PATHOLOGY STUDY GUIDE 3RD YEAR

This Study guide of the course outlines the key components and areas for the facilitation of the students.

Department of Medical Education

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

Khyber Girls Medical College will promote health care leaders that are critical thinker, ethical, research oriented, culturally and professionally competent

Khyber Girls Medical College: Mission

To develop competent health care leaders by ensuring appropriate policies, procedures which reflect ethical, cultural, community orientated and evidence based practices to achieve best possible health outcomes for society at large.

Curriculum Committee KGMC

Chair:

Professor Dr.Zahid Aman , Dean KGMC.

Co-Chair:

Dr. Sabina Aziz, Associate Dean KGMC.

Clinical Sciences:

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

Behavioral Sciences:

- Dr. Ameer Abbas Department of Psychiatry KGMC/HMC.

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

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 and 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

Introduction to the Pathology

Pathology is a medical specialty that determines the cause and nature of diseases by examining and testing body tissues (from biopsies and pap smears, for example) and bodily fluids (from samples including blood and urine). The results from these pathology tests help doctors diagnose and treat patients correctly.

From the birth we rely on pathology tests such as on blood tests, biopsies and a multitude of other pathology tests to prevent, diagnose and treat infections, allergies, chronic diseases, cancers and countless other medical conditions. Read more about the most common pathology tests.

General Learning Outcomes of Course

Knowledge

- Describe the processes of inflammation and its different types.
- Discuss the pathophysiology of cell injury and the responses that follow it.
- Describe the pathophysiology of common infectious diseases to Pakistan.
- Explain the basis and different classifications of tumors.
- Explain the morphological changes that usually occur in different tumors.
- Analyze the laboratory investigations undertaken for different diseases.

Skills

1. Demonstrate slide preparation and gram staining.
2. Perform histo-pathological examination of different slides.
3. Perform the analysis of a blood sample.
4. Perform Z. N. staining.

Attitude

1. Demonstrate ability to give and receive feedback, respect for self and peers.
2. Demonstrate empathy and care to patients while collecting samples
3. Develop respect for the individuality and values of others - (including having respect for oneself) patients, colleagues and other health professionals
4. Organize& distribute tasks
5. Exchange opinion & knowledge
6. Develop communication skills and etiquette with sense of responsibility.

7. To equip themselves for teamwork
8. Regularly attend the classes
9. Demonstrate good laboratory practices

Learning Objectives

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
General Parasitology	• Parasitology • Medical Parasitology • Parasite • Microparasites • Macroparasites • Ectoparasites • Endoparasites • Obligate Parasites • Facultative Parasites • Accidental Parasites • Aberrant Parasites • Opportunistic Parasite • Free-living:	Prof. Dr. Amir Muhammad	One Hour	3rd yr Lecture-theater (LGF)	MCQ & SEQ	Chatter jee Panikar

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
1. Sources of Infection 2. Portals of Entry (General Parasitology)	**Sources of Infection:** 1. Contaminated Soil: 2. Contaminated Water: 3. Freshwater fish 4. Crab 5. Raw or Undercooked pork 6. Raw or Undercooked beef 7. Blood-sucking insects 8. Housefly 9. Dog 10. Cat 11. Man 12. Auto-infection / Hyper-infection **<u>PORTAL OF ENTRY</u>** 1. MOUTH 2. SKIN 3. SEXUAL CONTACT 4. KISSING	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQs & SEQs	• Chatter jee • Panikar

	5. INHALATION 6. CONGENITAL 7. IATROGENIC INFECTION **PATHOGENESIS of** **PARASITES** 1. Traumatic Damage by Larvae & Ova, a. Damage by Larvae During Entry : b. Damage by Larvae During Migration: c. Damage by Ova 2. Trauma & blood loss 3. Obstruction 4. Lytic Necrosis 5. Mechanical Pressure 6. Competition for Specific					

