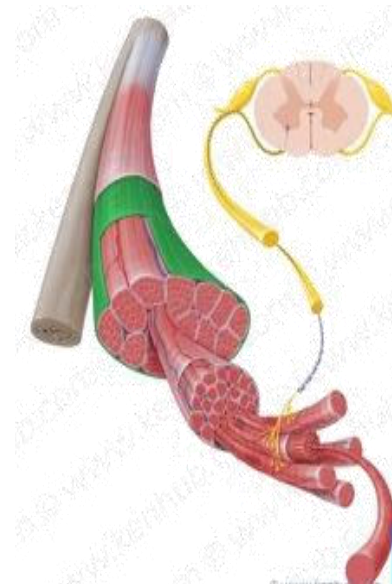




**BAQAI MEDICAL UNIVERSITY  
BAQAI MEDICAL COLLEGE  
First Year M.B.B.S MUSCULOSKELETAL MODULAR GUIDE 2022  
MUSCULOSKELETAL MODULE GUIDE  
FIRST PROFESSIONAL M.B.B.S. 2022-2023**



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**LIST OF ABBREVIATIONS**

<b>BMC</b>	<b>Baqai Medical College</b>
<b>BMU</b>	<b>Baqai Medical University</b>
<b>CBL</b>	<b>Case Based Learning</b>
<b>LGIF</b>	<b>Large Group Interactive Format</b>
<b>LOs</b>	<b>Learning Objectives</b>
<b>MCQs</b>	<b>Multiple Choice Questions</b>
<b>MSK</b>	<b>Musculoskeletal</b>
<b>OSCE</b>	<b>Objective Structured Clinical Examination</b>
<b>OSPE</b>	<b>Objective Structured Practical Examination</b>
<b>PEaRLS</b>	<b>Professionalism, Ethics, Research, Leadership, Communication Skills</b>
<b>PW</b>	<b>Practical Work</b>



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**SDL** Self Directed Learning

**SGD / SGT** Small Group Discussion / Small Group Teaching

**TS** Teaching Strategy



**BAQAI MEDICAL  
UNIVERSITY VISION  
STATEMENT**

To evolve as a nucleus for higher learning with a resolution to be socially accountable, focused on producing accomplished health care professionals for services in all spheres of life at the national and global level.



**BAQAI MEDICAL  
UNIVERSITY MISSION  
STATEMENT**

University is dedicated to the growth of competencies in its potential graduates through dissemination of knowledge for patient care, innovation in scholarship, origination of leadership skills, and use of technological advancements and providing.



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**BAQAI MEDICAL  
COLLEGE MISSION  
STATEMENT**

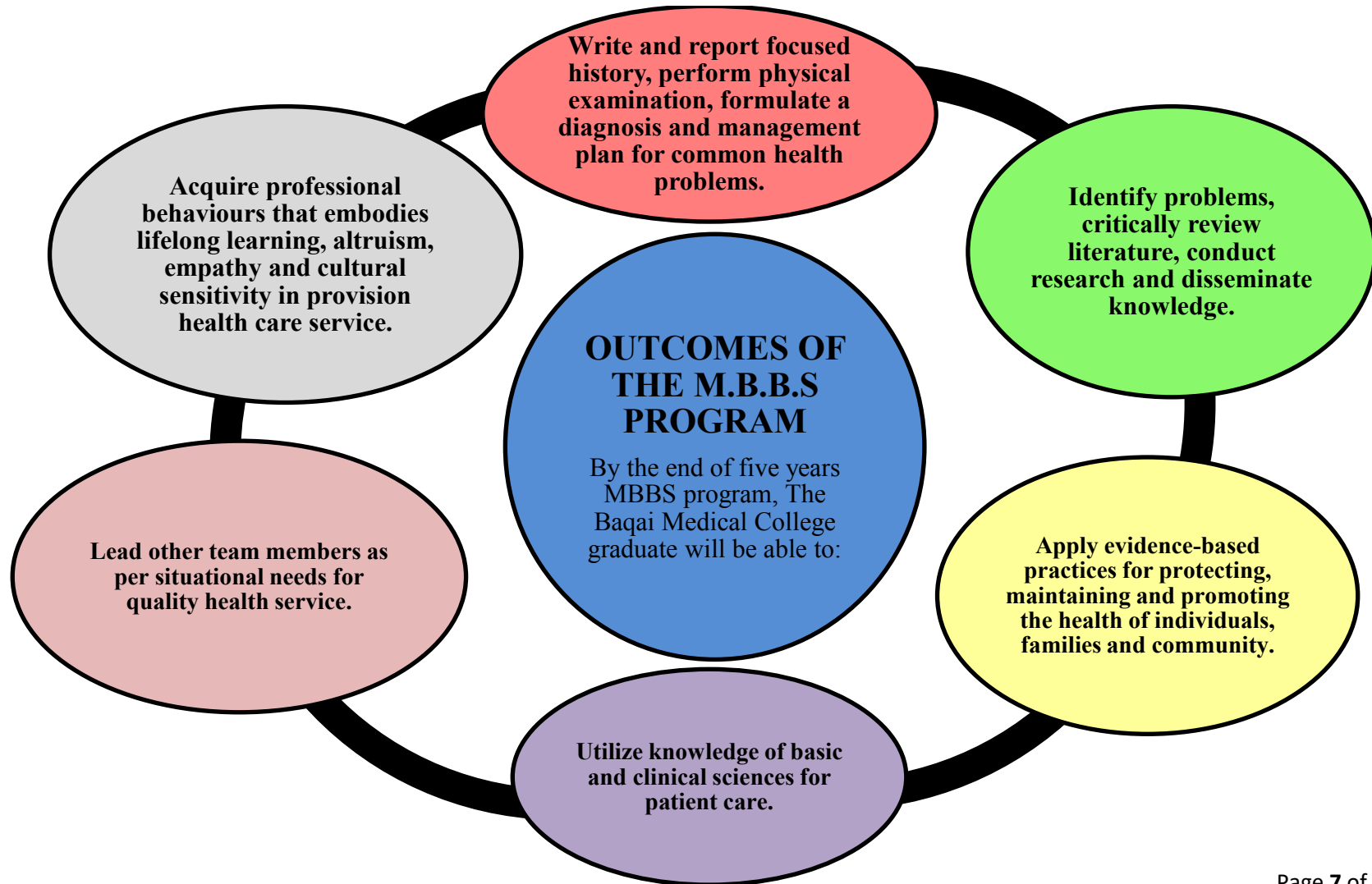
**To produce medical graduates, who are accomplished and responsible individuals and have skills for problem solving, clinical judgment, research & leadership for medical practice at the international level and are also aware of the health problems of the less privileged rural and urban population of Pakistan.**



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**MODULAR PLANNING COMMITTEE**

<b>Prof. Dr. Jameel Ahmed (Medicine)</b>	Chairman Curriculum Committee
<b>Prof. Dr. Syed Inayat Ali (Anatomy)</b>	Chairman Modular Committee
<b>Dr. Syed Adnan Ahmed (Physiology)</b>	Co-Chairman Modular Committee
<b>Dr. Benish Zafar (Biochemistry)</b>	Secretary Modular Committee
<b>Prof. Dr. Nazia Jameel (Community Medicine)</b>	Member
<b>Dr. Maeesa Sajeel (Pathology)</b>	Member
<b>Dr. Hina Masood (Pharmacology)</b>	Member
<b>Dr. Rafay Ahmed Siddiqui (Forensic Medicine)</b>	Member
<b>Dr. Sidra (Surgery)</b>	Member
<b>Dr. Masooda (Medicine)</b>	Member
<b>Department of Medical Education</b>	All Members



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**INTRODUCTION TO MUSCULOSKELETAL (MSK) MODULE GUIDE:**

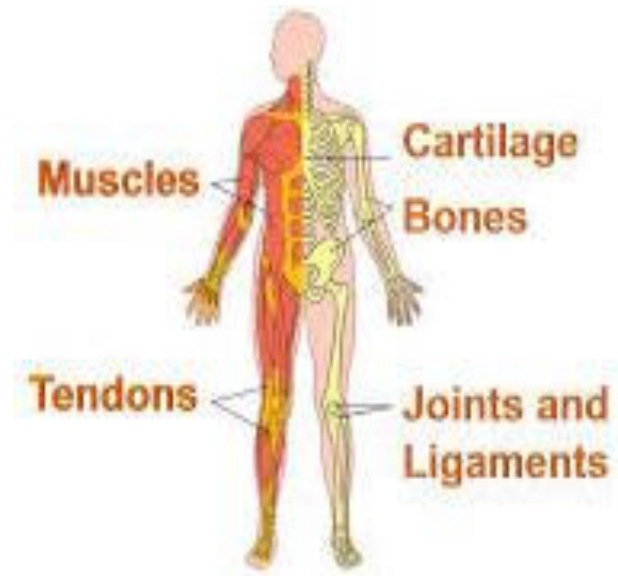
**Year to be taught: First Professional M.B.B.S. 2022**

**Placement of MSK Module: Second**

**Duration: 10 weeks (9+1)**

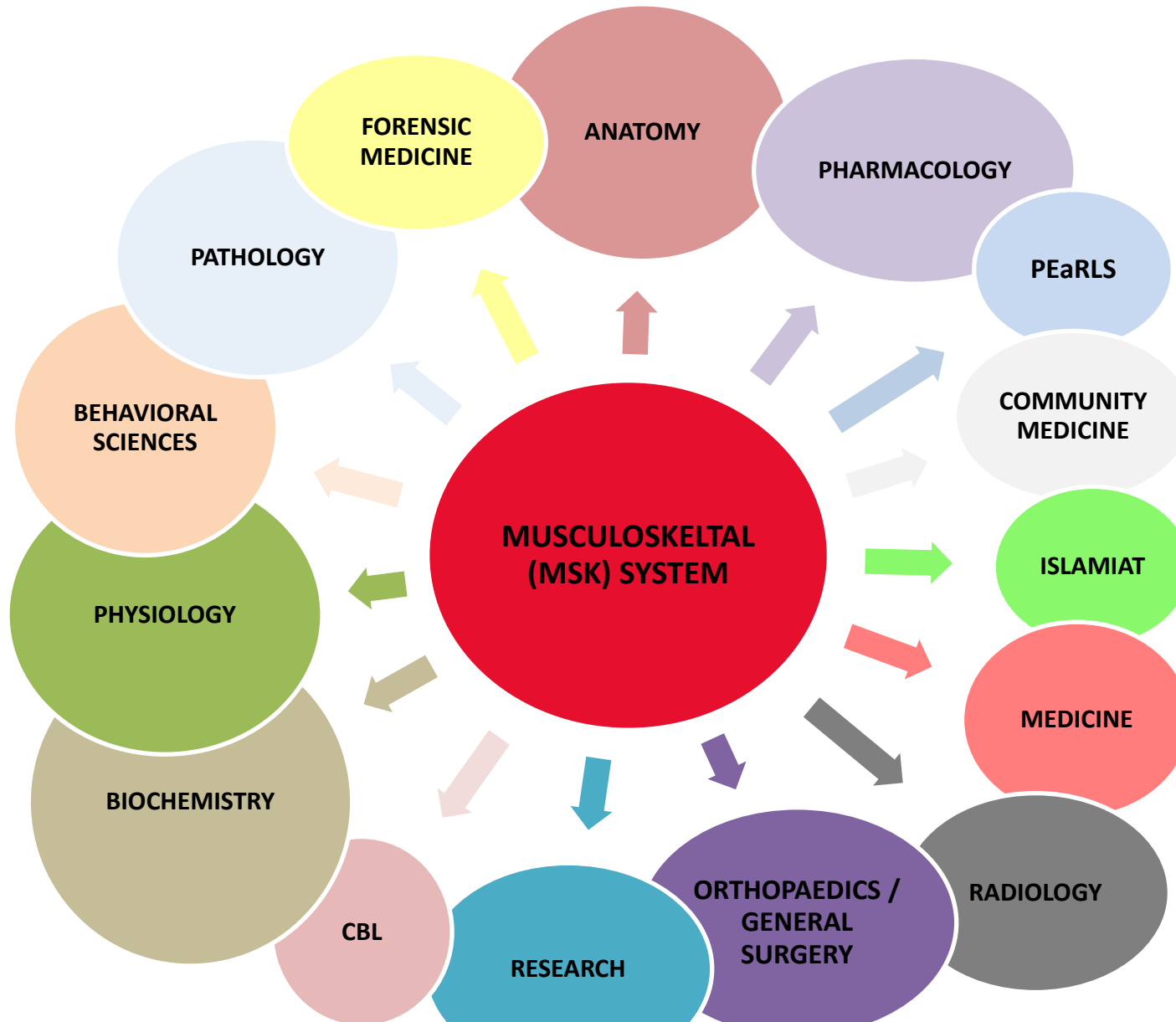
**Date: 29. 03. 2022 – 08.07.2022**

**End of Module Assessment (EOA): 02.08.2022**



The Musculoskeletal (MSK) Module involves the complex interactions of muscles, bones, and connective tissues. Throughout the lifespan it provides support and protection, allows movement, and thus provides a means for us to engage in life. Each component of the MSK varies in its structure and function, but there are similar patterns of change that occur as we age or at some time suffer from a problem such as osteoarthritis or back pain to severely disabling limb trauma or rheumatoid arthritis. Many MSK problems are chronic conditions as well. The most common symptoms are pain and disability, with an impact not only on individuals' quality of life but also, importantly, on people's ability to earn a living and be independent. MSK module is based on the Integrated Curriculum; that is, to link the basic science knowledge to clinical problems which will help the students to make connections among concepts and retain the information for later clinical education. It includes the following subjects that have been taught to the students in this module.

