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# **MUSCULOSKELETAL MODULE STUDY GUIDE 3RD YEAR MBBS**

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## 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 practices.

# Curriculum Committee KGMC

## Chair:

Professor Dr. Zahid Aman , Dean KGMC.

## Vice-Chair:

Professor Dr Amir Mohammad, Associate Dean KGMC.

## Clinical Sciences:

- Dr. Mohammad Noor Wazir ,Department of Medicine KGMC HMC
- Dr. Bushra Rauf Department of Gynae KGMC HMC.
- Dr. Sofia Iqbal, Department of Ophthalmology KGMC HMC.
- Dr. Said Amin Department of Medicine KGMC HMC.
- Dr. Ghareeb Nawaz Department of ENT KGMCHMC.
- Dr. Jamshed Alam Department of Surgery KGMC HMC.
- Dr. Ambreen Ahmad, Department of Pediatrics KGMC HMC.
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- 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. Khurram Naushad, 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.

### **Musculoskeletal Committee**

- Dr. Shams Suleman Associate Professor Department of Pharmacology.....Member
- Prof. Dr. Bushra Rauf Department of Gynae.....Member
- Prof. Dr. Samia Tabassum Department of Gynae.....Member
- Dr. Tauseef Aman Professor Department of Community Medicine.....Member
- Dr. Anwar-ul-Haq Associate Professor Department of Forensic Medicine.....Member
- Dr. Zeeshan Assistant Professor Department of Surgery(orthopedic).....Member
- Dr. Tehmina Jalil Senior Lecturer Department of Pathology..... Member
- Dr. Jahanzeb Khan Associate Professor Department of Pediatric A.....Member
- Dr. Fawad Rahim Assistant Professor Department of Medicine.....Member
- Dr. Sidra Ghafoor Lecturer Department of Pharmacology.....Member
- Dr. Shahid 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 Curricular Outcomes of the MBBS Program for a Graduating Doctor according to the PMDC are as follows:

### **1. Knowledgeable**

Knowledgeable about the diseases and health conditions prevalent in the population of Pakistan and use Evidence-based medicine to provide best possible cost-effective care.

### **2. Skillful**

Skillful in History taking and Physical examination to compassionately deal with a patient.

### **3. Community health promoter**

Take appropriate decisions and actions for protecting and promoting the health of their community.

### **4. Critical Thinker**

Evaluate critically the patient data to effectively deal with complexity of medical decisions for the best possible outcomes using evidence-based practices in service of humanity.

## **5. Professional**

Display professional values (honesty, accountability, cultural and religious sensitivity), attitudes and behaviors (empathy, ethics, good communication skills and lifelong learner) that embody good medical practice.

## **6. Researcher**

Exhibit a spirit of inquisitiveness, inventiveness, and ethical conduct while carrying out research in accordance with the prescribed guidelines.

## **7. Leader and role Model**

Demonstrate exemplary conduct and leadership in Advancing healthcare, enhancing medical education, and Enhancing the trust of the public in the medical profession by being exceptional role models.

## **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



# Teaching Hours Allocation

Table 1 Hours Allocation

S. No	Subject	Hours
1	Pathology	33
2	Pharmacology	18
3	Forensic medicine	22
4	Community medicine	4
5	Pediatrics	6
6	Medicine	5
7	Orthopedics	5
8	Radiology	1
9	Family medicine	1
10	Eye	1
11	ENT	1
12	PRIME/Research	1+1
	<b>Total</b>	<b>99</b>

# Themes

S.NO	Themes	Duration 4 weeks
1	Aching Bones	2 week (1 <sup>st</sup> & 2 <sup>nd</sup> Week)
2	Joint Stiffness	1 week (3 <sup>rd</sup> Week)
3	Muscle weakness and Trauma	1 week (4 <sup>th</sup> Week)
4	Skin Rash and Itching	1 week (5 <sup>th</sup> Week)

# Learning Objectives

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

## Knowledge

### Reinforcement

- Explain important anatomical and physiological characteristics of musculoskeletal system

### Pathology

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

### Pharmacology

- Describe the clinical applications of NSAIDs in the treatment of musculoskeletal disorders
- Describe the basic and clinical pharmacology of drugs affecting bone and Mineral Homeostasis
- Describe the basic and clinical pharmacology of drugs used to treat Gout and Rheumatoid Arthritis
- Describe the basic and clinical pharmacology of skeletal muscles relaxants
- Describe the drugs used for dermatological disorders.