	Nutrients 7. Inflammatory Reaction 8. Allergic Manifestations 9. Neoplasia 10. Secondary Infection.					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Entamoeba histolytica	• Geographical Distribution • Habitat • Morphology • Life Cycle • Pathogenesis • Extra- intestinal lesions • Lab Diagnosis a. Intestinal b. Hepatic	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Giardia lamblia	• Geographical Distribution • Habitat • Morphology • Life Cycle • Pathogenesis • Symptoms • Lab Diagnosis • Prevention • Treatment	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ SEQ	• Chatter jee • Panikar

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Trichomonas vaginalis	• Geographical Distribution • Habitat • Morphology • Life Cycle • Pathogenesis • Symptoms • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Leishmania donovani	• Geographical Distribution • Habitat • Morphological Forms • Life Cycle • Pathogenesis • Symptoms • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					•

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Leishmania tropica	• Geographical Distribution • Habitat • Morphological Forms • Life Cycle • Pathogenesis • Symptoms • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Trypanosomes T. brucei gambiense	• Geographical Distribution • Habitat • Morphological Forms • Antigenic variation • Cultivation • Life Cycle • Pathogenesis • Symptoms • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Trypanosoma cruzi	• Geographical Distribution • Habitat • Morphological Forms • Antigenic variation • Cultivation • Life Cycle • Pathogenesis • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Malaria	• Habitat • Morphological Forms • Life Cycle a. Human Cycle b. Mosquito Cycle • Pathogenesis • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Taenia saginata	• Geographical Distribution • Habitat • Morphological Forms • Life Cycle c. Human Cycle d. Cycle in Cattle • Pathogenesis • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Taenia solium	• Geographical Distribution • Habitat • Morphological Forms • Life Cycle e. Human Cycle f. Cycle in pork • Pathogenesis • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment					

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Hymenolepis nana	• Geographical Distribution • Habitat • Morphological Forms a. Adult worm b. Egg • Life Cycle g. Direct Cycle h. Indirect Cycle • Pathogenesis • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar
	• Prevention • Treatment • Prophylaxis					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Echinococcus granulosus	• Geographical Distribution • Habitat • Morphological Forms c. Adult worm d. Egg e. Larval Form • Life Cycle • Pathogenesis • Clinical Disease • Lab Diagnosis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	Chatter jee Panikar
	• Prevention • Treatment • Prophylaxis					

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Schistosomes	• Classification of Blood Flukes (Schistosomes) • Geographical Distribution • General characteristics • Habitat • Life Cycle • Life Cycle in Definitive Host • Life Cycle in Intermediate Host • Pathogenesis a. Katayama fever b. Other complications • Lab Diagnosis • Treatment • Prophylaxis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Nematodes	• Introduction • General characteristics • Classification on the basis of Habitat • Modes of Infection of Nematodes • Overview of all Nematodes • Ascaris lumbricoides • Ancylostoma duodenale • Necator americanus • Enterobius vermicularis • Trichuris trichura • W. bancrofti • Loa loa • Pathogenesis • Prophylaxis	Prof. Dr. Amir Muhammad	One Hour	3rd year Lecture Theater (LGF)	MCQ SEQ	• Chatter jee • Panikar

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Trichuris trichura	• Habitat • Morphology a. Adult worm b. Egg • Life Cycle • Pathogenesis • Lab. Diagnosis • Treatment • Prevention	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ & SEQ	• Chatter jee • Panikar

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
HOOKWORMS 1. Ancylostoma duodenale 2. Necator americanus	Geographical Distribution • Habitat • Morphology c. Adult worm d. Eggs • Life Cycle • Pathogenesis a. Pathogenesis of migrating larvae b. Pathogenesis of Adult worm • Lab. Diagnosis a. Direct methods b. Indirect methods • Treatment • Prevention	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ & SEQ	• Chatter jee • Panikar

