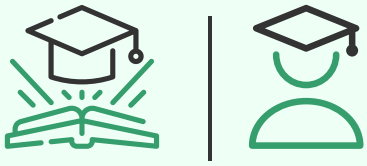
College of Medicine & Dentistry at The Hills

DEPARTMENT OF MEDICAL EDUCATION
COLLEGE OF MEDICINE AND DENTISTRY AT THE HILLS, ABBOTTABAD

MUSCULOSKELETAL - I

Module

Block-B (1st Year)
MBBS



Duration: 8 weeks

Year
2024-25

Contents

1 Vision

To be a leading institution in medical education, dedicated to cultivating a workforce of physicians and clinicians who excel in providing equitable, affordable, and exemplary healthcare while addressing the diverse health needs of our nation and the global community.

2 Mission

To deliver a transformative medical education that empowers future healthcare leaders to innovate in clinical care and health system design. Our mission is supported by a passionate and diverse faculty committed to fostering collaboration, upholding the highest ethical standards, and addressing healthcare disparities. We aim to inspire our students to engage with patients and communities, promoting inclusivity and teamwork in service to humanity.

3 List of abbreviations

Bio-L	Biochemistry Lecture	**OSPE**	Objectively Structured Practical Examination
Bio-P	Biochemistry Practical	**Paeds-L**	Pediatrics Lecture
Bio-SGD	Small Group Discussion in Biochemistry	**Patho-L**	Pathology Lecture
C.Med-L	Community Medicine Lecture	**Phar-L**	Pharmacology Lecture
DSL	Directed Self Learning	**Phy-L**	Physiology Lecture
FDT	Film/Demonstration/Tutorial	**Phy-P**	Physiology Practical
F.Med-L	Forensic Medicine Lecture	**Phy-SGD**	Small Group Discussion in Physiology
G.Anat-L	Gross Anatomy Lecture	**PBL**	Problem Based Learning
Histo-P	Histology Practical	**SDL**	Self-Directed Learning
IT	Information Technology	**SL**	Skill Lab
LGIS	Large Group Interactive Session	**SAQs**	Short Answer Questions
MCQs	Multiple Choice Questions	**SEQs**	Short Essay Questions
Med.Edu-L	Medical Education Lecture	**SGDs**	Small Group Discussions
PRIME	Professionalism and Communication Skills, Research, Identity Formation, Management and Leadership, Ethics		

4 Recommended List Of Icons

Introduction To Case

For Objectives

Critical Questions

Assessment

Resource Material

5 Overview of the Module/ Preface

Welcome to the second block, The Musculoskeletal system-I of first year MBBS. This guide is designed to support effective teaching and efficient learning by managing student learning, focusing learning activities, and providing essential information on the study topics.

The Musculoskeletal system is a vital component of the human body, enabling movement and facilitating essential functions necessary for survival. A comprehensive understanding of its structures, functions, and biochemical aspects is crucial for healthcare professionals, including physicians and surgeons. This module aims to establish a solid foundation in the knowledge of the locomotor system and its clinical applications, preparing students to diagnose and manage common skeletal system disorders and muscular pathologies encountered in primary and tertiary care settings. By grasping the normal structure and function of the Musculoskeletal system, students will be better equipped to understand and address various disorders later in their curriculum."

6 Introduction/ Organization of Module

6.1 Introduction:

The Musculoskeletal Module-I is an 8-week, theme-based module that aims to equip first-year MBBS students with the knowledge, skills, and attitudes necessary to manage common musculoskeletal diseases. As the third module of the first year, it builds upon the foundational knowledge of basic medical sciences subjects, including Anatomy, Physiology, Biochemistry, Pathology, Pharmacology, Community Medicine, and Forensic Medicine, as well as the principles of PRIME (Professionalism, Research, Innovation, Management, and Education). Upon completion of this module, students will be assessed through the Block B Exam, evaluating their mastery of the learning domains in musculoskeletal health.

6.2 Rationale:

Limb-related disorders are a common and significant cause of morbidity and disability, requiring a comprehensive understanding of their pathology and prevalence. This module provides a foundational understanding of the underlying mechanisms driving these conditions, essential for students to develop effective diagnostic and management skills.

This module lays the groundwork for understanding the pathology and prevalence of limb-related disorders, which will be further explored in Musculoskeletal II in the subsequent session of the curriculum. By mastering the fundamental concepts presented in this module, students will develop a deeper understanding of the underlying mechanisms driving relevant clinical conditions, enabling them to approach their future ward rotations and clerkships with confidence and a solid foundation.Organization of the Study Guide:

6.3 Organization of the study guide:

S.No	Theme	Duration
1.	Orientation and Shoulder Pain	2 Weeks
2.	Weak Grip and painful Hand	1 Week
3.	Pain Lower Limb/ Limping	2 Weeks
4.	Bony Arches and Fracture of Foot	1 Week
5.	Backache	1 Week
6.	Muscle Weakness and Fatigue	1 Week

The Musculoskeletal Module I consists of six themes, each focusing on a specific aspect of musculoskeletal health. Here's a brief explanation of each theme:

1. Orientation and Shoulder Pain: Introduces students to the musculoskeletal system and focuses on shoulder pain, including its causes, diagnosis, and management.

2. Weak Grip and Painful Hand: Explores hand anatomy, common hand disorders, and conditions affecting grip strength, such as arthritis or nerve damage.

3. Pain in Lower Limb/Limping: Covers the causes and management of lower limb pain, including hip, knee, and ankle disorders, as well as limping and its underlying mechanisms.

4. Bony Arches and Fracture of Foot: Examines the anatomy of the foot, common foot disorders, and fractures, emphasizing diagnosis and treatment.

5. Backache: Focuses on the causes, diagnosis, and management of back pain, including spinal anatomy and common back disorders.

6. Muscle Weakness and Fatigue: Discusses muscle physiology, common causes of muscle weakness and fatigue, and approaches to diagnosis and management.

7 Teaching Strategies:

The following teaching and learning methods are utilized to foster better understanding:

7.1 Large Group Formats:

a. **Interactive Lectures:** In large group settings, the lecturer introduces topics or common clinical conditions, explaining the underlying phenomena through interactive methods such as questions, visual aids, videos of patient interviews, and exercises. Students are actively engaged in the learning process.

b. **Directed Self-Learning:** Directed self-learning is an active approach where learners are provided with predefined learning objectives and receive guidance and supervision throughout the learning process. This method helps establish a strong foundation for independent and deep learning.

c. **Self-Directed Learning:** Students assume responsibility for their own learning through individual study, discussions with peers, and seeking information from the Learning Resource Center, teachers, and other resources both within and outside the college. Students can utilize designated college hours for self-study.

7.2 Small Group Formats:

a. **Small Group Discussions:** This format helps students clarify concepts, acquire skills, and develop attitudes. Sessions are structured around specific exercises, such as patient cases, interviews, or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials, and self-study. The facilitator's role is to ask probing questions, summarize, or rephrase to help clarify concepts.

b. **Practical Demonstrations:** Basic science practicals related to anatomy, biochemistry, and physiology are scheduled to enhance student learning.

c. **Problem-Based Learning (PBL):** In PBL sessions, students work in small groups to solve complex, real-world problems. This method encourages critical thinking, self-directed learning, and the application of knowledge in practical scenarios. Facilitators guide the process, helping students to develop problem-solving skills and integrate knowledge across disciplines.

d. **Journal Club:** The Journal Club involves students reviewing and presenting recent research articles. This activity promotes critical appraisal skills, keeps students updated with the latest scientific developments, and encourages the integration of evidence-based practices into their learning.

8 Assessment Strategies:

Assessments within the MBBS program at the College of Medicine and Dentistry at the Hills, Abbottabad consist of both formative and summative evaluations. These assessments are crucial for monitoring student progress and academic performance.

8.1 Formative Assessment:

Formative assessments, accounting for 10% of the total marks assigned to each block, serve as ongoing evaluations designed to provide feedback and promote learning. The allocation of this 10% can be determined in accordance with the blueprint of KMU and further distributed as per the recommendations of the academic council at the College of Medicine and Dentistry at the Hills, Abbottabad. Formative assessments are conducted after the completion of each module, ensuring students receive timely feedback to enhance their understanding and performance.

8.2 Summative Assessment:

Summative assessments, comprising 90% of the total assessment weighting, are conducted and overseen by KMU as part of the annual examination process. The summative annual examination is organized and conducted by KMU, which is responsible for evaluation and grading. This summative assessment evaluates students' comprehensive understanding of the curriculum and constitutes a significant portion of their final scores.

8.3 Assessment Tools:

Various assessment tools are employed to measure students' knowledge and competencies. These tools include:

1. **Written Examinations:** These include Multiple Choice Questions (MCQs) and Short Essay Questions (SEQs) that assess students' theoretical knowledge.
2. **Performance Assessments:** Objective Structured Practical Examinations (OSPE) and Objective Structured Clinical Examinations (OSCE) are used to evaluate practical skills and clinical competence.
3. **In-Training Assessments:** Clinical logbooks provide a comprehensive record of students' practical experiences and serve as a valuable tool for tracking their progress.
4. **Assignments:** Presentations, projects, and self-reflection assignments are included in the assessment process to enhance students' critical thinking and research skills.

8.4 Feedback Mechanism:

At the end of each module, a "Module Evaluation Form" will be provided to students, either in hard copy or online. Students will give their feedback on the "Course Content," "Learning Resources," "Teaching Methods," "Engagement & Motivation," and "Assessment Methods."

