UNIVERSITY OF HEALTH SCIENCES LAHORE

UHS

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Musculoskeletal & Locomotion – 1

Study Guide

First Year MBBS

ISLAM MEDICAL COLLEGE

Sialkot – Pakistan

Table of Contents

MODULE-03

MUSCULOSKELETAL & LOCOMTION – 1

GUIDE

MODULE LEAD DETAILS

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Associate Professor Office, Anatomy Department, Academic Block 1

Office timing: 08:00 am -3:30pm

MODULE OVERVIEW

The musculoskeletal system comprises the bones, muscles, cartilage, tendons, ligaments, and other connective tissues that provide the framework, support, and movement of the body. The initial learning activities will help in understanding the normal structure, development, and normal physiological mechanisms of the organs of the system. This will help in better understanding the possible pathological conditions of the system, including common injuries, & diseases, and disorders that affect it, followed by discussion on some important group of drugs used for treatment and/or prevention of these conditions (administration route, mechanism of action and side effects). The impact of musculoskeletal diseases on society and the effect of ageing on occurrence of musculoskeletal diseases will be discussed. Emphasis has been given to incorporate deranged laboratory and imaging findings into the clinical problem solving.

THEMES

- Pectoral Region & Axilla
- Upper limb
- Pelvic Girdle
- Lower Limb

Clinical Relevance (in relation to muscle, bone and joint diseases)

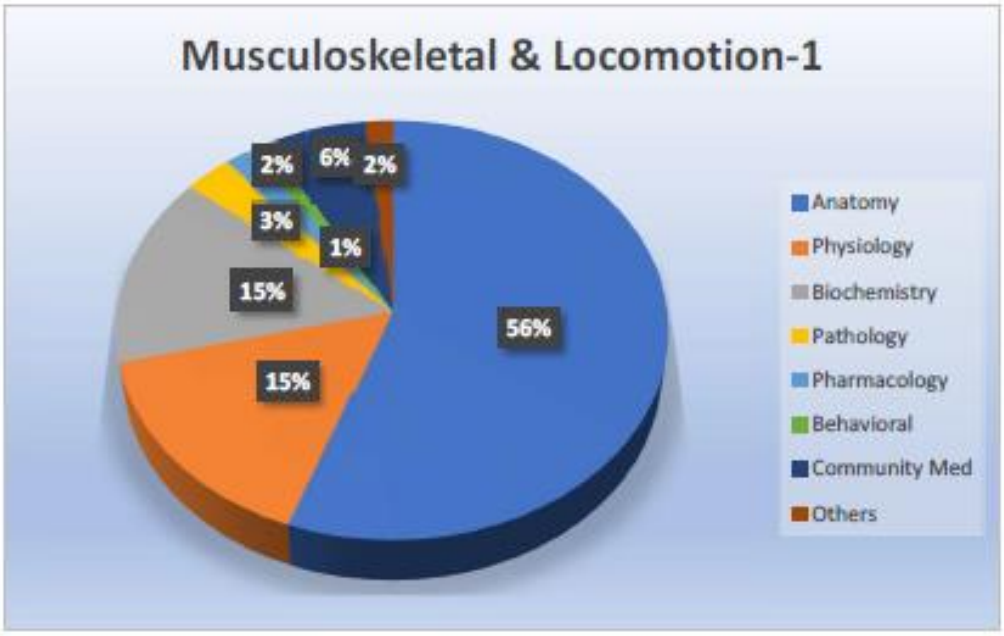
- Congenital anomalies of limb
- Joint Dislocation
- Fracture
- Metabolic bone diseases (osteoporosis, osteomalacia, rickets)
- Myasthenia Gravis
- Multiple Sclerosis

MODULE LEARNING OUTCOMES

1. Develop an understanding of the fundamental components of the musculoskeletal system.
2. Explain the development of the structure & function of the musculoskeletal (MSK) components of limbs, back & correlate it with organization and gross congenital anomalies of the limbs.
3. Identify the anatomical features of bones, muscles & neurovascular components of the limbs with clinical correlation.
4. Describe how injury and disease alter the MSK structure & function.
5. Integrate concepts relating to various metabolic processes, their disorders and relevant lab investigations in the study of human MSK system.
6. Describe the role of the limbs (upper/lower) in musculoskeletal support stability, and movements.
7. Describe the types, formation, stability, function & clinical significance of joints of the upper and lower limb.
8. Describe the basic histology of muscle fibers including their molecular structure (Sarcomere).
9. Explain the mechanism of excitation and contraction of skeletal and smooth muscles.
10. Discuss the psychosocial impact of musculoskeletal diseases in society.