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**LEARNING METHODOLOGIES**

The following teaching / learning methods are used to promote better understanding:

- Interactive Lectures
- E-Learning / Online lectures
- Small Group Discussion
- Case-Based Learning
- Practical
- Hospital / Clinic visits
- Self-Directed Learning
- Library



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**SUBJECT, TOPICS, OBJECTIVES, STRATEGY, LOCATION & ASSESSMENT**

By the end of lecture / module, First Professional M.B.B.S student will be able to;

TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. INTRODUCTION OF UPPER LIMB</b> <ul style="list-style-type: none"> <li>• Define upper limb.</li> <li>• Divide the upper limb into parts.</li> <li>• Recognize the bones of upper limb.</li> <li>• Name the arteries, veins and nerves of upper limb.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Tayyaba	
<b>2. OSTEOLOGY-Clavicle, Scapula, Humerus</b>			Dr. Misha	



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<ul style="list-style-type: none"> <li>• Identify the features of bone like border and surfaces and points used for side determination.</li> <li>• Discuss the attachment of muscles.</li> <li>• Discuss the applied aspects.</li> </ul>				
<p><b>3. PECTORAL REGION</b></p> <ul style="list-style-type: none"> <li>• Name the cutaneous supply of pectoral region.</li> <li>• Discuss the fascia of pectoral region.</li> <li>• Name the muscles of pectoral region.</li> <li>• Describe the attachment of muscles and its neuro vascular supply and action.</li> <li>• List the nerves and blood vessels of pectoral region.</li> </ul>			Dr. Tayyaba	
<p><b>4. MAMMARY GLAND</b></p> <ul style="list-style-type: none"> <li>• Discuss the gross anatomy of mammary gland.</li> <li>• Describe the blood supply and lymphatic drainage of mammary gland.</li> <li>• Discuss the disease of mammary gland.</li> </ul>			Dr. Tayyaba	
<p><b>5. SHOULDER OR PECTORAL GIRDLE- STERNOCLAVICULAR JOINT, ACROMIOCLAVICULAR JOINT</b></p> <ul style="list-style-type: none"> <li>• Describe the structure of joints.</li> <li>• Classify the type of joint.</li> <li>• List the muscle acting on the joint.</li> <li>• Explain movement at joint.</li> </ul>			Dr. Tayyaba	



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<ul style="list-style-type: none"> <li>Discuss clinical aspect of joint.</li> </ul>				
<b>6. AXILLA</b> <ul style="list-style-type: none"> <li>Describe the shape and position of axilla.</li> <li>Name the muscles forming the boundaries of axilla.</li> </ul>			Dr. Tayyaba	
<b>7. AXILLA (CONTENT)</b> <ul style="list-style-type: none"> <li>Name the content of axilla</li> <li>Discuss the formation, course and relation of axillary vessels.</li> <li>Describe the groups of axillary lymph node and their arrangement.</li> </ul>			Dr. Tayyaba	
<b>8. BRACHIAL PLEXUS</b> <ul style="list-style-type: none"> <li>Name the muscles of back.</li> <li>Describe the attachment of muscles of back and their neurovascular supply.</li> <li>Explain the action of back muscle.</li> <li>Describe the clinical correlation of back muscles.</li> </ul>			Dr. Tayyaba	
<b>9. BACK</b> <ul style="list-style-type: none"> <li>Name the muscles of back.</li> <li>Describe the attachment of muscles of back and their neurovascular supply.</li> <li>Explain the action of back muscle.</li> <li>Describe the clinical correlation of back muscles.</li> </ul>			Dr. Tayyaba	
<b>10. SCAPULAR OR SHOULDER REGION</b> <ul style="list-style-type: none"> <li>Name the muscles of shoulder region.</li> </ul>			Dr. Tayyaba	



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<ul style="list-style-type: none"> <li>• Describe the attachment and neurovascular supply of muscles.</li> <li>• Describe the nerve supply of shoulder muscles.</li> <li>• Define rotator cuff.</li> <li>• Discuss the anatomical spaces of scapular region.</li> <li>• Discuss the applied aspect of scapular region.</li> </ul>				
<p><b>11. SHOULDER JOINT</b></p> <ul style="list-style-type: none"> <li>• Classify the type of shoulder joint</li> <li>• Describe the structure of shoulder joint.</li> <li>• List the muscles acting on shoulder joint.</li> <li>• Describe the movement of shoulder joint.</li> <li>• Discuss the clinical aspect of shoulder joint.</li> </ul>			Dr. Tayyaba	
<p><b>12. ARM (ANTERIOR COMPARTMENT)</b></p> <ul style="list-style-type: none"> <li>• Identify the compartments of arm and formation of these compartment</li> <li>• Name the muscles of anterior compartment of arm.</li> <li>• Discuss the attachment and their neurovascular supply and action.</li> <li>• Describe the course and applied aspects of musculocutaneous nerve.</li> <li>• Describe the course and branches of brachial artery.</li> </ul>			Dr. Tayyaba	
<p><b>13. ARM (POSTERIOR COMPARTMENT)</b></p> <ul style="list-style-type: none"> <li>• List the muscle of posterior compartment of arm.</li> </ul>			Dr. Misha	



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<ul style="list-style-type: none"> <li>• Describe their attachment, neurovascular supply and action.</li> <li>• Discuss the course of radial nerve in arm.</li> <li>• Describe the vessels present in compartment.</li> <li>• Discuss clinical correlation of compartment.</li> </ul>				
<p><b>14. OSTEOLOGY OF RADIUS</b></p> <ul style="list-style-type: none"> <li>• Identify the bone of forearm.</li> <li>• Determine the side of bone.</li> <li>• Describe the borders, surfaces, ends and features of bone.</li> <li>• Describe the muscle attachment.</li> <li>• Discuss clinical aspect of bone.</li> </ul>			Dr. Misha	
<p><b>15. OSTEOLOGY OF ULNA</b></p> <ul style="list-style-type: none"> <li>• Identify the bone of forearm.</li> <li>• Determine the side of bone.</li> <li>• Describe the borders, surfaces, ends and features of bone.</li> <li>• Describe the muscle attachment.</li> <li>• Discuss clinical aspects of bone.</li> </ul>			Dr. Misha	
<p><b>16. ELBOW JOINT</b></p> <ul style="list-style-type: none"> <li>• Classify the type of joint.</li> <li>• Describe the structure of joint.</li> <li>• Describe the muscles acting on joint.</li> <li>• Discuss the neurovascular supply of joint.</li> <li>• Describe the carrying angle and applied aspect.</li> </ul>			Dr. Fatima	
<p><b>17. CUBITAL FOSSA</b></p> <ul style="list-style-type: none"> <li>• Identify the location of cubital fossa.</li> <li>• Describe the boundaries and content of cubital fossa.</li> <li>• Describe the anastomosis around elbow joint.</li> </ul>			Dr. Tayyaba	





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<ul style="list-style-type: none"> <li>• Discuss the clinical importance of cubital fossa.</li> </ul>				
<b>18. ANTERIOR COMPARTMENT OF FOREARM</b> <ul style="list-style-type: none"> <li>• Enumerate the compartment of forearm and formation of these compartments.</li> <li>• Explain the subdivision of compartment of forearm.</li> <li>• Discuss the muscles and its neurovascular supply of anterior compartment of forearm.</li> <li>• Describe muscle attachment and action.</li> <li>• Discuss the vessels and nerves of anterior compartment of forearm.</li> <li>• Describe the attachment and relation of flexor retinaculum.</li> <li>• Discuss the clinical correlation of the compartment.</li> </ul>			Dr. Fatima	
<b>19. POSTERIOR COMPARTMENT OF FOREARM</b> <ul style="list-style-type: none"> <li>• Explain the division of posterior compartment of forearm.</li> <li>• List the muscles of posterior compartment and their neurovascular supply.</li> <li>• Describe the attachment and action of muscles of posterior compartment.</li> <li>• Describe the vessels and branches of the posterior compartment.</li> <li>• Describe radial nerve and its branches.</li> <li>• Describe the attachment and relation of extensor retinaculum.</li> <li>• Discuss clinical correlation of the compartment.</li> </ul>			Dr. Fatima	
<b>20. OSTEOLOGY OF HAND</b> <ul style="list-style-type: none"> <li>• Name the bones of hand.</li> <li>• Describe arrangement of carpal bones.</li> </ul>			Dr. Misha	
<b>21. PALM OF HAND</b> <ul style="list-style-type: none"> <li>• Enumerate the intrinsic muscle of hand.</li> </ul>			Dr. Tayyaba	



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<ul style="list-style-type: none"> <li>• Describe the attachment and action of the muscles of hand.</li> <li>• Discuss the nerve supply of hand muscle.</li> </ul>				
<b>22. SPACES OF HAND</b> <ul style="list-style-type: none"> <li>• Identify the different spaces of hand on both dorsal and palmar aspect.</li> <li>• Describe the spaces of hand.</li> <li>• Describe the clinical importance of these spaces.</li> </ul>			Dr. Misha	
<b>23. BLOOD VESSELS AND NERVES OF HAND</b> <ul style="list-style-type: none"> <li>• Enumerate the arteries of the hand.</li> <li>• Describe the course and branches of ulnar and radial arteries.</li> <li>• Discuss the formation of superficial and deep palmar arch veins and their tributaries.</li> <li>• Describe the nerves and their applied aspect.</li> </ul>			Dr. Fatima	
<b>24. SUPERIOR AND INFERIOR RADIOULNAR JOINTS</b> <ul style="list-style-type: none"> <li>• Classify the joints.</li> <li>• Describe the radioulnar joint and their neurovascular supply.</li> <li>• Discuss the movement of these joint.</li> <li>• Explain clinical correlation of joint.</li> </ul>			Dr. Tayyaba	
<b>25. WRIST JOINT AND SMALL JOINTS OF HAND</b> <ul style="list-style-type: none"> <li>• Describe the wrist joint and their neurovascular supply.</li> <li>• Discuss the movement occurring at wrist joint.</li> <li>• Classify the intercarpal, metacarpal. Metacarpophalangeal and interphalangeal joints.</li> <li>• Explain clinical aspect of joints.</li> </ul>			Dr. Tayyaba	
<b>26. CUTANEOUS SUPPLY OF UPPER LIMB</b> <ul style="list-style-type: none"> <li>• Describe the cutaneous supply and dermatomes of upper limb.</li> </ul>			Dr. Tayyaba	



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<b>27. SUPERFICIAL VEINS OF UPPER LIMB</b> <ul style="list-style-type: none"> <li>Describe the course and applied aspect of major superficial veins of upper limb.</li> </ul>			Dr. Tayyaba	
<b>28. LYMPHATIC SUPPLY OF UPPER LIMB</b> <ul style="list-style-type: none"> <li>Describe the nodes and area of drainage.</li> <li>Define superficial and deep lymphatic vessels.</li> <li>Explain their clinical aspect.</li> </ul>			Dr. Tayyaba	
<b>LOWER LIMB</b>				
<b>1. INTRODUCTION TO LOWER LIMB</b> <ul style="list-style-type: none"> <li>Understand the different parts of the lower limb.</li> <li>Identify the fascial compartment of each part of the lower limb.</li> <li>Recognize the bones of each part of lower limb.</li> </ul>				
<b>2. CUTANEOUS SUPPLY AND SUPERFICIAL VEINS AND LYMPHATIC DRAINAGE OF LOWER LIMB</b> <ul style="list-style-type: none"> <li>Name the cutaneous nerve supply of each compartment of lower limb.</li> <li>Describe the superficial veins and lymphatic drainage of lower limb with clinical aspect.</li> </ul>				
<b>3. OSTEOLOGY OF HIP BONE</b> <ul style="list-style-type: none"> <li>Identify different parts of hip bone.</li> <li>Describe its bony feature and muscle attachment.</li> <li>Describe clinical anatomy of hip bone.</li> </ul>				
<b>4. OSTEOLOGY OF FEMUR</b> <ul style="list-style-type: none"> <li>Identify different parts of femur.</li> <li>Describe its bony feature and muscle attachment.</li> <li>Describe clinical anatomy of femur.</li> </ul>				