9 Table Of Specification

Block B Table of Specification					
Subject	**Weightage**	**No. of Hours Allocated in LOs**	**Assessment**		
			MSK-I		
			MCQs	**OSPE**	**Viva**
Gross Anatomy	31%	48	82	08	2
Physiology	21%	31	18		2
Biochemistry	22%	34	18		2
PRIME	7%	11	01	02	-
Pharmacology	2%	3	01	02	-
Pathology	5%	8	02	-	-
Community Medicine	4%	7	01	-	-
Forensic Medicine	1%	2	00	-	-
IT Skills	3%	5	00	-	-
Islamiyat	3%	4	00	-	-
Pak. Study	1%	1	00	-	-
Total	**100%**	**154**	**120**	**12**	**6**

10 Learning Objectives

10.1 General Learning Outcomes

By the end of this module the students should be able to;

Knowledge

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

1. Develop an understanding of the fundamental components of the musculoskeletal system.
2. Explain the structure & function of the musculoskeletal (MSK) components of limbs and back.
3. Describe how injury and disease alter the MSK structure & function.
4. Integrate concepts relating to various metabolic processes, their disorders and relevant lab investigations in the study of human MSK system.
5. Describe the role of the limbs (upper/lower) in musculoskeletal support, stability and movements.
6. Describe the development of the limbs & correlate it with organization and gross congenital anomalies of the limbs.
7. Identify the anatomical features of bones, muscles & neurovascular components of the limbs and correlate them with their functions, injuries and clinical problems.
8. Describe the types, formation, stability, function & clinical significance of joints of the upper and lower limb.
9. Describe the basic histology of muscle fibers including its molecular structure (Sarcomere).
10. Explain the mechanism of excitation and contraction of skeletal and smooth muscles.
11. Describe the basis for the use of therapeutic agents to modulate neuromuscular transmission.
12. Describe the general principles of MSK pain management.
13. Describe ergonomics and its principles. Prevention of different MSK disorders.
14. Interpret the mechanism of post-mortem rigidity. (spiral II)
15. Give an overview of pathology of bones, muscles and joints.
16. Explain the role of different minerals, hormones and specific metabolic products related to the musculoskeletal system and correlate them with their relevant clinical metabolic disorders.
17. Interpret the relevant laboratory investigations for diagnosis of common musculoskeletal disorders. (Spiral two)
18. To develop the critical thinking and analysis in the context of various case scenarios pertaining to locomotors system.

Skills

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

1. Demonstrate the anatomical structures of the limbs in a dissected cadaver/Model/prosecuted specimen & X-ray.
2. Demonstrate the provision of first aid measures in case of a limb fracture.

3. Communicate effectively in a team with colleagues and teachers**.**

Attitude

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

1. Demonstrate respect and care for the cadaver and prosected parts.
2. Demonstrate humbleness and use socially acceptable language during academic and social interactions with colleagues and teachers.
3. Make ethically competent decisions when confronted with an ethical, social or moral problem related to MSKS in professional or personal life.
4. Discuss ethical issues social and preventive aspect of health care in the context of MSK system.
5. To create awareness about the ethical, social and preventive aspect of health care in the context of locomotor system.

10.2 Specific Learning Outcomes

THEME –I ORIENTATION AND SHOULDER PAIN

SN	Topic	Contents	Learning outcomes	Teaching Strategy	Hours	Assessment Tools
			ANATOMY			
1	Introduction	Osseous Tissue. Classification of skeletal system. Bones of axial and appendicular skeleton. Classification, general features, nerve & blood supply of bones. Bone marrow and its types. Ossification and its types. Surface markings of bones. Definition of fracture, osteoporosis, rickets, osteomalacia. Introduction & classification of muscles. Classification, nomenclature and	Define osseous tissue Classify the skeletal system (axial and appendicular) Name and locate different bones of axial and appendicular skeleton Classify bones Describe general features of bones Describe Nerve/blood supply of bone Describe bone marrow and its types Describe ossification and its types Describe surface markings of bones Define fracture, osteoporosis, rickets, osteomalacia Introduction to muscular system Classify the muscles according to the directions of fibers	LGIS	1	**MCQs/ SEQs**

		innervation of skeletal muscles. Definition of paralysis, hyperplasia,hypertrophy,mysthena gravis.	Classify the skeletal muscles according to their action. Types of skeletal muscle fibers Describe the nomenclature of skeletal muscles Describe the principle of innervations and nerve supply of muscles Define paralysis, hyperplasia,hypertrophy,mysthena gravis.			
2-i	Introduction to Locomotion and Upper limb -I	Arm, Forearm & Hand	Identify the extent of the upper limb. Identify various regions of upper limb. Describe the division of the regions into compartments.	LGIS	1	**MCQs/ SEQs**
2-ii	Introduction to Locomotion and Upper limb -II	Arm, Forearm & Hand. Joints of Upper Limb.	State the contents of compartments of arm, forearm & hand Describe the joints of upper limb. Describe the clinical anatomy of upper limb	LGIS	1	**MCQs/ SEQs**
3	Osteology of clavicle	Recognizing the clavicle. Identifying the site of clavicle. Stating the bony landmarks of clavicle. Demonstrating the attachments of muscles on clavicle. Common fractures of clavicle. Salient features of clavicle & scapula. Surface anatomy, radiological anatomy & applied anatomy of the clavicle.	Recognize the bone Identify the site of bone State the bony land marks of clavicle: like borders, surfaces & land mark used for bone determination Describe & demonstrate the attachments of muscles. Describe the common fractures of the bone. Identify and describe the salient features of the bones scapula and clavicle Describe the surface anatomy clavicle Describe the radiological anatomy clavicle Describe the applied anatomy clavicle	LGIS	1	**MCQs/ SEQs**
4	Osteology of scapula	Recognizing the scapula. Identifying the site of scapula. Stating the bony landmarks of scapula.	Recognize the bone. Identify the site of bone. State the bony landmarks of scapula: like borders, surfaces & land mark used for bone determination.	LGIS	1	**MCQs/ SEQs**

		Demonstrating the attachments of muscles on scapula. Common fractures of scapula. Identifying attachments to scapula. Surface anatomy, radiological anatomy & applied anatomy of the scapula.	Demonstrate the attachment of muscles on scapula Describe the common fractures of the bone. Identify and describe the salient features of the bones scapula. Identify the attachments to scapula Describe the surface anatomy scapula Describe the radiological anatomy scapula. Describe the applied anatomy scapula.			
5	Osteology of humerus	Recognizing the Humerus. Stating the bony landmarks of humerus. Demonstrating the attachments of muscles & ligaments on humerus. Common fractures of humerus. Identifying the salient features of humerus & attachments to humerus. Surface anatomy, radiological anatomy & applied anatomy of the humerus.	Recognize the bone Identify the site of bone. State the bony landmarks of humerus: like borders, surfaces & land mark used for bone determination. Demonstrate the attachment of muscles & ligaments. Describe the common fractures of the bone. Identify and describe the salient features of the humerus Identify the attachments to humerus Describe the surface anatomy of humerus Describe the radiological anatomy of humerus Describe the applied anatomy of humerus	LGIS	1	**MCQs/ SEQs**
6	Muscles of the pectoral girdle	Role of muscles of pectoral region in stabilizing the pectoral girdle. Muscles of pectoral girdle. Demonstrating the attachments of muscle of pectoral girdle, nerve supply and actions. Structural organization of the clavi-pectoral fascia. Triangle of auscultation.	Recognize the role of muscles of pectoral region in stabilizing the pectoral girdle. List the muscle of pectoral girdle. Describe & Demonstrate the attachments of muscle of pectoral girdle, nerve supply and actions. Describe the structural organization of the clavi-pectoral fascia. Identify the triangle of auscultation. Describe the nerves and blood vessels of this region	LGIS	1	**MCQs/ SEQs**

		Nerves and blood vessels of the pectoral region.				
7	Muscles of the shoulder region	Extent & the muscle of shoulder region. Stating the detailed structures of each muscle with respect to Origin, Insertion, Nerve supply and Action of muscles with any characteristic features.	Recognize the extent of shoulder region. Describe the muscle of shoulder region. List the muscles of shoulder region. State the detailed structures of each muscle with respect to Origin, Insertion, Nerve supply and Action of muscles with any characteristic features.	LGIS	1	**MCQs/ SEQs**
8	The shoulder joint & its movements	Type & structure of shoulder joint. Muscles acting on the joint/rotator cuff muscles. Range of mobility & movements of shoulder joint. Clinical anatomy of shoulder joint.	Classify the type of shoulder joint. Describe the structure of shoulder joint. Name the muscles acting on the joint/rotator cuff muscles. Explain the range of mobility. Describe the movements of shoulder joint. Explain the clinical anatomy of the joint.	LGIS	1	**MCQs/ SEQs**
9	Brachial plexus	Formation of brachial plexus. Relation of brachial plexus. Branches arising from different cords of brachial plexus. Clinical correlates of the brachial plexus.	Mention the formation of brachial plexus (roots, trunk, division, and cords). Describe the relation of brachial plexus also in connection to clavicle (Supra, retro, infra clavicular parts). State the branches arising the different cords. Draw the brachial plexus. Describe the clinical correlates of the brachial plexus. Erb duchane palsy Klumpke palsy Saturday night palsy	LGIS	1	**MCQs/ SEQs**
10	Nerves of upper limb	Course and branches of nerves of upper limbs. Injuries associated with the nerves of upper limb. Causes, motor & sensory loss associated with nerve injuries of upper limb.	Describe the course and branches of nerves of upper limbs. Axillary nerve Musculocutaneous nerve Radial Nerve Ulnar Nerve Median Nerve Explain the injuries associated with these nerves.	LGIS	1	**MCQs/ SEQs**