MODULE SCHEDULE

Module weeks	8 weeks
Recommended minimum hours	225



MODULE CONTENTS

SPECIFIC LEARNING OBJECTIVE RELATED TO DEPARTMENTS:

ANATOMY:

(Gross Anatomy) UPPER LIMB

- Bones of upper limb and its clinical:
  - Describe the bony features, side determination, attachments, movements and neurovascular supply of Clavicle, Scapula, Humerus, Radius, ulna and hand bones
- Regions and its clinical:
  - Pectoral region:
    - Name the muscles of pectoral region
    - Describe the attachments of muscles, its neurovascular supply and actions.
  - Breast:
    - Describe the structural tissue of breast, its blood supply and lymphatics.
  - Scapular region :
    - Name the muscles of scapular region
    - Describe the attachments of muscles, its neurovascular supply and actions.
  - Axilla:
    - Describe the boundaries and contents of Axilla
  - Arm
    - Name the muscles of arm.
    - Describe the attachments of muscles, its neurovascular supply and actions.
  - Cubital fossa
    - Describe the boundaries and contents of cubital fossa
  - Forearm
    - Name the muscles of forearm
    - Describe the attachments of muscles, its neurovascular supply and actions.
  - Carpel tunnel:
    - Describe the attachments of flexor retinaculum
    - Name and describe the structure passing through carpel tunnel.
  - Hand:
    - Name the muscles of hand
    - Describe the attachments of muscles, its neurovascular supply and actions.
  - Palmar spaces and pulp space:

        - Name the spaces and its content
- Joints of upper limb and its clinical:
    - Describe the articulation, type, ligaments, movements, relations and neurovascular supply of
        - Shoulder joint,
        - Elbow joint,
        - Radioulnar joint,
        - Wrist joint
        - Joints of hands
- Blood supply and its clnical:
    - Name the blood supply of upper limb
    - Describe the Axillary artery and its branches
    - Describe the Axillary vein and its tributaries
    - Describe the arterial anastomosis around scapula
    - Describe the brachial artery and its branches
    - Describe the ulnar and radial artery
    - Describe the arterial anastomosis around elbow
    - Describe the superficial and deep palmar arch
- Lympatics of upper limb
    - Describe the lympatic drainage of upper limb.
- Nerve supply and its clinical:
    - Describe the formation, branches and distribution of brachial plexus
    - Name the paralysis/palsy related to brachial plexus
- Surface anatomy:
    - Describe the surface Anatomy of upper limb
- Skin and fascia:
    - Describe the skin and fascia of upper limb with its neuorovascular supply.
- Models of upper limb
    - Study and demonstrate the structure of upper limb on model

LOWER LIMB:

- Bones of lower limb and its clinical
    - Describe the bony features, side determination, attachments, movements and neurovascular supply of hip bone, femur, tibia, fibula and bones of foot
- Regions and its clinical
    - Name the muscles and describe the attachments, nerve supply and action of muscles of :
        - Gluteal region
        - Thigh
        - Leg

        - Foot
    - Describe the boundaries and content of popliteal of fossa
- Joints of lower limb and its clinical
    - Describe the articulation, type, relations, movements, ligaments, and neurovascular supply of:
        - Hip joint
        - Knee joint
        - Tibiofibular joint
        - Ankle joint
        - Joints of foot
- Blood supply and its clinical
    - Name the blood supply of lower limb
    - Describe the femoral artery and its branches
    - Describe the great and small saphenous vein and its tributaries
    - Describe the arterial anastomosis around hip joint
    - Describe the popliteal artery and its branches
    - Describe the arterial anastomosis around knee joint
    - Describe the anterior and posterior Tibial arteries and its branches
    - Describe the plantar arch formation and its branches
- Nerve supply and its clinical:
    - Describe the formation, branches and distribution and clinical of
        - Lumbar plexus
        - Sacral plexus
- Lymphatics of lower limb and its clinical
    - Describe the lymphatic drainage of lower limb
- Skin and fascia
    - Describe the skin and fascia of lower limb
- Surface Anatomy:
    - Describe the surface anatomy of lower limb
- Models of lower limb:
    - Study and demonstrate the structure of lower limb on model

Anatomy (Histology):

- Muscle
    - Describe the microscopic structure of cardiac, smooth and skeletal muscles
    - Draw and Demonstrate the microscopic structure of cardiac, smooth and skeletal muscles through microscopic slide tissue
    - Differentiate between the microscopic structure of cardiac, smooth and skeletal muscle

