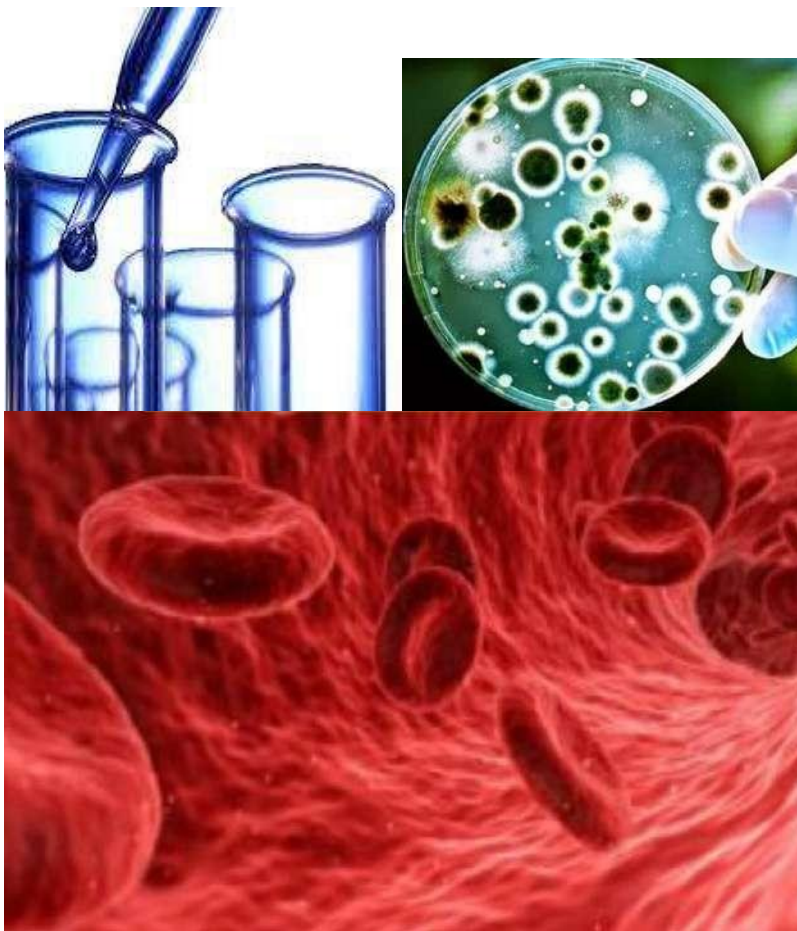
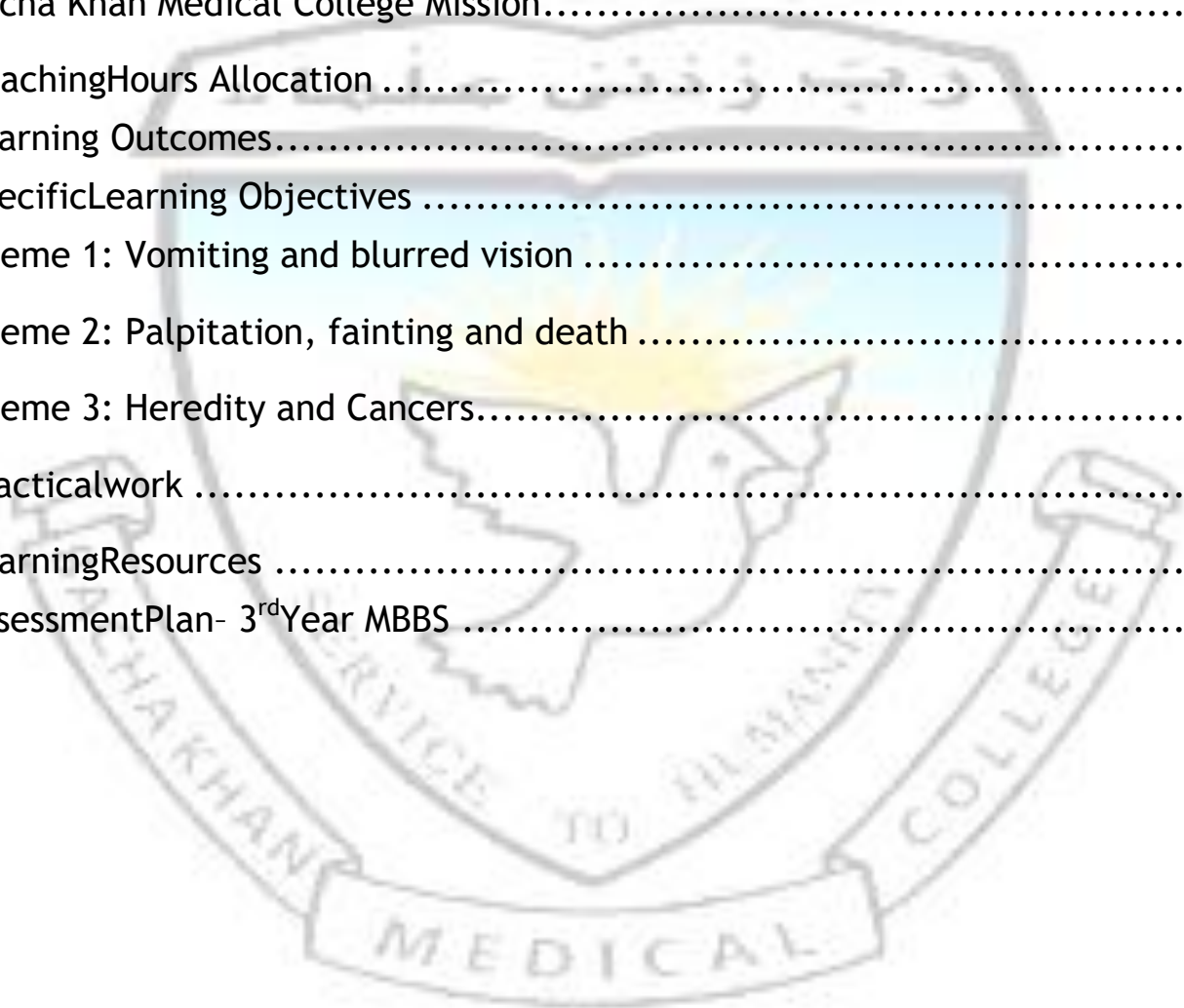