		Identifying the deformities associated with nerves of upper limb.	Identify the causes and motor and sensory loss associated with nerve injuries of upper limb. Apply knowledge of gross anatomy to identify the deformities associated with these nerves.			
11	Axilla	Position, shape, contents & boundaries of axilla. Formation, course and relations of axillary vessels. Axillary lymph nodes.	Describe the position, shape of axilla. Describe the boundaries and content of axilla Describe the boundaries and muscle forming the boundaries of axilla. Describe the formation, course and relations of axillary vessels. Describe arrangement and groups axillary lymph node	LGIS	1	**MCQs/ SEQs**
12	Arm	Compartments of the arm. Muscles of the arm & their action. Course & branches of the nerves of the arm. Cutaneous supply of arm.	Describe the compartments of arm and how they are formed. Identify and explain the muscles and their actions found in the arm. Describe the nerve supply of arm. Describe the course of the nerves Identify the branches of the nerves Relate & integrate with the clinical Correlations Describe cutaneous supply of arm.	LGIS	1	**MCQs/ SEQs**
13	Brachial vessels	Extension, relation and branches of the Brachial artery. Course of the basilic and cephalic veins. Scapular anastomosis.	Describe the extension, relation and branches of the Brachial artery. Describe the course of the basilic and cephalic veins Describe and explain the formation and purpose of the scapular anastomosis.	LGIS	1	**MCQs/ SEQs**
14	Elbow joint	Identifying the type of elbow joint & muscles acting on the elbow joint. Neurovascular supply of the elbow joint. Carrying angle and applied aspect of the elbow joint.	Identify the type of the joint. State and Identify the muscles acting on the elbow joint. Describe the neurovascular supply of the joint. Describe the carrying angle and applied aspect of the joint. Describe the anastomosis and collateral circulation.	LGIS	1	**MCQs/ SEQs**

		Formation of anastomosis around elbow joint.	Describe formation of anastomosis around elbow joint			
15	Osteology of ulna	Recognize ulna & determine the side of the bone. Identification of features of ulna and the muscles attached to it. Common fractures of ulna. Salient features of ulna. Attachments to ulna. Surface, radiological & applied anatomy of ulna.	Recognize the bone. Determine the side of bone. Identify the features of bone. Identify the muscles attached to bone. Describe the common fractures of the bone. Describe and Identify the salient features of the ulna Identify the attachments to ulna Describe the surface anatomy of ulna and the radiological anatomy of ulna Describe the applied anatomy of ulna	LGIS	1	**MCQs/ SEQs**
16	Superficial veins, lymphatic's and lymph nodes of upper limb	Normal anatomy of veins of upper limb. Superficial vs deep veins. Features of superficial veins of upper limb. Applied & gross anatomy of superficial veins of upper limb. Structure of a lymph node. Identification of groups of lymph nodes. Area of drainage of lymph nodes. Commencement, course and termination of superficial lymphatic vessels. Clinical conditions related to lymphatic channels of upper limb.	Describe the normal anatomy of veins of upper limb. Differentiate between superficial and deep veins. Describe the features of individual superficial veins of upper limb. Correlate the applied anatomy with the gross anatomy of superficial Veins of upper limb. Describe the structure of a lymph node. Identify the groups of lymph nodes. Describe groups and area of drainage of each group of lymph nodes. Describe the commencement, course and termination of superficial lymphatic vessels. Describe the clinical conditions related to lymphatic channels of upper limb.	LGIS	1	**MCQs/ SEQs**
17	Cubital fossa	Boundaries, the contents and the relationship among structures of Cubital fossa. Surface anatomy of the Cubital fossa.	Describe the boundaries, the contents and the relationship among structures of Cubital fossa. Demonstrate the surface anatomy of the Cubital fossa. Explain the clinical importance of the Cubital fossa.	LGIS	1	**MCQs/ SEQs**

		Clinical importance of the Cubital fossa.				
18	Anterior compartment of forearm	Muscles of forearm. Nerve supply of muscles of forearm. Actions of the muscles of anterior compartment of forearm. Attachment and functions of flexor retinaculum. Muscles of the anterior compartment of the forearm.	List the muscles of forearm. State the nerve supply of these muscles. Explain actions of the muscles of anterior compartment of forearm. Describe attachment and functions of flexor retinaculum Identify/Describe muscles of the anterior compartment of the forearm (origin, insertion, nerve supply, blood supply, and action)	LGIS	1	**MCQs/ SEQs**
19	Posterior compartment of forearm	Organization of muscles of posterior compartment of forearm. Identification & description of muscles of the posterior compartment of the forearm. Nerve supply, actions of the muscles of posterior compartment of forearm. Structural organization of the Extensor Retinaculum	Explain the organization of muscles of posterior compartment of forearm Identify/Describe muscles of the posterior compartment of the forearm (origin, insertion, nerve supply, blood supply, and action) State the nerve supply of these muscles. Explain the actions of the muscles of posterior compartment of forearm. Describe the structural organization of the Extensor Retinaculum.	LGIS	1	**MCQs/ SEQs**
20	Blood vessels & nerves of the forearm	Vessels & nerves in forearm. Location, destination, course & relations of radial and ulnar arteries & their branches in forearm. Deep veins of forearm and their tributaries. Location, destination, course & relations of ulnar, radial and median nerves & their branch.	Describe the different vessels & nerves in forearm. Describe the location, destination, course & relations of radial and ulnar arteries & their branches in forearm. Describe the deep veins of forearm and their tributaries. Describe the location, destination, course & relations of ulnar, radial and median nerves & their branch.	LGIS	1	**MCQs/ SEQs**
21	Radio-ulnar joint	Radio-ulnar joint. Movements occurring on Radio-ulnar joint.	Recognize the details of Radio-ulnar joint.	LGIS	1	**MCQs/ SEQs**

		Muscles acting in pronation and supination. Nerve supply and blood supply of Radio-ulnar joint. Clinical problems related to Radio-ulnar joints.	Describe and explain the movements occurring on Radio-ulnar joint. Name the muscles acting in pronation and supination. Describe the nerve supply and blood supply of Radio-ulnar joint. Describe clinical problems related to Radio-ulnar joints.			
22	Surface anatomy of upper Limb	Surface markings for various arteries of upper limb.	Demonstrate the surface markings for various arteries of upper limb	LGIS	1	**MCQs/ SEQs**
EMBRYOLOGY						
23	Somitogenesis	Gastrulation. Development of Mesoderm. Somitogenesis. Formation of cartilage.	Define the process of gastrulation. Describe the development of mesoderm. Describe the process of somitogenesis. Describe the formation of cartilage	LGIS	1	**MCQs/ SEQs**
24	Development of bone, cartilage and joints	Histogenesis of Bone. Intramembranous Ossification. Endochondral Ossification. Ossification of limb bones. Development of joints & Cartilage. Developmental events of fibrous joints, cartilaginous joint & synovial joints. Important congenital correlates.	Describe histogenesis of Bone Describe the Intramembranous Ossification Describe the Endochondral Ossification Describe the Ossification of limb bones Describe the development of joints Describe the development of cartilage Describe developmental events of fibrous joints Describe developmental events of cartilaginous joint Describe developmental events of synovial joints Describe important congenital correlates	LGIS	1	**MCQs/ SEQs**
25	Development of upper limb	Early & final stages of upper limb development. Development of upper limb buds.	Describe the early stages of upper limb development Describe the development of upper limb buds Describe the final stages of upper limb development	LGIS	1	**MCQs/ SEQs**

		Anomalies of the upper limb.	Describe and explain the anomalies of the upper limb			
26	Development of muscles	Development of skeletal muscle. Development of Myotomes and derivatives of epaxial divisions of myotomes and derivatives of hypaxial divisions of myotomes.	Describe the development of skeletal muscle. Describe the development of Myotomes and derivatives of epaxial divisions of myotomes and derivatives of hypaxial divisions of myotomes	LGIS	1	**MCQs/ SEQs**
			HISTOLOGY			
27	Bone histology	Compact bone. Spongy bone. Bone matrix. Identification of cells of boney tissue & microscopic structure of bone. Functions of various bone cells. Role of bones in calcium metabolism.	Define and identify compact and spongy bone Describe and identify bone matrix (organic and inorganic component) Describe and identify cells of boney tissue i.e. (osteoprogenitor, osteoblasts, osteoclast, and osteocytes) Describe and identify periosteum and endosteum Describe and identify the microscopic structure of bone i.e. (primary bone, secondary bone and haversian system) Describe Functions of various bone cells Describe important Functions and its role in calcium metabolism	LGIS	1	**MCQs/ SEQs**
28	Classification & histology of cartilage	General properties of cartilage. Types of cartilage. Hyaline, Elastic and Fibrocartilage. Growth of cartilage.	Describe the General properties of cartilage Describe the Different types of cartilage Describe the Hyaline, Elastic and Fibrocartilage Explain the growth of cartilage	LGIS	1	**MCQs/ SEQs**
29	Histology of cartilage	Identification of types of cartilages on microscopy. Classification of cartilages. Microscopic structure of hyaline cartilage, elastic cartilage & fibrous cartilage.	Identify types of cartilages on microscopy, including distinctive features of each. Describe the structural basis. Classify and distinguish three types of cartilages Describe the microscopic structure of hyaline cartilage Describe the microscopic structure of Elastic cartilage	LGIS	1	**MCQs/ SEQs**

		Important functional correlates of three types of cartilages.	Describe the microscopic structure of fibrous cartilage Describe important functional correlates of three types of cartilages			
30	Classification & histology of bone	Recognizing bone and its functions and composition. Woven bone vs lamellar bone. Compact bone vs spongy bone. Applied aspect of bone.	Recognize bone and its functions and composition. Differentiate between woven bone and lamellar bone. Differentiate between compact bone and spongy bone. Describe the applied aspect of bone	LGIS	1	**MCQs/ SEQs**
31	Histology of bone	Identification of types of bone on microscopy. Structural basis of classification of bones.	Identify three types of bone on microscopy, including distinctive features of each. Describe the structural basis of classification.	LGIS	1	**MCQs/ SEQs**
32	Histology of muscles	Identification of types of muscles on microscopy. Structural basis of muscle striations. function and organization of the connective tissue in muscle. Classify and distinguish three types of muscles. Microscopic structure of skeletal muscle. Microscopic structure of smooth muscle. Important functional correlates of skeletal & smooth muscle. Microscopic structure of cardiac muscle fiber. Important functional correlates of cardiac muscle fiber.	Identify three types of muscles on microscopy, including distinctive features of each muscle fiber. Describe the structural basis of muscle striations. Recognize the structural elements that produces muscle contraction and brings the movement of a body part. Recognize the function and organization of the connective tissue in muscle. Classify and distinguish three types of muscles Describe the microscopic structure of skeletal muscle Describe important functional correlates of skeletal, smooth Describe the microscopic structure of smooth muscle Identify/Describe the microscopic structure of cardiac muscle fiber Describe important functional correlates of cardiac muscle fiber	LGIS	1	**MCQs/ SEQs**
PHYSIOLOGY						
36	Terms related to MSK	Describing important terms related to	Describe the following terms related to MSK Excitable tissue	LGIS	1	**MCQs/ SEQs**

