

Behavioral sciences / professionalism

- Attributes ofprofessionalism

Research

- Study designs
- Research question

Skills:

Special pathology

- Identify morphological features ofbasal cell carcinoma and squamous cell carcinoma
- Identify morphological features oftuberculous osteomyelitis

Pharmacology

- Writing a prescription for a patient with rheumatoid arthritis
- Writing a prescription for a patient with gout

Forensic medicine

- Identify types of mechanical wound
- Identify the causative weapon
- Identify the manner of wound causation
- Issue a medico legal certificate for the given wound

Orthopedic/medicine

- Acquire a thorough history in relevance to msk and take focused general examination of musculoskeletal system.
- Identify, evaluate and interpret the x-ray to diagnose fractures/musculoskeletal conditions
- Discuss the radiological characteristics of fractures and radiological characteristics of dislocations

Attitude:

While not necessarily taught explicitly, students are expected to develop 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 msk in professional or personal life

4. Discuss ethical issues, social and preventive aspect of health care in the context of MSK system.

Theme 1: Aching Bones						
Sr #	**Subject**	**Topic**	**Learning objective**	**Teaching Methodology**	**Hrs**	**Assessment**
1	**Anatomy**	Important anatomical characteristics of MSK	• Describe the important anatomical characteristics of musculoskeletal system	Interactive lecture	1	MCQs
2	**Physiology**	Important physiological characteristics of MSK	• Describe the important physiological characteristics of Musculoskeletal system	Interactive lecture	1	MCQs
3	**Pathology**	Metabolic diseases of bone	• Describe following metabolic diseases of bone from pathological point of view: Osteopenia and osteoporosis Paget disease (osteitis deformans) Osteomalacia and rickets	Interactive lecture 1 SGD 1	3	MCQs
		Fracture and Osteonecrosis	• Classify fractures and describe healing process in fractures • Enlist aetiologies of osteonecrosis (avascular necrosis) • Describe clinical features and morphological findings in Osteonecrosis	Interactive lecture	1	MCQs
		Osteomyelitis	• Classify osteomyelitis and describe its etiology, pathogenesis, common clinical features, morphological findings, and complications	Interactive lecture 1 SGD 1	3	MCQs
		Bone tumours	• Classify bone tumors • Describe the frequency of different bone tumors in general population • Enlist common clinical features, found in common types of bone tumors. • Enlist key morphological features of osteosarcoma, osteoid osteoma and osteoblastoma	Interactive lecture 1	1	MCQs
		Cartilage forming tumors	• Describe the frequency of different cartilaginous tumors in general population	Interactive lectures 2	2	MCQs

			• Enlist clinical features of common cartilaginous tumors			
		Tumors of unknown origin	• Describe etiology, pathogenesis, and key clinico-morphological features of ewing's sarcoma and giant cell tumor	Interactive lecture	1	MCQs
		Lesions simulating primary neoplasms	• Describe key clinic morphological features and essential points in the pathogenesis of fibroma	Interactive lecture	1	MCQs
4	**Pharmacology**	NSAIDs	• Describe the clinical applications of nsaids in the treatment of musculoskeletal disorders	Interactive lecture	1	MCQs
		Drugs affecting bone and mineral homeostasis	• Classify drugs used in metabolic bone disorders • Enlist calcium preparations • Describe clinical uses of calcium salts • Enlist vitamin D preparations • Describe actions of vitamin D on intestine, kidney and bone • Describe clinical uses of vitamin D • Describe the mechanism of action, clinical uses and adverse effects of bisphosphonates • Describe the mechanism of action, clinical uses and adverse effects of calcitonin • Classify drugs used to treat osteoporosis • Explain the mechanism of action of serm (raloxifene) and rank ligand (denosumab)	Interactive lecture 1 SGD 1	3	MCQs
5	**Forensic Medicine**	Mechanism of wound production Abrasion	• Define and classify wounds • Describe mechanism of wound production • Enlist factors modifying the appearance of wound • Define abrasion and its types • Describe its Medico-legal aspects	Interactive lecture	1	MCQs