- Bone
    - Describe the microscopic structure of compact and spongy bone
    - Draw and Demonstrate the microscopic structure of compact and spongy bone through microscopic slide tissue
    - Differentiate between the microscopic structure of compact and spongy bone
- Cartilage
    - Describe the microscopic structure of hyaline, fibro and elastic cartilage
    - Draw and Demonstrate the microscopic structure of hyaline, fibro and elastic cartilage through microscopic slide tissue
    - Differentiate between the microscopic structure of hyaline, fibro and elastic cartilage

Anatomy (Embryology)

- Muscle
    - Describe the development of myotome (epiaxail and hypoaxial)
    - Describe the development of skeletal, cardiac and smooth muscles
- Limb
    - Describe the process of development of limb and its growth
    - Name the congenital anomalies of limb
- Bone:
    - Describe the ossification and development of bones
- Cartilage
    - Describe the developmental process of cartilage and its significance in bone development

Physiology:

- Diffusion, equilibrium and potential
    - Explain the physiological basis of membrane potential
    - Explain diffusion potential of sodium and potassium
- Nernst potential
    - Define Nernst potential
    - Explain the physiological basis of Nernst potential
    - Write Nernst equation
- Goldman equation
    - Describe the normal concentration of sodium, potassium, calcium and chloride across membrane
    - Describe the effects of sodium, potassium, calcium and chloride across membrane
    - Explain the physiological basis of goldman equation and its role in RMP.
- Resting membrane potential in neurons
    - Explain the physiological basis of Resting membrane potential (RMP)

    - Explain the role of hypo and hyper kalemia on RMP
- Neurons and Classification of neurons and fibers
    - Classification of neurons and neuroglial cells
    - Describe the process of myelination
- Action potential
    - Define the action potential and its properties
    - Describe the ionic basis of action potential
    - Describe the phases of action potential
    - Explain the effects of hypo and hyper kalemia on action potential.
    - Explain the absolute and relative refractory period.
- Role of other ions in action potential
    - Explain the effects of other ions on action potential.
- Local and graded potential
    - Describe and contrast between the physiological basis of local and graded potential.
- Synapse
    - Name the types of synapse
    - Explain the physiological basis of different types of synapse
    - Explain the process of signal transmission across chemical synapse.
- Conduction of nerve impulse:
    - Explain the process of nerve conduction across myelinated and nmyelinated fibres.
    - Elaborate the significance of salutatory conduction.
- Nerve degeneration:
    - Enlist types of nerve degeneration
    - Explain the walllerian degeneration
    - Describe the process of nerve regeneration its anomalies
- Skeletal muscle
    - Describe and contrast the physiological anatomy skeletal, smooth and cardiac muscles.
- Characteristics of whole muscle contraction
    - Describe the Isometric and isotonic contraction
    - Define fast and slow fibres
- Mechanics of muscle contraction
    - Explain the mechanism of summation and tetanization.
    - Describe the staircase and treppe phenomena.
    - Explain the skeletal muscle fatique.
    - Explain the physiological basis of rigor mortis.
- Neuromuscular junction:
    - Describe the physiological anatomy of NMJ

- Mechanism of Neuromuscular transmission & generation of End Plate Potential
- Mechanism of Neuromuscular transmission & generation of End Plate Potential
- Explain features, pathophysiology & treatment of myasthenia Gravis
- Discuss the steps/ events of excitation contraction coupling in skeletal muscle

- Smooth muscle
  - Differentiate between types of smooth muscles
  - Describe mechanism of smooth muscle contraction in comparison to skeletal muscle.
  - Explain the physiological anatomy of neuromuscular junction of smooth muscle
  - Explain the physiological anatomy of neuromuscular junction of smooth muscle
  - Explain the types of action potential in smooth muscles.
  - Explain the LATCH mechanism
  - Describe the significance of LATCH mechanism.
  - Explain the nervous and hormonal control of Smooth Muscle Contraction.

BIOCHEMISTRY:

- Classification of amino acids:
  - Classify amino acids based on polarity, nutritional importance, and glucogenic/Ketogenic properties
  - Explain the structure, physical, chemical properties of amino acids and their biomedical importance
  - Classify proteins based on functions and physicochemical properties
  - Explain its biomedical importance.
  - Distinguish between class A and B proteins.
  - Discuss structure and functions of Fibrous proteins (collagen and Elastin)
  - Interpret diseases associated with them on basis of sign/symptoms and data
- Structure of proteins:
  - Explain the structural levels of proteins