		musculoskeletal system.	Stimulus Threshold Depolarization Hyperpolarization Presynaptic potential Post synaptic potential Goldman Equation Nernst Equation			
35	Energetics of muscle contraction	Energetics of muscle Contraction.	Describe the energetics of muscle contraction.	LGIS	1	**MCQs/ SEQs**
34	Mechanism of muscle contraction	General & molecular mechanism of muscle contraction.	Describe the general mechanism of muscle contraction Describe the molecular mechanism of muscle contraction	LGIS	1	**MCQs/ SEQs**
BIOCHEMISTRY						
37	Connective tissues	Biochemistry of connective tissues.	Explain in detail the biochemistry of connective tissues.	LGIS	1	**MCQs/ SEQs**
38	Glycosaminoglycan	role of glycosaminoglycan in the formation of the connective tissues, cartilage, skin, blood vessels and tendons.	Discus the role of glycosaminoglycan (GAG) in the formation of the connective tissues, cartilage, skin, blood vessels and tendons.	LGIS	1	**MCQs/ SEQs**
39	Collagen	Chemical structures of cellular matrix of collagen and elastin.	Describe the chemical structures of cellular matrix of collagen and elastin	LGIS	1	**MCQs/ SEQs**
40	Chemistry of Amino acids and Proteins	Structure, classification of amino acids & Proteins. Plasma proteins.	Describe structure of amino acids & Proteins Classify proteins Describe different types of Plasma proteins	LGIS	1	**MCQs/ SEQs**
LAB WORK						
BIOCHEMISTRY						
41	Detection of Sulphur containing amino acids	Sulphur containing amino acids, their structure and types. Detection of Sulphur containing amino acids.	Define Sulphur containing amino acids their structure and types Perform Lead Sulphate test	Demonstration / Practical	2	**OSPE**
SMALL GROUP DISCUSSIONS						
ANATOMY						

42	Osteology of Clavicle & Scapula.	Recognizing Clavicle & Scapula. Identification of sites and bony landmarks of Clavicle & Scapula. Surface, radiological & applied anatomy of clavicle & scapula.	Recognize the bones & identify the site of the bones. Identify the bony landmarks of the clavicle & scapula like borders, surfaces and landmarks used for bone determination. Describe the surface, radiological & applied anatomy of clavicle & scapula.	SGDs	2	**MCQs/ SEQs**
PHYSIOLOGY						
43	Mechanism of Muscle Contraction.	General & molecular mechanism of muscle contraction.	Explain the general & molecular mechanism of muscle contraction.	SGDs	2	**MCQs/ SEQs**
DIRECTED SELF LEARNING						
ANATOMY						
44	The Shoulder Joint	Structure, range of mobility & clinical anatomy of the shoulder joint.	Describe the structure, range of mobility & clinical anatomy of the shoulder joint.	DSL	1	**MCQs/ SEQs**
45	Elbow Joint	Neurovascular supply & the formation of anastomosis around the elbow joint.	Describe the neurovascular supply & the formation of anastomosis around the elbow joint.	DSL	1	**MCQs/ SEQs**
PHYSIOLOGY						
46	Physiologic Anatomy of skeletal muscles	Physiologic Anatomy of skeletal muscles	Describe the physiologic anatomy of skeletal muscles.	DSL	1	**MCQs/ SEQs**
47	Muscle contraction	Energetics of muscle contraction.	Describe the energetics of muscle contraction.	DSL	1	**MCQs/ SEQs**
BIOCHEMISTRY						
48	Role of GAGs in the formation of connective tissues	role of glycosaminoglycan in the formation of the connective tissues, cartilage, skin, blood vessels and tendons.	Discus the role of glycosaminoglycan (GAG) in the formation of the connective tissues, cartilage, skin, blood vessels and tendons.	DSL	1	**MCQs/ SEQs**
49	**Chemistry of proteins**	**Structure & classification of proteins**	**Describe the structure & classification of proteins.**	**DSL**	**1**	**MCQs/ SEQs**

Theme-II (Weak Grip and Painful Hand)

S No.	Topic	Contents	Learning Outcomes	Teaching strategy	Hours	Assessment tools
			ANATOMY			
1	Osteology of radius & hand	Bones of forearm & hand. Determining the side of bones of radius and hand. Features of, & muscles attached to radius and bones of hand. Ossification of radius and bones of hand. clinical significance of radius and bones of hand. Salient features of the radius. Attachments to radius. Surface, radiological & applied anatomy of radius. Salient features bones of hand. Attachments to bones of hand. Surface, radiological & applied anatomy of bones of hand.	Recognize the bones of forearm & hand Determine side of bones. Identify the features of bones. Identify the muscles attached to bones. Describe the ossification of bones Explain the clinical significance of bones. Describe the common fractures of the bone. Describe and Identify the salient features of the radius Identify the attachments to radius Describe the surface anatomy radius and the radiological anatomy radius Describe the applied anatomy radius Describe and Identify the salient features bones of hand Identify the attachments to bones of hand Describe the surface anatomy main bones of hand and the radiological anatomy of main bones Describe the applied anatomy main bones of hand including carpal tunnel and fractures	LGIS	1	MCQs / SEQs
2	Muscles of hand	Structure and functions of palmar aponeurosis. Attachments, nerve supply & actions of muscles of hand. Thenar Muscles. Correlate the movements of	Recall the structure and functions of palmar aponeurosis. Describe the attachments, nerve supply & actions of muscles of hand. Describe the thenar Muscles. Correlate the movements of thumb with hand anatomy.	LGIS	1	MCQs / SEQs

		thumb with hand anatomy. Anatomical snuffbox. Relate applied with gross anatomy of few structures of hand. Small muscles of the hand Surface anatomy of important muscles of hand. Describe joints of the hand and fingers. Surface , radiological and clinical anatomy of important joints.	Identify the anatomical snuffbox. Relate applied with gross anatomy of few structures of hand Enumerate, describe and identify the small muscles of the hand Describe Surface anatomy of important muscles of hand Identify structures on transverse MRI hand taken at various levels Describe relevant clinical anatomy of important muscles Identify/Describe joints of the hand and fingers (intercarpal joints, carpometacarpal and intermetacarpal joints, carpometacarpal joint of the thumb, and metacarpophalangeal joints Describe surface , radiological and clinical anatomy of important joints			
3	Vessels & nerves of the hand	Identification of different vessels in hand. Location, destination course relations of radial and ulnar arteries in hand. Superficial and deep palmar arch. Veins of hand and their tributaries. Nerve supply of the hand.	Identify different vessels in hand. Describe the location, destination course relations of radial and ulnar arteries in hand. State the branches of radial and ulnar arteries in hand. Describe the formation of superficial and deep palmar arch, veins of hand and their tributaries. Describe the nervous supply of the hand.	LGIS	1	MCQs / SEQs
4	Wrist joint	Wrist joint. Movements occurring on wrist joints. Muscles acting in pronation and supination.	Recognize the details of wrist joints. Describe and explain the movements occurring on wrist joints. Name the muscles acting in pronation and supination.	LGIS	1	MCQs / SEQs

		Nerve supply and blood supply of wrist joints. Clinical problems related to Wrist joints.	Describe the nerve supply and blood supply of wrist joints. Describe clinical problems related to Wrist joints.			
5	Spaces of the palm	Spaces of the hand on both palmar and dorsal aspects. Clinical importance of spaces of the palm.	Identify the different spaces of the hand on both palmar and dorsal aspects. Describe the clinical importance of these spaces	LGIS	1	MCQs / SEQs
PHYSIOLOGY						
6	Describe the important terms	Motor unit Summation Tetanization Staircase effect Skeletal muscle tone Muscle fatigue Agonist Antagonists Coactivation of agonist& antagonist	Describe the following Motor unit Summation Tetanization Staircase effect Skeletal muscle tone Muscle fatigue Agonist Antagonists Coactivation of agonist and antagonist	LGIS	1	MCQs / SEQs
8	Muscle action potential	Muscle action potential	Describe the muscle action potential.	LGIS	1	MCQs / SEQs
7	Excitation contraction coupling in skeletal muscles	Process of excitation contraction coupling in skeletal muscles. Transverse tubule-sarcoplasmic reticulum system Release of Calcium ions by sarcoplasmic reticulum Role of Calcium pump Excitatory pulse of Ca+	Discuss the process of excitation contraction coupling in skeletal muscles. Explain Transverse tubule-sarcoplasmic reticulum system Describe Release of Calcium ions by sarcoplasmic reticulum Explain Role of Calcium pump Describe Excitatory pulse of Ca+	LGIS	1	MCQs / SEQs
33	Skeletal vs smooth muscle	Differences between skeletal muscle and smooth muscle.	Differentiate between skeletal muscle and smooth muscle.	LGIS	1	MCQs / SEQs
BIOCHEMISTRY						