		Bruise	• Define bruise and its Medico-legal aspects • Differentiate between Ante and postmortem bruise True and false bruise • Differentiate between hypostasis and bruise • Enlist factors modifying the appearance of a bruise	Interactive lecture	1	MCQs
		Lacerated wound	• Describe lacerated wound, its types , characteristics and Medico-legal aspects	Interactive lecture	1	MCQs
		Incised wound Stab wound Defence wounds and Fabricated injuries	• Describe an incised wound, its characteristics and Medico-legal aspects • Enlist features of hesitation/tentative cuts • Differentiate between lacerated and incised wound • Describe a stab wound, its features and Medico-legal aspects • Discuss defence wound,its features and M/L importance • Discuss Fabricated/self inflicted injuries their features and M/L importance	Interactive lectures	1	MCQs
6	**Community Medicine**	Ergonomics	• Describe ergonomics • Describe the principles & importance of ergonomics at work place	Interactive lecture	1	MCQs
		Prevention and control strategies for musculoskeletal disorders	• Explain the epidemiology of Musculoskeletal disorders • Discuss prevention and control strategies for Musculoskeletal disorders • Explain the types of rehabilitation and public health issues faced by the disabled person, and measures to be taken for	Interactive lecture	1	MCQs

			rehabilitation • Discuss epidemiology and prevention of osteoporosis, osteomalacia and rickets			
7	**Medicine**	Osteoporosis & Osteomalacia	• Describe osteoporosis & Osteomalacia • Enlist common causes and risk factors of osteoporosis & Osteomalacia • Discuss their clinical features and differential diagnosis • Enlist the investigations for patient presenting with osteoporosis and Osteomalacia	Interactive lecture	1	MCQs
8	**Orthopedics**	Fractures	• Describe and illustrate types of fracture, fracture patterns, displacement and angulation of fractures in children and adults. • Explain open fractures • Discuss the basic principles of wound debridement	Interactive lecture	1	MCQs
		Bone tumors	• Describe the radiological features of common benign and malignant bone tumors.	Interactive lecture	1	MCQs
9	**Radiology**	X-Ray Interpretation	• Identify and interpret different types of fractures	Interactive lecture	1	MCQs
10	**Eye**	Anatomy of eye	• Describe anatomy of orbit and Eyeball	Interactive lecture	1	MCQs
11	**ENT**	Ear	• Describe anatomy of ear	Interactive lecture	1	MCQs
12	**Peads**	Bone pains and aches in children	• Common causes of bones aches and pains including growing pains in children • Discuss nutritional rickets causation, clinical presentation, lab and radiological findings and prevention	Interactive lecture	1	MCQs
		Skeletal Dysplasia	• Discuss clinical feature and differential diagnosis of the following Achondroplasia Osteopetrosis Osteogenesis imperfecta	Interactive lecture	1	MCQs
13	**Prime/ Research**	Proposal writing	• Write a proposal for research	Interactive lectures 2	2	MCQs

			project using FMU/CPSP guidelines or any other standard guidelines			
		Attributes of Professionalism/Empathy	• Discriminate empathy and sympathy • Demonstrate empathy in patient- health professional interaction	Interactive lecture	1	MCQs

Theme II: Joint stiffness

Sr #	Subject	Topic	Learning objectives	Teaching Methodology	Hrs	Assessment
1	**Pathology**	Osteoarthritis	• Describe etiology and pathogenesis of osteoarthritis • Discuss clinical and morphological features of osteoarthritis • Enumerate complications of osteoarthritis	Interactive lecture 1 SGD 1	3	MCQs
		Rheumatoid Arthritis	• Describe etiology and pathogenesis of rheumatoid arthritis • Discuss clinical and morphological features of rheumatoid arthritis • Enumerate complications of rheumatoid arthritis	Interactive lecture 1 SGD 1	3	MCQs
		Seronegative Spondyloarthropathies	• Classify and explain spondyloarthropathies • Discuss pathogenesis and clinical features of ankylosing spondylitis • Discuss pathogenesis and clinical features of reactive arthritis • Discuss pathogenesis and clinical features of psoriatic arthritis	Interactive lecture	1	MCQs
		Infectious arthritis	• Describe etiology and pathogenesis of suppurative arthritis • Discuss clinical features and morphological features of suppurative arthritis • Enumerate complications of suppurative arthritis • Describe etiology and pathogenesis of mycobacterial arthritis	Interactive lecture 1 SGD 1	3	MCQs