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<ul style="list-style-type: none"> <li>• <b>5. GLUTEAL REGION</b></li> <li>Identify the bone and muscles of gluteal region.</li> <li>• Describe the action of muscles of gluteal region.</li> <li>• Describe the nerve and blood supply of gluteal region.</li> <li>• Describe the greater and lesser sciatic foramen and their contents.</li> </ul>				
<ul style="list-style-type: none"> <li><b>6. HIP JOINT</b></li> <li>• Identify the bones of hip joint.</li> <li>• Describe the structure of hip joint.</li> <li>• Classify the type of hip joint.</li> <li>• List the ligaments of hip joint.</li> <li>• Explain the movement of joint.</li> <li>• Name the blood and nerve supply of joint.</li> <li>• Discuss clinical aspect of joint.</li> </ul>				
<ul style="list-style-type: none"> <li><b>7. THIGH ANTERIOR COMPARTMENT</b></li> <li>• Enlist the muscles of anterior compartment of thigh.</li> <li>• Describe course and branches of femoral artery.</li> <li>• Describe course and branches of femoral nerve.</li> <li>• Describe the femoral triangle.</li> <li>• Explain clinical significance of femoral canal.</li> </ul>				
<ul style="list-style-type: none"> <li><b>8. THIGH MEDIAL COMPARTMENT</b></li> <li>• Enlist the muscles of medial compartment of thigh.</li> <li>• Discuss the nerve supply and action of muscles.</li> <li>• Describe the course and branches of obturator nerve.</li> <li>• Discuss the blood supply of of compartment.</li> </ul>				
<ul style="list-style-type: none"> <li><b>9. THIGH POSTERIOR COMPARTMENT</b></li> <li>• Enlist the hamstring muscles.</li> </ul>				



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<ul style="list-style-type: none"> <li>• Describe attachment, nerve supply and action of muscles.</li> <li>• Discuss the origin, course, branches and applied aspects of sciatic nerve.</li> <li>• Name the arteries of posterior compartment.</li> </ul>				
<p><b>10. OSTEOLOGY LEG TIBIA FIBULA</b></p> <ul style="list-style-type: none"> <li>• Identify the bone of leg.</li> <li>• Describe bony features and muscle attachment on tibia and fibula.</li> <li>• Discuss applied aspect of tibia and fibula.</li> </ul>				
<p><b>11. KNEE JOINT</b></p> <ul style="list-style-type: none"> <li>• Describe the structure and type of knee joint.</li> <li>• Enlist the intra and extra capsular ligaments of knee joint.</li> <li>• Explain the mechanism of locked and unlocked knee.</li> <li>• Describe nerve and blood supply of knee joint.</li> <li>• Describe injuries related to knee joint.</li> </ul>				
<p><b>12. POPLITEAL FOSSA</b></p> <ul style="list-style-type: none"> <li>• Identify the location of popliteal fossa.</li> <li>• Describe its boundaries and content.</li> </ul>				
<p><b>13. LEG ANTERIOR COMPARTMENT</b></p> <ul style="list-style-type: none"> <li>• Enlist the muscles of anterior compartment.</li> <li>• Describe their attachment, nerve supply and action.</li> <li>• Describe arteries and nerves of this compartment.</li> <li>• Discuss the applied aspect.</li> </ul>				
<p><b>14. LEG POSTERIOR COMPARTMENT</b></p> <ul style="list-style-type: none"> <li>• Enumerate the muscles of posterior compartment with attachment, action.</li> <li>• Describe nerve supply and blood supply of lateral compartment.</li> </ul>				



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<ul style="list-style-type: none"> <li>• Discuss applied aspect.</li> </ul>				
<b>15. LEG LATERAL COMPARTMENT</b> <ul style="list-style-type: none"> <li>• Enlist the muscle of posterior compartment of leg with attachment and action.</li> <li>• Describe nerve supply of posterior compartment.</li> <li>• Describe blood supply of posterior compartment.</li> <li>• Describe the deformities related to tibial nerve injury.</li> </ul>				
<b>16. OSTEOLOGY OF FOOT</b> <ul style="list-style-type: none"> <li>• Identify the bones of foot tarsal, metatarsal and phalanges.</li> <li>• Understand the arrangement of tarsal bones.</li> <li>• Describe the bony arches of foot.</li> <li>• Discuss the fractures and clinical aspect of bones of foot.</li> </ul>				
<b>17. RETINACULUM</b> <ul style="list-style-type: none"> <li>• Enumerate the retinaculum of foot.</li> <li>• Describe their attachment and location.</li> <li>• Enlist the structures pass superficial and deep to the retinaculum.</li> </ul>				
<b>18. ANKLE JOINT</b> <ul style="list-style-type: none"> <li>• Describe the structure of ankle joint.</li> <li>• Describe its blood and nerve supply.</li> <li>• Demonstrate movement of ankle joint.</li> <li>• Discuss injuries related to ankle joint.</li> </ul>				
<b>19. SUPERIOR AND INFERIOR RADIOULNAR JOINT AND SMALL JOINTS OF FOOT</b> <ul style="list-style-type: none"> <li>• Discuss the articulation and type of joints.</li> <li>• Describe the muscles and joints responsible for inversion and eversion.</li> </ul>				



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<b>20. DORSUM OF FOOT</b> <ul style="list-style-type: none"> <li>• Enlist the long extensor tendons of dorsum of foot.</li> <li>• Describe the course of dorsalis pedis artery.</li> <li>• Describe the nerve supply and superficial venous arches of dorsum of foot.</li> </ul>				
<b>21. SOLE OF FOOT</b> <ul style="list-style-type: none"> <li>• Describe contents of each layer of sole of foot.</li> <li>• Describe plantar fascia and its applied aspects.</li> <li>• Describe arteries of sole of foot.</li> <li>• Describe the nerve supply of sole of foot.</li> <li>• Discuss applied aspects of sole of foot.</li> </ul>				
<b>EMBRYOLOGY</b>				
<b>1. DEVELOPMENT OF MESODERM, PARAXIAL MESODERM AND SCLEROMYOTOME AND FORMATION OF CARTILAGES</b> <ul style="list-style-type: none"> <li>• Define the process of gastrulation.</li> <li>• Describe the development of mesoderm.</li> <li>• Describe the process of somitogenesis.</li> <li>• Describe the formation of cartilage.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Rashid	
<b>2. DEVELOPMENT OF BONE , CARTILAGE AND JOINTS</b> <ul style="list-style-type: none"> <li>• Discuss histogenesis of Bone.</li> <li>• Describe the Intramembranous Ossification.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Rashid	



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<ul style="list-style-type: none"> <li>• Describe the Endochondral Ossification.</li> <li>• Describe the Ossification of limb bones.</li> <li>• Describe the development of joints.</li> <li>• Describe the development of cartilage.</li> </ul>				
<b>3. DEVELOPMENT OF LIMBS</b> <ul style="list-style-type: none"> <li>• Describe the early stages of limb development.</li> <li>• Discuss the development of upper and lower limb buds.</li> <li>• Describe the final stages of limb development.</li> <li>• Describe and explain the anomalies of the limbs.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Rashid	
<b>4. DEVELOPMENT OF MUSCLES</b> <ul style="list-style-type: none"> <li>• Describe the development of skeletal muscle.</li> <li>• Discuss the development of Myotomes and derivatives of epaxial divisions of myotomes and derivatives of hypaxial divisions of myotomes.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Rashid	
<b>5. HISTOLOGY &amp; DEVELOPMENT OF MAMMARY GLANDS</b> <ul style="list-style-type: none"> <li>• Describe breast development in puberty &amp; in adults.</li> <li>• Describe histology of mammary gland in non-lactating, lactating &amp; during pregnancy.</li> <li>• Identify and describe the nipple and areola.</li> <li>• Describe the histologic changes in breasts during pregnancy &amp; lactation.</li> <li>• Describe the post lactational regression of the breasts.</li> <li>• Discuss about cancer of the breast.</li> <li>• Discuss the medical application.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Rashid	
<b>HISTOLOGY</b>				





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<p><b>1. CLASSIFICATION &amp; HISTOLOGY OF CARTILAGE</b></p> <ul style="list-style-type: none"> <li>• The General properties of cartilage.</li> <li>• Different types of cartilage.</li> <li>• Properties and locations Hyaline, Elastic and Fibrocartilage.</li> <li>• Growth of cartilage.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Inayat	
<p><b>2. HISTOLOGY OF CARTILAGE</b></p> <ul style="list-style-type: none"> <li>• Identify types of cartilages at the light and electron microscope levels, including distinctive features of each.</li> <li>• Describe the structural basis.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Inayat	
<p><b>3. CLASSIFICATION &amp; HISTOLOGY OF BONE</b></p> <ul style="list-style-type: none"> <li>• Recognize bone and its functions and composition.</li> <li>• Differentiate between woven bone and lamellar bone.</li> <li>• Differentiate between compact bone and spongy bone.</li> <li>• Discuss the applied aspect of bone.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Inayat	
<p><b>4. HISTOLOGY OF BONE</b></p> <ul style="list-style-type: none"> <li>• Identify three types of bone at the light and electron microscope levels, including distinctive features of each.</li> <li>• Describe the structural basis.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Inayat	
<p><b>5. HISTOLOGY OF MUSCLES</b></p> <ul style="list-style-type: none"> <li>• Identify three types of muscle at the light and electron microscope levels, including distinctive features of each muscle fiber.</li> <li>• Describe the structural basis of muscle striations.</li> <li>• Recognize the structural elements that produce muscle contraction and brings the movement of a body part.</li> <li>• Recognize the function and organization of the connective tissue in muscle.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Prof. Dr. Inayat	

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**BIOCHEMISTRY**



<b>TOPIC AND OBJECTIVES</b>	<b>T.S</b>	<b>LOCATION</b>	<b>FACILITATOR</b>	<b>ASSESSMENT</b>
<b>1. INTRODUCTION &amp; BIOMEDICAL IMPORTANCE OF VITAMINS</b> <ul style="list-style-type: none"><li>• Define Vitamins.</li><li>• Classify Vitamins into 2 groups &amp; Discuss the sub types of water soluble Vitamins.</li><li>• Discuss the biomedical importance of Vitamins in daily life.</li></ul>				
<b>2. VITAMIN D</b> <ul style="list-style-type: none"><li>• Distinguish between different forms of vitamin D.</li><li>• Describe the synthesis of vitamin D in body.</li><li>• Relate the function of vitamin D with homeostasis of Ca and PO<sub>4</sub> ion.</li><li>• Discuss the clinical features of Vitamin D deficiency.</li></ul>				



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<p><b>3. METABOLISM OF CALCIUM</b></p> <ul style="list-style-type: none"> <li>• Classify minerals into 5 major groups</li> <li>• Describe the metabolism of Ca and P.</li> <li>• Outline the dietary sources and daily requirements of calcium</li> <li>• State the normal blood levels of Calcium</li> <li>• List the functions of Calcium</li> <li>• Outline the clinical conditions associated with their excess and deficiencies in diet</li> </ul>				
<p><b>4. METABOLISM OF PHOSPHOROUS AND FLOURIDE</b></p> <ul style="list-style-type: none"> <li>• Describe the metabolism of phosphorus</li> <li>• Define ‘trace elements’</li> <li>• Outline the body content and daily requirements of trace elements</li> <li>• List the functions of Mg &amp; F</li> <li>• Discuss the clinical condition sassociated with their excess and deficiencies in diet</li> </ul>				
<p><b>5. VITAMIN C</b></p> <ul style="list-style-type: none"> <li>• Outline the dietary sources of Vitamin C</li> <li>• List the functions of Vitamin C</li> <li>• Relate the function of Vitamin C with collagen synthesis</li> </ul>				



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<ul style="list-style-type: none"> <li>• Outline the clinical manifestations of Vitamin C deficiency</li> </ul>				
<p><b>6. INTRODUCTION OF AMINO ACIDS &amp; BIOMEDICAL IMPORTANCE OF AMINO ACIDS</b></p> <ul style="list-style-type: none"> <li>• Define amino acids and protein</li> <li>• Discuss the biological functions of protein</li> <li>• Describe the structure of amino acids</li> </ul>				
<p><b>7. CLASSIFICATION OF AMINO ACIDS-I</b></p> <ul style="list-style-type: none"> <li>• Classify amino acids</li> <li>• Discuss the standard and non-standard amino acids and their functions</li> </ul>				
<p><b>8. CLASSIFICATION OF AMINO ACIDS-II</b></p> <ul style="list-style-type: none"> <li>• Discuss the nutritional classification of amino acids</li> <li>• Discuss the biomedical importance of amino acids</li> </ul>				
<p><b>9. INTRODUCTION OF PROTEINS &amp; BIOMEDICAL IMPORTANCE</b></p> <ul style="list-style-type: none"> <li>• Define protein</li> <li>• Discuss the biomedical importance of proteins in detail</li> </ul>				