10	Role of calcium and phosphorus	Role of calcium and phosphorous in formation of cellular matrix and bone.	Explain the role of calcium and phosphorous in formation of cellular matrix and bone	LGIS	1	MCQs / SEQs
11	Vitamins	Definition & classification of vitamins. Fat soluble vs Water soluble vitamins. Chemistry & role of Fat soluble vitamins.	Vitamins and their role Define vitamins Classify vitamins Differentiate between Fats and water soluble vitamins Describe role of Vitamin A Explain the role of Vitamin D Describe the role of Vitamin E & K	LGIS	1	MCQs / SEQs
12	Introduction to Minerals	Definition & classification of Minerals. Major vs minor minerals.	Define Minerals, Define major and minor minerals Describe classification of minerals	LGIS	1	MCQs / SEQs
PRACTICALS						
BIOCHEMISTRY						
13	Detection of Cyclic Amino Acids	Chemistry of Cyclic Amino Acids. Detection of Cyclic Amino Acids	Define Cyclic Amino Acids Understand the structure and types of Cyclic Amino Acids Perform Xanthoproteic Test	Demonstration / Practical	2	OSPE
SMALL GROUP DISCUSSIONS						
ANATOMY						
14	Osteology of Radius & Ulna.	Radius & Ulna. Features of Radius & ulna. Attachments to radius and ulna. salient features, surface anatomy and radiological anatomy of radius & ulna.	Recognize Radius & ulna., determine the sides and identify the features of Radius & ulna. Identify the attachments to radius and ulna. Describe the salient features, surface anatomy and radiological anatomy of radius & ulna.	SGD	2	MCQs /SEQs
PHYSIOLOGY						
15	Terms related to MSK-Muscle Remodeling.	Describing the important terms related to MSK. Muscle Remodeling.	Describe stimulus, threshold, depolarization, hyperpolarization, presynaptic potential, postsynaptic potential, Goldman equation, and Nernst equation. Describe Muscle hypertrophy, Muscle atrophy, Muscle hyperplasia, Rigor	SGD	2	MCQs / SEQs

			mortis, Muscle dystrophy and Recovery of muscle contraction in poliomyelitis			
BIOCHEMISTRY						
16	Vitamins Fat Soluble Vitamin	Definition & classification of vitamins. Fat vs Water soluble vitamins. Role of Fat Soluble Vitamins.	Define & Classify Vitamins. Differentiate between water soluble and fat soluble vitamins. Describe the role of Vitamin A, D, E & K.	SGD	2	MCQs / SEQs
DIRECTED SELF LEARNING						
ANATOMY						
17	Wrist Joint	Wrist joint. Movements occurring on wrist joint.	Recognize the details of wrist joint and the explain the movements occurring on wrist joint.	DSL	1	MCQs / SEQs
PHYSIOLOGY						
18	Myasthenia Gravis	Pathophysiology of myasthenia gravis	Describe the pathophysiology of myasthenia gravis	DSL	1	MCQs / SEQs
BIOCHEMISTRY						
19	Role of calcium and phosphorous in the formation of cellular matrix and bone	Role of calcium and phosphorous in formation of cellular matrix and bone	Explain the role of calcium and phosphorous in formation of cellular matrix and bone	DSL	1	MCQs / SEQs

Theme-III (Pain Lower Limb/ Limping)

S No.	Topic	Contents	Learning Outcomes	Teaching Strategy	Hours	Assessment Tool
Anatomy						
1-i	Introduction to lower limb -I	Parts of lower limb. Regions of lower limb. Bones of lower limb.	Recognize different parts of lower limb. Describe regions of lower limb. List the bones of lower limb.	LGIS	1	MCQs/ SEQs

1-ii	Introduction to lower limb -II	Vessels & nerves Land marks in different regions	Describe the vessels and nerves of lower limb. Identify different land marks in different regions of lower limb	LGIS	1	MCQs/ SEQs
2	Hip bone	Parts of hip bone. Side determination of hip bone. Muscle & ligamentous attachments to hip bone. Bones articulating with the hip bone. Common fractures of hip bone. Salient features of hip bone. Surface, radiological and applied anatomy of hip bone.	Identify the different parts of the bone. Describe side determination. Describe muscle attachments. Describe ligamentous attachments. Describe the different bones articulating with the hip bone Describe the common fractures of the bone. Identify and describe the salient features of the bones of hip bone Identify the attachments of hip bone Describe the surface anatomy of hip bone Describe the radiological anatomy of hip bone Describe the applied anatomy of hip bone.	LGIS	1	MCQs/ SEQs
3	The hip joint and movements	Characteristics features of synovial joint. Articular surfaces of hip joint. Capsule of hip joint. Synovial membrane, cavity & fluid of hip joint. Ligaments of hip joint. Movements possible at hip joint. Clinical correlates of the hip. Surface, radiological and	Describe the characteristics features of synovial joint Describe the Articular surfaces of hip joint Identify the capsule of hip joint Describe the synovial membrane, cavity & fluid of hip joint Enumerate the ligaments of hip joint & describe their attachments Describe the movements possible at hip joint Describe the clinical correlates of the hip joint Describe surface and radiological anatomy (X-rays and MRI) and clinical of hip joints	LGIS	1	MCQs/ SEQs

		applied anatomy of hip joint.				
4	Gluteal region	Boundaries of gluteal region. Bones and ligaments of gluteal region. Structures entering and leaving gluteal region. Muscles, vessels & nerves of the gluteal region. Clinical correlates regarding gluteal region.	Describe the boundaries of gluteal region Describe bones and ligaments of gluteal region Describe the different structures entering and leaving gluteal region Describe muscles of the gluteal region. Describe Vessels of the gluteal region. Describe nerves of the gluteal region. Describe about certain clinical correlates regarding gluteal region Describe Surface anatomy of important muscles Identify structures on transverse MRI of gluteal region taken at various levels Describe clinical anatomy of important muscles	LGIS	1	MCQs/ SEQs
5	Femur	Parts of the femur. Side determination of the femur. Surfaces and borders of femur. Common fractures of femur. Attachments of the different muscles and ligaments on femur. Arterial supply of femur. Fractures of femur. Salient features of the femur. Surface, radiology & applied anatomy of femur.	Identify different parts of the femur Determine the side of the bone Identify the surfaces and borders of the bone Describe the common fractures of the bone. Describe the attachments of the different muscles and ligaments on the bone Describe the arterial supply of the bone Relate to the general idea about fractures of femur and other clinical conditions Identify and describe the salient features of the femur Describe the surface anatomy of femur Describe the radiological anatomy of femur	LGIS	1	MCQs/ SEQs

			Describe the applied anatomy of femur			
6	Nerves of lower limb and their injuries	Nerves of lower limb and their main branches. Nerves closely related to a bone or other structure of lower limb. Nerves commonly vulnerable to injury.	Identify the names of nerves and their main branches innervating lower limb Identify the nerves closely related to a bone or other structure of lower limb Recognize the main nerves commonly vulnerable to injury Identify the main area and loss of function if particular nerve is injured Define and understand terms neuritis, anesthesia, par aesthesia, paralysis, neuralgia, sciatica	LGIS	1	MCQs/ SEQs
7	Superficial vessels and lymphatic's of lower limb	Superficial arteries of lower limb. Superficial veins of lower limb. Superficial lymphatic vessels and lymph nodes of lower limb.	Enumerate and describe the superficial arteries of lower limb Name and Describe superficial veins of lower limb List and Describe the superficial lymphatic vessels and lymph nodes of lower limb	LGIS	1	MCQs/ SEQs
8	Deep fascia of thigh, iliotibial tract and superficial vessels	Arrangement of deep fascia in thigh. Role of iliotibial tract in walking and running. Location of saphenous opening and its relations. Great saphenous vein. Clinical correlates of saphenous vein.	Describe the arrangement of deep fascia in thigh Describe how the iliotibial tract participates in walking and running Describe the location of saphenous opening and its relations Describe the great saphenous vein. Describe clinical correlates of saphenous vein	LGIS	1	MCQs/ SEQs
9	Muscles of the anterior fascial compartment of thigh	Muscles of anterior compartment of thigh and action of these muscles.	Describe the muscles of anterior compartment of thigh. Describe the nerve supply of anterior Compartment. Describe the action of these muscles	LGIS	1	MCQs/ SEQs

		Nerve supply of anterior Compartment.				
10	Nerves and vessels of anterior compartment of thigh	Nerve supply of anterior compartment of thigh. blood supply and the venous drainage of anterior compartment of thigh.	Describe the nerve supply of the anterior compartment of thigh. Describe the blood supply and the venous drainage of anterior compartment of thigh.	LGIS	1	MCQs/ SEQs
11	The medial compartment of thigh	Muscles of medial compartment of the thigh & their nerve supply. Actions of the muscles of medial compartment of thigh. Vessels of medial compartment of the thigh.	Describe the muscles of medial compartment of the thigh. Describe the nerve supply of these muscles. Describe the actions of the muscles of medial compartment of thigh Describe the vessels of medial compartment of the thigh	LGIS	1	MCQs/ SEQs
12	Posterior compartment of thigh	Muscles, arterial supply, venous drainage & nerve supply of posterior compartment of thigh. Trochanteric and cruciate anastomosis. Clinical conditions effecting posterior compartment of thigh.	Describe the muscles of posterior compartment of thigh Describe the arterial supply of posterior compartment of thigh Discuss the trochanteric and cruciate anastomosis at the back of thigh Describe the venous drainage of this region Describe the nerve supply of posterior compartment of thigh and Relate to the clinical conditions effecting the region	LGIS	1	MCQs/ SEQs
13	Popliteal fossa	Boundaries of popliteal fossa. Contents of the popliteal fossa. Clinical correlates regarding popliteal fossa.	Describe the boundaries of popliteal fossa. Describe the contents of the popliteal fossa. Describe some clinical correlates regarding popliteal fossa	LGIS	1	MCQs/ SEQs

14	Femoral triangle and its contents	Boundaries of femoral triangle. Contents of femoral triangle. Femoral sheath & canal. clinical correlates of the Femoral triangle. Location, boundaries and contents of adductor canal.	Describe the boundaries of femoral triangle List the contents of femoral triangle Describe the femoral sheath & canal Describe the clinical correlates of the Femoral triangle. Describe the location, boundaries and contents of adductor canal	LGIS	1	MCQs/ SEQs
15	Tibia bone	Division of tibia bone. Surfaces and borders of tibia. Attachments of muscles on the tibia bone. Ossification of tibia and its primary and secondary ossification centers. Common fractures of tibia. Salient features of the bone of leg. Attachments to the bone of the leg. Surface, radiological and applied anatomy of leg.	Describe the division of tibia bone in 3 parts Identify the surfaces and borders of tibia Describe the attachments of muscles on the tibia bone Describe the ossification of tibia and its primary and secondary ossification centers Describe the common fractures of the bone. Identify and describe the salient features of the bone of leg Identify the attachments to the bone of the leg Describe the surface anatomy of leg Describe the radiological anatomy of leg Describe the applied anatomy of leg	LGIS	1	MCQs/ SEQs
16	Fibula & bones of foot	Side determination of fibula. Bony features along with its different attachments on the fibula. Tarsal bones and their arrangement. Metatarsal and phalangeal bones.	Determine the side of bone. Describe the bony features along with its different attachments on the fibula. Name and describe the tarsal bones and their arrangement Name and describe the metatarsal bones and phalangeal bones. Describe the common fractures of the bone.	LGIS	1	MCQs/ SEQs

