



LAHORE
MEDICAL & DENTAL
COLLEGE

STUDY GUIDE

BLOCK-2

MUSCULOSKELETAL & LOCOMOTION-1 MODULE





Mission of LMDC

The Lahore Medical & Dental College is committed in its pursuit of excellence to providing the best academic facilities and atmosphere to its students.

Our Mission is to:

“Train future leaders of medicine who set new standards in knowledge, care and compassion”

The well qualified and committed faculty of LMDC provides combination of nurturing support and challenge to the students to reach their maximum potential.

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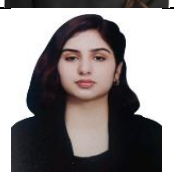
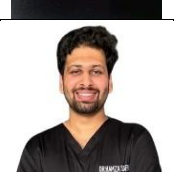
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LIST OF ABBREVIATIONS

A	Anatomy
Ag	Aging
ANS	Autonomic Nervous System
B	Biochemistry
BhS	Behavioral Sciences
C-FRC	Clinical Foundation Rotation Clerkship
CM	Community Medicine
CNS	Central Nervous System
CT	Computed Tomography
MBBS	Bachelor of Medicine, Bachelor of Surgery
MoA	Mechanism of Action
MRI	Magnetic Resonance Imaging
MSD	Musculoskeletal Disorders
NMJ	Neuro Muscular Junction
P	Physiology
Pa	Pathology
PERLs	Professionalism, Ethics, Research, Leadership
Ph	Pharmacology
RMP	Resting Membrane Potential

DEPARTMENTAL FACULTY & STAFF HEIRARCHY

Anatomy Department

Sr. No.	Picture	Name, Designation and qualification
1		Prof. Dr. Iffat Badar Professor & HOD MBBS, M.Phil.
2		Dr. Anis Fatima Associate Professor MBBS, M.Phil.
3		Dr. Shamaila Ejaz Assistant Professor MBBS, M.Phil.
4		Dr. Mishal Amjad Demonstrator MBBS
5		Dr. Zovera Khalid Demonstrator MBBS
6		Dr. Mahzaib Haider Demonstrator MBBS
7		Dr. Hamza Safdar Demonstrator MBBS

8		Dr. Afiq Khan Demonstrator MBBS
9		Dr. Ahmad Munawar Demonstrator MBBS
10		Dr. Sheharyar Ahmad Demonstrator MBBS
11		Dr. Junaid Mazhar Demonstrator MBBS
12		Dr. Dua Azhar Demonstrator MBBS

SUPPORTING STAFF

1. Humayun Sarfaraz (Museum Keeper)
2. M. Ismail Khan (Lab. Assistant)
3. Muhammad Imran (Lab. Assistant)
4. Waseem Sibtain (Lab. Assistant)
5. Amjad Hussain (Office Boy)
6. Tariq Ali (Lab. Attendant)
7. Arif Masih (Embalmer)

Physiology Department

Sr. No.	Picture	Name, Designation and qualification
1		Prof. Dr. Anser Asrar Professor & HOD MBBS, M.Phil., FCPS
2		Prof. Dr. Zaima Ali Professor MBBS, M.Phil., Ph.D, CHPE
3		Prof. Dr. Sadia Nazir Professor MBBS, M.Phil., CHPE, Ph.D (Scholar)
4		Prof. Dr. Attiqah Khalid Professor MBBS, M.Phil., CHPE, Ph.D (Scholar)
5		Dr. Asma Akram Assistant Professor BDS, M.Phil., CHPE
6		Dr. Zulfiqar Akram Senior Demonstrator BDS, M.Phil., CHPE
7		Dr. Arooj Fatima Demonstrator MBBS
8		Dr. Hafsa Imran Demonstrator MBBS

9		Dr. Hassnat Ahmed Demonstrator MBBS
10		Dr. Maha Sakhawat Demonstrator MBBS
11		Dr. Meeran Iftikhar Demonstrator MBBS
12		Dr. Rohail Sani Demonstrator MBBS
13		Dr. Yusha Mansha Demonstrator MBBS
14		Dr. Shoaib Shafique Demonstrator MBBS

SUPPORTING STAFF

1. Mr. M. Ashraf (Lab technician)
2. Mr. Akmal Raza (Lab assistant)
3. Mr. Noor-ul-Hassan (Lab attendant)
4. Mr. Ashfaq (Naib Qasid)