    - Differentiate between alpha helix and beta pleated protein structures
    - Identify bondings at different levels of proteins
- Protein misfolding:
    - Describe the role of chaperons in protein folding.
    - Interpret disorders related to protein misfolding on basis of given data.
    - Describe the biochemical basis of Alzheimer's disease/ prion disease
- Carbohydrates Chemistry
    - Describe biomedical importance of Mono-, Oligo and Polysaccharides.
    - Discuss isomerization of carbohydrates
    - Explain physical and chemical properties of carbohydrates
    - Differentiate proteoglycan and glycoprotein and explain their functions
- ECM and collagen synthesis:
    - Describe the components of extracellular matrix.
    - Describe the sources, metabolism, and biochemical functions of vitamin C
    - Describe structure, functions, and clinical significance of glycosaminoglycans.
    - Interpret the importance of vitamin C in collagen synthesis.
- Vitamin D metabolism:
    - Identify the defects in collagen synthesis based on given data. (Osteogenesis Imperfecta)
    - Explain dietary sources, metabolism and biochemical functions of vitamin D
    - Interpret Rickets and osteomalacia on basis of sign. Symptoms and clinical data
- Calcium and Phosphate metabolism
    - Explain dietary sources, metabolism and biochemical functions of calcium and phosphate
    - Discuss regulation of calcium metabolism in bone metabolism and role of parathyroid and calcitriol in it.
    - Interpret hyper and hypocalcemic conditions on basis of sign/symptoms and clinical data.
- Genetic basis of disease:
    - Interpret genetic basis of Duchene muscular dystrophy.
- **Biochemistry practical:**
    - Chromatography
        - Detection of amino acids by paper chromatography.
    - Total proteins:
        - Estimation of total proteins by kit method/dipstick methods
    - Albumin/ globulin
        - Estimation of albumin and globulin
    - Calcium

        - Detection of calcium by micro lab
    - Solutions
        - Prepare different types of solution Molar, Molal, Normal and percentages.

- **Aging:**
- Bone
    - Cartilage Discuss the effect of age on bone fragility and its implications with management
- Muscle:
    - Discuss the effect of age on Muscular strength and its implications and management
- Cartilage:
    - Discuss the effect of age on loss of cartilage resilience and its implications and management
- Effect of estrogen on BMD
    - Explain the protective effect of estrogen (female sex hormone) on bone mineral density and relate it increased prevalence of postmenopausal fractures in women.

PHARMACOLOGY:

- Drugs acting on Neuromuscular Junction (NMJ):
    - Explain the mechanism by which drugs can stimulate NMJ.
    - Explain the mechanism by which drugs can block NMJ.
- Drugs in Myasthenia Gravis:
    - Outline the pharmacological concepts of drugs used in Myasthenia gravis
- Local Anesthetic:
    - Outline the pharmacological concepts of drugs used as local anesthetics.

COMMUNITY MEDICINE:

- Back Pain
    - Explain causes of low back pain
    - Describe prevention of low back pain
- MSD related to child labour
    - Describe causes and prevention of musculoskeletal disorders (MSD)related to child labour
- Work related Musculoskeletal disorders
    - Describe work related musculoskeletal disorders addition with its burden/epidemiology
- MSD related to mobile usage
    - Identify risk factors of MSD at workplace
    - Describe prevention of exposure to risk factors related to workplace.
    - Describe MSD related to mobile addition with its burden/epidemiology.

- Identify risk factors relates to MSD due to excessive mobile usage
- Describe the preventive strategies for mobile addiction related MSD.

- Ergonomics
  - Describe application of ergonomics in MSD related to above disorders
- Non communicable disease
  - Describe the concept of non-communicable diseases
- Risk factor assessment of Musculoskeletal diseases
  - Identify the risk factors in the community for Osteoporosis
  - Learn and apply interventions to prevent the risk factors for various musculoskeletal diseases in community.

BEHAVIORAL SCIENCE:

- Psychosocial factors influencing chronic illnesses
  - Identify and deal with the various psychosocial aspects of Musculoskeletal conditions (such as Osteoarthritis, Osteomyelitis, Rheumatoid arthritis, Gout, chronic back pain, psycho somatic complaints) and Neuromuscular conditions (Muscular dystrophy, Myasthenia Gravis, Sclerosis) on Individual, Family and Society.
- Psychosocial Impact of Disease and its management:
  - Identify the psychosocial risk factors as mediating factors between illness and its effect.
  - Discuss the role of psychological variables like coping, social support, and other health cognitions in mediating between illness and its effect.