		Common fractures of the bone. Muscles of the sole of the foot. Muscles of the dorsum of the foot. Surface and clinical anatomy of important muscles.	Describe the muscles of the sole of the foot (origin, insertion, nerve supply, blood supply, and action) Describe the muscles of the dorsum of the foot (origin, insertion, nerve supply, blood supply, and action) Describe Surface anatomy of important muscles Identify structures on transverse MRI of foot taken at various levels Describe clinical anatomy of important muscles			
17	Anterior and lateral compartment of leg	Boundaries of anterior & lateral compartment of leg. Muscles of anterior and lateral compartment of leg & action of these muscles. Vessels & nerves of anterior and lateral compartment of leg	Identify the boundaries of the compartments of leg State the muscles of anterior and lateral compartment of leg Describe the vessels of anterior and lateral compartment of leg Describe the nerves of lateral and anterior compartment of leg Describe action of these muscles	LGIS	1	MCQs/ SEQs
18	Posterior compartment of leg	Muscles of posterior Compartment of leg and the actions of these muscles. Nerve supply of the muscles of posterior compartment of leg.	Explain the muscles of posterior Compartment of leg. Describe nerve supply of these muscles. Explain the actions of the muscles of posterior compartment of leg	LGIS	1	MCQs/ SEQs
19	Knee joint	Knee joint & its articular surfaces. Articular capsule. Synovial membrane and the synovial cavity. Ligaments of knee joint.	Describe the type of knee joint Describe the articular surfaces of this joint Describe the articular capsule Describe the synovial membrane and the synovial cavity	LGIS	1	MCQs/ SEQs

		Bursa around the knee joint. Blood and nerve supply of the knee joint. Mechanism of locking and unlocking of knee joint. Surface, radiological and clinical anatomy of knee joints.	Enumerate the ligaments of knee joint Describe the bursa around the knee joint Describe the blood and nerve supply of the knee joint Describe the mechanism of locking and unlocking of knee joint. Describe surface and radiological anatomy (X-rays and MRI) and clinical of knee joints			
20	Surface anatomy of lower limb	Surface anatomy of arteries of lower limb. Surface anatomy of superficial & deep veins lower limb. Surface anatomy of nerves of lower limb.	Demonstrate the surface anatomy of arteries of lower limb. Demonstrate the surface anatomy of superficial & deep veins lower limb. Demonstrate the surface anatomy of nerves of lower limb	LGIS	1	MCQs/ SEQs
			Embryology			
21	Developme nt of lower limb	Development of lower limb buds. Early & final stages of lower limb development. Anomalies of the lower limb.	Describe the early stages of lower limb development Describe the development of lower limb buds Describe the final stages of lower limb development Describe and explain the anomalies of the lower limb	LGIS	1	MCQs/ SEQs
			Biochemistry			
22	Sodium, potassium and chlorine in biology	RDA, serum levels, sources and Functions of sodium, potassium and chlorine. Absorption, excretion and disorders related to increase and decrease in amount of	Discuss RDA, serum levels Enlist sources of Sodium, Potassium and chlorine, Describe functions Discuss absorption excretion, Describe disorders related to increase and decrease in amount of Sodium, Potassium and chlorine	LGIS	1	MCQs/ SEQs

		Sodium, Potassium and chlorine.				
PRACTICALS						
BIOCHEMISTRY						
23	Salt Saturation Test	Salt Saturation Test	Perform Salt Saturation Test	Demonstration / Practical	2	OSPE
SMALL GROUP DISCUSSIONS						
ANATOMY						
24	Hip Bone	Side determination, muscle attachments different parts of the Hip Bone. salient features, surface anatomy, radiological and applied anatomy of Hip Bone.	Describe the side determination, muscle attachments & different parts of the Hip Bone. Describe the salient features, surface anatomy, radiological and applied anatomy of Hip Bone.	SGD	2	MCQs/ SEQs
25	Femur	Side determination, muscle attachments & different parts of the Femur. Salient features, surface anatomy, radiological and applied anatomy of Femur.	Describe the side determination, muscle attachments & different parts of the Femur. Describe the salient features, surface anatomy, radiological and applied anatomy of Femur.	SGD	2	MCQs/ SEQs
PHYSIOLOGY						
26	Muscle Action Potential	Muscle Action Potential	Describe the muscle action potential.	SGD	2	MCQs/ SEQs
27	Excitation-Contraction. Coupling in Skeletal Muscle	Excitation-Contraction. Coupling in Skeletal Muscle	Describe excitation contraction coupling of skeletal muscle.	SGD	2	MCQs/ SEQs
BIOCHEMISTRY						
28	Plasma Proteins.	Clinical significance of plasma proteins. Gamma globulin & Albumin.	Describe the clinical significance of plasma proteins. Explain gamma globulin proteins and albumin with their functions.	SGD	2	MCQs/ SEQs
DIRECTED SELF LEARNING						

			ANATOMY			
29	Hip Joint	Capsule of Hip Joint. Articular surfaces, synovial membrane cavity & fluid of Hip Joint. Surface, radiological & applied anatomy of Hip Joint.	Identify the capsule of Hip Joint. Describe the articular surfaces, synovial membrane cavity & fluid of Hip Joint. Describe the possible movements at and clinical correlates of Hip Joint. Describe the surface, radiological & applied anatomy of Hip Joint.	DSL	1	MCQs/ SEQs
			PHYSIOLOGY			
30	Mechanism and control of Smooth Muscles Contraction	Types of smooth muscles. Contractile mechanisms & excitation and contraction of smooth muscle. Nervous and hormonal control of smooth muscle contraction.	Identify the types of smooth muscles. Describe the contractile mechanisms & excitation and contraction of smooth muscle. Describe the nervous and hormonal control of smooth muscle contraction.	DSL	1	MCQs/ SEQs
			BIOCHEMSTRY			
31	Serum Electrolytes	Sources, serum levels functions & recommended daily allowances of Sodium, Potassium, Chlorine and magnesium. Absorption and excretion & disorders related to increase and decrease in amount of serum electrolytes.	Enlist the serum electrolytes. Discuss the sources, serum levels functions & recommended daily allowances of Sodium, Potassium, Chlorine and magnesium. Discuss the absorption and excretion & disorders related to increase and decrease in amount of serum electrolytes.	DSL	1	MCQs/ SEQs

Theme-IV (Bony arches and fracture of foot)

S No.	Topic	Contents	Learning Outcomes	Teaching strategy	Hours	Assessment tools
			ANATOMY			
1	Muscles and neurovascular supply of the foot	Dorsal muscles of foot. Origin and insertion of planter muscles of foot. Vascular and nervous supply of sole and dorsum of foot. Salient features of the bone of foot. Attachments to the bone of the foot. Surface, radiological and applied anatomy of foot	Describe the dorsal muscles of foot. Describe the origin and insertion of planter muscles of foot. Describe their nerve supply and actions. Describe vascular and nervous supply of sole and dorsum of foot Describe their course through foot Describe relationships Identify and describe the salient features of the bone of foot Identify the attachments to the bone of the foot Describe the surface anatomy of foot Describe the radiological anatomy of foot Describe the applied anatomy of foot	LGIS	1	MCQs/ SEQs
2	Arches of foot	Arches of foot. Factors responsible for maintenance of the arches of the foot. Plantar fasciitis.	Describe the arches of foot Describe the factors responsible for their maintenance of the arches of the foot Recognize the injury when it occurs and be able to evaluate plantar fasciitis. Describe about counselling regarding the rehabilitation for plantar fasciitis	LGIS	1	MCQs/ SEQs
			Biochemistry			
3	Role of vitamin C & D	Role of Vitamin C and Vitamin D in the formation of connective	Describe the role of Vitamin C and Vitamin D in the formation of connective tissues and bones.	LGIS	1	MCQs/ SEQs

		tissues and bones.				
4	Iodine in Biology	RDA, serum levels, sources, functions, absorption, excretion and disorders related to increase and decrease in amount of Iodine.	Discuss RDA, serum Levels Iodine Enlist sources of Describe functions Discuss absorption excretion, Describe disorders related to increase and decrease in amount of Iodine	LGIS	1	MCQs/ SEQs
			Pathology			
5	Introduction to Bone pathology	Osteopenia. Osteoporosis. Osteomalacia. Osteomyelitis. Arthritis.	Define and differentiate osteopenia, osteoporosis, osteomalacia Define osteomyelitis Enlist various forms of arthritis.	LGIS	1	MCQs/ SEQs
			Forensic medicine			
6	Injury	Injury. Mechanical injury. Classification of injury. Mechanisms of injury. Interpreting the nature of injury.	Define injury on medico legal basis. Classify injury. Define mechanical injury Classify mechanical injury Describe mechanisms of injury. Interpret the nature (manner) of injury.	LGIS	1	MCQs/ SEQs
7	Wound	Wound. Hurt. Factors affecting appearance of wound	Define wound. Define hurt. Identify factors affecting appearance of wound	LGIS	1	MCQs/ SEQs
			SMALL GROUP DISCUSSIONS			
			ANATOMY			
8	Vertebral Column	Origin, insertion, nerve supply, blood supply and action of muscles of the back. Surface & clinical anatomy of important	Describe the origin, insertion, nerve supply, blood supply and action of muscles of the back. Describe the Surface & clinical anatomy of important muscles of the back.	SGD	2	MCQs/ SEQs

		muscles of the back.				
PHYSIOLOGY						
9	Nervous and Hormonal Control of Smooth Muscle Contraction	Nervous and Hormonal Control of Smooth Muscle Contraction	Describe the nervous and hormonal control of smooth muscle Contraction.	SGD	2	MCQs/ SEQs
BIOCHEMISTRY						
10	Role of Calcium & Phosphorus in formation of cellular matrix & bone	Role of Calcium & Phosphorus in formation of cellular matrix & bone	Explain the role of calcium and phosphorous in formation of cellular matrix and bone.	SGD	2	MCQs/ SEQs
DIRECTED SELF LEARNING						
ANATOMY						
11	Foot Muscles	Dorsal muscles of the foot. Origin and insertion of plantar muscles of the foot.	Describe the dorsal muscles of the foot. Describe the origin and insertion of plantar muscles of the foot.	DSL	1	MCQs/ SEQs
PYSIOLOGY						
12	Skeletal Muscle Vs Smooth Muscle	Skeletal Vs Smooth Muscle. Skeletal Vs Smooth Muscle contraction.	Differentiate between skeletal muscle and smooth muscle. Compare the smooth muscle contraction and skeletal muscle contraction.	DSL	1	MCQs/ SEQs
BIOCHEMISTRY						
13	Hormonal regulation of Ca & P to maintain MSK s	Hormonal regulation of calcium and phosphorous to maintain musculoskeletal system	Explain the hormonal regulation of calcium and phosphorous to maintain musculoskeletal system	DSL	1	MCQs/ SEQs