			• Discuss clinical features and morphological features of mycobacterial arthritis • Enumerate complications of mycobacterial arthritis			
		Rheumatic fever	• Describe key structural features, virulence factors, modes of pathogenesis and diagnosis of streptococcus pyogenes • Explain etiology, pathogenesis, clinical features, diagnosis, and complications of rheumatic fever	Interactive lecture	1	MCQs
		Crystal-induced Arthritis	• Enlist different types of crystal-induced arthritis • Describe key points of etiology, pathogenesis, clinical features, morphological features, and complications of: Gout Calcium Pyrophosphate Crystal Deposition Disease (Pseudo-Gout)	Interactive lecture	1	MCQs
2	**Pharmacology**	Pharmacotherapy of Gout	• Classify drugs used to treat gout • Describe the role of NSAIDs in the treatment of Gout • Describe the role of glucocorticoids in the treatment of Gout • Describe the mechanism of action of various drugs (colchicine, probenecid, allopurinol, febuxostat) used in the treatment of Gout • Discuss the adverse effects of anti- gout drugs • Describe the drug interactions of allopurinol and probenecid • Enlist the drugs causing hyperuricemia • Discuss the mechanism by which drugs causes hyperuricemia	Interactive lecture	1	MCQs
		Pharmacotherapy of Rheumatoid Arthritis	• Classify drugs used in rheumatoid arthritis • Discuss the role of Nsaids in	Interactive lecture	1	MCQs

			Rheumatoid Arthritis			
			• Discuss the role of glucocorticoids in rheumatoid arthritis • Define and classify DMARDs • Enlist biological and non-biological agents used to treat rheumatoid arthritis • Describe pharmacokinetics mechanism of action, clinical uses and adverse effects of methotrexate. • Enlist adverse effects and therapeutic uses of DMARDs			
3	**Forensic Medicine**	Age of wound Injured Person Medical aid act Work-men compensation laws	• Differentiate between antemortem and postmortem wounds • Describe the salient features of Injured person medical aid act • Describe the salient features of Work-men compensation laws	Interactive lecture	1	MCQs
		Qisas and Diyyat	• Define hurt, wound & injury • Classify hurt according to international law • Classify hurt according to qisas & diyat act • Explain punishments (tazir), compensation and fine (diyat)	Interactive lecture	1	MCQs
4	**Medicine**	Rheumatoid Arthritis Ankylosing spondylitis	• Describe Rheumatoid arthritis with its clinical presentation and differential diagnosis. • Describe Ankylosing spondylitis with its clinical presentation and differential diagnosis	Interactive lecture	1	MCQs
5	**Orthopedics**	Bone and Joint infections	• Describe the etiology, pathology, clinical presentation and investigations of bone and joint Infections	Interactive lecture	1	MCQs
6	**ENT**	Nose, Paranasal sinuses and Oralcavity	• Discuss anatomy of nose, para nasal sinuses & oral cavity	Interactive lecture	1	MCQs
7	**Peads**	Juvenile Idiopathic Arthritis (JIA)	• Discuss criteria for classification of JIA	Interactive lecture	1	MCQs

			• Discuss its clinical features and differential diagnosis.			
8	**Prime/ Medical Education**	Communication skills: dealing with patients	• Explain importance of answering questions and giving explanation & instructions	Interactive lecture	1	MCQs