# MULTISYSTEM MODULE STUDY GUIDE 3<sup>rd</sup> YEAR



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# Vision Statement

Become a prominent regional healthcare center focused on improving individual and community health and achieving national and international standards of excellence.

# Mission Statement

Bacha Khan Medical College is committed to train students to become knowledgeable, skillful, and empathetic to meet the needs of society with an emphasis on research professionalism and health advocacy.

# Outcomes for Graduates of BKMC



# Introduction to the Study Guide

This study guide is designed for MBBS undergraduate students of BKMC to provide them with resource material that will highlight the important aspects of the curriculum to make them self-regulated lifelong learners.

This study guide will give an overview of course outcomes and objectives in relation to the course content. The assessment methodologies along with blueprints are also provided.

This study guide has been carefully designed, keeping in view the PMDC and KMC curriculum and guidelines. Dedicated effort by the faculty is done to make this guide tailored to the student's needs.

## Introduction to the Module

The Bacha Khan Medical College MULTISYSTEM module is designed to provide both basic and clinical knowledge and skills to the medical students. The module is aligned with the general outcomes required at the exit level, and includes sessions on preventive medicine, medico legal, communication skills, professionalism, self-management, and developing scholarly skills.

This module will be of 3 weeks duration and the assessment will be carried out through MCQs and OSPE.

# Curriculum Committee BKMC

## Chair

Prof. Dr. Amjid Ali (Dean BKMC)

## Co-Chair

Professor Dr. Usman Ali, Chairperson Anatomy Department.

## Clinical Sciences:

Dr. Naila Noor, Department of Obstetrics and Gynaecology BKMC/MMC.

Dr. Bilal, Department of Ophthalmology, BKMC/MMC.

Dr. Mudassir, Department of ENT, BKMC/MMC.

Dr. Karamat, Department of Pediatrics, BKMC/MMC.

Dr. Dr. Muhammad Sohrab Department of Medicine, BKMC/MMC.

Dr. Ajmal Afridi, Department of General Surgery, BKMC/MMC.

Dr. Zafar Ahmed Khan, Department of Urology, BKMC/MMC.

## Behavioral Sciences:

Dr. Ejaz Gul, Department of Psychiatry, BKMC/MMC.

Dr. Muslim Khan, Department of Psychiatry, BKMC/MMC

Dr. Aizaz Jamal, Department of Psychiatry, BKMC/MMC

## Medical Education:

Dr. Imtiaz Uddin, Director Medical Education BKMC.

Dr. Mehreen Lajber, Department of Medical Education BKMC.

## Basic Sciences:

Dr. Farhat Rehman, Department of Physiology BKMC.

Dr. Siyyar, Department of Biochemistry BKMC.

Dr. Khalid Khan, Department of Forensic Medicine, BKMC

Dr. Iftikhar Uddin, Department of Community Medicine, BKMC.

Dr. Shah Muhammad Khan Jadoon, Department of Pharmacology, BKMC.