### Community medicine

- Classify accidents and injuries, burden of RTAs, prevention and control strategies of RTAs
- Define poliomyelitis and discuss the epidemiology, prevention, and control of poliomyelitis
- Define Ergonomics, Principles of Ergonomics, Epidemiology of MSK disorders and their prevention
- Discuss burden and prevention of Osteoporosis, Osteomalacia and Rickets

### Forensic medicine

- Define and classify wounds
- Describe types of hurt according to Qisas and Diyat Act
- Describe firearm and explosives injuries
- Describe RTAs, Railway and Aircraft injuries
- Describe the Medico legal aspects of wounds

### Medicine

- Describe Osteoporosis and Osteomalacia and develop its management plan
- Discuss Rheumatoid Arthritis and Ankylosing Spondylitis
- Discuss Myopathies

## **Orthopedic**

- Describe types of fracture and explain the open fractures
- Explain the emergency treatment of an injured limb.
- Identify and describe common benign and malignant bone tumours.
- Describe common ligamentous, tendon injuries and common spinal fractures

## **Dermatology**

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

## **Radiology**

- Interpret normal X-Rays and X-Rays showing structural deformities

## **Paeds**

- Explain bone pains and aches in children
- Discuss Congenital/Hereditary Myopathies

## **Eye**

- Describe the basic Anatomy of Eye

## **ENT**

- Discuss anatomy of Ear, Nose, Para nasal Sinuses and Oral Cavity

## **Prime:**

### **Communication Skills**

- Dealing with patients

### **Behavioral Sciences / Professionalism**

- Attributes of Professionalism

### **Research**

- Study Designs
- Research question

## **Skills:**

## **Special Pathology**

- Identify morphological features of Basal cell carcinoma and Squamous cell carcinoma
- Identify morphological features of Tuberculous osteomyelitis

## **Pharmacology**

- Writing a prescription for a patient with Rheumatoid arthritis
- Writing a prescription for a patient with Gout

## **Forensic Medicine**

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

## **Orthopedic/Medicine**

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

## **Attitude:**

While not necessarily taught explicitly, students are expected to develop following attitudes throughout the course:

1. Demonstrate teamwork, leadership, punctuality and good manners
2. Demonstrate humbleness and use socially acceptable language during academic and social interactions with colleagues and teachers.
3. Make ethically competent decisions when confronted with an ethical, social or moral problem related to MSK in professional or personal life
4. Discuss ethical issues, social and preventive aspect of health care in the context of MSK system.

## Theme I: Aching Bones

Subject	Topic	Learning Outcome	Hrs
Anatomy	Important Anatomical Characteristics of MSK	Discuss important anatomical characteristics of musculoskeletal system	1
Physiology	Important Physiological Characteristics of MSK	Discuss important Physiological characteristics of musculoskeletal system	1
Pathology	Metabolic diseases of bone	Describe the following metabolic diseases of bone from pathological point of view: <ul style="list-style-type: none"> <li>• Osteopenia and Osteoporosis</li> <li>• Paget Disease (Osteitis Deformans)</li> <li>• Osteomalacia and Rickets</li> </ul>	1
	Fracture and Osteonecrosis	Classify fractures and describe healing process in fractures	1
		Enlist aetiologies of osteonecrosis (Avascular Necrosis)	
		Describe clinical features and morphological findings in osteonecrosis	
	Osteomyelitis	Classify osteomyelitis and delineate its etiology, pathogenesis, common clinical features, morphological findings, and complications related to osteomyelitis	1
	Bone Tumors	Classify bone tumors	1
		Describe the frequency of different bone tumors in general population	
		Enlist common clinical features found in common types of bone tumors.	
		Enlist key morphological features of Osteosarcoma, Osteoid osteoma and Osteoblastoma	
	Cartilage-Forming Tumors	Discuss the frequency of different cartilaginous tumors in general population	1