Theme III: Muscle Weakness And Trauma

Sr #	Subject	Topic	Learning Objectives(Los)	Teaching Methodology	Hrs	Assessment Tool
1	**Pathology**	Tumors of adipose tissue	• Classify soft tissue tumors &provide a brief description of their salient clinical features • Enlist key morphologicalfeatures of lipoma and liposarcoma	Interactive lecture	1	MCQs
		Fibrous Tumors	Describe important Clinico pathological& morphological features of: • Nodular Fasciitis • Fibromatoses	Interactive lecture	1	MCQs
		Muscle Tumors	• Classify muscle tumors • Describe etiology, Clinico morphological features, and complications of ▪ Rhabdomyosarcoma ▪ Leiomyoma ▪ Leiomyosarcoma ▪ Fibrosarcoma	Interactive lecture	1	MCQs
		Skeletal muscle atrophy & myopathies	• Describe pathological features of skeletal muscle atrophy • Describe pathological features of neurogenic & myopathic changes in skeletal muscle • Describe pathological features of ▪ Inflammatory Myopathies ▪ Dermatomyositis ▪ Polymyositis ▪ Inclusion body myositis • Toxic myopathies	Interactive lecture	1	MCQs
		Inherited diseases of skeletal muscle	• Describe genetic abnormality, morphology &clinical features of muscular dystrophies	Interactive lecture	1	MCQs

2	**Pharma-cology**	Skeletal Muscle Relaxants	• Classify skeletal muscle relax-ants. • Describe the mechanism of action of non-depolarizing & depolarizing neuro- muscular blockers • Discuss the differences be-tween depolarizing & nonde-polarizing Skeletal muscle relaxants • Describe the therapeutic uses & adverse effects of skeletal muscle relax- ants • Describe centrally acting skeletal muscle relaxants (spas-molytics) • Name Drugs Causing Malig-nant Hyperthermia • Discuss the rationale for use of dantrolene in the treatment of malignant hyperthermia • Discuss Succinylcholine apnea & its management	Interactive lecture(1) SGD(1)	3	MCQs
3	**Forensic Medicine**	Transpor-tation Accidents	• Discuss injuries to the driver & front seat occu- pant & rare seat Occu- pant. • Discuss spinal injuries includ-ing whiplash Injury & railway spine • Explain railway injuries with medico legal significance • Discuss air crash accidents	Interactive lecture	2	MCQs
		Firearm Injuries	• Describe wound ballistics and its types. • Describe terms /definition used in firearm injuries, types of bullets • Explain basic mechanism of firearm. • Explain ranges of fire in firearm injuries, beveling phenom-enon, wound production mechanism • Identify types of gun powders & ammunition used. • Interpret findings of injuries produced by different weap-ons. • Explain pattern of identification	Interactive lecture	3	MCQs

			of entry and exit wound. • Explain information inferred from examination of fire-arm entry wound.			
		Injuries by explosives	• Describe mechanism of production of injuries by bomb blast. • Explain different causes of death in blast injuries. • Interpret autopsy findings in explosion fatalities.	Interactive lecture	1	MCQs
		Thermal Injuries	• Describe thermal injuries & classify them • Describe burns & scalds	Interactive lecture	1	MCQs
		Electrical Injuries	• Explain electrocution • Describe electrical injuries & their PM findings • Explain Lightning	Interactive lecture	1	MCQs
4	**Community Medicine**	Rehabilitation of disabilities: Poliomyelitis	• Define disabilities, its types, concepts, & distinguish between impairment, disability and handicapped, and significance of Dalys and Qalys. • Describe the epidemiology, determinants & distribution Of Poliomyelitis • Describe the prevention & control measures and rehabilitation of poliomyelitis	Interactive lecture	1	MCQs
		Accidents and its prevention	• Describe of types of accidents & their mechanisms and their prevention (Haddon`s model) • Describe road traffic accidents • Classify different types of road traffic accidents and injuries • Describe and compare the burden of road traffic accidents in a developed country with a developing country like Pakistan • List and explain the risk factors of road traffic accidents • Explain effective public health strategies used at individual and national level to prevent for road traffic accidents	Interactive lecture	1	MCQs
5	**Medicine**	Myopathies	• Define Myopathy • Enlist myopathies (hereditary	Interactive lecture	1	MCQs

