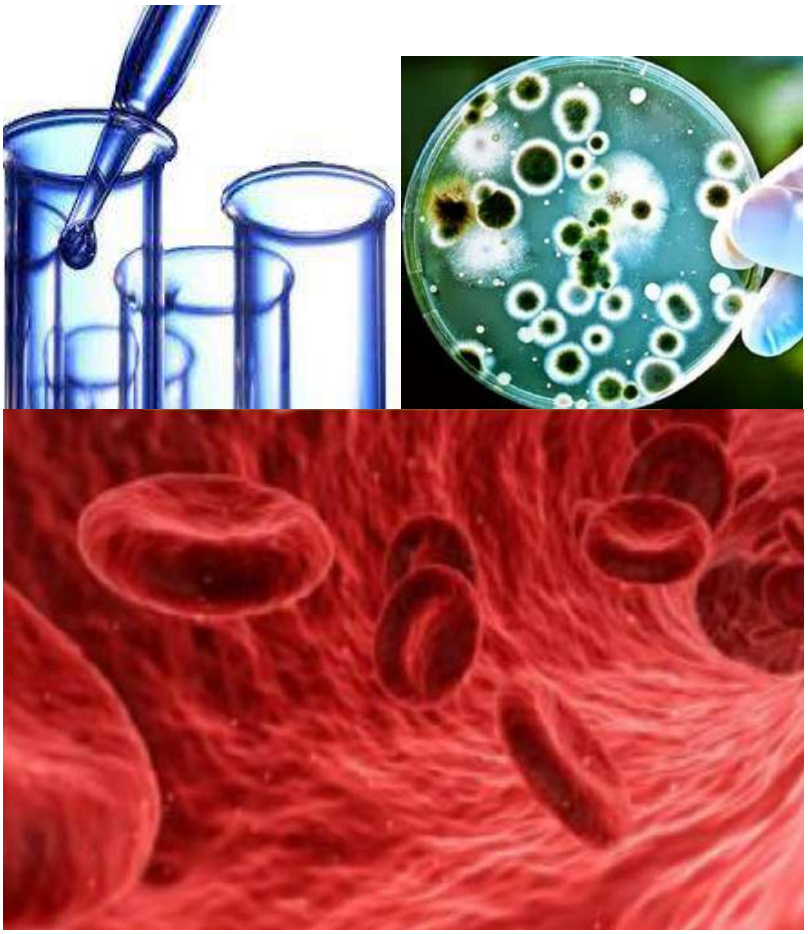

MULTISYSTEM MODULE STUDY GUIDE 3RD YEAR MBBS

Contents

Vision and Mission of KGMC

Khyber Medical University: Vision

Khyber Medical University will be the global leader in health sciences academics and research for efficient and compassionate health care.

Khyber Girls Medical College: Vision

"Excellence in health care, research ,teaching and training in the service of
Humanity"

Khyber Girls Medical College: Mission

The mission of KGMC is to promote compassionate and professional health care leaders
Who are knowledgeable, skillful, and community oriented lifelong learners serving humanity through evidence based practice

Curriculum Committee KGMC

Chair:

Professor Dr.Zahid Aman , Dean KGMC.

Co-Chair:

Professor Dr Amin ul HAQ, Associate Dean KGMC.

Clinical Sciences:

- Dr. Mohammad Noor Wazir ,Department of Medicine KGMCHMC
- Dr. Bushra Rauf Department of Gynae KGMCHMC.
- Dr. Sofia Iqbal, Department of Ophthalmology KGMCHMC.
- Dr. Said Amin Department of Medicine KGMCHMC.
- Dr. Ghareeb Nawaz Department of ENT KGMCHMC.
- Dr. Jamshed Alam Department of Surgery KGMCHMC.
- Dr. Ambreen Ahmad, Department of Pediatrics KGMCHMC.
- Dr. Ain-ul-Hadi Department of Surgery KGMCHMC.
- Dr. Fawad Rahim Department of Medicine KGMCHMC.

Behavioral Sciences:

- Dr. Ameer Abbas Department of Psychiatry KGMCHMC.

Medical Education

- Dr. Naheed Mahsood, Department of Medical Education, KGMC.
- Dr. Naveed Afzal Khan, Department of Medical Education, KGMC.
- Dr Onaiza Nasim , Department of Medical Education, KGMC

Basic Sciences:

- Dr. Amin-ul-Haq Department of Biochemistry, KGMC.
- Dr. Khalid Javed Department of Pathology, KGMC.
- Dr. Raheela Amin Department of Community Medicine, KGMC.
- Dr. Zubia Shah Department of Physiology, KGMC.
- Dr. Naheed Siddique Department of Forensic Medicine, KGMC.
- Dr. Shams Suleman Department of Pharmacology, KGMC.
- Dr. Shahab-ud-Din, Department of Anatomy, KGMC.