		Enlist common clinical features of common cartilaginous tumors	
	<b>Tumors of Unknown Origin</b>	Describe etiology, pathogenesis, and key clinico-morphological features of Ewing's Sarcoma and Giant Cell Tumor	1
	<b>Lesions Simulating Primary Neoplasms</b>	Describe key clinico-morphological features and essential points in the pathogenesis of Fibroma	1
<b>Pharmacology</b>	<b>NSAIDs</b>	Describe the clinical applications of NSAIDs in the treatment of musculoskeletal disorders	1
	<b>Drug affecting Bone &amp; Mineral Homeostasis</b>	Classify drugs used in metabolic bone disorders	2
		Enlist calcium preparations	
		Describe clinical uses of calcium salts	
		Enlist vitamin D preparations	
		Describe actions of vitamin D on intestine, Kidney and Bone	
		Describe clinical uses of vitamin D	
		Describe the mechanism of action, clinical uses and adverse effects of Bisphosphonates	
		Describe the mechanism of action, clinical uses and adverse effects of calcitonin	
		Classify drugs used to treat osteoporosis	
		Explain the mechanism of action of SERM (Raloxifene) and RANK ligand (Denosumab)	
<b>Forensic Medicine</b>	<b>Mechanism of production of wound</b>	Define and classify wound	1
		Describe mechanism of action of wound production associated factors, appearance and complications.	
	<b>Abrasion</b>	Define and classify abrasion	
		Explain types of abrasion and mechanism of wound production associated factors, appearance, and complication.	
		Differentiate between antemortem & postmortem abrasion.	

		Describe the medico legal aspects of abrasion	
	<b>Bruise</b>	Define and classify bruise	1
		Describe types of bruise and mechanism of wound production associated factors, appearance, and complication.	
		Differentiate between ante mortem & postmortem Bruise.	
		Describe the medico legal aspects of Bruise	
	<b>Lacerated wound</b>	Define and Classify lacerated wound	1
		Describe types of lacerated wound and Mechanism of wound production associated factors, appearance and complication.	
		Difference between ante mortem & postmortem Laceration.	
		Describe the medico legal aspects of Lacerated wound	
	<b>Incised Wound</b>	Define and classify incised wound	1
		Describe types of incised wound and mechanism of wound production associated factors, appearance, and complication.	
		Difference between ante mortem & postmortem Incised Wound	
		Differentiate between incised & lacerated wound.	
		Describe the medico legal aspects of Incised wound	
	<b>Stab wounds</b>	Define and classify Stab wound	
		Describe types of Stab wound and mechanism of wound production associated factors, appearance, and complication.	
		Difference between ante mortem & postmortem stab wound	
		Describe the medico legal aspects of stab wound	
	<b>Battered baby syndrome</b>	Explain the salient features of diagnosing Battered baby syndrome	1
<b>Community Medicine</b>	<b>Ergonomics</b>	Describe Ergonomics	1
		Describe the principles & importance of Ergonomics at work place	



		Explain the epidemiology of musculoskeletal disorders	
		Discuss prevention and control strategies for Musculoskeletal disorders	
	<b>Public health aspects of disability limitations: (Osteoporosis, Osteomalacia and Rickets)</b>	<ul style="list-style-type: none"> <li>Explain the types of rehabilitation and public health issues faced by the disabled person, and measures to be taken for rehabilitation</li> <li>Discuss epidemiology and prevention of Osteoporosis, Osteomalacia and Rickets</li> </ul>	1
<b>Medicine</b>	<b>Osteoporosis and Osteomalacia</b>	Describe Osteoporosis and Osteomalacia	1
		List common causes and risk factors of Osteoporosis and Osteomalacia	
		Discuss clinical features , differential diagnosis of Osteoporosis and Osteomalacia	
		Enlist the Investigations for patient presenting with Osteoporosis and Osteomalacia	
<b>Orthopedics</b>	<b>Fractures</b>	Describe and illustrate types of fracture, fracture patterns, displacement and angulation of fractures in children and adults.	1
		Explain open fractures Discuss the basic principles of wound debridement.	
	<b>Bone Tumours</b>	To recognize, investigate and describe the radiological features of common benign and malignant Bone Tumours.	1
<b>Radiology</b>	<b>X-Ray Interpretation</b>	Identify and interpret different types of fractures	1
<b>Eye</b>	<b>Anatomy of Eye</b>	Describe anatomy of Orbit	1
		Describe anatomy of Eye Ball	
<b>ENT</b>	<b>Ear</b>	Explain anatomy of ear	1
<b>Paeds</b>	<b>Bone pains and aches in children</b>	Common causes of bones aches and pains including Growing pains in children	1