			& acquired myopathies) • Describe the etiology and clinical features of myopathies • Plan investigations for myopathies			
6	**Orthopedics**	Application of cast	• Explain the emergency treatment of an injured limb. • Explain Emergency Immobilization techniques of the neck, spinal column & limbs. • Describe and discuss the basic principles pertaining to application of a cast, the complications of cast application • Discuss the principles of a three point pressure system in a cast.	Interactive lecture	1	MCQs
		Soft tissue injuries, spinal injuries	• Describe the common ligamentous & tendon injuries & advise appropriate management • Recognize common spinal fractures, and provide appropriate initial Management	Interactive lecture		MCQs
7	**Pead's**	Congenital/ hereditary myopathies	• Discuss common congenital & hereditary myopathies, their genetics, causation, clinical presentation, diagnosis.	Interactive lecture	1	MCQs
		Duchene Muscular Dystrophy (DMD)	• Describe DMD, its clinical presentation & differential diagnosis.	Interactive lecture	1	MCQs

Theme IV: Skin Rash And Itching

Sr #	Subject	Topic	Learning Objectives (Los)	Teaching Methodology	Hrs	Assessment Tools
1	**Pathology**	Important pathological terms	▪ Define the following skin lesions and describe these with respect to their etiologies and gross morphological features. ▪ Macule ▪ Papule ▪ Nodule	Interactive lecture	1	MCQs

			▪ Plaque ▪ Vesicle ▪ Bulla ▪ Blister ▪ Pustule ▪ Scale ▪ Lichenification ▪ Excoriation ▪ Hyperkeratosis ▪ Parakeratosis ▪ Acanthosis ▪ Dyskeratosis ▪ Acantholysis ▪ Papillomatosis ▪ Lentiginous spongiosis ▪ Urticaria ▪ Pemphigus ▪ Bullous Pemphigoid ▪ Warts			
		Eczematous Dermatitis	• Classify Eczematous Dermatitis • Describe the morphological & clinical features of acute eczematous dermatitis • Describe the etiology & pathogenesis of ▪ Contact Dermatitis ▪ Atopic Dermatitis ▪ Drug related Eczematous Dermatitis ▪ Photo eczematous Eruption ▪ Primary irritant dermatitis	Interactive lecture	1	MCQs
		Erythema Multiforme	• List the conditions which are associated with erythema multiforme & describe its clinical features	Interactive lecture	1	MCQs
		Psoriasis	• Describe the etiopathogenesis, morphological & clinical features of psoriasis	Interactive lecture	1	MCQs
		Premalignant Epithelial Lesions	Enlist the pre-malignant epithelial lesions (epidermal) • List the predisposing factors for squamous cell carcinoma of skin • Differentiate squamous cell	Interactive lecture	1	MCQs

			carcinoma from basal cell carcinoma on the basis of morphology and clinical features			
		Nevo cellular nevi& malignant Melanoma	Enlist types of Nevo cellular nevi (congenital nevus, blue nevus, spitz's nevus, halo nevus dysplastic nevus) along with their clinical significance. (dermal) • Describe the clinical & morphological features of dysplastic nevi • Describe malignant melanoma with respect to frequent site of origin & clinical morphological features	Interactive lecture	1	MCQs
		Viral Skin Infections	Describe the following viral skin infections in context of etiopathogenesis: • Herpes simplex virus • Herpes zoster virus	Interactive lecture	1	MCQs
		Fungal Skin Infections	Classify and describe the following fungal skin infections in context of etiopathogenesis: • Tinea • Candida	Interactive lecture	1	MCQs
		Skin and soft tissue infections	Describe the following skin lesions in context of ethiopathogenesis and diagnosis • Impetigo • Cellulitis / erysipelas • Folliculitis • Skin abscess (furuncle & carbuncle) Necrotizing soft tissue infections	Interactive lecture	1	MCQs
2	**Pharmacology**	Drugs used for dermatological disorders	• Classify dermatological preparations • Enlist topical antibacterial, antifungal & antiviral preparations • Describe clinical uses & adverse effects of topical antibacterial, antifungal and antiviral drugs. • Discuss oral treatment of candidiasis dermatophytosis and onychomychosis. • Describe various acne preparations and antibiotics used	Interactive lecture (1) SGD(1)	3	MCQs