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<ul style="list-style-type: none"><li>• Discuss the physical and chemical properties of proteins</li></ul>				
<b>10. CLASSIFICATION OF PROTEIN-I</b> <ul style="list-style-type: none"><li>• Classify proteins based on size, shape and functions</li></ul>				
<b>11. CLASSIFICATION OF PROTEIN-II (PHYSICO CHEMICAL)</b> <ul style="list-style-type: none"><li>• Classify proteins on basis of solubility and physical properties: simple, conjugated and derived proteins</li></ul>				
<b>12. CLASSIFICATION OF PROTEIN-III</b> <ul style="list-style-type: none"><li>• Discuss the proteins on physicochemical basis</li></ul>				
<b>13. PEPTIDES AND ITS IMPORTANCE</b> <ul style="list-style-type: none"><li>• Describe the peptide linkage in a protein molecule</li><li>• Define peptides</li><li>• List biologically important peptides</li></ul>				
<b>14. STRUCTURAL ORGANIZATION OF PROTEIN-I</b> <ul style="list-style-type: none"><li>• Discuss the different structural configuration of proteins in detail</li><li>• Discuss the primary structure of protein</li></ul>				



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<b>15. STRUCTURAL ORGANIZATION OF PROTEIN-II</b> <ul style="list-style-type: none"><li>• Describe all the types of secondary structure as: <math>\alpha</math>-helix, <math>\beta</math>-pleated sheet structure, triple helix and random coil.</li><li>• Identify the amino acids involved in maintaining the different types of secondary structure.</li><li>• List the examples of proteins in each type</li></ul>				
<b>16. STRUCTURAL ORGANIZATION OF PROTEIN-III</b> <ul style="list-style-type: none"><li>• Describe the tertiary structure of proteins</li><li>• Identify the bonds involved in tertiary structure formation</li><li>• Discuss briefly the quaternary structure</li><li>• Define denaturation</li><li>• List the various factors that cause denaturation</li></ul>				
<b>17. HETEROPOLYSACCHARIDES-I</b> <ul style="list-style-type: none"><li>• Define and classify heteropolysaccharides</li><li>• Describe the biological role of heteropolysaccharides</li></ul>				
<b>18. HETEROPOLYSACCHARIDES-II</b> <ul style="list-style-type: none"><li>• Discuss the biomedical importance of mucopolysaccharides</li></ul>				



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<p><b>19. NINHYDRIN TEST &amp; (DETECTION OF AMINO ACID PRACTICAL)</b></p> <ul style="list-style-type: none"><li>• Describe an <math>\alpha</math>-amino acid.</li><li>• Detect the presence of an <math>\alpha</math>-amino acid by ninhydrin test.</li><li>• Describe the principle of the reaction taking place in the experiment.</li><li>• Record the observations of the sample and control in the experiment.</li><li>• Detect the presence of aromatic</li></ul>	Practical			
<p><b>20. XANTHOPROTEIC TEST (DETECTION OF AMINO ACID)</b></p> <ul style="list-style-type: none"><li>• Detect the presence of aromatic amino acids by xanthoproteic test.</li><li>• Describe the principle of the reaction taking place in the experiment.</li><li>• Record the observations of the sample and control in the experiment.</li></ul>	Practical			
<p><b>21. MILLONNASSE'S TEST (DETECTION OF AMINO ACID )</b></p> <ul style="list-style-type: none"><li>• Demonstrate the presence of tyrosine in the given sample by millonnasse's test</li></ul>	Practical			



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<ul style="list-style-type: none"> <li>• Describe the principle of the reaction taking place in the experiment.</li> <li>• Record the observations of the sample and control in the experiment.</li> <li>• Demonstrate the presence of ?</li> </ul>				
<p><b>22. HOPKIN'S COLE TEST (DETECTION OF AMINO ACID)</b></p> <ul style="list-style-type: none"> <li>• Tryptophan in the given sample by hopkincole test</li> <li>• Describe the principle of the reaction taking place in the experiment.</li> <li>• Record the observations of the sample and control in the experiment.</li> </ul>	Practical			
<p><b>23. LEAD SULPHIDE TEST (DETECTION OF AMINO ACID )</b></p> <ul style="list-style-type: none"> <li>• Demonstrate the presence of sulphur containing amino acid (cysteine or cystine) in the given sample by lead sulphide test</li> <li>• Describe the principle of the reaction taking place in the experiment.</li> <li>• Record the observations of the sample and control in the experiment.</li> </ul>	Practical			
<p><b>24. ESTIMATION OF ASCORBIC ACID</b> <b>LOs ??????</b></p>	Practical			

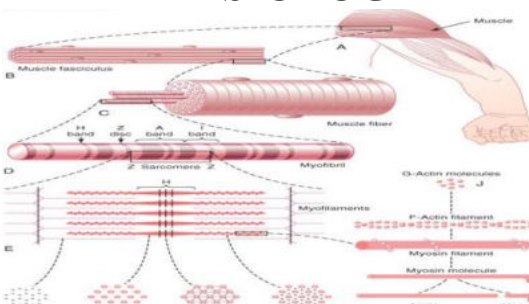




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<b>PHYSIOLOGY</b>				
				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. THE BONE PHYSIOLOGY</b> <ul style="list-style-type: none"> <li>• Discuss the major functions of bones.</li> <li>• Distinguish between long bones and short bones.</li> <li>• Understand the hormonal regulation of osteoblasts and osteoclasts in skeletal maintenance and in bone growth.</li> <li>• Know the role of parathyroid and calcitonin in bone physiology.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Asma Bilqeis	SEQs / BCQs
<b>2. PHYSIOLOGY OF BONE GROWTH AND OSTEOPOROSIS</b> <ul style="list-style-type: none"> <li>• Describe major types of bone cells.</li> <li>• List the Functions of bone cells.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	SEQs / BCQs



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<ul style="list-style-type: none"> <li>• List the steps of ossification.</li> <li>• Explain the growth activity at the epiphyseal plate.</li> <li>• Compare and contrast the process of modeling and remodeling.</li> <li>• Describe the role of calcium in bone growth.</li> <li>• Define osteoporosis.</li> <li>• List the risk factor associated with the development of osteoporosis.</li> </ul>				
<p><b>3. ROLE OF PARATHYROID, CALCITONIN HORMONE</b></p> <ul style="list-style-type: none"> <li>• Demonstrate normal Ca levels in body.</li> <li>• Enlist hormones involve in Ca metabolism.</li> <li>• Define physiological Anatomy of parathyroid and hormones released from it.</li> <li>• Describe the role of parathyroid Hormone in Ca homeostasis.</li> <li>• Explain the role of Calcitonin in hypercalcemia.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Sobia Khan	SEQs / BCQs
<p><b>4. ROLE OF VIT D3</b></p> <ul style="list-style-type: none"> <li>• Identify the sources of Vitamin D.</li> <li>• Define various physiological roles of Vitamin D<sub>3</sub> on different parts of body.</li> <li>• Explain the feedback mechanism for the regulation of Vitamin D<sub>3</sub>.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Mrs. Nida Lathiya	BCQs
<p><b>5. INTRODUCTION &amp; TYPES OF MUSCLES</b></p> <ul style="list-style-type: none"> <li>• Define Muscles.</li> <li>• List Types of Muscles.</li> <li>• Describe Physiologic Arrangement of each Muscle Type.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs



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<ul style="list-style-type: none"> <li>• Mention Comparative Feature of each Muscle Type.</li> </ul>				
<b>6. SKELETAL MUSCLE –I</b> <ul style="list-style-type: none"> <li>• List the characteristics of skeletal muscle fibers</li> <li>• Identify the physiologic anatomy of skeletal muscle</li> <li>• Define sarcomere</li> <li>• Explain the physiologic characteristics of Myosin and Actin molecules</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Mrs. Nida Lathiya	BCQs
<b>7. SKELETAL MUSCLE –II</b> <ul style="list-style-type: none"> <li>• Describe the General mechanism of muscle contraction</li> <li>• Describe the sequential steps involved in initiation and execution of muscle contraction</li> <li>• Describe the molecular mechanism involved in muscle contraction</li> <li>• Mention the molecular characteristics of contractile filament.</li> <li>• List the sources of energy for muscle contraction</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	BCQs
<b>8. PROPERTIES OF SKELETAL MUSCLE</b> <ul style="list-style-type: none"> <li>• List the properties of skeletal muscle fibers</li> <li>• Define each property of skeletal muscle fibers</li> <li>• Explain the mechanism of each property of skeletal muscle fibers</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Mrs. Nida Lathiya	BCQs
<b>9. CARDIAC &amp;SMOOTH MUSCLE PHYSIOLOGY</b> <ul style="list-style-type: none"> <li>• Differentiate Cardiac from Skeletal Muscles.</li> <li>• Categorize the Cardiac Muscles.</li> <li>• Explain the Properties “Syncytium”, “Plateau” &amp; “Rhythmicity”.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs



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<ul style="list-style-type: none"> <li>List the Distinguishing Points &amp; Types of Smooth Muscles.</li> <li>Mention the Properties of Smooth Muscle Cells</li> </ul>				
<b>10. RESTING MEMBRANE POTENTIAL</b> <ul style="list-style-type: none"> <li>Define the Resting Membrane Potential (RMP) and its value.</li> <li>Enlist the electrolytes, responsible for generating Resting Membrane Potential.</li> <li>Define the role of <math>K^+</math> &amp; <math>Na^+</math> diffusion potential in generating Resting Membrane Potential.</li> <li>Define the role of <math>Na^+ - K^+</math> electrogenic pump in generating Resting Membrane Potential.</li> <li>Define the Nernst Potential and Nernst equation.</li> <li>Define the Goldman equation.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saleemullah Abro	SEQs / BCQs
<b>11. ACTION POTENTIAL (PHASES, GENERATION &amp; PROPAGATION)</b> <ul style="list-style-type: none"> <li>Categorize potential across the membrane.</li> <li>Define action potential.</li> <li>List the phases of action potential.</li> <li>Differentiate between graded potential &amp; the action potential.</li> <li>Define the terms polarized, depolarized, repolarized &amp; the hyperpolarized.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Ruqaya	BCQs
<b>12. ACTION POTENTIAL OF SKELETAL MUSCLE</b> <ul style="list-style-type: none"> <li>Define Action potential.</li> <li>Define terms polarized, depolarized, repolarized &amp; the hyperpolarized.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	BCQs / SEQ / OSPE / Assignment



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<ul style="list-style-type: none"> <li>List the stages of action potential.</li> <li>Explain the conduction of action potential in the skeletal muscle fiber.</li> </ul>				
<b>13. STRUCTURE OF NEUROMUSCULAR JUNCTION (NMJ)- I</b> <ul style="list-style-type: none"> <li>Define the term neuromuscular junction.</li> <li>Define the terms motor neurons and motor units</li> <li>Describe the motor end plate with suitable diagram.</li> <li>Define the terms synaptic gutter or synaptic trough, synaptic space or synaptic cleft and subneural clefts.</li> <li>Define the function of mitochondria in presynaptic nerve fibers.</li> <li>Discuss the parts of neuromuscular junction.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saleemullah Abro	SEQ
<b>14. POWER LAB-I</b> <ul style="list-style-type: none"> <li>Generate their own IDs on Power Lab.</li> <li>Identify wires and electrodes in Power lab used for EMG.</li> <li>Demonstrate the placements of wires and electrodes on biceps and triceps for EMG</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Ruqaya	BCQs / OSPE
<b>15. STRUCTURE OF NEUROMUSCULAR JUNCTION (NMJ)- II</b> <ul style="list-style-type: none"> <li>Recall the components of neuromuscular junction</li> <li>Identify the physiologic parts at neural membrane</li> <li>Explain the role of acetylcholine in neuromuscular junction</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Mrs. Nida Lathiya	BCQs / OSPE
<b>16. IMPULSE TRANSMISSION AT NMJ</b> <ul style="list-style-type: none"> <li>Define Neuromuscular Junction.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / SEQs



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<ul style="list-style-type: none"> <li>List the Components of Neuromuscular Junction.</li> <li>Names &amp; Locations of Channels &amp; Receptors at NMJ.</li> <li>Explain the Pre – Synaptic &amp; Post – Synaptic Events during Impulse Transmission.</li> <li>Differentiate between “Miniature EPP &amp; EPP”.</li> </ul>				
<b>17. POWER LAB-II</b> <ul style="list-style-type: none"> <li>Generate their own IDs on Power Lab.</li> <li>Identify wires and electrodes in Power lab used for EMG.</li> <li>Demonstrate the placements of wires and electrodes on biceps and triceps for EMG</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Mrs. Nida Lathiya	BCQs / OSPE
<b>18. TRANSMISSION OF NMJ</b> <ul style="list-style-type: none"> <li>Define neuromuscular junction.</li> <li>Explain the mechanism of impulse conduction at NMJ.</li> <li>Summarize the development of end – plate potential.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	BCQs / SEQ / OSPE / Assignment
<b>19. POWER LAB-III</b> <ul style="list-style-type: none"> <li>Generate their own IDs on Power Lab.</li> <li>Identify wires and electrodes in Power lab used for EMG.</li> <li>Demonstrate the placements of wires and electrodes on biceps and triceps for EMG</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / OSPE
<b>20. STRUCTURE OF SARCOMERE</b> <ul style="list-style-type: none"> <li>Describe general features of skeletal muscle</li> <li>Define sarcomere &amp; its physiological importance in skeletal muscle</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Sobia Khan	BCQs