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Enterobius vermicularis	Geographical Distribution • Habitat • Morphology e. Adult worm f. Eggs • Life Cycle • Pathogenesis • Lab. Diagnosis • Treatment • Prevention	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ & SEQ	• Chatter jee • Panikar

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Ascaris lumbrecoides	Geographical Distribution • Habitat • Morphology g. Adult worm (Male & Female) h. Eggs • Life Cycle • Pathogenesis a. Pathogenesis of Adult • Pathogenesis of migrating larvae •	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ & SEQ	• Chatter jee • Panikar

	• Lab. Diagnosis • Treatment • Prevention					

Subject: Microbiology (Parasitology)

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
Wuchereria bancrofti	Geographical Distribution • Habitat • Morphology i. Adult worm j. Microfilaria • Life Cycle • Pathogenesis • Lab. Diagnosis • Treatment • Prevention	Prof. Dr. Amir Muhammad	One Hour	3rd yr lecture theater (LGF)	MCQ & SEQ	• Chatter jee • Panikar

Learning objectives of Cell injury

TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
Hyperplasia hypertrophy	Define Hyperplasia and Hypertrophy Describe mechanism and types with examples.	LGF	Dr Saima Nadeem	1-2 pm	3rd year lecture theater	MCQS and short presentation at the end of lecture	Robbins Pathology
Atrophy metaplasia	Define atrophy and metaplasia Describe mechanism and types with examples	LGF	Dr Saima Nadeem	1-2 pm	3rd year lecture theater	MCQs & SEQS at the end of lecture	Robbins Pathology
Necrosis	Define Necrosis Describe morphology (Cytoplasmic and nuclear changes) and types.	LGF	Dr Saima Nadeem	1-2 pm	3rd year lecture theater	MCQS Group discussion at the end of lecture	Robbins Pathology
Apoptosis 1	Define apoptosis Describe mechanisms(death receptor and mitochondrial pathways)	LGF	Dr Saima Nadeem	1-2 pm	3rd year lecture theater	MCQS and presentation at the end of lecture	Robbins Pathology
Apoptosis 2	Discuss Types of apoptosis , Describe morphological changes, Enlist differences between necrosis and apoptosis	LGF	Dr Saima Nadeem	1-2 pm	3rd year lecture theater	Short quiz at the end of lecture	Robbins Pathology

Subject: General Pathology

Topic	Learning objectives	Teacher	Time	Venue	Assessment strategy	References
ACUTE INFLAMMATION	• Define Acute inflammation • Enumerate Cardinal signs of inflammation • Enumerate Causes (aetiology) of acute inflammation • Discuss the Events of acute inflammation • Differentiate between exudate and transudate • Discusss the Chemotaxis and Phagocytosis phenomenon • What do you know about Outcome of acute inflammation • Classify Chemical mediators of inflammation and there mechanism of action • Discuss Macroscopic appearance of acute inflammation • What are systemic effects of acute inflammation	Prof. Dr. Arshad Parvez	07 hours	3rd yr lecture theater (LGF)	MCQ SEQ	• Robbin text book of pathology. • Harsh Mohan book of pathology. • Robbins review.

Chronic inflammation	• Define chronic inflammation • What are the Conditions favoring chronic inflammation • Discuss General features of chronic inflammation • Define Granuloma anddifferenciate between chronic granulomatous and non- granulomatous inflammation • Differenciate between acute and chronic inflammation	Prof. Dr. Arshad Parvez	4hours	3rd yr lecture theater (LGF)	MCQ SEQ	• Robbin text book of pathology. • Harsh Mohan book of pathology. • Robbins review.
WOUND HEALING	• What are the Steps of healing of wound by primary intention • What are the steps of healing of wound by secondary intention • Differenciate between primary& secondary intention of wound healing • What is repair process (Granulation tissue formation)	Prof. Dr. Arshad Parvez	4hours	3rd yr lecture theater (LGF)	MCQ SEQ	• Robbin text book of pathology. • Harsh Mohan book of pathology. • Robbins review.