			to treat Acnea • Enlist clinical uses of immunomodulators (imiquimod, tacrolimus) related to skin diseases • Enlist Ectoparasiticides • Enlist clinical uses and adverse effects of permethen • Discuss drug treatment of scabies & pediculosis • Describe the mechanism of action & adverse effects of various agents used for pigmentation disorders • Describe the clinical uses and adverse effects of drugs used for the treatment of psoriasis. • Describe clinical uses and adverse effects of topical corticosteroids • Enlist dermatological disorders responsive to topical corticosteroids ranked in order of sensitivity. • Discuss keratoytic agents, antipruritic agents, trichogenic and antitrichogenic agents & use of antineoplastic agents in topical conditions			
3	**Medicine/Derma**	Important Pathological Terms With Clinical Presentations	Enlist and explain the clinical presentation of the following skin lesions: • Macule • Papule • Nodule • Plaque • Vesicle • Bulla • Blister • Pustule • Scale • Lichenification • Excoriation • Hyperkeratosis • Parakeratosis • Acanthosis	Interactive lecture	1	MCQs

			• Dyskeratosis • Acantholysis • Papillomatosis • Lentiginousspongiosis • Urticaria • Pemphigus • Bullous Pemphigoid Warts			
		Malignant & premalignant conditions of skin&Nevocellular Nevi	• Enlist the premalignant& malignant (basal cell carcinoma & squamous cell carcinoma) skin conditions • Explain their differential diagnosis on the basis of clinical presentations • Enlist the relevant investigations • Enlist the types of Nevocellular Nevi & discuss their differential diagnosis on the basis of their clinical presentations. • Enlist the relevant investigations	Interactive lecture	1	MCQs
4	**Family Medicine**	Leishmaniasis	• Explain the clinical features & management of cutaneous leishmaniasis in primary healthcare	Interactive lecture	1	MCQs
5	**Peads**	Juvenile Dermatomy-oc-ytis (JDM)	• Discuss diagnostic criteria of JDM • Discuss its clinical Features& differential diagnosis	Interactive lecture	1	MCQs
6	**Prime/ Research**	Qualitative & Quantitative Study 3	• Write a proposal for research project using FMU/ CPSP guidelines or any other standard Guidelines	Interactive lecture	1	MCQs
			•	Interactive lecture	1	MCQs
			•	Interactive lecture	1	MCQs

Practical Work

Pathology Practicals		
Week	**Topic**	**Practical**
Week 1	Tuberculous osteomyelitis	Identify gross and microscopic morphological features of tuberculous osteomyelitis
Week 2	Osteogenic sarcoma, osteoclastoma and Chondrosarcoma	Identify gross and microscopic morphologic features of osteogenic sarcoma, osteoclastoma and Chondrosarcoma
Week 3	Aso (anti streptolysin o) test	Perform aso (anti streptolysin o) test by latex agglutination technique
Week 4	Tumors of skin	Identify gross and microscopic features of • Squamous cell carcinoma • Basal cell carcinoma
Pharmacology Practicals		
Week	**Topic**	**Practical**
Week 1	Gout	Write prescription for gout
Week 2	Rheumatoid arthritis	Write prescription for rheumatoid arthritis
Week 4	Drugs used to treat dermatological disorders	Write down prescription for scabies and Psoriasis

Forensic Practicals		
Week	**Topic**	**Practical**
Week 1	Examination of wound and weapon	• Abrasion • Bruise • Laceration • Incised wound • Qisas and diyat models/ Dura prints of injuries
Week 2	Examination of wound and weapon	• Stab wound • Fracture • Displacement • Qisas and diyat models of injuries/ multimedia slides remaining
Week 3	Examination of wound and weapon	Firearm injuries / weapons identification of bullets
Week 4	Writing a Medico legal Certificate	Medicolegal report writing in case of firearm injuries

Learning Resources

- Digital Library
- Virtual Learning Environment (VLE)
- Ambulatory Care Settings Which May Be Outside The HOSPEtal
- Accident AndEmergency/Casualty Departments
- Clinical Skills Laboratory
- Community Settings
- Electives In Own And Other Institutions
- Experimental Laboratories
- HOSPEtal Wards
- Out Patient Departments
- Medical College Setting

List of reference books

Recommended books pharmacology

Text books

1. Basic andclinical pharmacology by katzung bg, masters sb, trevor aj, 14th edition.
2. Lippincott's illustrated reviews: pharmacology, clark ma, finkel r, rey ja, whalen k, 7th edition.