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<ul style="list-style-type: none"> <li>Explain basic components &amp; physiology of different bands present in sarcomere</li> </ul>				
<b>21. TYPES OF SKELETAL MUSCLES</b> <ul style="list-style-type: none"> <li>Enlist the types of Skeletal Muscles</li> <li>Compare the activity of slow &amp; fast twitch fibers of skeletal muscle.</li> <li>Give functions of slow twitch fibers and fast twitch fibers.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Ruqaya	BCQs
<b>22. TROPONIN – TROPOMYOSIN COMPLEX</b> <ul style="list-style-type: none"> <li>Define Sarcomere with the Names of Contractile Proteins.</li> <li>Name the Components of Actin Filaments.</li> <li>Describe the Molecular Changes that occur in Actin &amp; Myosin Filaments during Muscle contraction.</li> <li>Summarize Walk – Along Mechanism (Ratchet Theory) of Skeletal Muscle contraction</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / SEQs
<b>23. EXCITATION CONTRACTION COUPLING</b> <ul style="list-style-type: none"> <li>Define the term excitation contraction coupling (ECC)</li> <li>List the events occurring in ECC.</li> <li>Explain the mechanisms in each ECC event of skeletal muscle</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Mrs. Nida Lathiya	BCQs / SEQs / OSPE
<b>24. CONTRACTION OF SMOOTH MUSCLE &amp; LATCH MECHANISM</b> <ul style="list-style-type: none"> <li>Identify the basic characteristics of smooth muscles.</li> <li>Explain the mechanism of contraction.</li> <li>Give the mechanism of relaxation of smooth muscles.</li> <li>Describe the latch phenomenon.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	BCQs / SEQ / OSPE / Assignment
<b>25. POWER LAB- IV</b> <ul style="list-style-type: none"> <li>Login their own account on power lab</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Ruqaya	BCQs / OSPE





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<ul style="list-style-type: none"> <li>Identify the locations for the placements of wires and electrodes on biceps and triceps for the EMG</li> <li>Applied the placements of wires and electrodes on subject's biceps and triceps for EMG</li> </ul>				
<p><b>26. MUSCLE ADAPTATION TO EXERCISE-I</b></p> <ul style="list-style-type: none"> <li>Explain fuel used during exercise.</li> <li>Describe how strength is gained through resistance training.</li> <li>Describe acute adaptations of the muscular system, including muscle contractility and muscle fatigue.</li> <li>What changes occur in respiratory system because of endurance training</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	BCQs / SEQ / OSPE / Assignment
<p><b>27. POWER LAB- V</b></p> <ul style="list-style-type: none"> <li>Login their own account on power lab</li> <li>Identify the locations for the placements of wires and electrodes on biceps and triceps for the EMG</li> <li>Applied the placements of wires and electrodes on subject's biceps and triceps for EMG</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Mrs. Nida Lathiya	BCQs / OSPE
<p><b>28. MUSCLE ADAPTATION TO EXERCISE-II</b></p> <ul style="list-style-type: none"> <li>Enlist the metabolic pathways of muscles.</li> <li>Define the role of hormones.</li> <li>Define strength, power, and endurance of muscles.</li> <li>Discuss the mechanism of muscle hypertrophy</li> <li>compare the Fast-twitch and Slow-twitch muscle fibers.</li> <li>Describe the role of respiration in exercise</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saleemullah Abro	BCQs / SEQ



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<ul style="list-style-type: none"> <li>Describe the role of CVS in exercise</li> </ul>				
<b>29. TYPES OF SMOOTH MUSCLES</b> <ul style="list-style-type: none"> <li>Describe the Main Structure of Smooth Muscle.</li> <li>Define the Structure of Contractile Unit of Smooth Muscles</li> <li>Explain Cross Bridging in Smooth Muscles.</li> <li>List the Types of Smooth Muscles with the Differentiating Point.</li> <li>Mention the Properties of Smooth Muscle Cells.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / SEQ
<b>30. POWER LAB-VI</b> <ul style="list-style-type: none"> <li>Login their own account on power lab</li> <li>Identify the locations for the placements of wires and electrodes on biceps and triceps for the EMG</li> <li>Applied the placements of wires and electrodes on subject's biceps and triceps for EMG</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / OSPE
<b>31. NERST POTENTIAL</b> <ul style="list-style-type: none"> <li>Define Electrical Potential.</li> <li>List &amp; Define the Phases of Membrane Potential.</li> <li>Define Diffusion Potential &amp; the Nernst Potential.</li> <li>Calculate the Nernst Potential for Na<sup>+</sup> &amp; K<sup>+</sup></li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / SEQ
<b>32. GOLDMAN'S EQUATION</b> <ul style="list-style-type: none"> <li>Describe the Nernst potential.</li> <li>List the elements of the Goldman equation for multiple ion movements.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Abrar	BCQs / SEQ / OSPE / Assignment



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<ul style="list-style-type: none"> <li>• Explain the contribution of different ion movements to the development of the resting membrane potential.</li> <li>• Explain the importance of Gibbs-Donnan's equilibrium.</li> </ul>				
<b>33. POWER LAB-VII</b> <ul style="list-style-type: none"> <li>• Recording EMG of median nerve by voluntary muscular contraction</li> <li>• Investigate how contractile forces change with increasing demand</li> <li>• Examine the activity of antagonist muscle &amp; the phenomenon of co-activation</li> <li>• Record EMG by stimulating the median nerve</li> <li>• Measure NCV from difference in latencies between responses evoked by nerve stimulation at wrist and elbow.</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Ruqaya Dr. Fizza Tariq	BCQs / OSPE
<b>34. NERVE SIGNALING-I</b> <ul style="list-style-type: none"> <li>• Recall the stages of action potential</li> <li>• List the processes involved in nerve signaling</li> <li>• Explain the direction of propagation of action potential in myelinated and unmyelinated axon</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Mrs. Nida Lathiya	BCQs
<b>35. POWER LAB- VIII</b> <ul style="list-style-type: none"> <li>• Recording EMG of median nerve by voluntary muscular contraction</li> <li>• Investigate how contractile forces change with increasing demand</li> <li>• Examine the activity of antagonist muscle &amp; the phenomenon of co-activation</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Ruqaya	BCQs / OSPE



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<ul style="list-style-type: none"> <li>• Record EMG by stimulating the median nerve</li> <li>• Measure NCV from difference in latencies between responses evoked by nerve stimulation at wrist and elbow.</li> </ul>				
<p><b>36. NERVE SIGNALING-II</b></p> <ul style="list-style-type: none"> <li>• Role of voltage gated sodium channels in generation of action potential</li> <li>• Role of voltage gated potassium channels in generation of action potential</li> <li>• Description of method of study of effect of voltage on activity of channels, the voltage clamp method.</li> <li>• Summary of change of conductance of sodium &amp; potassium during action potential.</li> <li>• Role of other ions during action potential + mechanism of development of muscle tetany.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Muhammad Ali	BCQs / SEQ
<p><b>37. ENERGETICS OF MUSCLE CONTRACTIONS</b></p> <ul style="list-style-type: none"> <li>• Define Muscle Energetics.</li> <li>• List &amp; Define the Sources of ATP Generation in the Body.</li> <li>• List &amp; Explain the Sites of ATP Use, in Skeletal Muscles.</li> <li>• List &amp; Mention the Characteristics of Muscle Fibers Types.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs
<p><b>38. POWER LAB- IX</b></p> <ul style="list-style-type: none"> <li>• Recording EMG of median nerve by voluntary muscular contraction</li> <li>• Investigate how contractile forces change with increasing demand</li> <li>• Examine the activity of antagonist muscle &amp; the phenomenon of co-activation</li> </ul>	Practical	Physiology lab, 1 <sup>st</sup> floor, Block-A.	Dr. Syed Adnan Ahmed	BCQs / OSPE



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<ul style="list-style-type: none"> <li>• Record EMG by stimulating the median nerve</li> <li>• Measure NCV from difference in latencies between responses evoked by nerve stimulation at wrist and elbow.</li> </ul>				
<p><b>39. NMJ OF SMOOTH MUSCLES</b></p> <ul style="list-style-type: none"> <li>• Enlist the properties of smooth muscles.</li> <li>• Define types of smooth muscles.</li> <li>• Enlist the characteristics of single unit type of smooth muscles.</li> <li>• Enlist the characteristics of multiunit smooth muscle type.</li> <li>• Describe the communicating junctions and its types.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saleemullah Abro	SEQ
<p><b>40. NERVOUS AND HORMONAL CONTROL OF SMOOTH MUSCLE CONTRACTION</b></p> <ul style="list-style-type: none"> <li>• Define smooth muscle morphology, characteristics</li> <li>• Explain Mechanism of contraction of smooth muscles</li> <li>• Describe the Nervous and hormonal control of</li> <li>• Smooth muscle contraction</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Saba Leeza	BCQs / SEQ
<p><b>41. DRUGS ACTING ON NMJ</b></p> <ul style="list-style-type: none"> <li>• Define the following terms:</li> <li>• Neuromuscular junction, motor neurons, motor unit.</li> <li>• Describe the physiologic anatomy of NMJ.</li> </ul>	LGIF	Online on MS Teams	Dr. Saleemullah Abro	BCQs / SEQ



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<ul style="list-style-type: none"> <li>• Describe the sequence of events at neuromuscular junction.</li> <li>• Classify the skeletal muscle relaxants.</li> <li>• Describe the peripherally acting muscle relaxant (depolarizing and non-depolarizing) and its types.</li> <li>• Describe the myasthenia gravis and its treatment.</li> </ul>				
<p><b>42. ROLE OF HORMONES IN BONE DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• Lists the hormones involved in bone development.</li> <li>• Define the role of each hormone.</li> <li>• Explain the hormones mechanism of action in the bone development.</li> </ul>	LGIF	Online on MS Teams	Mrs. Nida Lathiya	BCQs / SEQ
<p><b>43. PHYSIOLOGICAL DIVISION OF NERVE FIBER</b></p> <ul style="list-style-type: none"> <li>• Define Nerve Fiber &amp; Neuron.</li> <li>• Differentiate between Dendrites &amp; Axon.</li> <li>• Explain the Process of Transduction.</li> <li>• List &amp; Define Functional Division of Nerve Fibers. o List &amp; Brief the Classical &amp; Numerical Classification of Nerve Fibers.</li> <li>• Describe the Motor Outflow System.</li> <li>• Locate the Division of Autonomic Nervous system</li> </ul>	LGIF	Online on MS Teams	Dr. Syed Adnan Ahmed	BCQs / SEQ
<p><b>44. NEUROMUSCULAR JUNCTION (NMJ)</b></p> <ul style="list-style-type: none"> <li>• Describe the physiological anatomy of Neuromuscular Junction (NMJ).</li> <li>• Explain the components of Neuromuscular junction.</li> <li>• Demonstrate the physiology of Terminal button, Motor end plate, Synaptic trough/ gutter/ cleft.</li> <li>• Explain the functioning of neuromuscular junction.</li> </ul>	LGIF	Online on MS Teams	Dr. Sobia Khan	BCQs / SEQ



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<ul style="list-style-type: none"><li>Enlist chemicals/ drugs/ diseases effecting neuromuscular transmission</li></ul>				
<b>45. REFLEX ARC IN DEEP REFLEXES</b> <ul style="list-style-type: none"><li>Define the term Reflex</li><li>Lists the parts involved in reflex arc</li><li>List the nerve fibers innervating the muscle spindle and golgi tendon organ</li><li>Explain the mechanism of stretch and inverse stretch reflex</li><li>Explain the deep spinal cord reflexes</li></ul>	LGIF	Online on MS Teams	Mrs. Nida Lathiya	BCQs / SEQ
<b>46. RECIPROCAL INHIBITION IN DEEP REFLEXES</b> <ul style="list-style-type: none"><li>Define the Terms “Reflex, Reflex Arc &amp; Reflex Action”.</li><li>List the Components of a Reflex Arc.</li><li>List types of Reflexes with the Reflexes that Governed by the Spinal Cord.</li><li>Explain the Mechanism of “Reciprocal Inhibition”</li></ul>	LGIF	Online on MS Teams	Dr. Syed Adnan Ahmed	BCQs / SEQ

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**PATHOLOGY**

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TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. CONGENITAL DISORDERS OF BONE AND CARTILAGE</b> <ul style="list-style-type: none"> <li>Understand the etiopathogenesis and clinical course of Achondroplasia, Osteogenesis Imperfecta and Osteopetrosis.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Salman	MCQs, SEQs, OSPE
<b>2. METABOLIC DISORDERS OF BONE</b> <ul style="list-style-type: none"> <li>Understand the etiopathogenesis and clinical course of Osteoporosis, Hyperparathyroidism.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Salman	MCQs, SEQs, OSPE
<b>3. BONE INFECTION</b> <ul style="list-style-type: none"> <li>Identify the different types and understand the etiopathogenesis and clinical course of each type of Osteomyelitis.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Salman	MCQs, SEQs, OSPE
<b>4. INFLAMMATORY CONDITIONS OF JOINTS</b> <ul style="list-style-type: none"> <li>Identify the different types and understand the etiopathogenesis and clinical course of Arthritis.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Salman	MCQs, SEQs, OSPE
<b>5. MOTOR NERVE DYSFUNCTION</b> <ul style="list-style-type: none"> <li>Understand the etiopathogenesis and clinical course of Myasthenia Gravis.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Salman	MCQs, SEQs, OSPE