	• What do you know about Resolution,Organisation and Regeneration phenomenon • Enumerate the factors which effect process of wound healing • Enumerate the various complications of wound healing • What is the Mechanism involved in process of wound healing					

LEARNING OBJECTIVES NEOPLASIA

#	TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
1	Disorders of development	-Define growth -Describe the types of growth -Discuss hyperplasia,hypertrophy ,atrophy,metaplasia,	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
2	Dysplasia	-define dysplasia -Discuss mechanism of dysplasia -Describe grades of dysplasia -discuss its examples and diagnosis	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
3	Neoplasia	-Define Neoplasia -Explain the classification of Neoplasia with examples -describe differences	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases

		between benign and malignant tumours						
4	Precancerous (Premalignant) Lesions	Define Precancerous (Premalignant) Lesions Explain their significance Discuss their examples	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
5	Invasion (Infiltration) Routes Of Metastasis	Explain the process of Invasion (Infiltration) Describe the Routes Of Metastasis	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
6	PARANEOPLASTIC SYNDROMES,	Define PARANEOPLASTIC SYNDROMES Discuss the examples of diiferent groups of PARANEOPLASTIC SYNDROMES Identify different PARANEOPLASTIC SYNDROMES	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
7	Effects of Neoplasia on the Host	Disscuss various cancer effects on body Describe cancer cachexia	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases

8	Hypotheses of Origin of Neoplasia	Define Hypotheses of Origin of Neoplasia Describe different Hypotheses of Origin of Neoplasia Discuss examples of monoclonal origin of Neoplasia with examples Explain 2 hit and multihit theories of neoplasia	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
9	carcinogens	Define and classify carcinogens Describe chemical carcinogens withexamples Explain viral oncogenesis Define incised wound Describe physical agents causing cancers with examples Nutrional role in carcinogenesis Role of hormones in carcinogenesis	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
1	*LABORATORY*	Describe different routine	LGF	Dr Khalid Javed	1 hr.	3rd year	MCQs,	Robbins

0	*DIAGNOSIS OF CANCER*	methods of cancer diagnosis Discuss molecular diagnosis of cancers				lecture theatre	SEQs, OSPE	pathologic basis of diseases
11	GRADING & STAGING of the cancers	Define GRADING & STAGING Discuss the grading and staging with examples Describe various staging systems	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
12	CARCINOGENESIS: THE MOLECULAR BASIS OF CANCER	enlist some fundamental principles Differentiate *Four classes of normal regulatory genes* With their examples Describe scheme of the molecular basis of cancer with examples Discuss Insensitivity to Growth-Inhibitory Signals	LGF	Dr Khalid Javed	4 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
13	*p53* Gene: Guardian of the Genome	Describe its role as central monitor of stress Discuss its various roles	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases

14	*RB* Gene and Cell Cycle	Describe *RB* Gene and Cell Cycle	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases
15	Adenomatous Polyposis Coli-β-Catenin Pathway	Describe Adenomatous Polyposis Coli-β-Catenin Pathway	LGF	Dr Khalid Javed	1 hr.	3rd year lecture theatre	MCQs, SEQs, OSPE	Robbins pathologic basis of diseases

Learning objectives General Pathology

Learning Objectives **By the end of this lesson the students of 3rd year MBBS should be able to:**	**Time**	**Teaching faculty**	**Learning Sites**	**Learning strategies**	**Recommended Books and Websites**	**Assessment Tool**
1. Discuss introduction to Pathology	1 hour	Dr Munir Hussain	3rd year lecture theatre	LGF	• Robins Pathologic Basis of Disease 9th edition • Robins Basic Pathology 9th edition • Pathology Secrets 3rd edition • Robins and Cotran Review of Pathology 4th edition	• MCQs • SEQs • OSPE
2. Describe cell injury 3. Describe causes of cell injury	1 hour					
4. Discuss mechanisms of cell injury	1 hour					
5. Discuss morphology of cell and tissue injury 6. Describe calcification in detail	1 hour					
7. Discuss intracellular accumulation	2 hours					
8. Selected examples of cell injury and necrosis	1 hour					

