

# MUSCULOSKELETAL SYSTEM – II MODULE

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MBBS Year-3 (Academic Year 2020-2021)

*KMU Central Curriculum Committee*

*Khyber Medical University, Phase V, Hayatabad | Peshawar*

**Year- 3 Modules**

<b>S.NO</b>	<b>Module</b>	<b>Duration</b>
1	Foundation-II	5 Weeks
2	Inflammation & Infection-I	6 Weeks
3	Blood & Immunology-II	3 Weeks
4	Multi-System-I	4 Weeks
5	Musculoskeletal-II	5 Weeks
6	Cardiovascular-II	
7	Respiratory-II	

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## Introduction to Module

Welcome to the musculoskeletal module II

Conditions related to musculoskeletal system have a significant value in clinical practice. Back pain, trauma and violence are presently quite common in Pakistan. Conditions like joint diseases, bone diseases and deformities are additionally essential to have a command on. Analogously 70% of the people suffers from skin diseases in some part of their life and most of the skin infections are endemic in developing countries like Pakistan. Therefore it's additionally important to give students essential knowledge about common skin lesions and explain their clinical presentation to understand the importance of health issues related to skin and the burden of disease.

Hence to better understand these states, as well as the neoplastic and infective conditions of the musculoskeletal system including skin, appropriate pathological, microbiological aspects, pharmacological aspects as well as preventions and control will be covered in this specific module. The relevance of the various imaging modalities, the importance of medico legal practices will also be put into prospective throughout.

There will be an additional continual emphasis on a practical approach with regards to the most common conditions affecting the musculoskeletal system.

The important aspects of the clinical diagnosis, radiological interpretation, treatment and prevention will be likewise emphasized.

## General Learning Outcomes

### Knowledge

By the end of this module, students should be able to:

### Reinforcement

- Explain important anatomical and physiological characteristics of musculoskeletal system

### Pathology

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

### Pharmacology

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

### Community medicine

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

### **Forensic medicine**

- Define and classify wounds
- Describe types of hurt according to Qisas and Diyat Act
- Describe firearm and explosives injuries
- Describe RTAs, Railway 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 and management plan

### **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:**

By the end of this module, it is a core objective that students should have acquired the following skills:

**Special Pathology**

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

**Pharmacology**

- Write a prescription for a patient with Rheumatoid arthritis
- Write 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

**THEMES FOR MUSCULOSKELETAL MODULE**

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

Theme 1 Aching Bones				
Subject	Topic	SNo.	Learning Outcome	Hrs
Anatomy	Important Anatomical Characteristics of MSK	1.	Discuss important anatomical characteristics of musculoskeletal system	1
Physiology	Important Physiological Characteristics of MSK	2.	Discuss important Physiological characteristics of musculoskeletal system	1
Pathology	Metabolic diseases of bone	3.	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	4.	Classify fractures and describe healing process in fractures	1
		5.	Enlist etiology of osteonecrosis (Avascular Necrosis)	
		6.	Describe clinical features and morphological findings in osteonecrosis	
	Osteomyelitis	7.	Classify osteomyelitis and delineate its etiology, pathogenesis, common clinical features, morphological findings, and complications related to osteomyelitis	1
	Bone Tumors	8.	Classify bone tumors	1
		9.	Describe the frequency of different bone tumors in general population	
		10.	Enlist common clinical features found in common types of bone tumors.	
		11.	Enlist key morphological features of Osteosarcoma, Osteoid osteoma and Osteoblastoma	
	Cartilage-Forming Tumors	12.	Discuss the frequency of different cartilaginous tumors in general population	1
		13.	Enlist common clinical features of common cartilaginous tumors	
	Tumors of Unknown Origin	14.	Describe etiology, pathogenesis, and key clinico-morphological features of Ewing's Sarcoma and Giant Cell Tumor	1