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<b>6. CONGENITAL DISORDERS OF MUSCLE</b> <ul style="list-style-type: none"> <li>Understand the etiopathogenesis and clinical course of common muscular Dystrophies.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Salman	MCQs, SEQs, OSPE
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By the end of lecture / module, First Professional M.B.B.S student will be able to;

<b>MEDICINE</b> 				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. INTRODUCTION TO MUSCULOSKELETAL SYSTEM</b> <ul style="list-style-type: none"> <li>Quote regarding structural and functional significance of musculoskeletal system</li> <li>Discuss regarding bones and its types structural and functional significance of musculoskeletal system</li> <li>Elaborate basic knowledge regarding cartilage structure function and types</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	




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<ul style="list-style-type: none"> <li>Review basic structure of joint and its types and discuss functional significance of every joint type</li> </ul>				

By the end of lecture / module, First Professional M.B.B.S student will be able to;

<b>COMMUNITY MEDICINE</b> 				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. INTRODUCTION TO MUSCULOSKELETAL SYSTEM</b> <ul style="list-style-type: none"> <li>Discuss the limitations of joints movement &amp; its consideration regarding prevention of musculoskeletal injuries.</li> <li>Describe the steps to avoid musculoskeletal injuries at work place</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	<b>Prof. Dr. Syed Imtiaz Ahmed Jafry</b>	SEQs + MCQs



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<b>2. MALNUTRITION IN CHILDREN</b> <ul style="list-style-type: none"> <li>Define protein energy Malnutrition.</li> <li>Describe the disease caused by protein energy Malnutrition its children.</li> <li>Discuss the prevention of protein energy Malnutrition.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	<b>Dr. Munir Ahmed</b>	SEQs + MCQs
<b>3. ARTHRITIS</b> <ul style="list-style-type: none"> <li>Define Arthritis.</li> <li>Explain the types of Arthritis.</li> <li>Elutriate the preventive strategies regarding Arthritis in the community</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	<b>Dr. Munir Ahmed</b>	SEQs + MCQs

By the end of lecture / module, First Professional M.B.B.S student will be able to;

<p><b>PHARMACOLOGY</b></p> 				
<b>TOPIC AND OBJECTIVES</b>	<b>T.S</b>	<b>LOCATION</b>	<b>FACILITATOR</b>	<b>ASSESSMENT</b>



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<b>1. OVERVIEW OF PHARMACOLOGY OF MUSCULOSKELETAL SYSTEM</b> <ul style="list-style-type: none"><li>• Describe the physiology of musculoskeletal diseases.</li><li>• Explain the pathophysiology of musculoskeletal diseases.</li><li>• Discuss and understand the mechanistic pharmacology of musculoskeletal diseases.</li></ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	<b>Dr. Faraz Saleem</b>	SEQs + MCQs
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**BEHAVIORAL SCIENCES**

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TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<p><b>1. UNDERSTANDING BEHAVIOUR</b></p> <ul style="list-style-type: none"> <li>• Define behavior.</li> <li>• Why behavior differ in same situations.</li> <li>• Define attention and concentration.</li> <li>• What factors affect attention and concentration.</li> <li>• How concentration can be improved.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Azhra Shaheen	SEQs + MCQs

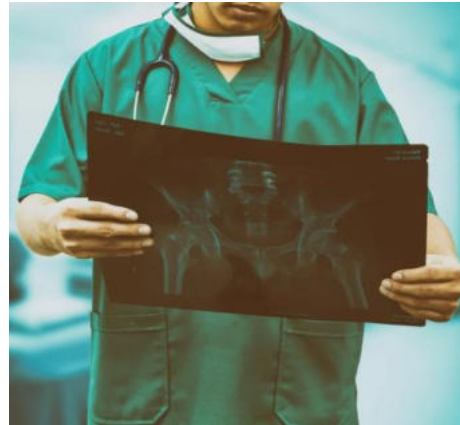


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By the end of lecture / module, First Professional M.B.B.S student will be able to;

**RADIOLOGY**



<b>TOPIC AND OBJECTIVES</b>	<b>T.S</b>	<b>TIME DURATION</b>	<b>LOCATION</b>	<b>FACILITATOR</b>	<b>ASSESSMENT</b>
1. Topic					
Los					



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By the end of lecture / module, First Professional M.B.B.S student will be able to;

<b>ORTHOPAEDICS / GENERAL SURGERY</b>				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. METABOLIC BONE DISEASES</b> <ul style="list-style-type: none"> <li>• Able to define different metabolic bone diseases.</li> <li>• Causes of metabolic bone diseases.</li> <li>• Advice relevant laboratory and radiographic tests.</li> <li>• Identify radiological findings.</li> <li>• Treatment.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	



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<p><b>2. GENERAL PRINCIPLES OF FRACTURE MANAGEMENT</b></p> <ul style="list-style-type: none"> <li>• Able to diagnose fractures.</li> <li>• Types of fractures</li> <li>• Symptoms and signs of fractures.</li> <li>• Closed versus open fractures.</li> <li>• Classification of open fractures.</li> <li>• Management of open fractures.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	
<p><b>3. FRACTURE HEALING AND IT'S COMPLICATIONS</b></p> <ul style="list-style-type: none"> <li>• Able to define fracture healing phases.</li> <li>• Differentiate between Non-union &amp;delayed union.</li> <li>• Risk factors of Non-union.</li> <li>• Types of non-union.</li> <li>• Treatment of non-union.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	
<p><b>4. FRACTURES OF UPPER LIMB</b></p> <ul style="list-style-type: none"> <li>• Able to diagnose fractures of upper limb.</li> <li>• Mechanism of injury.</li> <li>• Essential radiographs to diagnose.</li> <li>• Non-Operative treatment.</li> <li>• Operative treatment.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	
<p><b>5. FRACTURES OF LOWER LIMB</b></p> <ul style="list-style-type: none"> <li>• Able to diagnose fractures of Lower limb.</li> <li>• Mechanism of injury.</li> <li>• Essential radiographs to diagnose.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	





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<ul style="list-style-type: none"> <li>• Non-Operative treatment.</li> <li>• Operative treatment.</li> </ul>				
<b>6. OSTEOMYELITIS</b> <ul style="list-style-type: none"> <li>• Able to diagnose osteomyelitis.</li> <li>• Types of osteomyelitis.</li> <li>• Common causative agents.</li> <li>• Advice relevant laboratory and radiographic tests.</li> <li>• Treatment principles.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	
<b>7. SEPTIC ARTHRITIS</b> <ul style="list-style-type: none"> <li>• Able to diagnose septic arthritis.</li> <li>• Understand and correlate symptoms and pathognomonic sign.</li> <li>• Advice relevant laboratory and radiographic tests.</li> <li>• Remember the gold standard investigation.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	
<b>8. KNEE OSTEOARTHRITIS</b> <ul style="list-style-type: none"> <li>• Able to define osteoarthritis.</li> <li>• Symptoms and signs.</li> <li>• Radiographic findings.</li> <li>• Non-surgical treatment.</li> <li>• Surgical treatment.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Masooda Fatima	



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**FORENSIC MEDICINE**

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TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. DIFFERENCES B/W MALE &amp; FEMALE SKELETON</b> <ul style="list-style-type: none"> <li>• Determine Sex by Examination of Bones.</li> <li>• Describe Osteometric / Skeletal Indices &amp; their Formulae for determination of Sex &amp; Race.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Rafay A. Siddiqui	
<b>2. CHANGE IN MUSCLE AFTER DEATH-I</b> <ul style="list-style-type: none"> <li>• Enlist Methods of Estimation of Time since Death / Postmortem Interval from the Immediate, Early &amp; Late Signs of Death &amp; Factors influencing such changes.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Rafay A. Siddiqui	
<b>3. CHANGE IN MUSCLE AFTER DEATH-II</b> <ul style="list-style-type: none"> <li>• Differentiate between Rigor Mortis &amp; Cadaveric Spasm, Rigor Mortis &amp; Conditions simulating Rigor Mortis, Primary &amp; Secondary Relaxation of Muscles, etc.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Rafay A. Siddiqui	



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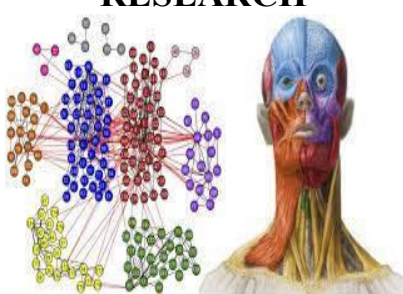
By the end of lecture / module, First Professional M.B.B.S student will be able to;

				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. STUDY SKILLS-LEARNING EXPERIENCE AND TEST TAKING SKILLS</b> <ul style="list-style-type: none"> <li>• Use Study guides and Table of Specifications.</li> <li>• Identify different learning resources available for learning.</li> </ul>	Hands on activity	Lecture Hall 1, Ground Floor, Block-A.	Dr. Talal Bin Taheer	Formative
<b>2. STUDY SKILLS-LEARNING EXPERIENCE AND TEST TAKING SKILLS</b> <ul style="list-style-type: none"> <li>• Identify ways for stress management.</li> <li>• Discuss different test taking skills.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Dr. Shams Nadeem Alam	Formative
<b>3. REFLECTION ON LEARNING</b> <ul style="list-style-type: none"> <li>• Discuss reflective practices.</li> <li>• Develop a reflective portfolio.</li> </ul>	Hands on activity	Lecture Hall 1, Ground Floor, Block-A.	Dr. Syeda Saima Qamar	Formative
<b>4. REFLECTION ON LEARNING</b> <ul style="list-style-type: none"> <li>• Feedback session on reflective portfolios.</li> </ul>	Self-Assessment Activity	Lecture Hall 1, Ground Floor, Block-A.	Dr. Talal Bin Taheer	Formative



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By the end of lecture / module, First Professional M.B.B.S student will be able to;

 <b>RESEARCH</b>				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. CLASSIFICATION OF VARIABLES</b> <ul style="list-style-type: none"> <li>• Define the types of variables.</li> <li>• Explain the differences between various types of variables.</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A	Miss. Erach	



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By the end of this case based learning session, First Professional M.B.B.S student will be able to;

				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. CBL</b> <b>LOs</b> <ul style="list-style-type: none"> <li>• Identify the lower limb muscles and their innervations.</li> <li>• Apply frank starling law on muscle mechanics.</li> <li>• Point out contractile elements of skeletal muscles.</li> </ul>		<ul style="list-style-type: none"> <li>- Biochemistry lab, 1<sup>st</sup> Floor, Block-A.</li> <li>- Dissection hall, Ground Floor, Block-A.</li> </ul>	<ul style="list-style-type: none"> <li>- Dr. Farhan</li> <li>- Dr. Saba Leeza</li> </ul>	




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<ul style="list-style-type: none"> <li>Recall the electrolytes which are involved in muscle contraction.</li> <li>Correlate the symptoms of muscle paralysis with electrolyte imbalance along with other neuromuscular disorders.</li> <li>Interpret the serum electrolyte report as normal or abnormal.</li> <li>Construct a diet plan for patient suffering from the disease.</li> </ul>		<p>- LRC Anatomy, Ground Floor, Block-A..</p>		
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By the end of lecture / module, First Professional M.B.B.S student will be able to;

<b>ISLAMIAT</b> 				
TOPIC AND OBJECTIVES	T.S	LOCATION	FACILITATOR	ASSESSMENT
<b>1. LIFE OF HOLY PROPHET (S.A.W.) IN MAKKAH</b> <ul style="list-style-type: none"> <li>Describe and explain the life of holy Prophet (SAWS) in makkah in detail</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Madam Uzma Waseem	



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<b>2. IMPORTANT LESSONS DERIVED FROM THE LIFE OF HOLY PROPHET (S.A.W.) IN MAKKAH</b> <ul style="list-style-type: none"> <li>Give examples of important lessons learned from the life of Prophet PBUH in detail</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Madam Uzma Waseem	
<b>3. LIFE OF HOLY PROPHET (S.A.W.) IN MADINA</b> <ul style="list-style-type: none"> <li>Describe the life of holy Prophet PBUH in madina in detail</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Madam Uzma Waseem	
<b>4. IMPORTANT EVENTS OF LIFE HOLY PROPHET (S.A.W.) IN MADINA</b> <ul style="list-style-type: none"> <li>Relate the events from the life of Prophet PBUH with our daily life with examples</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Madam Uzma Waseem	
<b>5. IMPORTANT LESSONS DERIVED FROM THE LIFE OF HOLY PROPHET (S.A.W.) IN MADINA</b> <ul style="list-style-type: none"> <li>List the important events from the life of Prophet PBUH Explain in detail one of the important event from the life of Prophet PBUH</li> </ul>	LGIF	Lecture Hall 1, Ground Floor, Block-A.	Madam Uzma Waseem	