Biochemistry Department

Sr. No.	Picture	Name, Designation and qualification
1		Prof. Dr. Rubina Bashir Professor & HOD MBBS, M.Phil.
2		Prof. Sobia Imtiaz Professor MBBS, M.Phil., MHPE
3		Dr. Mahwish Shahzad Associate Professor MBBS, M.Phil., CHPE
4		Dr. Sana Sarmad Associate Professor MBBS, M.Phil.
5		Dr. Madeeha Mushtaq Senior Demonstrator MBBS, M.Phil.
6		Dr. Maryam Saeed Demonstrator MBBS
7		Dr. Iqra Sarwar Demonstrator MBBS

8		Dr. Zain Atta Demonstrator MBBS
9		Dr. Momin Ali Demonstrator MBBS
10		Dr. Fahad Faisal Demonstrator MBBS
11		Dr. Afeera Talib Demonstrator MBBS
12		Dr. Gul Siera Demonstrator MBBS

SUPPORTING STAFF

1. Mr. Saqib Bashir (Lab technologist)
2. Mr. M. Ahmed (Lab assistant)
3. Mr. Ghulam Dastagir (Lab assistant)
4. Mr. Ali Raza (Lab attendant)
5. Mr. Abdul Qayyum (Office boy)
6. Mr. Waqas Javed (cleaner)

Community Medicine Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Seema Daud Professor & HOD MBBS, MHPE, FCPS, Ph.d
2		Prof. Dr. Humayun Mirza Professor MBBS, MPH, CHPE
3		Dr. Umbreen Navied Associate Professor MBBS, M.Phil., CMT
4		Dr. Saadia Maqbool Assistant Professor MBBS, DMCH, M.Phil., CHPE

Pathology Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Shazia Nilofar Professor & HOD MBBS, M.Phil., MHPE
2		Dr. Saadia Chaudhary Professor MBBS, M.Phil., MHPE
3		Dr. Nazia Ahmad Associate Professor MBBS, M.Phil. , CHPE
4		Dr. Sonia Tahir Associate Professor MBBS, M.Phil. , CHPE
5		Dr. Maimoona Aslam Assistant Professor MBBS, M.Phil. , CHPE

Pharmacology Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Ajaz Fatima Professor & HOD MBBS, M.Phil., Ph.D (Scholar)
2		Dr. Asia Firdous Associate Professor MBBS, M.Phil.
3		Dr. Ghulam Ovais Qarni Senior Lecturer MBBS, M.Phil. (Part -1)
4		Dr. Amina Zubair Demonstrator MBBS, M.Phil. (Part-1)

Psychiatry & Behavioral Sciences Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Maqbool Ahmad Khan Professor & HOD MBBS, FCPS
2		Mr. Ebrahim Naeem Demonstrator MS. Clinical Psychology
3		Dr. Tehreem Imtiaz Demonstrator MBBS

Orthopedic Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Naeem Ahmad Professor MBBS, FCPS
2		Dr. Muhammad Ali Ayub Senior Registrar MBBS, FCPS, CHPE, Fellow of Hip and Knee Arthroplasty, Fellow of spine (AO Spine Malaysia)

Forensic Medicine Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Aamir Bashir Professor & HOD MBBS, DMJ, Master in Sociology, M,Phil.

Pediatrics Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Rizwan Waseem Professor & HOD MBBS, FCPS
2		Dr. Madiha Iqbal Assistant Professor MBBS, FCPS

Medical Education Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Nighat Nadeem Professor & HOD MBBS, MME

Medicine Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Shamail Zafar Professor & HOD MBBS, FCPS, FACG
2		Prof. Dr. Sarah Shoaib Professor MBBS, FCPS, CMT, CME

Surgery Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Saquib Zahur Professor & HOD MBBS, FCPS
2		Dr. Sidra Shoaib Associate Professor MBBS, FCPS