	Lesions Simulating Primary Neoplasms	15.	Describe key clinico-morphological features and essential points in the pathogenesis of Fibroma	1
<b>Pharmacology</b>	NSAIDs	16.	Describe the clinical applications of NSAIDs in the treatment of musculoskeletal disorders	1
	Drug affecting Bone & Mineral Homeostasis	17.	Classify drugs used in metabolic bone disorders	2
		18.	Enlist calcium preparations	
		19.	Describe clinical uses of calcium salts	
		20.	Enlist vitamin D preparations	
		21.	Describe actions of vitamin D on intestine, Kidney and Bone	
		22.	Describe clinical uses of vitamin D	
		23.	Describe the mechanism of action, clinical uses and adverse effects of Bisphosphonates	
		24.	Describe the mechanism of action, clinical uses and adverse effects of calcitonin	
		25.	Classify drugs used to treat osteoporosis	
26.	Explain the mechanism of action of SERM (Raloxifene) and RANK ligand (Denosumab)			
<b>Forensic Medicine</b>	Mechanism of production of wound	27.	Define and classify wound	1
		28.	Describe mechanism of action of wound production associated factors, appearance and complications.	
	Abrasion	29.	Define and classify abrasion	
		30.	Explain types of abrasion and mechanism of wound production associated factors, appearance, and complication.	
		31.	Differentiate between antemortem & postmortem abrasion.	
		32.	Describe the medico legal aspects of abrasion	
	Bruise	33.	Define and classify bruise	1
		34.	Describe types of bruise and mechanism of wound production associated factors, appearance, and complication.	

		35.	Differentiate between ante mortem & postmortem Bruise.	
		36.	Describe the medico legal aspects of Bruise	
	Lacerated wound	37.	Define and Classify lacerated wound	1
		38.	Describe types of lacerated wound and Mechanism of wound production associated factors, appearance and complication.	
		39.	Difference between ante mortem & postmortem Laceration.	
		40.	Describe the medico legal aspects of Lacerated wound	
	Incised Wound	41.	Define and classify incised wound	1
		42.	Describe types of incised wound and mechanism of wound production associated factors, appearance, and complication.	
		43.	Difference between ante mortem & postmortem Incised Wound	
		44.	Differentiate between incised & lacerated wound.	
		45.	Describe the medico legal aspects of Incised wound	
		46.	Define and classify Stab wound	
	Stab wounds	47.	Describe types of Stab wound and mechanism of wound production associated factors, appearance, and complication.	
		48.	Difference between ante mortem & postmortem stab wound	
49.		Describe the medico legal aspects of stab wound		
50.		Describe Ergonomics	1	
51.	Describe the principles & importance of Ergonomics at work place			
52.	Explain the epidemiology of musculoskeletal disorders			
53.	Discuss prevention and control strategies for Musculoskeletal disorders			
<b>Community Medicine</b>	Osteoporosis, Osteomalacia and Rickets	54.	Discuss epidemiology and prevention of Osteoporosis, Osteomalacia and Rickets	1

<b>Medicine</b>	Osteoporosis and Osteomalacia	55.	Describe Osteoporosis and Osteomalacia	1
		56.	List common causes and risk factors of Osteoporosis and Osteomalacia	
		57.	Discuss clinical features, differential diagnosis and management plan of Osteoporosis and Osteomalacia	
		58.	Enlist the Investigations for patient presenting with Osteoporosis and Osteomalacia	
<b>Orthopedics</b>	Fractures	59.	Describe and illustrate types of fracture, fracture patterns, displacement and angulation of fractures in children and adults.	1
		60.	Explain open fractures Discuss the basic principles of wound debridement.	
	Bone Tumors	61.	To recognize, investigate and describe the radiological features of common benign and malignant bone tumors.	1
<b>Radiology</b>	X-Ray Interpretation	62.	Identify and interpret different types of fractures	1
<b>Eye</b>	Anatomy of Eye	63.	Describe anatomy of Orbit	1
		64.	Describe anatomy of Eye Ball	
<b>ENT</b>	Ear	65.	Explain anatomy of ear	1
<b>Paeds</b>	Bone pains and aches in children	66.	Common causes of bones aches and pains including Growing pains in children	1
		67.	Discuss nutritional Rickets causation, clinical presentation, Lab and Radiological findings and prevention	
	Skeletal dysplasia's	68.	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>Research</b>	Qualitative and quantitative study designs	69.	List and explain different study designs that can be used in quantitative and qualitative research studies	3
<b>Behavioral Sciences</b>	Attributes of prof	70.	Discriminate empathy and sympathy	1
			Demonstrate empathy in patient-health professional interaction	