Dr. Nazish Farooq, Department of Pathology, BKMC

# Modular Committee for MULTISYSTEM Module

**Module Coordinator:** Dr.HUMA HABIB

**Co Coordinators':** Dr. Fatima Lajber

**Medical Educationists:**Dr.Imtiazud Din

Dr. Mehreen Lajber



# Introduction to the Module Facilitators

**Table 1: Module facilitators**

S. No	Names	Designation/Department
1	Dr. IftikharUddin	Community Medicine Department
2	Dr. ShahanaNisar	Community Medicine Department
3.	Dr. Nighat Musa	Community Medicine Department
4.	Dr. NaeemKhattak	Community Medicine Department
5.	Dr. HumaHabib	Community Medicine Department
6.	Dr. Fatima Lajber	Community Medicine Department
7.	Dr. HaleemaSadia	Pharmacology Department
8	DrSomia	Pharmacology Department
9	Dr. Fazli Rabi	Pharmacology Department
10	<b>DrZaheer</b>	<b>Forensic Medicine Department</b>
11.	Dr. Shahid	Forensic Medicine Department
12	Dr Abdullah	Forensic Medicine Department
13	Prof DrNazishFarooq	Pathology Department
14.	Dr. Komal	Pathology Department
15.	Dr. Mashal	Pathology Department
16	Dr. Siyar	BiochemistryDepartment
17	Dr. Khalida	Pathology Department
18.	Dr. Ayesha	Pathology Department
19.	Dr. Zarmina	Pathology Department
20.	Dr. Zahir Shah	Pathology Department
24.	Dr. Sadia	Pathology Department
25.	Dr. Zainab	Pathology Department

**Themes covered during  
MULTISYSTEM Module**



## Weekwise themes

<p>Week1 Vomiting and blurred vision</p>	<p>Week 2 Palpitation, fainting and death</p>	<p>Week 3 Heredity and Cancers</p>
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# TeachingHoursAllocation

Table2: Hour's allocation for different subjects

S. No	Subject	Hours
1	Pathology	24
2	Pharmacology	29
3	Forensic medicine	25
4	Community medicine	5
5	Medicine	1
6	Family medicine	1
7	Research/PRIME *	2
	Physiology	1
	<b>Total</b>	<b>90</b>

# Learning Objectives

By the end of MULTISYSTEM Module, 3<sup>rd</sup> year MBS students will 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 medicolegal implications.
- 17) Describe general principles of Toxicology and their role in medicolegal sciences.
- 18) Describe the fundamentals of Research Ethics

# Specific Learning Objectives

Table 3: Learning Objectives Theme Wise

Theme-1 (Vomiting and Blurred vision)		
		Specific Learning objectives

Subject	Topic	s	At the end of this module, the students of year-3 will be able to:
Physiology	Functional organization of ANS-and overview	1	Describe the functional organization of ANS and its related neurotransmitters and receptors
Pharmacology	Introduction to the pharmacology of Autonomic Nervous System (ANS)	1	Enlist major autonomic neurotransmitters.
			Enlist various types of cholinergic,adrenergic and dopaminergic receptors discovered so far.
			Describe the organ system distribution of autonomic receptors.
			Describe presynaptic receptors (autoreceptors and heteroreceptors).
			Describe inotropy, chronotropy and dromotropy.
	Cholinomimetic Drugs (Parasympatho-mimetic drugs)	1	Classify cholinomimetic drugs.
	Enlist the naturally-occurring cholinomimetic alkaloids.		
Enlist major organophosphate compounds.			
Enlist the organophosphates used as “Nerve gases”.			

		Describe the pharmacokinetics of cholinomimetics with emphasis on metabolism and duration of action.
		Describe the mechanism of action of directly-acting and indirectly-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 (Parasympatholytic)	1	Classify anticholinergic drugs (Parasympatholytics/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 action of antimuscarinic drugs.
			Describe the organ system effects 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 regenerating compounds.
			Describe "aging" of the phosphorylated enzyme complex and its clinical importance regarding the management of organophosphate poisoning.
			Describe the drug treatment of mushroom poisoning.
			Describe the adverse effects of antimuscarinic drugs.

			Describe atropine fever.
			Name the antidote for atropine poisoning.
			Describe the contraindications of antimuscarinic drugs.
	Ganglion-blocking dru	1	Enlist major ganglion-blocking drugs.
			Describe the mechanism of action of ganglion-blocking drugs.
			Describe the organ system effects of ganglion-blocking drugs.
			Enlist the clinical uses of ganglion-blocking drugs.
			Enlist the adverse effects of ganglion-blocking drugs.
Forensic Medicine	Poison & related laws	1	Define a poison
			Describe laws related to poisoning or drug use.
	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 Biotransformation.
			Enlist the route of excretion of Poisons
	Diagnosis of poisoning in living and dead		Describe the protocols of diagnosing poisoning in living and Dead.
Antidotes	1	Define and classify antidotes	

			Describe the mechanism of action of different antidotes
	Steps of management in a case of poisoning		Describe general steps of management in a case of poisoning
	Organophosphate group		Describe the mechanism of action of commonly used organophosphate poisons.
			Describe the characteristics finding for organophosphate group in postmortem examination.
			describe different signs and symptoms for organophosphate group.
			Describe the medico-legal importance for organophosphate group.
			Explain fatal dose, fatal period, and treatment for organophosphate poisons.
Community medicine	Smoking	1	Describe the global distribution and increase of smoking
			Discuss the causes of smoking
			Discuss the effects of smoking on Health
			Describe preventive and control Measures
	International Health Role of international health agencies in public health	1	Describe International health regulations and their importance
			Describe preventive measures for travelers visiting disease endemic areas
			Enumerate international health agencies working in health sector

			Discuss structure and function of WHO & UNICEF
			Explain the roles of WHO & UNICEF in Pakistan
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
Referencing	1	Differentiate between references, citation & bibliography	
		List different styles of referencing	
		Select appropriate referencing style for a research project	

**Theme-2: (Palpitation, fainting and death)**

Pharmacology	Sympathomimetic drugs	1	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 sympathomimetics with Monoamine oxidase inhibiting drugs.
		Describe the treatment of accidental overdose of adrenaline.