		Discuss nutritional Rickets causation, clinical presentation, Lab and Radiological findings and prevention	
	<b>Skeletal dysplasia's</b>	Discuss clinical feature and differential diagnosis of the following <ul style="list-style-type: none"> <li>• Achondroplasia</li> <li>• Osteopetrosis</li> <li>• Osteogenesis Imperfecta</li> </ul>	1
<b>PRIME/Research</b>	<b>Proposal writing</b>	Write a proposal for research project using KMU or CPSP guidelines or any other standard guidelines	3
<b>PRIME/MEDICAL EDUCATION</b>	<b>Attributes of professionalism- Empathy</b>	Discriminate empathy and sympathy	1
		Demonstrate empathy in patient-health professional interaction	

## Theme II: Joint Stiffness

Subjects	Topics	Los	Hours
Pathology	Osteoarthritis	Describe aetiology and pathogenesis of osteoarthritis	1
		Discuss clinical and morphological features of osteoarthritis	
		Enumerate complications of osteoarthritis	
	Rheumatoid Arthritis	Describe aetiology and pathogenesis of Rheumatoid Arthritis	1
		Discuss clinical and morphological features of Rheumatoid Arthritis	
		Enumerate complications of Rheumatoid Arthritis	
	Seronegative Spondyloarthropathies	Classify and explain Spondyloarthropathies	1
		Discuss pathogenesis and clinical features of Ankylosing Spondylitis	
		Discuss pathogenesis and clinical features of Reactive Arthritis	
		Discuss pathogenesis and clinical features of Psoriatic Arthritis	
	Infectious Arthritis	Describe etiology and pathogenesis of Suppurative Arthritis	1
		Discuss clinical features and morphological features of Suppurative arthritis.	

		Enumerate complications of Suppurative arthritis	
		Describe etiology and pathogenesis of Mycobacterial Arthritis	
		Discuss clinical features and morphological features of Mycobacterial Arthritis	
		Enumerate complications of Mycobacterial Arthritis	
	Rheumatic Fever	Describe key structural features, virulence factors, modes of pathogenesis and diagnosis of Streptococcus pyogenes	1
		Explain etiology, pathogenesis, clinical features, diagnosis, and complications of Rheumatic Fever.	
Pharmacology	Crystal-Induced Arthritis	Enlist different types of crystal-Induced arthritis	1
		Describe key points of aetiology, pathogenesis, clinical features, morphological features, and complications of: <ul style="list-style-type: none"> <li>Gout</li> <li>Calcium Pyrophosphate Crystal deposition Disease (Pseudo-Gout)</li> </ul>	
	Pharmacotherapy of Gout	Classify drugs used to treat gout	2
		Describe the role of NSAIDs in the treatment of gout	
		Describe the role of Glucocorticoids in the treatment of gout	
		Describe the mechanism of action of various drugs (Colchicine, Probenecid, Allopurinol, Febuxostat) used in the treatment of Gout	
		Discuss the adverse effects of anti-gout drugs	
		Describe the drug interactions of Allopurinol and Probenecid	
		Enlist the drugs causing hyperuricemia	
		Discuss the mechanism by which drugs causes hyperuricemia	
	Pharmacotherapy of Rheumatoid Arthritis	Classify drugs used in Rheumatoid arthritis	3
		Discuss the role of NSAIDs in Rheumatoid Arthritis	

		Discuss the role of Glucocorticoids in Rheumatoid Arthritis	
		Define and classify DMARDs	
		Enlist biological and non-biological agents used to treat rheumatoid arthritis	
		Describe pharmacokinetics mechanism of action, clinical uses and adverse effects of methotrexate.	
		Enlist adverse effects and therapeutic uses of DMARDs	
<b>Forensic Medicine</b>	Age of Wound & Complication	Describe events associated with wound healing	1
		Differentiate between old and fresh wound	
		Describe injury zone on the basis of histo-chemical changes and Biochemical events taking place.	
	Qisas & Diyat	Define hurt, Wound & injury	1
		Classify hurt according to International law	
		Types of hurt according to Qisas & Diyat Act	
		Explain Punishments (tazir), compensation and Fine (Diyat)	
	Injured person medical aid act	Describe the salient features of injured person medical aid act	1
	Work-men compensation laws	Describe the salient features of Work-men compensation laws	
<b>Medicine</b>	Rheumatoid Arthritis	Describe Rheumatoid Arthritis with its clinical presentation and differential diagnosis.	1
	Ankylosing Spondylitis	Describe Ankylosing Spondylitis with its clinical presentation and differential diagnosis.	
<b>Orthopedics</b>	Bone and Joint Infections	Describe the aetiology, pathology, clinical presentation and investigations of Bone and Joint infections	1
<b>ENT</b>	Nose, Para Nasal Sinuses & Oral Cavity	Discuss anatomy of Nose, Para nasal sinuses & oral cavity	1
<b>Paeds</b>	Juvenile Idiopathic arthritis (JIA)	Discuss criteria for classification of JIA	1
		Discuss its clinical features and differential diagnosis.	