Multisystem Module

1. Prof. Dr. Abdul Hameed Department of Pharmacology….**Member**
2. Dr. Khalid Khan Professor Department of **Pathology**…… **Member**
3. Prof. Dr. Bushra Rauf Department of **Gynae**…….**Member**
4. Prof. Dr. Samia Tabassum Department of **Gynae**…….**Member**
5. Dr. Rashid Aslam Associate Professor Department of **Surgery B**…….**Member**
6. Dr. Jahanzeb Khan Associate Professor Department of **Pediatric A**…….**Member**
7. Dr. Fawad Rahim Assistant Professor Department of **Medicine**…….**Member**
8. Dr. Shahnaz Rehman Senior Lecturer Department of **Community Medicine**…**Member**
9. Dr. Ihsan Lecturer Department of **Forensic Medicine**…….**Member**
10. Dr. Fahad Falah Lecturer Department of **Pharmacology**…….**Member**

Integrated curriculum:

An integrated curriculum is all about making connections, whether to real life or across the disciplines, about skills or about knowledge. An integrated curriculum fuses subject areas, experiences, and real-life knowledge together to make a more fulfilling and tangible learning environment for students. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basic sciences when they repeatedly learn in relation to clinical examples. Case based discussions, computer-based assignments, early exposure to clinics, wards, and skills acquisition in skills lab are characteristics of integrated teaching program.

Outcomes of the curriculum:

The outcomes of the curriculum of MBBS According to the PMDC are as follows:

- Knowledgeable
- Skilful
- Community Heath Promoter
- Problem-solver
- Professional
- Researcher
- Leader
- Role model

KNOWLEDGE

By the end of five year MBBS program the KGMC student should be able to;

1. Acquire a high level of clinical proficiency in history taking, physical examination, differential diagnosis, and the effective use of medicine's evolving diagnostic and procedural capabilities including therapeutic and palliative modalities
2. Manage the common prevalent diseases in community
3. Identify the common medical emergencies
4. Develop plan for prevention of common community diseases
5. Formulate a referral plan
6. Compose a prescription plan

PSYCHOMOTOR

By the end of five year MBBS program the KGMC student should be able to;

1. Demonstrate the ability to perform the disease specific relevant examination
2. Respond to common medical emergencies
3. Master the skill of first aid
4. Perform BLS
5. Apply the best evidenced practices for local health problems

AFFECTIVE

By the end of five year MBBS program the KGMC student should be able to

1. Relate to patient and careers vulnerability
2. Demonstrate ethical self-management
3. Counsel and educate patients and their families to empower them to participate in their care and enable shared decision-making.
4. Display compassion with patient and colleagues
5. Demonstrate in clinical care an understanding of the impact of psychological, social, and economic factors on human health and disease

Table of Contents

S. No	Subject	Hours
1	Pharmacology	29
2	Pathology	24
3	Forensic medicine	25
4	Community medicine	12
5	Medicine	1
6	PRIME/Research	2
7	Family medicine	1
	Total	**94**

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

Subject	Topic	Hours	S. No	Specific Learning objectives At the end of this module, the students of year-3 will be able to:
Theme-1 (Vomiting and Blurred vision)				
Physiology	Functional organization of ANS- and overview	1	1	Describe the functional organization of ANS and its related neurotransmitters and receptors
Pharmacology	Introduction to the pharmacology of Autonomic Nervous System (ANS)		2	Enlist major autonomic neurotransmitters.
			3	Enlist various types of cholinergic, adrenergic and dopaminergic receptors discovered so far.
			4	Describe the organ system distribution of autonomic receptors.
			5	Describe presynaptic receptors (autoreceptors and heteroreceptors).
			6	Describe inotropy, chronotropy and dromotropy.
	Cholinomimetic drugs (Parasympatho-mimetic drugs)		7	Classify cholinomimetic drugs.
			8	Enlist the naturally-occurring cholinomimetic alkaloids.
			9	Enlist major organophosphate compounds.
			10	Enlist the organophosphates used as “Nerve gases”.

			11	Describe the pharmacokinetics of cholinomimetics with emphasis on metabolism and duration of action.
			12	Describe the mechanism of action of directly-acting and indirectly-acting cholinomimetics.
			13	Describe the organ system effects of directly-acting and indirectly-acting cholinomimetics with special reference to their effects on receptors.
			14	Describe the clinical uses of cholinomimetics.
			15	Describe the cholinomimetics used in glaucoma and Alzheimer's disease.
			16	Describe the use of Edrophonium to differentiate between cholinergic crisis and Myasthenic crises.
			17	Describe the adverse effects of cholinomimetics.
			18	Describe the clinical manifestations of organophosphate poisoning.
			19	Describe the clinical manifestations of mushroom poisoning.
			20	Explain the pharmacological rationale of prophylactic use of Pyridostigmine in situations where chemical warfare with nerve gases is anticipated.
			21	Enlist the contraindications of cholinomimetics.
	Anticholinergic drugs (Parasympatholytic		22	Classify anticholinergic drugs (Parasympatholytics/Cholinoceptor-blocking drugs).
			23	Describe belladonna alkaloids with reference to their natural sources.