Sympatholytic drugs (Adrenoceptor antagonists)	1	Classify sympatholytic drugs (adrenoceptor antagonists) on the basis of spectrum of adrenoceptors they affect.
		Name the prototype $\alpha$ -blocker.
		Name the $\alpha$ -blocker having more specificity for prostate muscle.
		Describe the mechanism of action of $\alpha$ -blockers.
		Describe the organ system effects of $\alpha$ -blockers with special reference to their effects on receptors.
		Describe the phenomenon of epinephrine reversal.
		Describe the clinical uses of $\alpha$ -blockers.
		Describe the adverse effects of $\alpha$ -blockers.
		Name the prototype $\beta$ -blocker.
		Enlist the $\beta$ -blockers with intrinsic sympathomimetic activity (partial agonist activity).

		<p>Enlist the <math>\beta</math>-blockers with membrane stabilizing activity (Na channel-blocking activity).</p>
		<p>Enlist the <math>\beta</math>-blockers which have proved to be inverse agonists.</p>
		<p>Enlist the <math>\beta</math>-blockers which are relatively safe in chronic stable heart failure.</p>
		<p>Enlist the <math>\beta</math>-blockers which are relatively safe in asthmatic patients.</p>
		<p>Describe the pharmacokinetics of propranolol.</p>
		<p>Describe the mechanism of action of <math>\beta</math>-blockers.</p>
		<p>Describe the organ system effects of <math>\beta</math>-blockers with special reference to their effects on receptors.</p>
		<p>Describe the clinical uses of <math>\beta</math>-blockers.</p>
		<p>Describe <math>\beta</math>-blockers used in the management of glaucoma.</p>
		<p>Describe stage fright and name the <math>\beta</math>-blocker used for its management.</p>
		<p>Describe the adverse effects of <math>\beta</math>-blockers.</p>
		<p>Name the antidote for <math>\beta</math>-blockers' toxicity.</p>

			Enlist the contraindications of $\beta$ -blockers.		
			Describe the limitations of beta-blockers in patients with Diabetes Mellitus, Hyperlipidemias, Bronchial Asthma and peripheral arterial disease.		
			Enlist mixed adrenoceptor antagonists (Labetalol and Carvedilol).		
			Describe the clinical uses of mixed adrenoceptor antagonists.		
Forensic medicine	Thanatology/Death	1	Describe death.		
			Describe phases of death.		
			Define brain death.		
			Describe the criteria of brain death.		
			Describe the role of EEG/ECG in death.		
			Explain apparent death.		
			Describe human tissue act.		
			Describe medicolegal importance of death.		
			Postmortem changes	1	Define Post Mortem changes.
					Classify Post-mortem changes.
Describe immediate, early and late changes of post-mortem.					
Describe Post-mortem lividity.					

			Describe the steps to report changes due to post-mortem Lividity
	Rigor mortis	1	Define Rigor Mortis.
			Describe the mechanism of formation of Rigor mortis
			Describe the special features of Rigor Mortis.
			Describe time consumed to develop Rigor mortis.
			Describe chemical basis of Rigor Mortis.
			Describe factors affecting Rigor Mortis.
			Describe the conditions that simulate Rigor Mortis.
			Describe procedure of its confirmation.
			Describe medico legal importance of Rigor Mortis.
	Cooling of dead body (Algor Mortis)	1	Define Algor Mortis?
			Describe different methods of recording the temperature of dead body.
			Describe the PM body cooling curve?
			Describe the formula/calculation used for time since death.
	Late P.M. changes & putrefaction		Define putrefaction?
			Describe the process of Putrefaction

			Describe stages of putrefaction.
			Describe order of progression in putrefaction.
			Describe factors affecting Putrefaction.
			Describe Casper dictum.
			Describe medicolegal importance of putrefaction.
	Maceration	1	Define maceration.
			Describe features of maceration.
			Discuss differentiation point for maceration
			Discuss medicolegal importance of maceration.
	Adipocere formation (Saponification)		Define Adipocere formation.
			Describe features of Adipocere formation.
			Discuss medicolegal importance of Adipocere formation.
	Mummification	1	Define Mummification.
			Describe features of Mummification.
			Discuss medicolegal importance of Mummification.
	Introduction to autopsy	1	Define Autopsy.
			Describe the modified continental system and compare it with other medicolegal systems in the world.
			Classify types of Autopsy.