Learning objectives Genetics

Topics	LO for Genetics	Teaching strategy	Time	Teacher	Assessment
Genetics	Define the term mutation, hereditary, congenital, genotype, phenotype, codon, mendelian disorder	LGF	1 hour	Dr jamita kor	MCQ/SAQ
Transmission pattern of single Gene disorders	Enumerate transmission patterns of single gene disorders Describe the characteristics of each pattern Recall biochemical and molecular basis of single gene disorder	LGF	1 hour	Dr jamita kor	MCQ/SAQ
Disorders associated with defects in structural protein, receptor protein	Enlist the diseases associated with defects in structural protein/receptor protein Describe pathogenesis of these disorders Describe the key clinical and histological features of these disorder	LGF	1 hour	Dr jamita kor	MCQ/SAQ
Disorders associated with defects in enzymes, proteins that regulate cell growth	Enlist the diseases associated with defects in enzymes proteins regulating cell growth. Describe pathogenesis of these disorders Describe the key clinical and histological features	LGF	1 hour	Dr jamita kor	MCQ/SAQ

	of these disorders				
Cytogenetic Disorders	Describe various types of cytogenetic disorders involving autosomes Describe various types of cytogenetic disorders involving sex chromosomes	LGF	1 hour	Dr jamita kor	MCQ/SAQ
Mutations	Describe various types of mutations	LGF	1 hour	Dr jamita kor	MCQ/SAQ
Molecular Genetics Diagnosis	Describe the basic principles of various molecular techniques including PCR, FISH and Southern/western blotting Enumerate indications of these techniques	LGF	1 hour	Dr jamita kor	MCQ/SAQ

#	TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
1	EDEMA	Definition, Pathophysiology, Morphology.	LGF	Dr. Saima Hasham	1 HOUR	LECTURE THEATRE	MCQs, SEQs	Robins Basic Pathology 9th edition
2	THROMBOSIS	Definition, Pathophysiology, Morphology, Difference between Arterial and Venous Thrombus.	LGF	Dr. Saima Hasham	1 HOUR	LECTURE THEATRE	MCQs, SEQs	Robins Basic Pathology 9th edition
3	EMBOLISM	Definition, Pulmonary Thromboembolism, Systemic Thromboembolism,	LGF	Dr. Saima Hasham	1 HOUR	LECTURE THEATRE	MCQs, SEQs	Robins Basic Pathology 9th edition
4	INFARCTION	Definition, Common Causes/ Pathophysiology, Types, Morphology, Factors that influence infarct development,	LGS	Dr. Saima Hasham	1 HOUR	LECTURE THEATRE	MCQs, SEQs	Robins Basic Pathology 9th edition

#	TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
1	CULTURE MEDIA	definition,history,types,preparation of culture media,biochemical tests and reactions,culture methods.	LGF	Dr. Ghazala Afridi	2 HOUR	LECTURE THEATRE	MCQs, SEQs OSPES.	Warren Lewinson 13th edition.
2	ENTEROBIOUS VERMICULAR IS	• Introduction to • E. vermicularis GEOGRAPHICAL DISTRIBUTION • Egg • Life cycle • Clinical presentation • Diagnostic laboratory tests • Wet mount methoid • PROPHYLAXSIS • Treatment.	LGF	Dr. Ghazala Afridi	2 HOUR	LECTURE THEATRE	MCQs, SEQs OSPES.	Warren Lewinson 13th edition Practical Notebook Part 1