			24	Describe the pharmacokinetics of antimuscarinic drugs with emphasis
				on metabolism and duration of action.
			25	Describe the mechanism of action of antimuscarinic drugs.
			26	Describe the organ system effects of antimuscarinic drugs with special reference to their effects on receptors.
			27	Describe the clinical uses of antimuscarinic drugs.
			28	Describe the drug treatment of organophosphate poisoning.
			29	Enlist cholinesterase regenerating compounds.
			30	Describe “aging” of the phosphorylated enzyme complex and its clinical importance regarding the management of organophosphate poisoning.
			31	Describe the drug treatment of mushroom poisoning.
			32	Describe the adverse effects of antimuscarinic drugs.
			33	Describe atropine fever.
			34	Name the antidote for atropine poisoning.
			35	Describe the contraindications of antimuscarinic drugs.
	Ganglion-blocking dru		36	Enlist major ganglion-blocking drugs.
			37	Describe the mechanism of action of ganglion-blocking drugs.
			38	Describe the organ system effects of ganglion-blocking drugs.
			39	Enlist the clinical uses of ganglion-blocking drugs.

			40	Enlist the adverse effects of ganglion-blocking drugs.
Forensic Medicine	Poison & related laws		41	Define a poison
			42	Describe laws related to poisoning or drug use.
	Legal duties of a Registered Medical Practitioner in a case of poisoning		43	Explain legal, ethical, and moral duties of Registered Medical Practitioner in a case of poisoning.
	Fate of Poison		44	Enumerate different routes of administration of poisons.
			45	Describe Biotransformation.
			46	Enlist the route of excretion of Poisons
	Diagnosis of poisoning in living and dead		47	Describe the protocols of diagnosing poisoning in living and Dead
	Antidotes		48	Define and classify antidotes
			49	Describe the mechanism of action of different antidotes
	Steps of management in a case of poisoning		50	Describe general steps of management in a case of poisoning
	Organophosphate group		51	Describe the mechanism of action of commonly used organophosphate poisons.
			52	Describe the characteristics finding for organophosphate group in postmortem examination.
			53	describe different signs and symptoms for organophosphate group.
			54	Describe the medico-legal importance for organophosphate group.
			55	Explain fatal dose, fatal period, and treatment for organophosphate poisons.

Community medicine	Smoking	1	55	Describe the global distribution and increase of smoking
			56	Discuss the causes of smoking
			57	Discuss the effects of smoking on Health
			58	Describe preventive and control Measures
	International Health	1	59	Describe International health regulations and their importance
			60	Describe preventive measures for travelers visiting disease endemic areas
	Role of international health agencies in public health	1	61	Enumerate international health agencies working in health sector
			62	Discuss structure and function of WHO & UNICEF
			63	Explain the roles of WHO & UNICEF in Pakistan
PRIME/ Research	Research Ethics	1	64	Define ethics in research
			65	Discuss importance of research Ethics
			66	Discuss principles of ethics
			67	Describe the theories of ethics
			68	Discuss research misconduct
	Referencing	1	69	Differentiate between references, citation & bibliography
			70	List different styles of referencing
			71	Select appropriate referencing style for a research project
Theme-2: (Palpitation, fainting and death)				
Pharmacology	Sympathomimetic drugs		72	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).
			73	Define Catecholamines with examples.

			74	Describe the pharmacokinetics of sympathomimetic drugs with emphasis on their metabolism.
			75	Describe the mechanism of action of sympathomimetics.
			76	Describe the organ system effects of sympathomimetics with special reference to their effects on receptors.
			77	Compare the effects of Adrenaline, Noradrenaline, Phenylephrine and Isoprenaline on heart rate and blood pressure.
			78	Describe the clinical uses of sympathomimetics.
			79	Describe the drug treatment of Anaphylactic shock.
			80	Describe the dose-dependent effects of Dopamine and its clinical importance.
			81	Describe the sympathomimetic drugs used in the management of glaucoma.
			82	Describe the role of mannitol and acetazolamide in the treatment of Glaucoma
			83	Describe the adverse effects of sympathomimetics.
			84	Describe hypertensive cheese Reaction
			85	Enlist the foods with high Tyramine content.
			86	Describe the drug interactions of sympathomimetics with Monoamine oxidase inhibiting drugs.
			87	Describe the treatment of accidental overdose of adrenaline.