			Describe the role of Autopsy in Criminal offences.
			Describe section 174 and 176 of the Criminal Procedure Code (CrPC), 1973
	Modern autopsy suite		Describe the components of modern autopsy suite
	Autopsy Protocol		Describe the precautions taken while working in modern autopsy suites
			Explain the hazards encountered in modern autopsy suites
			Describe pre-examination in Autopsy.
			Describe the protocol of examination of clothes, and external examination in autopsy.
			Classify and describe different autopsy incisions.
			Describe internal examination in an autopsy.
			Describe the procedure to collect different autopsy samples.
			Describe the chain of custody.
			Describe the steps of writing an autopsy report
			Describe autopsy procedure for death due to heat and cold.
	Exhumation	1	Define exhumation.
			Describe authorisation of autopsy surgeon for exhumation.
			Describe protocol of exhumation.
			Describe time limit for exhumation.

			Describe the precautions for exhumations.	
			Describe the procedure to collect samples.	
			Describe the limitations of exhumations.	
			Describe the scope of exhumation.	
	Skeletonized body	1	Describe the steps of examination of a skeletonized body to assess its race, age, sex and stature	
			Describe the protocol for autopsy of a skeletonized body	
			Describe cause of death in such cases.	
			Describe nature of injury and type of weapon used in such cases.	
			Describe time since death in such cases.	
	Negative autopsy	2	Define negative autopsy.	
	Autopsy artifacts and hazards			Describe causes of the negative autopsy.
				Describe concealed trauma.
				Describe autopsy artefacts.
	Infanticide			Describe the importance of forensic artefacts.
				Describe effect of artefacts on the opinion of post-mortem report.
Describe infanticide and its related law.				
Describe the Age of viability and its medico legal significance.				
			Describe the concept of live birth and separate existence.	



			Describe the Hydrostatic test and its importance.
			Explain Cause of death, i.e. acts of commission and acts of omission
			Describe sudden infant death syndrome (SIDS)
	Autopsy of an infected body	2	Describe the protocols for autopsy of the infected dead body.
			Describe the precautions required for autopsy of an infected person.
			Enlist the diseases transferred from during autopsy infected dead body
	Autopsy of fragmentary remains		Describe autopsy of a fragmentary remains and mutilated body.
			Discuss the protocols adopted for autopsy of fragmentary remains
			Describe the samples needed for autopsy of fragmentary remains.
	Embalming		Define Embalming.
			Enlist the chemical used for Embalming.
			Describe the procedure for Embalming.
			Describe the used of Embalming.
Community Medicine	Child labor	1	Define child labor
			Describe different types of child labor and its effects
			Describe statistics of child labor
			Describe governments` actions against child labor
			Define IPEC 2011 (international program on elimination of

			child Labor
			Define child abuse
	Child Abuse	1	Describe different forms of child Abuse and its effects
			Describe statistics of child Abuse
			Describe the preventive strategies regarding child abuse
Medicine	General management of poisons	1	Describe approach to manage a poisoned patient in accident and emergency department

### Theme-3: (Heredity and Cancers)

Pathology	Genetics	1	Define the term mutation, hereditary, congenital, genotype, phenotype, codon, Mendelian Disorder
	Mutations	1	Describe various types of mutations
			Describe trinucleotide-repeat Mutations
			Enlist few examples of trinucleotide-Repeat Disorders
			Describe mutations in mitochondrial genes
	Transmission pattern of single Gene disorders	1	Enumerate transmission patterns of single gene disorders
			Describe biochemical and molecular 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 Disorders
			Describe mechanism of transmission of X-Linked disorders
			Enumerate examples of X-Linked Disorders
	Biochemical and molecular basis of single gene disorders	1	Discuss enzyme defects and their consequences
			Describe defects in receptors and transport system
			Describe alterations in structure, functions or quantity of non-enzyme proteins
			Describe genetically determined adverse reactions to drugs
	Complex multigenic disorders	1	Describe multigenic disorders with Examples
	Cytogenetic Disorders involving Autosomes	1	Discuss Trisomy 21 and its molecular basis
			Describe diagnostic clinical features of Trisomy 21
	Molecular genetic diagnosis	1	Describe the basic principles of various molecular techniques including PCR, FISH and Southern/Western blotting
			Enumerate indications of these techniques.