3	GRANULOM A	INTRODUCTION TO GRANULOMA DEFINITION TYPES CAUSES MORPHOLOGY	LGF	Dr. Ghazala Afridi	2 HOUR	LECTURE THEATRE	MCQs, SEQs OSPES.	Warren lewinson 1 13th edition Practical
4	TRICHURIS TRICHURA	INTRODUCTION TO TRICHURIS TRICHURA EOGRAPHICAL DISTRIBUTION MORPHOLOGY EGGS LIFE CYCLE PATHOGENCITY AND CLINICAL PRESENTATION LABORATORY DIAGNOSIS PROPHYLAXIS TREATMENT	LGF	Dr. Ghazala Afridi	2 HOUR	LECTURE THEATRE	MCQs, SEQs OSPES	Warren lewinson lewinson 1 3th edition Practical Notebook Part 1

Practical 3rd year pathology

Practical Histopathology

#	TOPIC	LEARNING OBJECTIVES	TEACHER	TIME	VENUE		ASSESSMENT STRATEGY	Reference
1	Acute Inflammation / Acute Appendicitis	Definition, Types, Causes, Cardinal Signs, Morphology of Acute Appendicitus Gross/ Microscopic.	PRACTICAL	Dr. Saima Hasham	2 HOUR	DEMONASTRATION ROOM/ LABORATORY	OSPE	Robins Basic Pathology 9th edition/ Pathology Practical Copy Part 1
2	Chronic Inflammation / Chronic Cholecystitis	Definition, Pathophysiology, Morphology of Chronic Cholecystitis Gross/ Microscopic,.	PRACTICAL	Dr. Saima Hasham	2 HOUR	DEMONASTRATION ROOM/ LABORATORY	OSPE	Robins Basic Pathology 9th edition/ Pathology Practical Copy Part 1
3	BENIGN PROSTATIC HYPERPLASIA	Definition, Etiology, Morphology Gross/ Microscopic.	PRACTICAL	Dr. Saima Hasham	2 HOUR	DEMONASTRATION ROOM/ LABORATORY	OSPE	Robins Basic Pathology 9th edition/ Pathology Practical Copy Part

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4	TESTICULAR ATROPHY	Definition, Common Causes/ Pathophysiology, Morphology Gross/ Microscopic.	PRACTICAL	Dr. Saima Hasham	2 HOUR	DEMONASTRATION ROOM/ LABORATORY	OSPE	Robins Basic Pathology 9th edition/ Pathology Practical Copy Part 1

SPECIAL VIROLOGY/PATHOLOGY

#	TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
1	TISSUE PROCESSING	Definition and Purpose of Tissue processing. Requirements. Steps of procedure. Video. Demonstration in laboratory.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.
2	FATTY CHANGE.	Definition. Common sites of fat deposition. Gross and Histological Morphology of Liver fatty change. Slide Microscopy.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.

MICROBIOLOGY/PATHOLOGY

#	TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
1	STOOL ROUTINE EXAMINATION	Composition of stool. Indications for Stool R/E. Stool collection procedure. Procedure of preparation of Stool R/E slide. Slide Microscopy and Pathophysiology of stool.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.
2	GRAM STAINING	What is gram staining and its Principle. Requirements and methods of Gram Staining. Video about procedure. Procedure of Gram Staining.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.
3	HYMENOLEPIS NANA	Taxonomy and Hosts of H.Nana. Ovum and Adult Morphology. Prevention. Specimen and Slide Microscopy.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.
4	ZIEHL NEELSON STAINING	Purpose of Z. N. Staining. Requirements, Reagents and sampling. Video. Procedure. Result and Interpretation.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.

5	ACTINOMYCOSIS	What is Actinomycosis. Types of Actinomycosis. Morphology of Actinomycosis. Photographs.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.
6	TAENIA SAGINATA	Common types of T.Saginata. Morphology of Ovum and Adult Tap Worm. Prevention. Specimen and Slide Microscopy.	Practical	Dr. Bangash	2 HOURS	LECTURE THEATRE + Pathology Laboratory	OSPE	Robbins, Practical copy.