<b>PRIME/MEDICAL EDUCATION</b>	Communication Skills: Dealing with Patients	Explain importance of answering questions and giving explanation and/or instructions	1
<b>Theme III: Muscle weakness and Trauma</b>			
<b>Subjects</b>	<b>Topics</b>	<b>Los</b>	<b>Hours</b>
Pathology	Tumors of adipose tissue	Classify soft tissue tumors and provide a brief description of their salient clinical features	1
		Enlist key morphological features of lipoma and liposarcoma	
	Fibrous Tumors	Describe important clinico-pathological and morphological features of: <ul style="list-style-type: none"> <li>• Nodular Fasciitis</li> <li>• Fibromatoses</li> </ul>	1
	Muscle tumors	Classify muscle tumors	1
		Describe etiology, clinico-morphological features, and complications of Rhabdomyosarcoma	
		Describe etiology, clinico-morphological features, and complications of Leiomyoma	
		Describe etiology, clinico-morphological features, and complications of Leiomyosarcoma	
		Describe etiology, clinico-morphological features, and complications of Fibrosarcoma	
	Skeletal muscle atrophy and myopathies	Describe pathological features of Skeletal Muscle Atrophy	1
		Describe pathological features of Neurogenic and Myopathic changes in Skeletal Muscle	
		Describe pathological features of Inflammatory Myopathies	
		Describe pathological features of Dermatomyositis	
		Describe pathological features of Polymyositis	
		Describe pathological features of Inclusion Body Myositis	

		Describe pathological features of Toxic Myopathies	1
	Inherited Diseases of Skeletal Muscle	Describe genetic abnormality, morphology and clinical features of Muscular Dystrophies	
Pharmacology	Skeletal muscle relaxants	Classify skeletal muscle relaxants.	3
		Describe the mechanism of action of Non-depolarizing and depolarizing neuromuscular blockers.	
		Discuss the differences between depolarizing and non-depolarizing skeletal muscle relaxants	
		Describe the therapeutic uses and adverse effects of skeletal muscle relaxants	
		Describe centrally acting skeletal muscle relaxants (Spasmolytics)	
		Name drugs causing malignant hyperthermia	
		Discuss the rationale for use of Dantrolene in the treatment of malignant hyperthermia	
		Discuss succinylcholine apnea and its management	
Forensic Medicine	Transportation Accidents	Discuss injuries to the driver & front seat occupant and rare seat occupant.	2
		Discuss spinal injuries including Whiplash injury and railway spine	
		Explain Railway injuries with medico legal significance	
		Discuss Air crash accidents.	
	Firearm Injuries	Describe wound ballistics and its types.	3
		Describe terms /Definition used in firearm injuries, types of bullets.	
		Explain basic mechanism of firearm.	
		Explain ranges of fire in firearm injuries, beveling phenomenon, wound production mechanism.	
		Identify types of gun powders and ammunition used.	
		Interpret findings of injuries produced by different weapons.	
		Explain pattern of identification of entry and exit wound.	

		Explain information inferred from examination of firearm entry wound.	
	Injuries By Explosives	Describe mechanism of production of injuries by bomb blast.	1
		Explain different causes of death in blast injuries.	
		Interpret Autopsy findings in explosion fatalities.	
	Thermal Injuries	Describe Thermal Injuries	1
		Describe their classifications	
		Describe Burns and Scalds	
	Electrical Injuries	Explain electrocution	1
		Types of electrical injuries	
		Describe PM findings	
		Explain Lightning	
Community Medicine	Rehabilitation of disabilities: Poliomyelitis	Define disabilities and its types, and concepts, and distinguish between impairment, disability and handicapped, and significance of DALYs and QALYs.	1
		Describe the Epidemiology, determinants & distribution of poliomyelitis	
		Describe the prevention and control measures and rehabilitation of Poliomyelitis	
	Accidents and its prevention	Describe of types of accidents and their mechanisms and their prevention (Haddon`s model)	
		Describe Road Traffic Accidents	1
		Classify different types of road traffic accidents and injuries?	
		Describe and compare the burden of road traffic accidents in a developed country with a developing country like Pakistan	
		List and Explain the risk factors of road traffic accidents	
		Explain effective public health strategies used at individual and national level to prevent for road traffic accidents	
Medicine	Myopathies	Define Myopathy	1