	Introduction to Neoplasia	1	Define the terms: neoplasia, neoplasm, oncology, tumor, benign tumor, malignant tumor, anaplasia, metaplasia, differentiation and dysplasia.
	Nomenclature of Tumors	1	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
	Epidemiology of Cancer	1	Describe characteristics of benign and malignant neoplasms in terms of differentiation, anaplasia, rate of growth, local invasion and Metastasis
			Describe the epidemiology of cancer with respect to overall incidence of cancer and various
	Molecular Basis of Cancer	1	host factors (age and hereditary) that predisposes to cancer
			Discuss the epidemiology of cancer with respect to geographical and environmental factors that predispose to cancer
	Molecular Basis of Cancer	1	Describe the molecular/genetic basis of carcinogenesis
			Describe genetic lesions in cancer

			Define oncogene, proto-oncogene and Oncoproteins.
	Carcinogenesis	1	Enumerate carcinogens
			Describe the process of Carcinogenesis
			Describe the hallmarks of cancer cells and process involved
			Describe the role of p53
	Types of Carcinogens	1	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
	Clinical Aspects of neoplasia	1	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 its causal mechanism and major forms of underlying Cancer

	Diagnosis of Cancer	1	Describe morphologic, biochemical and molecular methods employed for diagnosis of cancer
	Pathways for tumor spread	1	Describe the pathways for spread of tumors like local invasion and metastasis
	Grading and Staging of tumors	1	Describe grading and staging of Tumors
	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
Pharmacology	Anticancer drugs	1	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.
			Describe general adverse effects of anticancer drugs.
			Describe the mechanism of action of alkylating agents.
			Describe the clinical uses and adverse effects of Busulfan and Cyclophosphamide.
			Describe the mechanism of action, clinical uses and adverse effects of Cisplatin.

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

			Describe cancer treatment modalities (primary induction, adjuvant, neo-adjuvant and maintenance chemotherapy)
			Describe the antidotes of Methotrexate, Cyclophosphamide and Doxorubicin 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 Prostaglandins.
			Describe the prostaglandins used in the management of glaucoma.
			Describe the pharmacologic effects of Thromboxane's <sup>2</sup> .
	Dermatologic preparations	1	Describe dermatologic formulations like creams, ointments, gels, lotions, pastes, powders, tinctures and wet dressings.
			Describe the choice of dermatologic formulation with reference to the nature of the lesion.
	Drug treatment of Scabies	1	Enlist the drugs used for the treatment of Scabies



			Describe the method of application of Permethrin, Crothamiton and Benzyl benzoate for treating scabies.
Drug treatment of Acne vulgaris	1		Enlist the drugs used for treating Acne (including antibiotics and hormonal agents).
			Describe the mechanism of action and adverse effects of Benzoyl peroxide, Tretinoin and Isotretinoin.
			Describe the teratogenicity of Isotretinoin.
Drug treatment of Psoriasis	1		Enlist the drugs used for treating Psoriasis.
			Describe the teratogenicity of Acitretin.
Herbal medications	1		Describe the terms like herbal medications, botanicals and nutritional supplements with special reference to drug regulatory factors.
			Describe the pharmacologic effects and intended uses of Garlic ( <i>Allium sativum</i> ).
			Describe the drug interactions of Garlic with Warfarin and Aspirin.
			Describe the possible medicinal use of Kalonji ( <i>Nigella sativa</i> ).

			Describe the pharmacologic effects and intended uses of Ginseng.
			Describe the drug interactions of Ginseng with antipsychotic and hypoglycemic medications.
			Describe the intended clinical uses of Coenzyme Q10.
			Describe the drug interactions of Coenzyme Q10 with Warfarin.
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
Familymedicine	Cancer screening	1	Identify red-flags in patient which need referral for cancerscreening
			Explain the psychosocial impact of disease on patient and their families
			Describe the indications, rationale and common diseases which require routine cancer screening

## Practical work

Pathology	Lipoma	1	Identify the morphological changes occurring in lipoma
	Squamous cell Carcinoma	1	Identify morphological changes of squamous cell carcinoma
	Fibro adenoma	1	Enlist points of identification of gross and microscopic features of fibro adenoma of breast
	Karyotyping	2	Demonstrate preparation of Karyogram
Identify gender on the basis of Karyogram			
Identify common numerical chromosomal abnormalities on Karyogram			
Pharmacology	Introduction to experimental Pharmacology (experiments on isolated piece of rabbit's Ileum)	1	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.
Ceiling effect for Parasympathomimetic drug (Acetylcholine)	2		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.
Antagonism between acetylcholine and atropine	1		Demonstrate surmountable antagonism between acetylcholine and atropine on piece of rabbit's ileum by adding proper doses of the drugs into the inner organ bath.
			Interpret the recording of acetylcholine- and Atropine-induced ileal activity on the revolving drum.
			Construct tables and graphs for inference of the results.
Ceiling effect for Histamine	2		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.