	Sympatholytic drugs (Adrenoceptor antagonists)		88	Classify sympatholytic drugs (adrenoceptor antagonists) on the basis of spectrum of adrenoceptors they affect.
			89	Name the prototype α-blocker.
			90	Name the α-blocker having more specificity for prostate muscle.
			91	Describe the mechanism of action of α-blockers.
			92	Describe the organ system effects of α-blockers with special reference to their effects on receptors.
			93	Describe the phenomenon of epinephrine reversal.
			94	Describe the clinical uses of α-blockers.
			95	Describe the adverse effects of α-blockers.
			96	Name the prototype β-blocker.
			97	Enlist the β-blockers with intrinsic sympathomimetic activity (partial agonist activity).
			98	Enlist the β-blockers with membrane stabilizing activity (Na channel-blocking activity).
			99	Enlist the β-blockers which have proved to be inverse agonists.
			100	Enlist the β-blockers which are relatively safe in chronic stable heart failure.
			101	Enlist the β-blockers which are relatively safe in asthmatic patients.
			102	Describe the pharmacokinetics of propranolol.
			103	Describe the mechanism of action of β-blockers.

			104	Describe the organ system effects of ß-blockers with special reference to their effects on receptors.
			105	Describe the clinical uses of ß-blockers.
			106	Describe ß-blockers used in the management of glaucoma.
			107	Describe stage fright and name the ß-blocker used for its management.
			108	Describe the adverse effects of ß-blockers.
			109	Name the antidote for ß-blockers' toxicity.
			110	Enlist the contraindications of ß-blockers.
			111	Describe the limitations of beta-blockers in patients with Diabetes Mellitus, Hyperlipidemias, Bronchial Asthma and peripheral arterial disease.
			112	Enlist mixed adrenoceptor antagonists (Labetalol and Carvedilol).
			113	Describe the clinical uses of mixed adrenoceptor antagonists.
Forensic medicine	Thanatology/Death		114	Describe death.
			115	Describe phases of death.
			116	Define brain death.
			117	Describe the criteria of brain death.
			118	Describe the role of EEG/ECG in death.
			119	Explain apparent death.

			120	Describe human tissue act.
			121	Describe medicolegal importance of death.
	Postmortem changes		122	Define Post Mortem changes.
			123	Classify Post-mortem changes.
			124	Describe immediate, early and late changes of post-mortem.
			125	Describe Post-mortem lividity.
			126	Describe the steps to report changes due to post-mortem Lividity
	Rigor mortis		127	Define Rigor Mortis.
			128	Describe the mechanism of formation of Rigor mortis
			129	Describe the special features of Rigor Mortis.
			130	Describe time consumed to develop Rigor mortis.
			131	Describe chemical basis of Rigor Mortis.
			132	Describe factors affecting Rigor Mortis.
			133	Describe the conditions that simulate Rigor Mortis.
			134	Describe procedure of its confirmation.
			135	Describe medico legal importance of Rigor Mortis.
	Cooling of dead body (Algor Mortis)		136	Define Algor Mortis?
			137	Describe different methods of recording the temperature of dead body.

			138	Describe the PM body cooling curve?
			139	Describe the formula/calculation used for time since death.
	Late P.M. changes & putrefaction		140	Define putrefaction?
			141	Describe the process of Putrefaction
			142	Describe stages of putrefaction.
			143	Describe order of progression in putrefaction.
			144	Describe factors affecting Putrefaction.
			145	Describe Casper dictum.
			146	Describe medicolegal importance of putrefaction.
	Maceration		147	Define maceration.
			148	Describe features of maceration.
			149	Discuss differentiation point for maceration
			150	Discuss medicolegal importance of maceration.
	Adipocere formation (Saponification)		151	Define Adipocere formation.
			152	Describe features of Adipocere formation.
			153	Discuss medicolegal importance of Adipocere formation.
	Mummification		154	Define Mummification.
			155	Describe features of Mummification.
			156	Discuss medicolegal importance of Mummification.

	Introduction to autopsy		157	Define Autopsy.
			158	Describe the modified continental system and compare it with other medicolegal systems in the world.
			159	Classify types of Autopsy.
			160	Describe the role of Autopsy in Criminal offences.
			161	Describe section 174 and 176 of the Criminal Procedure Code (CrPC), 1973
	Modern autopsy suite		162	Describe the components of modern autopsy suite
			163	Describe the precautions taken while working in modern autopsy suites
			164	Explain the hazards encountered in modern autopsy suites
	Autopsy Protocol		165	Describe pre-examination in Autopsy.
			166	Describe the protocol of examination of clothes, and external examination in autopsy.
			167	Classify and describe different autopsy incisions.
			168	Describe internal examination in an autopsy.
			169	Describe the procedure to collect different autopsy samples.
			170	Describe the chain of custody.
			171	Describe the steps of writing an autopsy report
			172	Describe autopsy procedure for death due to heat and cold.
	Exhumation		173	Define exhumation.
			174	Describe authorisation of autopsy surgeon for exhumation.