		Enlist Myopathies (Hereditary & Acquired Myopathies)	
		Describe the etiology and clinical features of Myopathies	
		Plan investigations for Myopathies	
Orthopedic	Application of Cast	Explain the emergency treatment of an injured limb.	1
		Explain emergency immobilization techniques of the Neck, Spinal column and limbs.	
		Describe and discuss the basic principles pertaining to application of a cast, the complications of cast application.	
		Discuss the principles of a three-point pressure system in a cast.	
	Soft Tissue Injuries, Spinal Injuries	Describe the common ligamentous and tendon injuries and advise appropriate management	1
		Recognize common Spinal fractures, and provide appropriate initial management	
Paeds	Congenital/Hereditary Myopathies	Discuss common congenital and hereditary myopathies, their genetics, causation, clinical presentation, diagnosis.	1
	Duchene Muscular dystrophy (DMD)	Describe DMD, its clinical presentation and differential diagnosis.	1

#### Theme IV: Skin Rash and Itching

Subjects	Topics	Los	Hours
Pathology	Important pathological terms	<p>Define the following skin lesions and describe these with respect to their etiologies and gross morphological features.</p> <ul style="list-style-type: none"> <li>• Macule</li> <li>• Papule</li> <li>• Nodule</li> <li>• Plaque</li> <li>• Vesicle</li> <li>• Bulla</li> <li>• Blister</li> <li>• Pustule</li> <li>• Scale</li> <li>• Lichenification</li> <li>• Excoriation</li> </ul>	1



		<ul style="list-style-type: none"> <li>• Hyperkeratosis</li> <li>• Parakeratosis</li> <li>• Acanthosis</li> <li>• Dyskeratosis</li> <li>• Acantholysis</li> <li>• Papillomatosis</li> <li>• Lentiginousspongiosis</li> <li>• Urticaria</li> <li>• Pemphigus</li> <li>• Bullous pemphigoid</li> <li>• Warts</li> </ul>	
	Eczematous dermatitis	Classify eczematous dermatitis Describe the morphological and clinical features of acute eczematous dermatitis Describe the etiology and pathogenesis of <ul style="list-style-type: none"> <li>• Contact dermatitis</li> <li>• Atopic dermatitis</li> <li>• Drug related eczematous dermatitis</li> <li>• Photoeczematus eruption</li> <li>• Primary irritant dermatitis</li> </ul>	1
	Erythema multiforme	List the conditions which are associated with erythema multiforme and describe its clinical features	1
	Psoriasis	Describe the etiopathogenesis, morphological and clinical features of psoriasis	1
	Pre-malignant epithelial lesions	List the pre-malignant epithelial lesions (Epidermal) <ul style="list-style-type: none"> <li>• List the predisposing factors for squamous cell carcinoma of skin</li> <li>• Differentiate squamous cell carcinoma from basal cell carcinoma on the basis of morphology and clinical features</li> </ul>	1
	Nevocellular Nevi and Malignant Melanoma	List types of Nevocellular Nevi (Congenital Nevus, blue nevus, Spitz's Nevus, halo nevus dysplastic nevus) along with their clinical significance. (Dermal) <ul style="list-style-type: none"> <li>• Describe the clinical and morphological features of dysplastic nevi</li> <li>• Describe malignant melanoma with respect to frequent site of</li> </ul>	1

		origin, clinical and morphological features.	
	Viral skin infections	Describe the following viral skin infections in context of etiopathogenesis: <ul style="list-style-type: none"> <li>• Herpes simplex virus</li> <li>• Herpes zoster virus</li> </ul>	1
	Fungal skin infections	Classify and describe the following fungal skin infections in context of etiopathogenesis: <ul style="list-style-type: none"> <li>• Tinea</li> <li>• Candida</li> </ul>	1
	Skin and soft tissue infections	Describe the following skin lesions in context of etiopathogenesis and diagnosis <ul style="list-style-type: none"> <li>• Impetigo</li> <li>• Cellulitis / Erysipelas</li> <li>• Folliculitis</li> <li>• Skin Abscess (Furuncle &amp; Carbuncle)</li> <li>• Necrotizing Soft Tissue Infections</li> </ul>	1
<b>Pharmacology</b>	Drugs used for dermatological disorders	Classify dermatological preparations	2
		Enlist topical antibacterial, antifungal & antiviral preparations.	
		Describe clinical uses and adverse effects of topical antibacterial, antifungal and antiviral drugs.	
		Discuss oral treatment of candidiasis dermatophytosis and onychomycosis.	
		Describe various acne preparations and antibiotics used to treat acne.	
		Enlist clinical uses of immunomodulators (Imiquimod, Tacrolimus) related to skin diseases.	
		Enlist ectoparasiticides	
		Enlist clinical uses and adverse effects of Permethen.	
		Discuss drug treatment of Scabies & Pediculosis.	
		Describe the mechanism of action and adverse effects of various agents used for pigmentation disorders	