**Theme 2 Joint Stiffness**

<b>Pathology</b>	Osteoarthritis	71.	Describe aetiology and pathogenesis of osteoarthritis	1
		72.	Discuss clinical and morphological features of osteoarthritis	
		73.	Enumerate complications of osteoarthritis	
	Rheumatoid Arthritis	74.	Describe aetiology and pathogenesis of Rheumatoid Arthritis	1
		75.	Discuss clinical and morphological features of Rheumatoid Arthritis	
		76.	Enumerate complications of Rheumatoid Arthritis	
	Seronegative Spondyloarthropathies	77.	Classify and explain Spondyloarthropathies	1
		78.	Discuss pathogenesis and clinical features of Ankylosing Spondylitis	
		79.	Discuss pathogenesis and clinical features of Reactive Arthritis	
		80.	Discuss pathogenesis and clinical features of Psoriatic Arthritis	
	Infectious Arthritis	81.	Describe etiology and pathogenesis of Suppurative Arthritis	1
		82.	Discuss clinical features and morphological features of Suppurative arthritis.	
		83.	Enumerate complications of Suppurative arthritis	
		84.	Describe etiology and pathogenesis of Mycobacterial Arthritis	
		85.	Discuss clinical features and morphological features of Mycobacterial Arthritis	
86.		Enumerate complications of Mycobacterial Arthritis		
Rheumatic Fever	87.	Describe key structural features, virulence factors, modes of pathogenesis and diagnosis of Streptococcus pyogenes	1	
	88.	Explain etiology, pathogenesis, clinical features, diagnosis, and complications of Rheumatic Fever.		
Crystal-Induced Arthritis	89.	Enlist different types of crystal-Induced arthritis	1	

		90.	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>	
<b>Pharmacology</b>	Pharmacotherapy of Gout	91.	Classify drugs used to treat gout	2
		92.	Describe the role of NSAIDs in the treatment of gout	
		93.	Describe the role of Glucocorticoids in the treatment of gout	
		94.	Describe the mechanism of action of various drugs (Colchicine, Probenecid, Allopurinol, Febuxostat) used in the treatment of Gout	
		95.	Discuss the adverse effects of anti-gout drugs	
		96.	Describe the drug interactions of Allopurinol and Probenecid	
		97.	Enlist the drugs causing hyperuricemia	
		98.	Discuss the mechanism by which drugs causes hyperuricemia	
	Pharmacotherapy of Rheumatoid Arthritis	99.	Classify drugs used in Rheumatoid arthritis	3
		100.	Discuss the role of NSAIDs in Rheumatoid Arthritis	
		101.	Discuss the role of Glucocorticoids in Rheumatoid Arthritis	
		102.	Define and classify DMARDs	
		103.	Enlist biological and non-biological agents used to treat rheumatoid arthritis	
		104.	Describe pharmacokinetics mechanism of action, clinical uses and adverse effects of methotrexate.	
		105.	Enlist adverse effects and therapeutic uses of DMARDs	
<b>Forensic Medicine</b>	Age of Wound & Complication	106.	Describe events associated with wound healing	1
		107.	Differentiate between old and fresh wound	
		108.	Describe injury zone on the basis of histo-chemical changes and Biochemical events taking place.	

	Qisas & Diyat	109.	Define hurt, Wound & injury	1
		110.	Classify hurt according to International law	
		111.	Types of hurt according to Qisas & Diyat Act	
		112.	Explain Punishments (tazir), compensation and Fine (Diyat)	
<b>Medicine</b>	Rheumatoid Arthritis	113.	Describe Rheumatoid Arthritis with its clinical presentation, differential diagnosis and management plan.	1
	Ankylosing Spondylitis	114.	Describe Ankylosing Spondylitis with its clinical presentation, differential diagnosis and management plan.	
<b>Orthopedics</b>	Bone and Joint Infections	115.	Describe the aetiology, pathology, clinical presentation and investigations of Bone and Joint infections	1
			Discuss the management plan of multiple bone and joint infections.	
<b>ENT</b>	Nose, Para Nasal Sinuses & Oral Cavity	116.	Discuss anatomy of Nose, Para nasal sinuses & oral cavity	1
<b>Paeds</b>	Juvenile Idiopathic arthritis (JIA)	117.	Discuss criteria for classification of JIA	1
			Discuss its clinical features , differential diagnosis and its management plan.	
<b>Research</b>	Qualitative and quantitative study designs	118.	Discuss and select the appropriate study design/approach for the research question	1
<b>Communication Skills</b>	Dealing with Patients	119.	Explain importance of answering questions and giving explanation and/or instructions	1
<b>Theme 3 Muscle weakness and Trauma</b>				
<b>Pathology</b>	Tumors of adipose tissue	120.	Classify soft tissue tumors and provide a brief description of their salient clinical features	1
		121.	Enlist key morphological features of lipoma and liposarcoma	
	Fibrous Tumors	122.	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	123.	Classify muscle tumors	1
124.		Describe etiology, clinico-morphological features, and complications of Rhabdomyosarcoma		