**TIME TABLES FOLLOWED FOR MSK MODULE:**

**WEEK 1**

DAYS	8:30-9:30	9:30-10:15	10:15 - 10:30	10:30-11:30	11:30-12:30	12:30-1:15	1:15 - 1:30	1:30-3:30
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<b>MONDAY 28-03-2022</b>	<b>FOUNDATION</b>		<b>MODULE</b>			<b>EXAM</b>
<b>TUESDAY 29-03-2022</b>	<b>ANATOMY</b> Embryology-I  <b>DR. RASHID</b>	<b>BIOCHEMISTRY</b> INTRODUCTION &BIOMEDICAL IMPORTANCE OF VITAMINS	<b>ANATOMY</b> The Clavicle <b>Dr. Misha</b>	<b>BIOCHEMISTRY</b> Vitamin D	<b>PHYSIOLOGY</b> The Bone Physiology	LIBRARY
<b>WEDNESDAY 30-03-2022</b>	<b>BIOCHEMISTRY</b> Metabolism of Calcium	<b>PHYSIOLOGY</b> Physiology of Bone Growth & Osteoporosis	<b>BIOCHEMISTRY</b> Metabolism of phosphorus & Flouride	<b>PEARLS</b>	<b>ANATOMY</b> Scapula <b>Dr Tayyaba</b> Humerus <b>&amp;Dr. Misha</b>	<b>PHYSIOLOGY</b> Role of Parathyroid, Calcitonin Hormone & Vitamin – D <sub>3</sub> )
<b>THURSDAY 31-03-2022</b>	<b>ANATOMY</b> Ulna <b>DR. TAYYABA</b>	<b>PATHOLOGY</b> Osteoporosis	<b>PHARMA</b>	<b>ANATOMY</b> Histology of Bones I <b>DR. INAYAT</b>	<b>Plastic surgery</b>	<b>BIOCHEMISTRY</b> Vitamin -C
<b>FRIDAY 01-04-2022</b>	<b>PHYSIOLOGY</b> Role of Vitamin – D <sub>3</sub> in bone	<b>RESEARCH</b>	SDL	SDL	<b>Orthopedics</b> General principles of Fractures Management	<b>ANATOMY</b>  <b>Radius</b> <b>Dr. Misha</b>

**WEEK 2**



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**RAMDAAN 1 WEEK**

DAYS	8:30-9:15	9:15-10:00	10:00-10:45	10:45-11:30	11:30-12:15	12:15-1:00	1:00-1:15 1:15-1:30 1:30-1:45 1:45-2:00	1:15-2:00
MONDAY 4-04-2022		<b>BHUTTO</b>		<b>BHUTTO DEATH ANNIVERSERY</b>				
TUESDAY 5-04-2022	<b>ANATOMY</b> Embryology <b>DR RASHID</b>	<b>PHYSIOLOGY</b> <b>Y</b> Intro & Types of Muscle	<b>ANATOMY</b> Carpel & metacarpal bones <b>DR MISHA</b>	<b>PRACTICAL</b> [Physiology] Study of Power Lab		<b>ANATOMY</b> Muscle attachment of Clavicle <b>DR TAYYABA</b>		<b>PHYSIOLOGY</b> Skeletal muscle 1
WEDNESDAY 6-04-2022	<b>ANATOMY</b> Histology of Muscles II <b>DR INAYAT</b>	<b>PHYSIOLOGY</b> <b>Y</b> Skeletal Muscle 2	<b>ANATOMY</b> Muscle attachment of Scapula <b>DR MISHA</b>	<b>PRACTICAL</b> Biochemistry] Detection of amino acid scheme(Demo)		<b>ANATOMY</b> Muscle attachment of Humerus <b>DR FATIMA</b>		<b>PHYSIOLOGY</b> Properties of Skeletal Muscle
THURSDAY 7-04-2022	<b>BIOCHEMISTRY</b> Introduction of amino acid & biomedical importance of a.acids	<b>PHYSIOLOGY</b> <b>Y</b> Smooth Muscle & cardiac muscle physiology	<b>ANATOMY</b> BRACHIAL PLEXUSES AND ITS CLINICAL <b>DR TAYYABA</b>	<b>BIOCHEMISTRY</b> Classification of Amino Acid 1		<b>ANATOMY</b> Muscle attachment of RADIUS <b>DR MISHA</b>	<b>PRAY</b>	<b>ANATOMY</b> AXILLA <b>DR TAYYABA</b>
FRIDAY 8-04-2022	<b>BIOCHEMISTRY</b> <b>Y</b> CLASSIFICATION OF A.ACIDS	<b>PHYSIOLOGY</b> <b>Y</b> Resting Membrane Potential	<b>BIOCHEMISTRY</b> INTRO&BIOMEDICAL IMP OF PROTEINS	<b>PHYSIOLOGY</b> Action potential (phases, generation & propagation)	<b>OFF</b>			



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**WEEK 3  
RAMDAAN 2 WEEK**

DAYS	8:30-9:15	9:15-10:00	10:00-10:45	10:45-11:30	11:30-12:15	12:15-1:00	1:00-1:30	1:30-2:30
<b>MONDAY</b> 11-04-2022	<b>ANATOMY</b> PECTORAL REGION DR TAYYABA	<b>PHYSIOLOGY</b> Action Potential of skeletal muscle	<b>ANATOMY</b> Vessels of Anterior & post. compartment of ARM DR FATIMA	<b>PHYSIOLOGY</b> Structure of neuromuscular junction	<b>PRACTICAL</b> [Physiology] Nerve Conduction Velocity Median Nerve		<b>PRAY</b>	<b>ANATOMY</b> ANATOMY Muscle attachment of ULNA DR MISHA
<b>TUESDAY</b> 12-04-2022	<b>PHYSIOLOGY</b> Structure of Neuromuscular Junction	<b>ANATOMY</b> Shoulder joint DR TAYYABA	<b>BIOCHEMISTRY</b> CLASSIFICATION OF PROTEIN1	<b>PHYSIOLOGY</b> Transmission of Neuromuscular junction	<b>PRACTICAL</b> [Anatomy] Histology of Compact Bones			<b>ANATOMY</b> MUSCLES OF anterior compartment of ARM DR MISHA
<b>WEDNESDAY</b> 13-04-2022	<b>BIOCHEMISTRY</b> CLASSIFICATION of protein 2	<b>ANATOMY</b> muscles of posterior compartment of ARM DR MISHA	<b>ANATOMY</b> muscles of anterior compartment of FOREARM DR FATIMA	<b>PHYSIOLOGY</b> Transmission of Neuromuscular Junction	<b>PRACTICAL</b> [Biochemistry] Detection of Amino Acid(Ninhydrin test)			<b>PHYSIOLOGY</b> Structure of Sarcomere
<b>THURSDAY</b> 14-04-2022	<b>BIOCHEMISTRY</b> CLASSIFICATION OF PROTEIN 3	<b>ANATOMY</b> Anastomosis around Shoulder joint DR TAYYABA	<b>ANATOMY</b> EMBRYOLOGY DR RASHID	<b>ANATOMY</b> LRC DR TAYYABA	<b>PHYSIOLOGY</b> Types of Skeletal Muscles	<b>BIOCHEMISTRY</b> biomedical imp of protein		<b>ANATOMY</b> Histology DR INAYAT



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<b>FRIDAY</b> 15-04-2022	<b>ANATOMY</b> Vessels of Ant & post. comp of FOREARM <b>DR MISHA</b>	<b>BIOCHEMISTRY</b> <b>STRUCTURAL ORGANIZATION OF PROTEIN</b>	<b>PHYSIOLOGY</b> Troponin-tropomyosin complex	<b>ANATOMY</b> AXILLARY AND MUSCULOCUTANEOUS NERVE <b>DR TAYYABA</b>	<b>PHYSIOLOGY</b> Excitation Contraction Coupling		<b>ANATOMY</b> Vessels of Ant & post. comp of FOREARM <b>DR MISHA</b>
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**WEEK 4  
RAMDAN 3 WEEK**

DAYS	8:30-9:15	9:15-10:10:00	10:00-10:45	10:45-11:30	11:30-12:15	12:15-1:00	1:00-1:30	1:30- 2:30
<b>MONDAY</b> 18-04-2022	<b>BIOCHEMISTRY</b> Structural organization of protein 2	<b>PHYSIOLOGY</b> Contraction of Smooth Muscle & Latch Mechanism	SDL	<b>ANATOMY</b> RADIAL N <b>DR FATIMA</b>	PRACTICAL [Physiology] Nerve Conduction Velocity Ulnar Nerve	PRACTICAL [Biochemistry] Detection of Amino Acid (Xanthoporetic test)	PRAYER	<b>ANATOMY</b> muscles of anterior compartment of FOREARM <b>DR MISHA</b>
<b>TUESDAY</b> 19-04-2022	<b>ANATOMY</b> ULNAR N <b>DR MISHA</b>	<b>PHYSIOLOGY</b> Muscle Adaptation to exercise	BEHAVIORAL SCIENCES	<b>ANATOMY</b> Palm of Hand <b>DR MISHA</b>				<b>SGT</b> <b>PHYSIOLOGY</b> Walk along Mechanism



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<b>WEDNESDAY</b> 20-04-2022	<b>PHYSIOLOGY</b> Muscle Adaptation to exercise	RESEARCH	<b>ANATOMY HISTOLOGY</b> DR INAYAT	<b>PHYSIOLOGY</b> Types of Smooth Muscles	PRACTICAL [Anatomy] Histology of Spongy Bones		Radiology	
<b>THURSDAY</b> 21-04-2022	PHARMA	<b>SGT PHYSIOLOGY</b> Action Potential	<b>ANATOMY HISTOLOGY</b> DR INAYAT	Orthopedics	MEDICINE Introduction to MSK	<b>PHYSIOLOGY</b> Nernst Potential		COMMUNITY MEDICINE
<b>FRIDAY</b> 22-04-2022	<b>ANATOMY</b> Dorsum of Hand DR FATIMA	ISLAMYIAT	<b>ANATOMY CUBITAL FOSSA</b> DR TAYYABA	SDL		<b>ANATOMY</b> Anatomy of hand model DR MISHA		<b>PHYSIO</b> GOLDMAN'S EQUATION

**WEEK 5**  
RAMDAAN 4 WEEK

DAYS	8:30-9:15	9:15-10:00	10:00-10:45	10:45-11:30	11:30-12:15	12:15-1:00	1:00-1:30	1:30-2:30
<b>MONDAY</b> 25-04-2022	<b>ANATOMY</b> ELBOW JOINT DR FATIMA	PEARL	SDL	<b>ANATOMY</b> Histology	PRACTICAL [Physiology]		PRAYER	<b>SGT PHYSIOLOGY</b> Plateau in Cardiac



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				<b>DR INAYAT</b>	Nerve Conduction Velocity Peroneal Nerve		
<b>TUESDAY 26-04-2022</b>	<b>ANATOMY</b> ARTERIAL SUPPLY OF HANDS <b>DR TAYYABA</b>	<b>PHYSIOLOGY</b> Nerve Signaling	<b>ANATOMY</b> <b>SGT</b> <b>DR MISHA</b>	<b>ANATOMY</b> <b>MEDIAN N</b> <b>DR TAYYABA</b>	<b>PRACTICAL</b> [Biochemistry] Detection of Amino Acid(Millon's test)		<b>SGT</b> <b>PHYSIOLOGY</b> Energetics of Muscle contraction
<b>WEDNESDAY 27-04-2022</b>	<b>PHYSIOLOGY</b> Nerve Signaling	<b>BIOCHEMISTRY</b> Structural organization of protein 3	<b>ANATOMY</b> Wrist Joint&Retinaculum <b>DR MISHA</b>	<b>SGT</b> <b>PHYSIOLOGY</b> Energetics of Muscle contraction	<b>PRACTICAL</b> [Anatomy] Histology of Spongy Bones		<b>ANATOMY</b> Anastomosis around elbow joint <b>DR TAYYABA</b>
<b>THURSDAY 28-04-2022</b>	<b>PHYSIOLOGY</b> NMJ of Smooth Muscles	<b>ANATOMY</b> LRC <b>DR TAYYABA</b>	<b>SDL</b>	<b>ANATOMY</b> Anastomosis around wrist joint <b>DR MISHA</b>	<b>PLASTIC SURGERY</b>	<b>FORENSIC</b>	<b>PHYSIOLOGY</b> Nervous & hormonal control of Smooth Muscle contraction
<b>FRIDAY 29-04-2022</b>	<b>ANATOMY</b> Venous drainage of hand <b>DR FATIMA</b>	<b>BIOCHEMISTRY</b> structural organization of protein	<b>Anatomy</b> Small joints of hand <b>DR MISHA</b>	<b>SDL</b>		<b>ISLAMYIAT</b>	<b>PHYSIOLOGY</b> Nervous & Hormonal control of smooth muscle Contraction