			175	Describe protocol of exhumation.
			176	Describe time limit for exhumation.
			177	Describe the precautions for exhumations.
			178	Describe the procedure to collect samples.
			179	Describe the limitations of exhumations.
			180	Describe the scope of exhumation.
	Skeletonized body		181	Describe the steps of examination of a skeletonized body to assess its race, age, sex and stature
			182	Describe the protocol for autopsy of a skeletonized body
			183	Describe cause of death in such cases.
			184	Describe nature of injury and type of weapon used in such cases.
			185	Describe time since death in such cases.
	Negative autopsy		186	Define negative autopsy.
			187	Describe causes of the negative autopsy.
			188	Describe concealed trauma.
	Autopsy artifacts and hazards		189	Describe autopsy artefacts.
			190	Describe the importance of forensic artefacts.
			191	Describe effect of artefacts on the opinion of post-mortem report.
	Infanticide		192	Describe infanticide and its related law.
			193	Describe the Age of viability and its medico legal significance.
			194	Describe the concept of live birth and separate existence.
			195	Describe the Hydrostatic test and its importance.

			196	Explain Cause of death, i.e. acts of commission and acts of omission
				Describe sudden infant death syndrome (SIDS)
	Autopsy of an infected body		197	Describe the protocols for autopsy of the infected dead body.
			198	Describe the precautions required for autopsy of an infected person.
			199	Enlist the diseases transferred from during autopsy infected dead body
	Autopsy of fragmentary remains		200	Describe autopsy of a fragmentary remains and mutilated body.
			201	Discuss the protocols adopted for autopsy of fragmentary remains
			202	Describe the samples needed for autopsy of fragmentary remains.
	Embalming		203	Define Embalming.
			204	Enlist the chemical used for Embalming.
			205	Describe the procedure for Embalming.
			206	Describe the used of Embalming.
Community Medicine	Child labor and Child Abuse	1	207	Define child labor
			208	Describe different types of child labor and its effects
			209	Describe statistics of child labor
			210	Describe governments` actions against child labor
			211	Define IPEC 2011 (international program on elimination of child Labor
			212	Define child abuse
			213	Describe different forms of child abuse and its effects

			214	Describe statistics of child abuse
			215	Describe the preventive strategies regarding child abuse
Medicine	General management of poisons	1	216	Describe approach to manage a poisoned patient in accident and emergency department

Theme-3: (Heredity and Cancers)				
Pathology	Genetics		217	Define the term mutation, hereditary, congenital, genotype, phenotype, codon, Mendelian Disorder
	Mutations		218	Describe various types of mutations
			219	Describe trinucleotide-repeat Mutations
			220	Enlist few examples of trinucleotide-Repeat Disorders
			221	Describe mutations in mitochondrial genes
	Transmission pattern of single Gene disorders		222	Enumerate transmission patterns of single gene disorders
			223	Describe biochemical and molecular basis of Autosomal Dominant Disorders
			224	Enlist few examples of Autosomal Dominant Disorders
			225	Describe biochemical and molecular basis of Autosomal Recessive disorder
			226	Enlist few Examples of Autosomal Recessive Disorders
			227	Describe mechanism of transmission of X-Linked disorders
			228	Enumerate examples of X-Linked Disorders
	Biochemical and molecular basis of single gene disorders		229	Discuss enzyme defects and their consequences
			230	Describe defects in receptors and transport system
			231	Describe alterations in structure, functions or quantity of non-enzyme proteins

			232	Describe genetically determined adverse reactions to drugs
	Complex multigeneic disorders		233	Describe multigeneic disorders with Examples
	Cytogenetic Disorders involving Autosomes		234	Discuss Trisomy 21 and its molecular basis
			235	Describe diagnostic clinical features of Trisomy 21
	Molecular genetic diagnosis		236	Describe the basic principles of various molecular techniques including PCR, FISH and Southern/Western blotting
			237	Enumerate indications of these techniques.
	Introduction to Neoplasia		238	Define the terms: neoplasia, neoplasm, oncology, tumor, benign tumor, malignant tumor, anaplasia, metaplasia, differentiation and dysplasia.
	Nomenclature of Tumors		239	Describe the basic principle of nomenclature of tumors with respect to tissue of origin, benign and malignant nature
	Characteristics of Benign and Malignant Tumors		240	Describe characteristics of benign and malignant tumors
			241	Differentiate between benign and malignant tumors
			242	Describe characteristics of benign and malignant neoplasms in terms of differentiation, anaplasia, rate of growth, local invasion and Metastasis
	Epidemiology of Cancer		243	Describe the epidemiology of cancer with respect to overall incidence of cancer and various

				host factors (age and hereditary) that predisposes to cancer
			244	Discuss the epidemiology of cancer with respect to geographical and environmental factors that predispose to cancer
	Molecular Basis of Cancer		245	Describe the molecular/genetic basis of carcinogenesis
			246	Describe genetic lesions in cancer
			247	Define oncogene, proto-oncogene and Oncoproteins.
	Carcinogenesis		248	Enumerate carcinogens
			249	Describe the process of carcinogenesis
			250	Describe the hallmarks of cancer cells and process involved
			251	Describe the role of p53
	Types of Carcinogens		252	Discuss properties of chemical Carcinogens
			253	Describe direct and indirect chemical carcinogens and their mechanism of action
			254	Describe the mechanism of radiation carcinogenesis
			255	Enumerate viral and bacterial Carcinogens
			256	Describe mechanism of carcinogenesis by viral and microbial oncogenes
	Clinical Aspects of neoplasia		257	Define cachexia
			258	Describe the clinical features of neoplasia including effects of tumor on host cancer cachexia
			259	Describe the clinical significance of paraneoplastic syndromes