		Describe the clinical uses and adverse effects of drugs used for the treatment of psoriasis.	
		Describe clinical uses and adverse effects of topical corticosteroids	
		Enlist dermatological disorders responsive to topical corticosteroids ranked in order of sensitivity.	
		Discuss keratolytic agents, antipruritic agents, trichogenic and antitrichogenic agents and use of antineoplastic agents in topical conditions	
<b>Medicine/Dermatology</b>	Important pathological terms with Clinical presentations	<p>Enlist and explain the clinical presentation of the following skin Lesions:</p> <ul style="list-style-type: none"> <li>• Macule</li> <li>• Papule</li> <li>• Nodule</li> <li>• Plaque</li> <li>• Vesicle</li> <li>• Bulla</li> <li>• Blister</li> <li>• Pustule</li> <li>• Scale</li> <li>• Lichenification</li> <li>• Excoriation</li> <li>• Hyperkeratosis</li> <li>• Parakeratosis</li> <li>• Acanthosis</li> <li>• Dyskeratosis</li> <li>• Acantholysis</li> <li>• Papillomatosis</li> <li>• Lentiginousspongiosis</li> <li>• Urticaria</li> <li>• Pemphigus</li> <li>• Bullous pemphigoid</li> <li>• Warts</li> </ul>	1
	Pre-malignant skin conditions	<p>Enlist the pre-malignant skin conditions</p> <p>Explain their differential diagnosis on the basis of clinical presentations</p> <p>Enlist the relevant investigations</p>	1
	Malignant conditions of skin	<p>Enlist the malignant conditions of skin (squamous and basal cell carcinoma) Explain their differential diagnosis on the basis of clinical presentations</p>	

		Enlist the relevant investigations	
	Nevocellular Nevi	List the types of Nevocellular Nevi and discuss their differential diagnosis on the basis of their clinical presentations. Enlist the relevant investigations	
Family medicine	Leishmaniasis	Explain the clinical features and management of cutaneous Leishmaniasis in primary healthcare	
Paeds	Juvenile Dermatomyocytis (JDM)	Discuss diagnostic criteria of JDM	1
		Discuss its clinical features differential diagnosis	
PRIME/Research	Qualitative and quantitative study 3	Write a proposal for research project using KMU or CPSP guidelines or any other standard guidelines	7

## Pathology Practicals

Week	Topic	Practical
Week 1	Tuberculous osteomyelitis	Identify gross and microscopic morphological features of tuberculous osteomyelitis
Week 2	Osteogenic sarcoma, Osteoclastoma and chondrosarcoma	Identify gross and microscopic morphologic features of osteogenic sarcoma, osteoclastoma and chondrosarcoma
Week 3	ASO (Anti Streptolysin O) test	Perform ASO (Anti Streptolysin O) test by latex agglutination technique
Week 4	Tumors of Skin	Identify gross and microscopic features of <ul style="list-style-type: none"> <li>Squamous cell carcinoma</li> <li>Basal cell carcinoma</li> </ul>

## Pharmacology Practicals

Week	Topic	Practical
Week 1	Gout	Write prescription for Gout
Week 2	Rheumatoid Arthritis	Write prescription for Rheumatoid Arthritis
Week 4	Drugs used to treat Dermatological Disorders	Write down prescription for scabies.