		125.	Describe etiology, clinico-morphological features, and complications of Leiomyoma	
		126.	Describe etiology, clinico-morphological features, and complications of Leiomyosarcoma	
		127.	Describe etiology, clinico-morphological features, and complications of Fibrosarcoma	
	Skeletal muscle atrophy and myopathies	128.	Describe pathological features of Skeletal Muscle Atrophy	1
		129.	Describe pathological features of Neurogenic and Myopathic changes in Skeletal Muscle	
		130.	Describe pathological features of Inflammatory Myopathies	
		131.	Describe pathological features of Dermatomyositis	
		132.	Describe pathological features of Polymyositis	
		133.	Describe pathological features of Inclusion Body Myositis	
		134.	Describe pathological features of Toxic Myopathies	
	Inherited Diseases of Skeletal Muscle	135.	Describe genetic abnormality, morphology and clinical features of Muscular Dystrophies	1
<b>Pharmacology</b>	Skeletal muscle relaxants	136.	Classify skeletal muscle relaxants.	3
		137.	Describe the mechanism of action of Non depolarizing and depolarizing neuromuscular blockers.	
		138.	Discuss the differences between depolarizing and non depolarizing skeletal muscle relaxants	
		139.	Describe the therapeutic uses and adverse effects of skeletal muscle relaxants	
		140.	Describe centrally acting skeletal muscle relaxants (Spasmolytics)	
		141.	Name drugs causing malignant hyperthermia	
		142.	Discuss the rationale for use of Dantrolene in the treatment of malignant hyperthermia	

		143.	Discuss succinylcholine apnea and its management	
<b>Forensic Medicine</b>	Transportation Accidents	144.	Discuss injuries to the driver & front seat occupant and rare seat occupant.	2
		145.	Discuss spinal injuries including Whiplash injury and railway spine	
		146.	Explain Railway injuries with medico legal significance	
		147.	Discuss Air crash accidents.	
	Firearm Injuries	148.	Describe wound ballistics and its types.	3
		149.	Describe terms /Definition used in firearm injuries, types of bullets.	
		150.	Explain basic mechanism of firearm.	
		151.	Explain ranges of fire in firearm injuries, beveling phenomenon, wound production mechanism.	
		152.	Identify types of gun powders and ammunition used.	
		153.	Interpret findings of injuries produced by different weapons.	
		154.	Explain pattern of identification of entry and exit wound.	
		155.	Explain information inferred from examination of firearm entry wound.	
	Injuries By Explosives	156.	Describe mechanism of production of injuries by bomb blast.	1
		157.	Explain different causes of death in blast injuries.	
		158.	Interpret Autopsy findings in explosion fatalities.	
Thermal Injuries	159.	Describe Thermal Injuries	1	
	160.	Describe their classifications		
	161.	Describe Burns and Scalds		
Electrical Injuries	162.	Explain electrocution	1	
	163.	Types of electrical injuries		
	164.	Describe PM findings		
	165.	Explain Lightning		
	Poliomyelitis	166.	Define Poliomyelitis	1

<b>Community Medicine</b>		167.	Describe the Epidemiology, determinants & distribution of poliomyelitis	1
		168.	Describe the prevention and control measures of Poliomyelitis	
	Road Traffic Accidents	169.	Describe Road Traffic Accidents?	
		170.	Classify different types of road traffic accidents and injuries?	
		171.	Describe and compare the burden of road traffic accidents in a developed country with a developing country like Pakistan	
		172.	List and Explain the risk factors of road traffic accidents	
173.		Explain effective public health strategies used at individual and national level to prevent for road traffic accidents		
<b>Medicine</b>	Myopathies	174.	Define Myopathy	1
		175.	Enlist Myopathies (Hereditary & Acquired Myopathies)	
		176.	Describe the etiology and clinical features of Myopathies	
		177.	Plan investigations for Myopathies	
<b>Orthopedic</b>	Application of Cast	178.	Explain the emergency treatment of an injured limb.	1
		179.	Explain emergency immobilization techniques of the Neck, Spinal column and limbs.	
		180.	Describe and discuss the basic principles pertaining to application of a cast, the complications of cast application.	
		181.	Discuss the principles of a three-point pressure system in a cast.	
	Soft Tissue Injuries, Spinal Injuries	182.	Describe the common ligamentous and tendon injuries and advise appropriate management	1
Recognize common Spinal fractures, and provide appropriate initial management				
<b>Paeds</b>	Congenital/Hereditary Myopathies	183.	Discuss common congenital and hereditary myopathies, their genetics, causation, clinical presentation and diagnosis.	1