PATHOLOGY:

- Bone
  - Name and describe the physiological basis of Metabolic bone diseases
- Muscle
  - Name and describe the physiological basis of Muscle disorder
  - Name and describe the physiological basis of Myopathy
- Cartilage
  - Name and describe the physiological basis of disease related to cartilage

MEDICINE:

- Name the Bone disease and its management
- Name the Muscle disorder and its management
- Name the types of Myopathy and its management
- Nam the physiological basis of Myasthenia gravis and its management

SURGERY:

- Demonstrate palpation of breast and its significance in breast infection and carcinoma.
- Describe the anatomical basis of frozen shoulder and its management.
- Nam the anatomical basis of Carpel tunnel syndrome and its management

ORTHOPEDICS:

- Name the fractures of upper and lower limb
- Describe the anatomical basis of these fractures
- Identify and demonstrate the fractures on X ray.

RADIOLOGY:

- Name the X rays
- Identify and demonstrate the anatomical features of upper and lower limb on X Ray

CLINICAL SKILLS:

- Demonstrate movements at different joint of the body
    - Shoulder joint
    - Elbow joint
    - Wrist joint
    - Hip joint
    - Knee joint
    - Ankle joint

WEEKLY TIMETABLES

<table>
<tr><th colspan="10">MSK Module Schedule (1st Year MBBS)</th></tr>
<tr><th colspan="10">WEEK- 01/08</th></tr>
<tr><td>Day/Date</td><td>8:00 - 08:50</td><td>08:50 - 9:40</td><td>9:40 - 10:30</td><td>10:30 - 11:20</td><td colspan="2">11:20 - 12:10</td><td>12:10-1:00</td><td>1:00-1:30</td><td>1:30-2:10</td><td>2:10 - 3:00</td></tr>
<tr><td>Monday
14/7/25</td><td>Quran</td><td colspan="4">Remedial Block-1
9:00-12:00</td><td>Osteology
Anat</td><td rowspan="6">Lunch/
prayer Break</td><td>Biochem
LGIS</td><td>Anat SGD</td></tr>
<tr><td>Tuesday
15/7/25</td><td colspan="2">Practical (Anat, Bio, Physio)</td><td>Embryo GIS</td><td>Physio LGIS</td><td colspan="2">SGD (Physio/Bio)</td><td>Osteology
Anat</td><td>CFRC Med</td><td>Anat SGD</td></tr>
<tr><td>Wednesday
16/7/25</td><td colspan="2">Practical (Anat, Bio, Physio)</td><td>Anat LGIS</td><td>Biochem
LGIS</td><td colspan="2">Physiology LGIS</td><td>Osteology
Anat</td><td>Aging
Med/Bio</td><td>Anat SGD</td></tr>
<tr><td>Thursday
17/7/25</td><td colspan="2">Practical (Anat, Bio, Physio)</td><td>AnatLGIS</td><td>Physio LGIS</td><td colspan="2">11:20- 12:10
Biochem LGIS</td><td>Osteology
Anat</td><td>Community Med
LGIS</td><td>Anat SGD</td></tr>
<tr><td rowspan="2">Friday
18/7/25</td><td colspan="2">8:00-8:50</td><td>8:50-9:40</td><td>9:40-10:30</td><td>10:30-11:20</td><td>11:20-12:10</td><td>12:10-1:00</td><td rowspan="2">DSL</td><td rowspan="2">Pathology LGIS</td></tr>
<tr><td colspan="2">Community Med</td><td>DSL</td><td>Anat LGIS</td><td>BS LGIS</td><td>Physio LGIS</td><td>Osteology
Anat</td></tr>
</table>

WEEK- 02/08

Day/Date	8:00 - 08:50	08:50 - 9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:10	2:10 - 3:00
Monday 21/7/25	PERL LGIS	Histo LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem LGIS	Anat SGD
Tuesday 22/7/25	Practical (Anat, Bio, Physio)		Embryo GIS	Physio LGIS	SGD (Physio/Bio)		Osteology Anat		CFRC Med	Anat SGD
Wednesday 23/7/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	Physiology LGIS		Osteology Anat		Aging Med/Bio	Anat SGD
Thursday 24/7/25	Practical (Anat, Bio, Physio)		Anat LGIS	Physio LGIS	11:20- 12:10	Biochem LGIS	Osteology Anat		Community Med LGIS	Anat SGD
Friday 25/7/27	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00		DSL	Pathology LGIS
	Community Med		DSL	Anat LGIS	BS LGIS	Physio LGIS	Osteology Anat			