		Write down prescription for Psoriasis
<b>Forensic Practicals</b>		
<b>Week</b>	<b>Topic</b>	<b>Practical</b>
<b>Week 1</b>	Examination of wound and weapon	<ul style="list-style-type: none"> <li>• Abrasion</li> <li>• Bruise</li> <li>• Laceration</li> <li>• Incised wound</li> <li>• Qisas and Diyat models/</li> <li>• Dura prints of injuries</li> </ul>
<b>Week 2</b>	Examination of wound and weapon	<ul style="list-style-type: none"> <li>• Stab wound</li> <li>• Fracture</li> <li>• Displacement</li> <li>• Qisas and Diyat models of injuries/ multimedia slides remaining</li> </ul>
<b>Week 3</b>	Examination of wound and weapon	Firearm injuries / Weapons Identification of bullets
<b>Week 4</b>	Writing a medico legal certificate	Medicolegal report writing in case of firearm Injuries

# Learning Resources

- Digital library
- Virtual Learning Environment (VLE)
- Ambulatory care settings which may be outside the hospital
- Accident and Emergency/Casualty departments
- Clinical Skills Laboratory
- Community Settings
- Electives in own and other Institutions
- Experimental Laboratories
- Hospital Wards
- Out Patient Departments
- Medical College setting

## List of reference books

### Recommended books

#### Pharmacology

##### Text Books

1. Basic and Clinical Pharmacology by Katzung BG, Masters SB, Trevor AJ, 14th Edition.
2. Lippincott's Illustrated Reviews: Pharmacology, Clark MA, Finkel R, Rey JA, Whalen K, 7th Edition.

##### Reference Books:

1. Goodman & Gilman's The Pharmacological Basis of Therapeutics, Brunton LL 12th Edition.

#### Pathology

##### Text Books

1. Robbins Pathologic Basis of Disease

##### Reference Books:

1. Walter & Israel's General Pathology"
2. Harsh Mohan's "Textbook of Pathology".
3. Pathology Illustrated
4. Stefan Silbernagl's "Color Atlas of Pathophysiology"
5. Muir's Textbook of Pathology

#### Textbook for Microbiology

1. Jawetz, Melnick & Adelberg's "Medical Microbiology"

##### Reference Books:

1. Levinson's "Medical Microbiology & Immunology"
2. Sherris Medical Microbiology
3. Lippincott's Illustrated Reviews: Microbiology

## **Forensic Medicine**

### **Textbooks:**

1. CK Parikh new edition

### **Reference Books:**

1. Nasib R Awan
2. KrishanVij
3. Smart series (SSS) Forensic MCQs with explanation
4. Gazette Pakistan Penal Code (PPC)
5. VV Pillay and Rajesh Bardale

## **Community Medicine**

### **Textbooks:**

1. Public Health & Community Medicine by Shah Ilyas Ansari; 8th Edition
2. Parks Textbook of Prevention & Social Medicine by K.Park; 24th Edition

## **Ophthalmology**

### **Textbooks:**

1. Parsons' Disease of the EYE

### **Reference Books:**

2. Short Kanski
3. Clinical Ophthalmology Shafi M Jatoi

## **Research and Biostatistics**

1. A synopsis of epidemiology and basic statistics (Ali Muhammad Mir)
2. Statistics at square one (TDVS winscow)
3. Essentials of research design and methodology. (GeoferryMarczyk)
4. The essentials of clinical epidemiology (Robert H)

## **Medicine & Allied**

1. Kumar and Clark for Medicine 8th edition 2012
2. Davidson

## **Surgery & Allied**

1. Bailey and Love. Short Practice of Surgery 25th edition 2008
2. Current Surgical Diagnosis and Treatment 13th edition 2009

## **Otorhinolaryngology**

1. PL Dhingra 7th edition
2. Cuming standards, ENT

## **Paediatric Medicine**

1. Text book of paediatrics, Pakistan paediatrics association
2. Essentials of paediatrics, Nelson, Eight edition
3. Basis of paediatrics, Pervez akbar khan, Ninth edition



# Assessment Plan - 3rd Year MBBS

The year-3 will be assessed in 3 blocks

- 1) Block-1 (Foundation 2 and Infection and Inflammation modules) will be assessed in paper-G
- 2) Block-2 (Multisystem, blood and MSK modules) will be assessed in paper-H
- 3) Block-3 (CVS and Respiratory module) will be assessed in paper-I
- 4) Each written paper consists of 120 MCQs and
- 5) Internal assessment will be added to final marks in KMU as shown in below table.

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

## 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
TOTAL MARKS		360	40	360	40	800

\*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.

# 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>

Table 3 OSCEs

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).

# 1. Learning Sites

## 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.

## **2. 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 shared 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

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

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

### **3. Attendance Requirement:**

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

## 4. Learning Sites

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