Theme-V (Backache)

S No.	Topic	Content	Learning Outcomes	Teaching Strategy	Hours	Assessment tool	
			ANATOMY				
1	Typical spinal nerve	Spinal Nerve. Spinal nerves in different regions. Location, site of emergence and components of typical spinal nerve. Fate of rami. Gray rami. Association of rami communicans with typical spinal nerve.	Define a spinal nerve. Recognize the spinal nerve as a part of PNS. Enumerate the spinal nerves in different regions Identify their location and site of emergence. Identify various components of a typical spinal nerve. Recall the fate of rami. Associate the rami communicans with typical spinal nerve Recall the distribution of gray rami	LGIS	1	MCQs/ SEQs	
2	Vertebral column	Muscles of back. Identification of structures on CT/MRI of vertebral column. Surface and clinical anatomy of important muscles.	Describe the muscles of back (origin, insertion, nerve supply, blood supply, and action) Describe Surface anatomy of important muscles Identify structures on CT/MRI of vertebral column taken at various levels Describe clinical anatomy of important muscles	LGIS	1	MCQs/ SEQs	
3	Lumbo sacral plexus, cutaneous nerves.	Formation of lumbar Plexus. Branches of lumber plexus. Relation of the nerves with Psoas major muscle. Structures supplied by lumbar plexus.	Describe the formation of lumbar Plexus. List the branches of lumber plexus with their root values. Describe relation of the nerves with Psoas major muscle. List the structures supplied by lumbar plexus.	LGIS	1	MCQs/ SEQs	

		Formation of sacral plexus. composition and relations and branches of sacral plexus.	Describe the formation of sacral plexus. Describe the composition and relations of sacral plexus. List the branches of this plexus				
			Biochemistry				
4	Phosphorus and Magnesium in biology	Recommended daily allowance, serum levels, sources & functions of Phosphorus and Magnesium. Absorption, excretion & disorders related to increase and decrease in amount of Phosphorus and Magnesium.	Discuss RDA, serum Levels Enlist sources of Phosphorus and Magnesium Describe functions Discuss absorption excretion, Describe disorders related to increase and decrease in amount of Phosphorus and Magnesium	LGIS	1	MCQs/ SEQs	
5	Sulphur in biology	Recommended daily allowance, serum levels, sources & functions of Sulphur. Absorption, excretion & disorders related to increase and decrease in amount of Sulphur.	Discuss RDA, serum Levels Enlist sources of Sulphur Describe functions Discuss absorption excretion, Describe disorders related to increase and decrease in amount of sulphur	LGIS	1	MCQs/ SEQs	
6	Copper and cobalt in biology	Recommended daily allowance, serum levels, sources & functions of copper and cobalt. Absorption, excretion & disorders related to increase and decrease in	Discuss RDA, serum Levels Copper and cobalt Enlist sources of Describe functions Discuss absorption excretion, Describe disorders related to increase and decrease in amount of Copper and cobalt	LGIS	1	MCQs/ SEQs	

		amount of copper and cobalt.					
Community Medicine							
7	Back pain	Causes & prevention of low back pain. causes & prevention of musculoskeletal diseases related to child labor.	Explain the causes of low back pain Describe the prevention of low back pain Describe the causes & prevention of msd related to child labor	LGIS	1	MCQs/ SEQs	
SMALL GROUP DISCUSSIONS							
ANATOMY							
8	Vertebral column		Identify structures on CT/MRI of vertebral column taken at various levels	SGD	2	MCQs/ SEQs	
PHYSIOLOGY							
9	Skeletal Muscle vs Smooth Muscle	Contractile mechanisms in skeletal and smooth muscles. Nervous and hormonal regulation of skeletal muscle and smooth muscle contraction.	Describe the contractile mechanisms in skeletal and smooth muscles. Compare the nervous and hormonal regulation of skeletal muscle and smooth muscle contraction.	SGD	2	MCQs/ SEQs	
BIOCHEMISTRY							
10	Minerals	Minerals. Micro-Minerals. Macro-Minerals.	Define and classify Minerals. Compare Micro and Macro Minerals.	SGD	2	MCQs/ SEQs	

THEME VI (Muscle weakness and fatigue)

S No.	Topic	Content	Learning Outcomes	Teaching Strategy	Hours	Assessment tools
Physiology						
1	Physiologic anatomy of the skeletal muscle fiber.	Physiologic anatomy of the Skeletal Muscle Fiber.	Explain the physiologic anatomy of the skeletal muscle fiber. Skeletal muscle fiber Sarcolemma Myofibrils I band	LGIS	1	MCQs/ SEQs

			A band Z disk M line Sarcomere Titin microfilament molecules Sarcoplasm Sarcoplasmic reticulum			
2	Resting Membrane Potential	Intracellular and extracellular concentrations of different ions Major membrane ion channels	Enumerate the intracellular and extracellular concentrations of sodium, potassium, chloride and calcium ions in a resting/normal cell. Describe the characteristics of major membrane ion channels and their role in the membrane potential Describe the resting membrane potential in a cell/nerve fiber	LGIS	1	MCQs/ SEQs
3	Neuromuscular junction	Transmission of Physiologic anatomy and impulses Transmission	Describe the transmission of impulses from nerve endings to skeletal muscle fibers. Explain the physiologic anatomy of the neuromuscular junction	LGIS	1	MCQs/ SEQs
4	Neuromuscular Transmission	Mechanism of transmission of impulses from nerve endings to muscle fibers.	Explain the mechanism of transmission of impulses from nerve endings to muscle fibers Explain Formation and Secretion of acetylcholine at nerve terminals Describe Action of acetylcholine at postsynaptic membrane Describe Degradation/Destruction of released acetylcholine Describe End plate potential Describe Fatigue of junction	LGIS	1	MCQs/ SEQs

6	Myasthenia Gravis	Pathophysiology of Myasthenia Gravis	Describe the Pathophysiology of Myasthenia gravis	LGIS	1	MCQs/ SEQs
2	Characteristics of whole muscle contraction	Characteristics of whole muscle contraction. Isotonic and isometric exercises. Slow and fast muscle fibers. Mechanics of skeletal muscle contraction. Muscle tone and muscle fatigue. Lever systems of the body and positioning of a body part. Remodeling of muscle to match function.	Identify the characteristics of whole muscle contraction. Compare isotonic and isometric exercises. Compare and contrast slow and fast muscle fibers. Describe the mechanics of skeletal muscle contraction. Describe muscle tone and muscle fatigue. Describe lever systems of the body and positioning of a body part. Describe remodeling of muscle to match function.	LGIS	1	MCQs/ SEQs
PHARMACOLOGY						
5	Neuromuscular drugs	Physiologic basis of the drugs used in the Neuromuscular Disorders.	Describe the physiologic basis of the drugs used in the neuromuscular disorders (Drugs that enhance or block the transmission at neuromuscular junction) Enlist the excitatory and inhibitory transmitter substances secreted at the smooth muscle neuromuscular junction Drugs that stimulate the muscle fiber by acetylcholine like action Drugs that stimulate neuromuscular junction by inactivating acetylcholinesterase	LGIS	1	MCQs/ SEQs
PHYSIOLOGY						
7	Smooth Muscle	Classification & physiologic	Classify smooth muscles	LGIS	1	MCQs/ SEQs

		anatomy of the smooth muscle.	Describe the physiologic anatomy of the smooth muscle			
14	Membrane Potentials and action potentials in smooth muscles	Mechanism of Membrane potentials and action potentials in smooth muscles.	Describe the membrane potentials and action potentials in smooth muscles. Describe Role of calcium channels in generating the smooth muscle action potential Describe Depolarization of multi-unit smooth muscle without action potentials	DSL	1	MCQs/ SEQs
9	Contraction of Smooth Muscle	Contractile mechanisms in Smooth muscles and comparison with Skeletal muscle contraction.	Describe the contractile mechanisms in smooth muscles Describe excitation and contraction of smooth muscle. Identify the types of smooth muscles. Describe the chemical and physical basis for smooth muscle contraction. Compare smooth and skeletal muscle contraction. Regulation of smooth muscle contraction by the calcium ions Enlist the excitatory and inhibitory transmitter substances secreted at the smooth muscle.	LGIS	1	MCQs/ SEQs
10	Nervous and hormonal control of smooth muscle contraction	Nervous and hormonal control of smooth muscle Contraction.	Describe the nervous and hormonal control of smooth muscle contraction	LGIS	1	MCQs/ SEQs
8	Skeletal Muscle fiber	Skeletal Muscle Fibers.	Discuss in detail types of muscles and arrangement of skeletal muscle fibers.	LGIS	1	MCQs/ SEQs
			PATHOLOGY			
12	Muscle Remodeling	Muscle Remodeling	Describe following Muscle hypertrophy Muscle atrophy Muscle hyperplasia	LGIS	1	MCQs/ SEQs