WEEK- 03/08

Day/Date	8:00 - 8:50	8:50 - 9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:10	2:10 - 3:00
Monday 28/7/25	PERL LGIS	Histo LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem LGIS	Anat SGD
Tuesday 29/7/25	Practical (Anat, Bio, Physio)		Embryo LGIS	Physio LGIS	SGD (Physio/Bio)		Osteology Anat		CFRC	Anat SGD
Wednesday 30/7/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	Physiology LGIS		Osteology Anat		Aging Med/Bio	Anat SGD
Thursday 31/7/25	Practical (Anat, Bio, Physio)		Anat LGIS	Physio LGIS	11:20- 12:10	Biochem LGIS	Osteology Anat		Community Medicine LGIS	Anat SGD
Friday 1/8/25	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:10		DSL	Pathology LGIS
	Community Med		DSL	Anat LGIS	BS LGIS	Physio LGIS	Osteology Anat			

WEEK- 04/08

Day/Date	8:00 - 8:50	8:50 – 9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:10	2:10 - 3:00
Monday 4/8/25	PERL LGIS	Histo LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem	Anat SGD
Tuesday 5/8/25	Practical (Anat, Bio, Physio)		Embryo LGIS	Physio LGIS	SGD (Physio/Bio)		Osteology Anat		CFRC	Anat SGD
Wednesday 6/8/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	Physiology LGIS		Osteology Anat		DSL	Anat SGD
Thursday 7/8/25	Practical (Anat, Bio, Physio)		Anat LGIS	Physio LGIS	11:20- 12:10 Community Med LGIS		Osteology Anat		Aging Med/Bio	Anat SGD
Friday 8/8/25	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00		DSL	Pathology LGIS
	Community Med		Biochem LGIS	Anat LGIS	Pharma LGIS	Physio LGIS	Osteology Anat			

WEEK- 05/08

Day/Date	8:00 - 8:50	8:50 – 9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:00	2:00 - 3:00
Monday 11/8/25	PERL LGIS	Histo LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem LGIS	Anat SGD
Tuesday 12/8/25	Practical (Anat, Bio, Physio)		Embryo LGIS	Physio LGIS	SGD (Physio/Bio)		Osteology Anat		CFRC	Anat SGD
Wednesday 13/8/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	Physiology LGIS		Osteology Anat		DSL	Anat SGD
Thursday 14/8/25										
Friday 15/8/25	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:10		DSL	Pathology LGIS
	Community Med		Biochem LGIS	Anat LGIS	Pharma LGIS	Physio LGIS	Osteology Anat			

WEEK- 06/08

Day/Date	8:00 - 8:50	8:50 - 9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:00	2:00 - 3:00
Monday 18/8/25	PERL LGIS	Anat LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem LGIS	Anat SGD
Tuesday 19/8/25	Practical (Anat, Bio, Physio)		Embryo/Peds LGIS	Physio LGIS	SGD (Physio/Bio)		Osteology Anat		CFRC	Anat SGD
Wednesday 20/8/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	Physiology LGIS		Osteology Anat		DSL	Anat SGD
Thursday 21/8/25	Practical (Anat, Bio, Physio)		Anat LGIS	Physio LGIS	11:20-12:10 Community Med LGIS		Osteology Anat		DSL	Anat SGD
Friday 22/8/25	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00		1:30-2:10	2:10 - 3:00
	Community Med		Biochem LGIS	Anat LGIS	Pharma LGIS	Physio LGIS	Osteology Anat		DSL	Pathology LGIS

WEEK- 07/08

Day/Date	8:00 - 8:50	8:50-9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:10	2:10 - 3:00
Monday 25/8/25	PERL LGIS	Anat LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem LGIS	Anat SGD
Tuesday 26/8/25	Practical (Anat, Bio, Physio)		LGIS	LGIS	SGD (Physio/Bio)		Osteology Anat		CFRC	Anat SGD
Wednesday 27/8/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	LGIS		Osteology Anat		DSL	Anat SGD
Thursday 28/8/25	Practical (Anat, Bio, Physio)		LGIS	LGIS	11:20 - 12:10 Community Med LGIS		Osteology Anat		DSL	Anat SGD
Friday 29/8/25	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00		1:30-2:10	2:10 - 3:00
	Community Med		Biochem LGIS	Anat LGIS	Pharma LGIS	LGIS	Osteology Anat		DSL	Pathology LGIS