			260	Describe clinical syndromes with respect to its causal mechanism and major forms of underlying Cancer
	Diagnosis of Cancer		261	Describe morphologic, biochemical and molecular methods employed for diagnosis of cancer
	Pathways for tumor spread		262	Describe the pathways for spread of tumors like local invasion and metastasis
	Grading and Staging of tumors		263	Describe grading and staging of Tumors
	Tumor immunity		264	Discuss host defenses against Tumors
			265	Describe tumor antigens and anti-tumor effect mechanisms
			266	Describe tumor surveillance and Immune evasion by the tumors
Pharmacology	Anticancer drugs		267	Describe terms like cell cycle-specific drugs and cell cycle-nonspecific drugs.
			268	Describe the role of P-glycoprotein in relation to the development of resistance to cytotoxic drugs.
			269	Classify anticancer drugs.
			270	Describe general adverse effects of anticancer drugs.
			271	Describe the mechanism of action of alkylating agents.
			272	Describe the clinical uses and adverse effects of Busulfan and Cyclophosphamide.
			273	Describe the mechanism of action, clinical uses and adverse effects of Cisplatin.
			274	Describe in general the mechanism of action of antimetabolites.

			275	Describe the mechanism of action, clinical uses, adverse effects and contraindications of Methotrexate, Azathioprine, 6-Mercaptopurine and 5-Fluorouracil.
			276	Describe the drug interaction of Azathioprine and 6-Mercaptopurine with Allopurinol.
			277	Describe the natural source of plant alkaloids Vinblastine and Vincristine.
			278	Describe the mechanism of action, clinical uses and adverse effects of Vinblastine and Vincristine.
			279	Describe the mechanism of action, clinical uses and adverse effects of Doxorubicin, Daunorubicin, Dactinomycin and Bleomycin.
			280	Enlist the anticancer mechanism of action and uses of hormonal agents like Tamoxifen, Flutamide, Goserelin and Aminoglutethimide.
			281	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.
			282	Describe cancer treatment modalities (primary induction, adjuvant, neo-adjuvant and maintenance chemotherapy)
			283	Describe the antidotes of Methotrexate, Cyclophosphamide and Doxorubicin toxicity.
	Eicosanoids-Prostaglandins		284	Classify eicosanoids.

			285	Describe the mechanism of action of Prostaglandins.
			286	Describe the organ system effects of Prostaglandins.
			287	Describe the clinical uses of Prostaglandins.
			288	Describe the prostaglandins used in the management of glaucoma.
			289	Describe the pharmacologic effects of Thromboxane's2.
	Dermatologic preparations		290	Describe dermatologic formulations like creams, ointments, gels, lotions, pastes, powders, tinctures and wet dressings.
			291	Describe the choice of dermatologic formulation with reference to the nature of the lesion.
	Drug treatment of scabies		292	Enlist the drugs used for the treatment of Scabies
			292	Describe the method of application of Permethrin, Crotamiton and Benzyl benzoate for treating scabies.
	Drug treatment of Acne vulgaris		293	Enlist the drugs used for treating Acne (including antibiotics and hormonal agents).
			294	Describe the mechanism of action and adverse effects of Benzoyl peroxide, Tretinoin and Isotretinoin.
			295	Describe the teratogenicity of Isotretinoin.
	Drug treatment of Psoriasis		296	Enlist the drugs used for treating Psoriasis.

			297	Describe the teratogenicity of Acitretin.
	Herbal medications		298	Describe the terms like herbal medications, botanicals and nutritional supplements with special reference to drug regulatory factors.
			299	Describe the pharmacologic effects and intended uses of Garlic (Allium sativum).
			300	Describe the drug interactions of Garlic with Warfarin and Aspirin.
			301	Describe the possible medicinal use of Kalonji (Nigella sativa).
			302	Describe the pharmacologic effects and intended uses of Ginseng.
			303	Describe the drug interactions of Ginseng with antipsychotic and hypoglycemic medications.
			304	Describe the intended clinical uses of Coenzyme Q10.
			305	Describe the drug interactions of Coenzyme Q10 with Warfarin.
Community Medicine	Cancers	1	306	Enlist the common cancers prevalent in Pakistan
			307	Describe the burden and epidemiology of common cancers prevalent globally and in Pakistan
			308	Describe the prevention and control of cancers
			309	Describe various governmental programs and strategies for the prevention of cancers

Family medicine	Cancer screening		310	Identify red-flags in patient which need referral for cancer screening
			311	Explain the psychosocial impact of disease on patient and their families
			312	Describe the indications, rationale and common diseases which require routine cancer screening