Reference books:

1. Goodman &gilman's the pharmacological basis oftherapeutics, brunton ll 12th edition.

Pathology

Text books

1. Robbins pathologic basis ofdisease

Reference books:

1. Walter&israel's general pathology"
2. Harsh mohan's "textbook ofpathology".
3. Pathology illustrated
4. Stefan silbernagl's"color atlas ofpathophysiology"
5. Muir's textbook ofpathology

Textbook formicrobiology

1. Jawetz, melnick&adelberg's"medical microbiology"

Reference books:

1. Levinson's "medical microbiology &immunology"
2. Sherris medical microbiology
3. Lippincott's illustrated reviews: microbiology

Forensic medicine

Textbooks:

1. Ck parikh new edition

Reference books:

1. Nasib r awan
2. Krishanvij
3. Smart series (sss) forensic mcqs with explanation
4. Gazette pakistan penal code (ppc)

5. Vv pillay and rajesh bardale

Community medicine

Textbooks:

1. Public health &community medicine byshah ilyas ansari; 8th edition
2. Parks textbook of prevention &social medicine by k.park; 24th edition

Ophthalmology

Textbooks:

1. Parsons' disease of the eye

Reference books:

2. Short kanski
3. Clinical ophthalmology shafi m jatoi

Research andbiostatistics

1. A synopsis of epidemiology and basic statistics (ali muhammad mir)
2. Statissticsat square one (tdvs winscow)
3. Essentials of research design and methodology. (geoferrymarczyk)
4. The essentials of clinical epidemiology (robert h)

Medicine &allied

1. Kumar and clark for medicine 8th edition 2012
2. Davidson

Surgery &allied

1. Bailey andlove. Short practice ofsurgery 25th edition 2008
2. Current surgical diagnosis andtreatment 13th edition 2009

Otorhinolaryngology

1. Pl dhingra 7th edition
2. Cuming standards, ent

Paediatric medicine

1. Text book ofpaediatrics, pakistan paediatrics association
2. Essentials ofpaediatrics, nelson, eight edition
3. Basis ofpaediatrics, pervez akbar khan, ninth edition

Internal Assessment Pattern

Sr. No.	Criteria	Numbers
	Theory:	
1.	Attendance (>90%=3,80-89%=2,70-79%=1,<70%=0)	3
2.	Creative work/assignments/Task	1
3.	Continuous Assessment throughout block	2
4.	Block examination theory	4
5.	Pre prof Examination of block	3
	Total	**13**
Sr. No.	**Criteria**	**Numbers**
OSPE:		
1.	Attendance (>90%=3,80-89%=2,70-79%=1,<70%=0)	3
2.	Log Book	5
3.	Discipline, Responsibility and team work	2
4.	Block examination OSPE	4
	Total	**14**

Table of Specification for Block H

OSPE AND MCQs

Subject	Multisys-tem-1 mod-ule	Blood and Immu-nology-2	Musculoskele-tal (MSK)-2 module
Pharmacology	12	3	5
Pathology	16	22	13
Forensic medicine	9	2	9
Community medi-cine	3	4	3
ENT			1
Eye			1
PRIME			1
Research			5
Medicine	1	2	2
Orthopedics			2
Pediatrics		1	3
Total	**41**	**35**	**44**
OSPE			
Subject	**OSPE/OSC E**	**Viva stations**	**Total***
Pharmacology	5	2	7
Pathology	3	2	5
Forensic medicine	2	2	4
Community medi-cine	0	2	2
Surgery & Allied (orthopedics)	1	0	1

PRIME(Behavioral Sciences)	**1**	**0**	**1**
Total	**12**	**8**	**20**