WEEK- 08/08										
Day/Date	8:00 - 89:50	8:50-9:40	9:40 - 11:20		11:20 - 12:10		12:10-1:00	1:00-1:30	1:30-2:10	2:10 - 3:00
Monday 1/9/25	DSL	Anat LGIS	Weekly Assessment		SGD (Physio/Bio)		Osteology Anat	Lunch/ prayer Break	Biochem LGIS	Anat SGD
Tuesday 2/9/25	Practical (Anat, Bio, Physio)		LGIS	LGIS	SGD (Physio/Bio)		Osteology Anat		DSL	Anat SGD
Wednesday 3/9/25	Practical (Anat, Bio, Physio)		Anat LGIS	Biochem LGIS	LGIS		Osteology Anat		DSL	Anat SGD
Thursday 4/9/25	Practical (Anat, Bio, Physio)		LGIS	LGIS	11:20 -12:10 LGIS		Osteology Anat		DSL	Anat SGD
Friday 5/9/25	8:00-8:50		8:50-9:40	9:40-10:30	10:30-11:20	11:20-12:10	12:10-1:00		1:30-2:10	2:10 - 3:00
	LGIS		Biochem LGIS	Anat LGIS	LGIS	LGIS	Osteology Anat		DSL	DSL

ASSESSMENT TOOLS

Students will be assessed by the following methods

1. **Weekly Assessments**

Weekly assessments will be conducted on Monday.

2. **Assignments/ PBLs:**

Assignments /PBLs will be given monthly.

3. **Block exam:**

At the end of block an exam will be conducted comprising of theory (MCQs & SEQs) and practical/ OSPE content.

4. **Departmental quizzes, presentations & group projects:**

Above mentioned can be the assessment tools for different departments on their will.

UHS BLOCK EXAM MARKS DISTTRIBUTIONS:

YEAR-1						
Subject	**Theory**		**Practical**			**Total**
Block 2 **Modules** (Musculoskeletal & Locomotion-I)	Part I MCQs (90)	90 Marks	Practical /Clinical Examination	11 OSPE 02 OSCE 03 OSVE	Marks 88 10 42	350
	Part II SEQS (10)	50 Marks				
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	Total	175	Total	175		

MBBS 1st Professional

Block-2

Theme	Subject	Written Exam			Oral/Practical/Clinical Exam			
		MCQ (1 mark)	SEQ (5 mark each)	Marks	OSPE (8 marks each observed)	OSCE (5 marks each observed)	OSVE (14 marks each observed)	Marks
Normal Structure	Anatomy applied/clinical	35	04	55	05	-	01	54
Normal Function	Physiology applied/clinical	17	02	27	02	-	01	30
	Biochemistry applied/clinical	13	02	23	02	-	01	30
Disease Burden & Prevention	Community Medicine & Public Health	06	-	06	-	-	-	-
	Behavioral Sciences	04	-	04	-	-	-	-
Pathophysiology & pharmacotherapeutics	Pathology	10	01	15	01	-	-	08
	Pharmacology	05	01	10	01	-	-	08
CFRC	CF-I	-	-	-	-	01	-	05
PERLs	PERLs-I	-	-	-	-	01	-	05
Total		90	10x5=50	140	11 stations x 08 = 88	02 stations x 05 = 10	03 stations x 14=42	140

RECOMMENDED SOURCES

Anatomy

- Snell's Clinical Anatomy 10th ed.
- Langman's Medical Embryology 12th ed
- Medical Histology by Laiq Hussain Siddiqui 8th edition.
- General Anatomy by Laiq Hussain Siddiqui 6th edition.

Biochemistry

- Harpers illustrated Biochemistry (latest edition). Rodwell.V.W MCGrawHill publishers.
- Lippincott illustrated Review (latest edition). Kluwer.W.
- Essentials of Medical Biochemistry vol 1&2 by Mushtaq Ahmed.

Pathology

- Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pathologic basis of disease. WB Saunders.
- Robbins and Cotran Pathological Basis of Disease. Kumar, V., Abbas, A. and Aster, J. Latest Edition
- Richard Mitchall, Vinary Kumar, Abul K. Abbas and Nelson Fausto Robbins and Cotran, Pocket
- Companion to Pathologic basis of diseases, Saunder Harcourt.
- Walter and Israel. General Pathology. Churchill Livingstone.
- Robbins & Kumar, Medical Microbiology and Immunology Levinson.