Practical work				
Pathology	Lipoma		313	Identify the morphological changes occurring in lipoma
	Squamous cell carcinoma		314	Identify morphological changes of squamous cell carcinoma
	Fibro adenoma		315	Enlist points of identification of gross and microscopic features of fibro adenoma of breast
	Karyotyping		316	Demonstrate preparation of Karyogram
			317	Identify gender on the basis of Karyogram
			318	Identify common numerical chromosomal abnormalities on Karyogram
Pharmacology	Introduction to experimental Pharmacology (experiments on isolated piece of rabbit's Ileum)		319	Differentiate between Qualitative and Quantitative experiments.
			320	Recognize various parts of Tissue Organ Bath and describe their functions.
			321	Describe the ingredients and their quantities required for preparing the Tyrode's Solution.
			322	Describe the technique of slaughtering of rabbit and removal of a piece of ileum.
			323	Describe the fixation of piece of ileum in the inner organ bath.
			324	Enumerate the causes of tissue death.
	Ceiling effect for Parasympathomimetic drug (Acetylcholine)		325	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.
			326	Interpret the recording of acetylcholine-induced ileal activity on the revolving drum.
			327	Demonstrate washing of the inner organ bath for the subsequent doses of Acetylcholine.
			328	Construct tables and graphs for inference of the results.
	Antagonism between acetylcholine and atropine		329	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.
			330	Interpret the recording of acetylcholine- and Atropine-induced ileal activity on the revolving drum.
			331	Construct tables and graphs for inference of the results.
	Ceiling effect for Histamine		332	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.
			331	Interpret the recording of Histamine -induced ileal activity on the revolving drum.
			332	Demonstrate washing of the inner organ bath for the subsequent doses of Histamine.
			333	Construct tables and graphs for inference of the results.
	Antagonism between Histamine and antihistamine		334	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.
			335	Interpret the recording of Histamine- and antihistamine-induced ileal activity on the revolving drum.
			336	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		337	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.
			338	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.
			339	Interpret the recording of drug-induced ileal activity on the revolving drum.
			340	Construct tables and graphs for inference of the results.
	Introduction to experimental Pharmacology (effects of drugs on rabbit's Eye)		341	Demonstrate measuring the pupil size.
			342	Demonstrate corneal reflex.
			343	Demonstrate light reflex.
	Effects of Parasympathomimetic drug (e.g.,		344	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			
			345	Demonstrate the effect of Pilocarpine on the colour of the conjunctiva in the test eye in comparison with the control eye.
			346	Demonstrate the effect of Pilocarpine on the corneal reflex in the test eye in comparison with the control eye.
			347	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		348	Demonstrate the effect of Ephedrine on the size of the pupil in the test eye in comparison with the control eye.
			349	Demonstrate the effect of Ephedrine on the colour of the conjunctiva in the test eye in comparison with the control eye.
			350	Demonstrate the effect of Ephedrine on the corneal reflex in the test eye in comparison with the control eye.
			351	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		352	Demonstrate the effect of Tropicamide on the size of the pupil in the test eye in comparison with the control eye.

			353	Demonstrate the effect of Tropicamide on the colour of the conjunctiva in the test eye in comparison with the control eye.
			354	Demonstrate the effect of Tropicamide on the corneal reflex in the test eye in comparison with the control eye.
			355	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., Proparacaine) on rabbit's eye		356	Describe the mechanism of action of Proparacaine regarding its effects on the eye.
			357	Demonstrate the effect of Proparacaine on the size of the pupil in the test eye in comparison with the control eye.
			358	Demonstrate the effect of Proparacaine on the colour of the conjunctiva in the test eye in comparison with the control eye.
			359	Demonstrate the effect of Proparacaine on the corneal reflex in the test eye in comparison with the control eye.
			360	Demonstrate the effect of Proparacaine on the light reflex in the test eye in comparison with the control eye.
	To identify an unknown drug on rabbit's eye		361	Demonstrate the effect of the unknown drug on the size of the pupil in the test eye in comparison with the control eye.

			361	Demonstrate the effect of the unknown drug on the colour of the conjunctiva in the test eye in comparison with the control eye.
			362	Demonstrate the effect of the unknown drug on the corneal reflex in the test eye in comparison with the control eye.
			363	Demonstrate the effect of the unknown drug on the light reflex in the test eye in comparison with the control eye.
			364	Interpret the results.
			365	Identify the unknown drug.
Forensic medicine	Autopsy report		366	Construct a full autopsy report including all components after thorough examination.
	Toxicology Sample collection		367	Explain the procedures, organ needed, and preservation used in sample collection.
	Toxicology Report Analysis		368	interpret the toxicology report received and then incorporate it in final opinion.
	Thanatology		369	Identify and describe various models of post-mortem changes
	Stomach wash		370	Perform stomach wash on a manikin

Teaching and learning strategies:

The following teaching learning methods are used to promote better understanding:

- Interactive Lectures
- Hospital Clinic visits
- Small Group Discussion
- Skills session
- Self-Directed Study

Interactive lectures:

An interactive lecture is an easy way for instructors to intellectually engage and involve students as active participants in a lecture-based class of any size. Interactive lectures are classes in which the instructor breaks the lecture at least once per class to have students participate in an activity that lets them work directly with the material.