			Interpret the recording of Histamine - induced ileal activity on the revolving drum.
			Demonstrate washing of the inner organ bath for the subsequent doses of Histamine.
			Construct tables and graphs for inference of the results.
	Antagonism between Histamine and antihistamine	1	Demonstrate surmountable antagonism between Histamine and antihistamine on piece of rabbit's ileum by adding proper doses of the drugs into the inner organ bath.
			Interpret the recording of Histamine- and antihistamine-induced ileal activity on the revolving drum.
			Construct tables and graphs for inference of the results.
	To identify an unknown drug on rabbit's ileum with the help of two known antagonists	1	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.
			Interpret the recording of drug-induced ileal activity on the revolving drum.
			Construct tables and graphs for inference of the results.
	Introduction to experimental Pharmacology (effects of drugs on rabbit's Eye)	2	Demonstrate measuring the pupil size.
			Demonstrate corneal reflex.
			Demonstrate light reflex.
	Effects of Parasympathomimetic drug (e.g.,	1	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	1	
			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.
Effects of Sympathomimetic drug (e.g., Ephedrine) on rabbit's eye	1		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 colour of the conjunctiva in the test eye in comparison with the control eye.
			Demonstrate the effect of Ephedrine on the corneal reflex in the test eye in comparison with the control eye.
			Demonstrate the effect of Ephedrine on the light reflex in the test eye in comparison with the control eye.
Effects of Parasympatholytic drug (e.g., Tropicamide) on rabbit's eye	1		Demonstrate the effect of Tropicamide on the size of the pupil in the test eye in comparison with the control eye.
			Demonstrate the effect of Tropicamide on the colour of the conjunctiva in the test eye in comparison with the control eye.

			Demonstrate the effect of Tropicamide on the corneal reflex in the test eye in comparison with the control eye.
			Demonstrate the effect of Tropicamide on the light reflex in the test eye in comparison with the control eye.
	Effects of Local anaesthetic (e.g., Proparacaine) on rabbit's eye	1	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 colour of the conjunctiva in the test eye in comparison with the control eye.
			Demonstrate the effect of Proparacaine on the corneal reflex in the test eye in comparison with the control eye.
			Demonstrate the effect of Proparacaine on the light reflex in the test eye in comparison with the control eye.



	To identify an unknown drug on rabbit's eye	1	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 colour of the conjunctiva in the test eye in comparison with the control eye.
			Demonstrate the effect of the unknown drug on the corneal reflex in the test eye in comparison with the control eye.
			Demonstrate the effect of the unknown drug on the light reflex in the test eye in comparison with the control eye.
			Interpret the results.
			Identify the unknown drug.
Forensic medicine	Autopsy report	2	Construct a full autopsy report including all components after thorough examination.
	Toxicology Sample collection	2	Explain the procedures, organ needed, and preservation used in sample collection.
	Toxicology Report Analysis	1	interpret the toxicology report received and then incorporate it in final opinion.
	Thanatology	1	Identify and describe various models of post-mortem changes
	Stomach wash	2	Perform stomach wash on a Manikin

# Timetables

The timetable for the module will be shared via WhatsApp in the BKMC academic activities group. It will also be displayed on college notice boards in advance.

## Instructional Strategies

The following teaching-learning strategies are used to promote better understanding.

- ❖ Interactive lectures
- ❖ Small group discussions
- ❖ Clinical rotation in the hospital
- ❖ Self-directed learning.