#	TOPIC	LEARNING OBJECTIVES	TEACHING STRATEGY	TEACHER	TIME	VENUE	ASSESSMENT STRATEGY	Reference
1	Granulation Tissue	1. Define granulation tissue 2. Formation of granulation tissue 3. Factors affecting granulation tissue 4. Conditions in which it is formed 5. Growth factors required for its formation 6. Gross features 7. Microscopic features	Practical	Drsaima shaheen	2 hours	Demonstration room and pathology lab	OSPE	Robbins pathology & pathology practical notebook part-1

2	Calcification	1. Define calcification and its types 2. Etiology of pathological and metastatic calcification with examples 3. Pathogenesis of calcification 4. Gross features 5. Microscopic features	practical	Drsaimas haheen	2 hours	Demonstration room and pathology lab	OSPE	Robbins pathology and pathology practical notebook part 1
3	Ascarislumb	1. Introduction of	Drsaimash	Practical	2 hours	Demonstration	OSPE	Levinson

	ricoides	ascarislumbricoides 2. Egg of ascarislumbricoides 3. Morphological features of ascarislumbricoides 4. Lifecycle of ascarislumbricoides 5. Pathogenicity and its clinical features 6. Laboratory diagnosis	aheen			room and pathology lab		microbiology and pathology practical notebook part 1
4	Ankylostom	1. Introduction of	Drsaimash	Practical	2 hours	Demonstration	OSPE	Levinson

	adeudenale	Ankylostomadeudenale 2. Egg of ankylostomadeudenale 3. Morphological features of Ankylostomadeudenale 4. Lifecycle of ankylostomadeudenale 5. Pathogenicity and its clinical features 6. Laboratory diagnosis	aheen			room and pathology lab		microbiology & pathology practical notebook part 1

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..

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 tables:

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

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.

Short Essay Questions (SEQ)

Short answer questions generally ask for brief, text-based responses and may also be referred to as fill-in-the-blank*;* or completion questions.

Variations of the short answer question may request a list of terms or rules in which the order is not important, or may require a numerical or formula response.

Here is some general information about short answer questions:

- Does not measure interpretation.
- Can be used to check for preciseness such as correct spelling (good when using computer grading), proper or specific names of things, especially factual knowledge, and proper creation of formulas.
- Requires specific, definite, exact information.
- Can be used to discriminate whether errors can be detected in a diagram, for example.

Advantages of Short Answer Questions

- Easy to write.
- Reduces possibility of guessing.
- Can have a lengthy stem such as a paragraph. (Caution: You generally should not expect an exact answer character-by-character.)
- May be easy to score if the required answer is short.

Disadvantages of Short Answer Questions

- It can take time to create items with complex formulas.
- Can be turned into a measure of memorization ability.
- Grading can be subjective.
- Correct responses may appear incorrect due to minor errors such as misspellings, order of words, etc.
- Difficult to machine score. Much work is being conducted in this area, but it is still in early stages of development.

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 his/her thoughts.
- The Block OSPE will be comprise of 18 examined station and 7 rest stations. The stations will be assigned according to the shred blueprint.

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

Distribution of Marks for paper	
KMU (final Examination)	140
internal evaluation	10
Total	150

Distribution of Marks for practical	
OSPE plus viva	70+60
Notebook	5
Internal OSPE	10
Attendance	5
Total practical	150

Total paper plus practical ……..300

Attendance Requirement:

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

Learning resources for students

- ROBBINS TEXTBOOK OF PATHOLOGY
- HARSH MOHAN TEXT BOOK OF PATHOLOGY
- LEVISON TEXT BOOK OF MICROBIOLOGY
- PANIKER PARASITOLOGY
- CHATTERJEE BOOK OF PARASITOLOGY