- The instructor might begin the interactive segment with an engagement trigger that captures and maintains student attention.
- Then the instructor incorporates an activity that allows students to apply what they have learned or give them a context for upcoming lecture material.
- As the instructor feels more comfortable using interactive techniques he or she might begin to call upon a blend of various interactive techniques all in one class period.

Hospital Clinic visits:

In small groups, students observe patients with signs and symptoms in hospital or clinical settings. This helps students to relate knowledge of basic and clinical sciences of the relevant module.

Small group discussion (SGD):

The shy and less articulate are more able to contribute. Students learn from each other. Everyone gets more practice at expressing their ideas. A two way discussion is almost always more creative than individual thoughts. Social skills are practiced in a 'safe' environment e.g. tolerance, cooperation. This format helps students to clarify concepts acquire skills or attitudes. Students

exchange opinions and apply knowledge gained from lectures, tutorials and self-study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

Skills Practical session:

Skills relevant to respective module are observed and practiced where applicable in skills laboratory or Laboratories of various departments.

Self-Directed learning (SDL):

Self-directed learning, which involves studying without direct supervision in a classroom Library, is a valuable way to learn and is quickly growing in popularity among parents and students. Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Centre, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

Time table:

The timetables for the module will be shared via Edmodo and the notice boards in advance.

1. Assessment tools:

Theoretical knowledge is tested by a written examination system constituted by multiple choice questions (MCQs). The assessment of practical knowledge involves oral, spot, or objective structured practical examinations (OSPE).

Multiple Choice Questions (MCQs):

- Multiple choice questions (MCQs) are a form of assessment for which students are asked to select the best choice from a list of answers.
- MCQ consists of a stem and a set of options. The stem is usually the first part of the assessment that presents the question as a problem to be solved; the question can be an incomplete statement which requires to be completed and can include a graph, a picture or any other relevant information. The options are the possible answers that the student can choose from, with the correct answer called the key and the incorrect answers called distractors.
- Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.
- Students mark their responses on specified computer-based sheet designed for the college.

- The block exam will comprise of 120 MCQs and will be compiled according to the shared blueprint.

Objective Structured Practical Examination (OSPE)

- The content may assess application of knowledge, or practical skills.
- Student will complete task in define time at one given station.
- All the students are assessed on the same content by the same examiner in the same allocated time.
- A structured examination will have observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.
- Unobserved will be static stations in which students will have to answer the questions related to the given pictures, models or specimens the provided response sheet.
- Rest station is a station where there is no task given, and in this time student can organize their thoughts.
- The Block OSPE will be comprise of 20 examined station and 5 rest stations. The stations will be assigned according to the shred blueprint. There will be 8 stations for viva of core subjects like Pathology, Pharmacology, Forensic Medicine and Community Medicine (2 station for viva of each core subject) and 2 clinical station and rest of 10 out of 20 stations will be assigned according to shared blue prints.

Internal Evaluation:

Internal evaluation is a process of quality review undertaken within an institution for its own ends. 10% marks of internal evaluation will be added to final marks. This 10% will be based on

Marks obtained	**14 out of total 40 marks of internal assessment in block H Paper**

Marks obtained	**14 out of total 40 marks of internal assessment in block H OSPE**

2. Attendance Requirement:

More than 75% attendance is mandatory to sit for the examinations.

Learning Resources For Students

Physiology

- Guyton nd Hall physiology
- Ganong physiology
- Human Physiology from cells to system by lauralee sherwood
- BRS Physiology
- Neuroscience by Dale Purves

Biochemistry

- Chatterjee text book of Biochemistry
- Harpers Biochemistry
- Lippincotts Biochemistry
- Satya Narayan biochemistry

PATHOLOGY

- Robbins textbook of pathology
- Harsh mohan text book of pathology
- Levison text book of microbiology
- Paniker parasitology
- Chatterjee book of parasitology

PHARMACOLOGY

- Basic & Clinical Pharmacology, 14edition
- Katzung & Trevor's Pharmacology: Examination & Board Review, 10edition
- Lippincott Illustrated Reviews: Pharmacology, 8th edition
- Pharmacology for Medical Graduates by Tara V. Shanbhag

FORENSIC MEDICINE

- Parikh’s textbook of Medical Jurisprudence and Toxicology.
- Principles and Practice of Forensic Medicine by Nasir R Awan
- Forensic medicine and toxicology principals and practice by Krishan Vij
- Knights forensic pathology by Bernard knight, Pekka saukko
- Forensic medicine and toxicology Nagesh Kumar G rao

Apart from these resources learning, students can consult books available in library or recommended by the specialty experts.