			Rigor mortis Muscle dystrophy Recovery of muscle contraction in poliomyelitis			
DIRECTED SELF LEARNING						
ANATOMY						
13	Lumbosacral Plexus	Formation of lumbar & sacral plexus. Branches of lumbar & sacral plexus. Structures supplied by lumbar & sacral plexus.	Describe the formation of lumbar & sacral plexus. List the branches of lumbar & sacral plexus. List the structures supplied by lumbar & sacral plexus.	DSL	1	MCQs/ SEQs
PHYSIOLOGY						
BIOCHEMISTRY						
15	Role of vitamin C & D in MSK	Role of Vitamin C and Vitamin D in the formation of connective tissues and bones.	Describe the role of Vitamin C and Vitamin D in the formation of connective tissues and bones.	DSL	1	MCQs/ SEQs

11 Learning Opportunities and Resources

1. Anatomy

Books:

- *Clinical Anatomy by Regions* by Richard S. Snell (Latest Edition)
- *Gray's Anatomy for Students* (Latest Edition)
- *Clinically Oriented Anatomy* by K.L. Moore (Latest Edition)
- *Netter's Atlas of Human Anatomy* (Latest Edition)
- *Last's Anatomy* (Latest Edition)

Online Resources:

- TeachMeAnatomy – Comprehensive anatomy resource with diagrams and explanations.
- AnatomyZone YouTube Channel – 3D anatomy tutorials.

2. Histology

Books:

- *Textbook of Histology* by Junqueira (Latest Edition)
- *diFiore's Atlas of Histology with Functional Correlations* (Latest Edition)
- *Atlas of Human Histology* by Wheater's (Latest Edition)
- *Textbook of Histology* by Laiq Hussain (Latest Edition)

Online Resources:

- Histology Guide – A virtual histology lab with slides and explanations.
- Armando Hasudungan YouTube Channel – Educational videos on histology and related topics.

3. Embryology

Books:

- *Langman's Medical Embryology* (Latest Edition)
- *The Developing Human* by Keith L. Moore (Latest Edition)

Online Resources:

- Embryology at UNSW – Detailed embryology resource from the University of New South Wales.
- Dr. Najeeb Lectures YouTube Channel – In-depth video lectures on embryology and other basic medical sciences.

4. Physiology

Books:

- *Textbook of Medical Physiology* by Guyton and Hall (Latest Edition)
- *Ganong's Review of Medical Physiology* (Latest Edition)

Online Resources:

- Vivo Interactive Physiology – Interactive tutorials on physiology topics.
- PhysioPathoPharmaco YouTube Channel – Physiology explanations and tutorials.

5. Biochemistry

Books:

- *Harper's Illustrated Biochemistry* (Latest Edition)

- *Lippincott's Illustrated Review: Biochemistry* (Latest Edition)

Online Resources:

- MedlinePlus Biochemistry – Basic biochemistry concepts with clinical correlations.
- Osmosis YouTube Channel – Visual and concise videos on biochemistry and other medical topics.

6. Pharmacology

Books:

- *Katzung's Basic and Clinical Pharmacology* (Latest Edition)

Online Resources:

- Pharmacology YouTube Channel by Ninja Nerd – Detailed pharmacology lectures and notes.
- GoodRx Pharmacology Resources – Practical applications of pharmacology in medicine.

7. Pathology

Books:

- *Robbins Basic Pathology* (Latest Edition)

Online Resources:

- PathologyOutlines.com – An online pathology resource with a focus on differential diagnosis.
- Dr. John Minarcik YouTube Channel – Free pathology lectures and tutorials.

8. Community Medicine

Books:

- *Essential Community Medicine* (Latest Edition)
- *K. Park's Textbook of Preventive and Social Medicine* (Latest Edition)

Online Resources:

- CDC Public Health – Extensive resources on public health and community medicine.
- Public Health England YouTube Channel – Videos on various community health topics.

9. Forensic Medicine

Books:

- *Parikh's Textbook of Medical Jurisprudence, Forensic Medicine, and Toxicology* (Latest Edition)

Online Resources:

- Forensic Medicine Online – Detailed forensic medicine resources for students.
- Forensic Pathology Lectures YouTube Channel – Educational videos on forensic pathology.

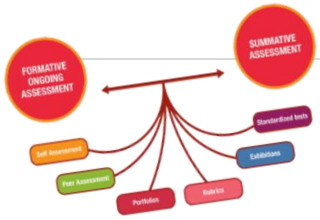
10. General Medicine

Books:

- *Davidson's Principles and Practice of Medicine* (Latest Edition)

Online Resources:

- Medscape – Comprehensive resource for clinical medicine and continuing medical education.
- Geeky Medics YouTube Channel – Clinical skills and general medicine tutorials.



12 Examination and Methods of Assessment:

12.1 Examination Instructions:

- **Arrival Time:** Students must arrive at the examination venue at least 15 minutes before the scheduled start time. Latecomers arriving 15 minutes after the start of the exam will not be allowed to enter the examination hall, and if permitted, they will not receive extra time.
- **Identification:** Students without a College ID Card and a white Lab Coat will not be permitted to sit for the exam.
- **Emergency Protocol:** In case of an emergency, such as a medical issue, students should immediately inform the examination supervisor.
- **Prohibited Items:** Students are required to submit any prohibited items, such as mobile phones, smartwatches, electronic devices, books, notes, or any unauthorized materials, before entering the examination hall.
- **Conduct:** Students must maintain complete silence within the examination hall. Any communication with fellow students is strictly prohibited, and all invigilator instructions must be followed without exception.
- **Attendance:** Students must properly mark their attendance during the examination.
- Leaving the Hall: No student will be allowed to leave the examination hall before half of the exam time has elapsed. The exam paper must be properly handed over to the examiner before leaving.
- **Compliance:** Failure to adhere to these guidelines may result in disqualification from the examination.

12.2 Internal Assessment (Total 10% Marks):

The internal assessment comprises a module test, featuring MCQs and OSPE, administered at the end of the module in accordance with the university's exam format. This test consists of 120 MCQs, accounting for 10% of the total marks in both theory and practical components, with the results to be submitted to the university prior to the final examination.

12.3 External Assessment: (Total 90% Marks)

- To appear in any university examination, more than 75% attendance in all disciplines is mandatory for the students.
- The Paper B will be comprised of 120 MCQs. The distribution of 90% Marks for Paper B Written Exam will be as under:

Block B (PAPER B) Musculoskeletal Module-I	
Subject	**Number of MCQs**
Gross Anatomy	71
Histology	8
Embryology	4
Physiology	16
Biochemistry	16

PRIME including Research	1
Pharmacology	1
Pathology	2
Community Medicine	1
Total	**120**

- The distribution of OSPE stations for Paper **B is** as under:

Block B OSPE Musculoskeletal Module-I			
Specialty	**Practical**	**No. of Stations**	**Total**
MSK Anatomy	Osteology Attachment of Muscles	5	13
	Histology of Bone Histology of Cartilage Histology of Muscles	4	
	Radiology of lower limb Radiology of upper limb Radiology of back	2	
	Surface anatomy of upper limb Surface anatomy of lower limb Surface anatomy of back	2	
MSK Biochemistry	Lead Sulphate Test Detection of cyclic amino acids Salt Saturation Test	3	3
MSK Physiology	MSK Physiology	2	2
Total		18	18

13 For inquiry and troubleshooting

Please contact
Department Of Medical Education

14 Module Evaluation Form

MBBS Year: _____ Block: _____ Module: _____

1. (Unsatisfactory) 2 (Fair) 3 (Satisfactory) 4 (Good) 5 (Excellent)

Category: Course Contents

No.	Question	1	2	3	4	5
1	To what extent did the course contents align with the stated learning objectives of the module?					
2	How clear and comprehensive were the course materials provided in this module?					
3	Were the core topics adequately covered, ensuring a well-rounded understanding of the subject?					
4	How current and up-to-date were the course contents in reflecting recent advancements?					
5	Did the module incorporate real-world applications and case studies effectively?					
	Category: Learning Resources					
6	Were the learning resources (e.g., textbooks, online materials, laboratory facilities) readily available and easily accessible?					
7	How helpful were additional learning resources such as supplementary readings or multimedia content?					
8	Did the module offer adequate support for research and independent study?					
9	Were digital resources and online platforms effectively utilized to enhance the learning experience?					
10	Were there sufficient opportunities for hands-on practice and practical application of knowledge?					
	Category: Teaching Methods					
11	How well did instructors engage with students and create a supportive learning environment?					
12	Were diverse teaching methods (e.g., lectures, group discussions, simulations) effectively employed?					
13	How responsive were instructors to questions, concerns, and feedback from students?					
14	To what extent did instructors provide timely and constructive feedback on assignments and assessments?					
15	Were opportunities for collaborative learning and peer-to-peer interactions encouraged and facilitated?					
No.	**Category: Engagement and Motivation**					
16	To what extent did the module use real-world examples and practical applications to engage students?					
17	How well were active learning techniques (e.g., problem-solving, case studies) integrated into the curriculum?					
18	Did the module provide opportunities for students to pursue their individual interests within the subject matter?					
19	Were assessments designed to challenge and motivate students to excel in their studies?					
Category: Inclusivity and Diversity						
20	How well did the module accommodate different learning styles and preferences among students?					

21	Were efforts made to include diverse perspectives, cultures, and backgrounds in the curriculum?					
22	How effectively were accommodations provided for students with varying levels of prior knowledge?					
	Category: Overall					
No.	**Question**	**1 (Very Poor)**	**2 (Poor)**	**3 (Fair)**	**4 (Good)**	**5 (Excellent)**
23	How would you rate the overall quality of this module?					

15 Students Diary/Notes

S.NO	DATE	TOPICS	PENDING/COMPLETED	COMMENTS

PROGESS:_____


College of Medicine & Dentistry at The Hills