General Medicine

- Principles and Practice of Medicine by Davidson (latest edition)
- Clinical Medicine by Parveen J Kumar & Michaell Clark
- Oxford Handbook of Medicine
- Macleod's Clinical Examination book
- Medicine and Toxicology by C.K. Parikh
- Hutchison's Clinical Methods by Michael Swash. 21st edition

Pharmacology And Therapeutics

- Katzung and Trevor's Pharmacology: Examination and Board Review- 15th Edition
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 16th Edition-
- Current Medical Diagnosis and Treatment- reference book –Edition-2024
- Basic and Clinical Pharmacology by Bertram G Katzung (case scenarios only) - 15th Edition
- Basic and Clinical Pharmacology by Katzung, McGraw-Hill. 16th Edition.
- Pharmacology by Champe and Harvey, Lippincott Williams & Wilkins 8th Edition.
- Katzung Basic and Clinical pharmacology, Lippincot Illustated reviews.
- Clinical Pathology Interpretations by A. H. Nagi

Behavioural Sciences

- Handbook of Behavioural Sciences by Prof. Mowadat H.Rana, 3rd Edition
- Medical and Psychosocial aspects of chronic illness and disability 6th edition by Donna R.Falvo and Beverely E.Holland,
- Integrating behavioral sciences in healthcare, Asma Humayun,2003, 1st edition

Community medicine

- Parks Textbook of Preventive and Social Medicine. K. Park
- Public Health and Community Medicine by Ilyas Ansari
- MSDS manual of Government of Punjab
- Text book of Community Medicine by Park J E. Latest Edition

Surgery

- Bailey & Love's Short Practice of Surgery (latest edition)
- Browse's Introduction to the Symptoms & Signs of Surgical Disease 4th Edition
- Bailey & Love Short Practice of Surgery, Clinical Surgery pearls by Dayananda Babu RACS for Surgical Audits.

Patent Safety

- Patient Safety Currciulum Guide: Multi Professional Guide

Microbiology

- Levinson's review of Microbiology
- Medical Microbiology and Immunology by Levinson and Jawetz

Pediatrics Medicine

- Nelson Textbook of Pediatrics
- Basis of Pediatrics by Pervez Akbar Khan

Gynecology

- Gynecology by Ten Teachers

Infection Control

- National Guidelines Infection Prevention and control, National Institute of Health Pakistan Biosafety
- Biosafety in Microbiological and Biomedical Laboratories, 6th Edition (CDC, USA)
- WHO Laboratory Biosafety Manual, Fourth Edition, And Associated Monographs
- WHO safe management of wastes from healthcare facilities chapter 7 -8 page 77-99, 105-125)

Family medicine

- Oxford Handbook of General Practice, 5th Edition

Orthopedics

- Apley and Solomon's System of Orthopaedics and Trauma by Ashley Blom (Editor) Rheumatology
- Davidson's Principles and Practice of Medicine

- Clinical Medicine by Parveen J Kumar & Michaell, Clark
- Hutchison's Clinical Methods by Michael Swash

Radiology

- Aids to Radiological Differential Diagnosis by Chapman S. and Nakielny R. 4th edition. Elsevier Science Limited; 2003.

Forensic Medicine

- Knight's Forensic Pathology by Barnard Knight 3rd edition
- G. Principles and Practice of Forensic Medicine by Prof. Nasib R. Awan,2nd edition
- Forensic DNA Typing – 2nd Edition, Author: John M. Butler
- Parikh's Text book of Medical Jurisprudence, Forensic Medicine and Toxicology by C.K. Parikh 6th Ed., CBS Publisher.
- Gun Shot Wounds 2nd edition by V.J.Deimaio
- Knight B. Simpson's Forensic Medicine.
- Knight and Pekka. Principles of Forensic Medicine

Forensic Pathology

- Forensic pathology 2nd edition by V.J.Deimaio CRC press Boca Raton London New York Washington DC

Toxicology

- Principles of clinical toxicology 3rd edition Thomas . Gossel CRC press Taylor and Francis group

Forensic Sciences

- Fundamentals of Forensic Science- 3rd Edition: Author: Max M Houck, Jay A. Siegel
- Text Book of forensic medicine and toxicology Principles and Practice 5th edition by Krishan Vig

Biomedical ethics

- Principles of Biomedical ethics, 8th edition by Tom. L. Beauchamp, James F. Childress.

Evidence Based Medicine

- Databases for the latest articles/manuscripts
- Clinical Practice Guidelines- local and international - (within last 3 years)
- Books (Latest edition-within last 5 years)

Pediatrics

- Nelson's Book of Pediatric 22 edition Illustrated book of Pediatrics, Pervaiz Akbar textbook peads medicine

Islamiyat

- Standard Islamiyat (compulsory) for B.A, BSc, MA, MSc, MBBS by Prof M Sharif Islahi.
- IImi Islamiyat(compulsory) for BA, BSc & equivalent.

MODULE COORDINATORS

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IMPORTANT NOTE

To be able to sit in Annual Exam

85 % attendance and at least 50 % in internal assessment is mandatory

DISCLAIMER

This module guide may be subject to changes, and students should stay updated through official communication channel