**WEEK 6**  
Online MSK Timetable



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Day/Time	08:30-10:30	10:30-12:30	12:30-2:30
Monday 02-05-2022	<b>EID HOLIDAY</b>		
Tuesday 03-05-2022			
Wednesday 04-05-2022			
Thursday 05-05-2022			
Friday 06-05-2022	<b>Physiology</b> Drugs Acting on NMJ	<b>Biochemistry</b> Heteropolysaccharides 1 Muhammad Jamal	<b>Anatomy</b> Superficial v of U.L <b>DR MISHA</b>



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**WEEK 7  
Online MSK Timetable**

Day/Time	08:30-10:30	10:30-12:30	12:30-2:30
Monday 09-05-2022	<b>Biochemistry</b> Vitamins & its biomedical importance (Mcqs discussion) <b>DR IFFAT</b>	<b>Physiology</b> (Role of Hormones in Bone Development)	<b>Anatomy</b> cutaneous N.S of U.L <b>DR FATIMA</b>
Tuesday 10-05-2022	<b>Physiology</b> Physiologic Divisions of Nerve Fiber)	<b>Anatomy</b> hip bone <b>DR MISHA</b>	<b>Biochemistry</b> Metabolism of minerals (short essay discussion) Dr Farhan
Wednesday 11-05-2022	<b>Physiology</b> Neuromuscular Junction	<b>Biochemistry</b> Heteropolysaccharide II <b>MS ERAJ</b>	<b>Anatomy</b> femur bone <b>DR FATIMA</b>
Thursday 12-05-2022	<b>Anatomy</b> Muscle of Gluteal Region <b>DR MISHA</b>	<b>Physiology</b> Reflex Arc in deep reflexes	<b>Biochemistry</b> Classification & biomedical imp of Amino Acids (mcqs discussion) <b>DR FARHAN</b>
Friday 13-05-2022	<b>Physiology</b> (Reciprocal Inhibition in deep reflexes)	<b>Biochemistry</b> Classification & biomedical imp of proteins (Mcqs discussion) <b>DR IFFAT</b>	<b>Anatomy</b> Muscles of Ant. Compartment of Thigh <b>DR FATIMA</b>





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SUMMER VACATIONS 14 MAY SATURDAY 2022 TILL 12 JUNE SUNDAY 2022

**WEEK 8**

DAYS	8:30-9:30	9:30-10:15	10:15-10:30	10:30-11:30	11:30-12:30	12:30-1:15	1:15-1:30	1:30-3:30
<b>MONDAY</b> 13-06-2022	<b>ANATOMY</b> HIP JOINT	<b>ORTHO</b> Fractures of lower limb	TEA BREAK	<b>SGT</b> <b>PHYSIOLOGY</b> (Role of Hormones in Bone Development)	<b>PRACTICAL</b> [Physiology] Electromyography (EMG) Of Flexor Carpi Radialis & Digital Flexors	LUNCH & PRAY	1:15-1:30	<b>ANATOMY</b> Muscles of Medial Compartment of Thigh
<b>TUESDAY</b> 14-06-2022	<b>ANATOMY</b> Sciatic Nerve	<b>ANATOMY</b> histology of muscles		<b>SDL</b>	<b>PRACTICAL</b> <b>Biochemistry</b> Detection of Amino Acid (Hopkin'scole test)			<b>ANATOMY</b> Femoral Triangle & Sheath and its content adductor canal
<b>WEDNESDAY</b> 15-06-2022	<b>ANATOMY</b> Profunda Femoris Artery	<b>RADIOLOGY</b>		<b>FORENSIC</b> <b>MEDICINE</b>	<b>PRACTICAL</b> Anatomy] Histology of MUSCLES			<b>SGT</b> <b>PHYSIOLOGY</b> (Physiologic Divisions of Nerve Fiber)



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<b>THURSDAY</b> 16-06-2022	<b>Pathology</b> Congenital Disorders of Bones	<b>COMMUNITY MEDICINE</b>		<b>MEDICINE</b> Muscular Dystrophies	<b>SDL</b> (study of previous lectures)	<b>DERMA</b>		<b>ANATOMY</b> Muscles of posterior compartment of thigh
<b>FRIDAY</b> 17-06-2022	<b>EMBRYO</b>	<b>PATHOLOGY</b>		<b>RESEARCH</b>	<b>ANATOMY TIBIA</b>	<b>ISLAMYIAT</b>		<b>PHYSIOLOGY</b> PRESENTATION

**WEEK 9**

DAYS	8:30-9:30	9:30-10:15	10:15-10:30	10:30-11:30	11:30-12:30	12:30-1:15	1:15-1:30	1:30-3:30
<b>MONDAY</b> 20-6-2022	<b>ANATOMY</b> FIBULA	<b>SDL</b>	TEA BREAK	<b>Orthopedic</b> Osteoarthritis	<b>PRACTICAL</b> [Physiology] Electromyography (EMG) Of Flexor Carpi Ulnaris & Flexor Digitorum Profundus	LUNCH & PRAY		<b>ANATOMY</b> KNEE JOINT
<b>TUESDAY</b> 21-6-2022	<b>ANATOMY</b> ANTERIOR COMPARTMENT OF LEG	<b>RADIOLOGY</b>		<b>PATHO</b>				<b>ANATOMY</b> Histology of MUSCLES <b>DR FATIMA</b>



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<b>WEDNESDAY 22-6-2022</b>	<b>ANATOMY</b> LATERAL Compartment of Leg	<b>PEARLS</b>		<b>PHYSIO</b> PRESENTATION	<b>Biochemistry</b> Detection of Amino Acid ( Sulphur test)		<b>ANATOMY</b> VEINS OF LEG
<b>THURSDAY 23-6-2022</b>	<b>RESEARCH</b>	<b>PHYSIO</b> PRESENTATION		SDL	<b>PHYSIOLOGY</b> PRESENTATION		<b>CBL</b>
<b>FRIDAY 24-6-2022</b>	<b>ANATOMY</b> FEMORAL N	<b>RADIOLOGY</b>		FAMILY MEDICINE	PHARMA	ISLAMIAT	<b>ANATOMY</b> TIBIAL N

**WEEK 10**

DAYS	8:30-9:30	9:30-10:15	10:15-10:30	10:30-11:30	11:30-12:30	12:30-1:15	1:15-1:30	1:30-3:30
<b>MONDAY 27-6-2022</b>	<b>ANATOMY</b> Posterior Compartment of Leg	<b>EMERGENCY MED</b>	TEA BREAK	<b>ANATOMY</b> Popliteal fossa	<b>PRACTICAL</b> [Physiology] Electromyography (EMG) Of Peroneus Longus&Brevis		LUNCH & PRAY	<b>RADIOLOGY</b>



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<b>TUESDAY</b> 28-6-2022	<b>ANATOMY</b> Bones & joints of foot	<b>PATHOLOGY</b> Osteo& Poliomyelitis		<b>Orthopedic</b> Acute osteomyelitis	<b>Biochemistry</b> Presentation of Amino Acid scheme			<b>ANATOMY</b> SOLE OF FOOT
<b>WEDNESDAY</b> 29-6-2022	<b>PATHO</b>	<b>ANATOMY</b> LRC		<b>PHYSIOLOGY</b> PRESENTATION	<b>ANATOMY</b> Histology of MUSCLES			<b>ORTHOPEdic</b>
<b>THURSDAY</b> 30-6-2022	<b>ANATOMY</b> Arches & Dorsum of Foot	<b>FORENSIC MEDICINE</b> Change in Muscle after Death		<b>COMMUNITY MEDICINE</b>	<b>SDL</b>	<b>SDL</b>		<b>CBL</b>
<b>FRIDAY</b> 1-7-2022	<b>ANATOMY</b> EMBRYOLOG Y	<b>DERMA</b>		<b>BEHAVIORAL SCIENCES</b>	<b>RADIOLOGY</b>			<b>ANATOMY</b> Ankle joint & Retinaculum

**DISTRIBUTION AND DURATION OF TEACHING ACTIVITIES AMONGST DIFFERENT  
DISCIPLINES**

<b>S.No.</b>	<b>SUBJECT</b>	<b>LGIF</b>	<b>SGT</b>	<b>PRACTICALS</b>	<b>TOTAL</b>
<b>1</b>	<b>ANATOMY</b>				



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2	BIOCHEMISTRY				
3	PHYSIOLOGY				
4	PATHOLOGY				
5	COMMUNITY MEDICINE				
6	MEDICINE				
7	PHARMACOLOGY				
8	RADIOLOGY				
9	ORTHOPAEDICS / GENERAL SURGERY				
10	BEHAVIORAL SCIENCES				
11	FORENSIC MEDICINE				
12	RESEARCH				
13	CBL				
14	PEaRLS				
15	ISLAMIAT				
16	SDL				

- Calculated in minutes / hours

**REFERENCE BOOKS AND OTHER READING RESOURCES:**



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Gross Anatomy	BD Chaurasia's <b>Handbook of GENERAL ANATOMY</b> <b>Netter Atlas of Human Anatomy</b>
Embryology	<b>Langman's Embryology</b>
Histology	<b>Laiq Hussain Histology</b>
Physiology	<b>Guyton and Hall</b> . Textbook of Medical Physiology, 13 <sup>th</sup> Edition. <b>Ganong's</b> Review of Medical Physiology, 24 <sup>th</sup> Edition.
Pathology	Robin`s Basic Pathology-10 <sup>th</sup> Edition
Pharmacology	<b><u>Essential</u></b> <ul style="list-style-type: none"> <li>• <b>Bertram G. Katzung</b>. Basic and Clinical Pharmacology, 14<sup>th</sup> Edition. 2017.</li> <li>• <b>Katzung and Trevor's pharmacology</b> Examination and Board Review 11<sup>th</sup> Edition 2015.</li> </ul> <b><u>Recommended</u></b> <ul style="list-style-type: none"> <li>• <b>Lippincott's illustrated review of Pharmacology</b>. 6<sup>th</sup> Edition. 2015.</li> </ul>
Islamiat	<ul style="list-style-type: none"> <li>• Hameed ullah Muhammad, "Emergence of Islam" , IRI, Islamabad, "Muslim Conduct of State" and "Introduction to Islam".</li> <li>• Hussain Hamid Hassan, "An Introduction to the Study of Islamic Law" leaf Publication Islamabad, Pakistan.</li> <li>• Abdul Qayyum Natiq, "Sirat-E-Mustaqim.</li> <li>• Farkhanda Noor Muhammad, "Islamiat".</li> </ul>



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- |  |   |
|--|---|
|  | <ul style="list-style-type: none"><li>• Dr. Muhammad Zia-ul-Haq, "Introduction to Al Sharia Al Islamia" Allama Iqbal Open University, Islamabad (2001).</li></ul> |
|--|---|

**ASSESSMENT METHODS:**

**THEORY:**

❖ **Essay Questions- Short Essay Questions (SEQs)** are used to assess objectives covered in each module.

- 6 SEQs are given (no choice).
- Time duration 90 minutes.
- Students write their answer in an answer sheet.

❖ **Best Choice Questions (BCQs)** also known as MCQs (Multiple Choice Questions) are used to assess objectives covered in each module.

- A BCQ has a statement or clinical scenario followed by four options (likely answer).
- Students after reading the statement/scenario select ONE, the most appropriate response from the given list of options.
- Correct answer carries one mark, and incorrect 'zero mark'. There is no negative marking.
- Students **mark their responses on specified computer-based/OMR sheet designed for BMC, BMU.**

❖ **OSPE/OSCE: Objective Structured Practical/Clinical Examination:**

- Each student will be assessed on the same content and have same time to complete the task.
- Comprise of 12-25 stations.
- Each station may assess a variety of clinical tasks; these tasks may include history taking, physical examination, skills and application of skills and knowledge.
- Stations are observed, unobserved, interactive and rest stations.
- Observed and interactive stations will be assessed by internal or external examiners.



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- Unobserved will be static stations in which there may be an X-ray, Labs reports, pictures, clinical scenarios with related questions for students to answer.
- Rest station is a station where there is no task given and in this time, student can organize his/her thoughts.

#### INTERNAL EVALUATION:

- Students will be assessed to determine achievement of module objectives through the following:
  - o **Module Examination:** will be scheduled on completion of each module. The method of examination comprises theory exam which includes BCQs and OSPE (Objective Structured Practical Examination).
  - **Graded Assessment of students by Individual Department:** Quiz, viva, practical, assignment, small group activities such as CBL, online assessment, ward activities, examination, and Practical journals.
  - Marks of both modular examination and graded assessment will constitute 20% weightage which will be added to Annual Examination.

#### FORMATIVE ASSESSMENT:

- Individual departments may hold quiz or short answer questions to help students assess their own learning.
- The **marks obtained are not included in the internal evaluation.**

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**More than 75% attendance is  
needed to sit for the modular  
and final examinations**