## Learning Site

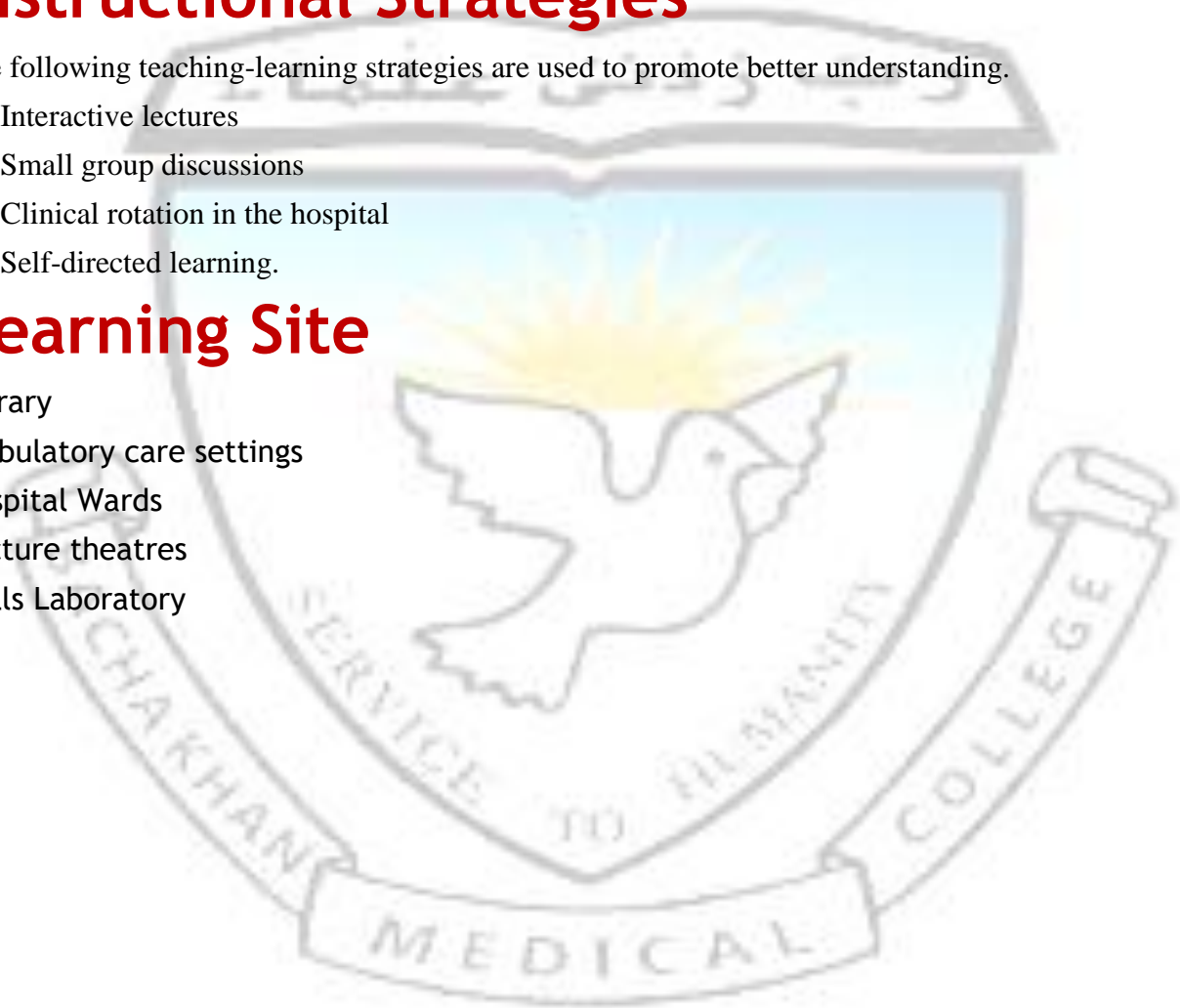
Library

Ambulatory care settings

Hospital Wards

Lecture theatres

Skills Laboratory



# Learning Resources

Table4: Reference Textbooks

S #	Subjects	Resources
2.	Community Medicine	Community Medicine by Parikh Community Medicine by M Ilyas Statistics for the Health Sciences by Jan W Kuzma
4.	Pathology	1. Robbins & Cotran, Pathologic Basis of Disease, 9 <sup>th</sup> edition. 2. Rapid Review Pathology, 4 <sup>th</sup> edition by Edward F. Goljan MD
5.	Physiology	1. Textbook Of Medical Physiology by Guyton And Hall 2. Ganong's Review of Medical Physiology 3. Human Physiology by Laura Lee Sherwood 4. Berne & Levy Physiology 5. Best & Taylor Physiological Basis of Medical Practice
8	Medicine	Kumar and Clark for Medicine 8th edition 2012 Davidson
10	Pharmacology	Basic and Clinical Pharmacology by Katzung BG, Masters SB, Trevor AJ, 14th Edition. Lippincott's Illustrated Reviews: Pharmacology, Clark MA, Finkel R, Rey JA, Whalen K, 7th Edition. Goodman & Gilman's The Pharmacological Basis of Therapeutics, Brunton LL 12th Edition
11	Forensic Medicine	Parikh new edition Nasib R Awan Krishan Vij Smart series (SSS) Forensic MCQs with explanation Gazette Pakistan Penal Code (PPC) VV Pillay and Rajesh Bardale

# Assessment Plan-3<sup>rd</sup> Year MBBS

The year-3 will be assessed in 3 blocks

- 1) Block-1 (Foundation 2. Infection and Inflammation module) will be assessed in **paper-G**
- 2) Block-2 (Multisystem Blood 2 and MSK 2 module) will be assessed in **paper-H**
- 3) Block-3 (Respiratory 2 and CVS 2 module) will be assessed in **paper-I**
- 4) Each written paper consists of 120 MCQs.
- 5) Internal assessment will be added to final marks in KMU as shown in below table.
- 6) In OSPE, each station will be allotted 6 marks, and a total of 120 (+10% marks of internal assessment) marks are allocated for each OSPE/OSCE examination.

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

## Year 3 Professional Exam in System-based Curriculum

Theory paper	Modules	Theory marks	Internal assessment theory (10%)	OSPE/OSPE	Internal assessment OSPE/OSPE (10%)	TOTAL MARKS
Paper G	Foundation-II Inf.&Inflamm.	120	14	120	14	268
Paper H	Multisystem Blood MSK-II	120	13	120	14	267
Paper I	CVS-II Respiratory-II	120	13	120	12	265
<b>TOTAL MARKS</b>		<b>360</b>	<b>40</b>	<b>360</b>	<b>40</b>	<b>800</b>

# Assessment Blueprints

Table 2 Paper-H (Multisystem, Blood and MSK)

Subjects	Total MCQs
MSK	44
Multisystem I	41
Blood and Immunology	35
<b>Total</b>	<b>120</b>



**Table6: OSPE /OSCE Distribution**

Subjects	Total OSCEs
MSK	10
Multisystem I	0
Blood and Immunology	10
<b>Total</b>	<b>20</b>

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