			Discuss the most appropriate management plan for Congenital Myopathies.	
	Duchene Muscular dystrophy (DMD)	184.	Describe DMD, its clinical presentation and differential diagnosis.	1
<b>Theme 4 : Skin Rash and Itching</b>				
<b>Pathology</b>	Important pathological terms	185.	Define the following skin lesions and describe these with respect to their etiologies and gross morphological features. <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
	Eczematous dermatitis	186.	Classify eczematous dermatitis	1
		187.	Describe the morphological and clinical features of acute eczematous dermatitis	
		188.	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>	

	Erythema multiforme	189.	List the conditions which are associated with erythema multiforme and describe its clinical features	1
	Psoriasis	190.	Describe the etiopathogenesis, morphological and clinical features of psoriasis	1
	Pre-malignant epithelial lesions	191.	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	192.	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 origin, clinical and morphological features.</li> </ul>	1
	Viral skin infections	193.	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	194.	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	195.	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	196.	Classify dermatological preparations	2
		197.	Enlist topical antibacterial, antifungal & antiviral preparations.	

		198.	Describe clinical uses and adverse effects of topical antibacterial, antifungal and antiviral drugs.	
		199.	Discuss oral treatment of candidiasis dermatophytosis and onychomycosis.	
		200.	Describe various acne preparations and antibiotics used to treat acne.	
		201.	Enlist clinical uses of immunomodulators (Imiquimod, Tacrolimus) related to skin diseases.	
		202.	Enlist ectoparasiticides	
		203.	Enlist clinical uses and adverse effects of Permethen.	
		204.	Discuss drug treatment of Scabies & Pediculosis.	
		205.	Describe the mechanism of action and adverse effects of various agents used for pigmentation disorders	
		206.	Describe the clinical uses and adverse effects of drugs used for the treatment of psoriasis.	
		207.	Describe clinical uses and adverse effects of topical corticosteroids	
		208.	Enlist dermatological disorders responsive to topical corticosteroids ranked in order of sensitivity.	
		209.	Discuss keratoytic agents, antipruritic agents, trichogenic and antitrichogenic agents and use of antineoplastic agents in topical conditions	
<b>Medicine</b>	Important pathological terms with Clinical presentations	210.	Enlist and explain the clinical presentation of the following skin Lesions: <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> </ul>	1

			<ul style="list-style-type: none"> <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>	
	Pre-malignant skin conditions	211.	Enlist the pre-malignant skin conditions Explain their differential diagnosis on the basis of clinical presentations Enlist the relevant investigations and give appropriate management plan	1
	Malignant conditions of skin	212.	Enlist the malignant conditions of skin (squamous and basal cell carcinoma) Explain their differential diagnosis on the basis of clinical presentations Enlist the relevant investigations and provide appropriate management plan	
	Nevocellular Nevi	213.	List the types of Nevocellular Nevi and discuss their differential diagnosis on the basis of their clinical presentations. Enlist the relevant investigations and explain its management.	
<b>Paeds</b>	Juvenile Dermatomyocytis (JDM)	214.	Discuss diagnostic criteria of JDM Discuss its clinical features differential diagnosis	1
<b>Research</b>	Qualitative and quantitative study 3	215.	Write a proposal for research project using KMU or CPSP guidelines or any other standard guidelines	7

Pathology Practical's		
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>
<b>Pharmacology Practical's</b>		
<b>Week</b>	<b>Topic</b>	<b>Practical</b>
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 Practical's</b>		
<b>Week</b>	<b>Topic</b>	<b>Practical</b>
Week 1	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>
Week 2	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>
Week 3	Examination of wound and Weapon	Firearm injuries / Weapons Identification of bullets
Week 4	Writing a medico legal Certificate	Medicolegal report writing in case of firearm Injuries

## Learning Sites

- 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. Krishan Vij
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