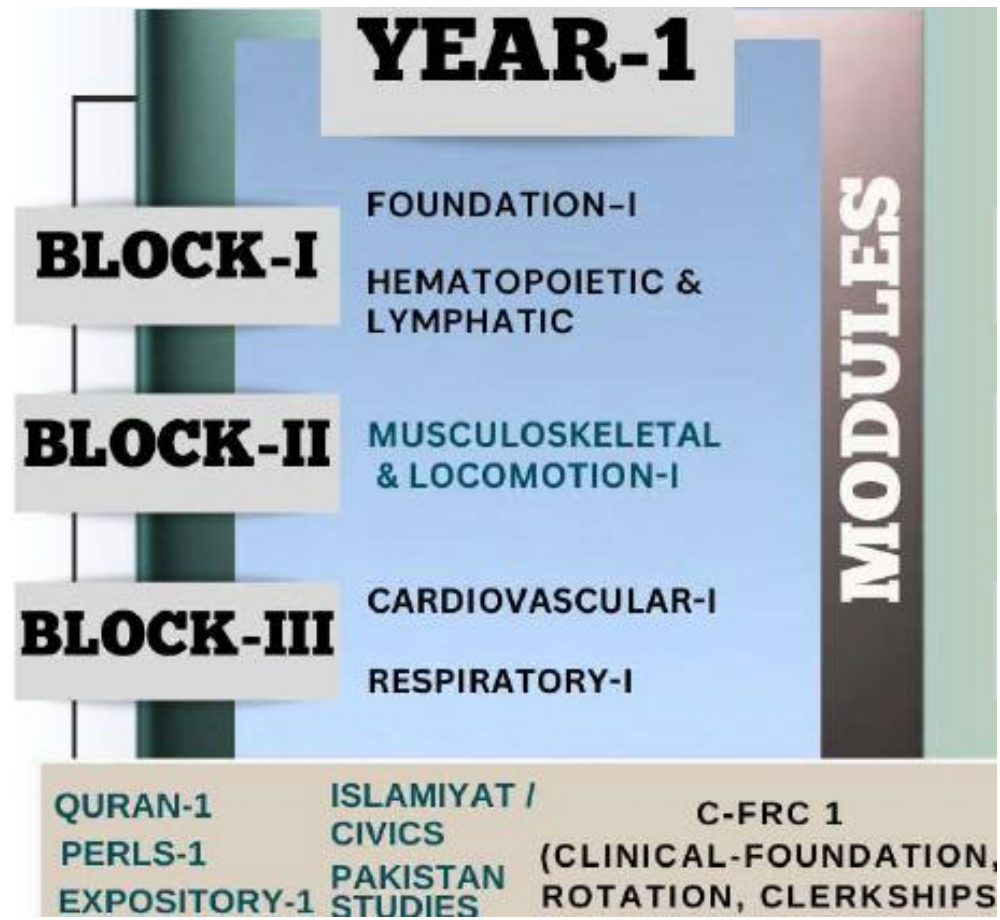
Gynecology & Obstetrics Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Fozia Umber Qureshi Professor & HOD MBBS, FCPS, CMT, CME, Dip Gynaecological Laparoscopy, MS. Gynae-Oncology
2		Dr. Nabiha Iqbal Assistant Professor MBBS, FCPS
3		Dr. Humaira Rasheed Assistant Professor MBBS, FCPS, MRCOG

Radiology Department

Sr. No.	Picture	Name, Designation and Qualification
1		Prof. Dr. Khalid Farooq Professor & HOD MBBS, FCPS
2		Dr. Muhammad Ali Rauf MBBS, PGR Registrar Radiology

CURRICULUM FRAMEWORK



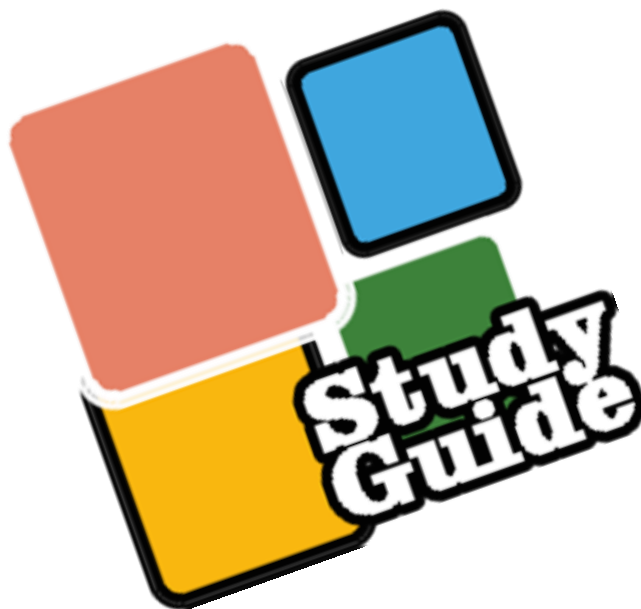
INTRODUCTION TO STUDY GUIDE

What is study guide?

The study guide is an important academic tool that aids students for different educational activities they are engaged in. It provides pertinent details on the module's structure, assisting students in planning their academic activities accordingly. Another purpose of study guide is to guide students about different rules and regulations as well as teaching and assessment techniques.

Purpose of study guide:

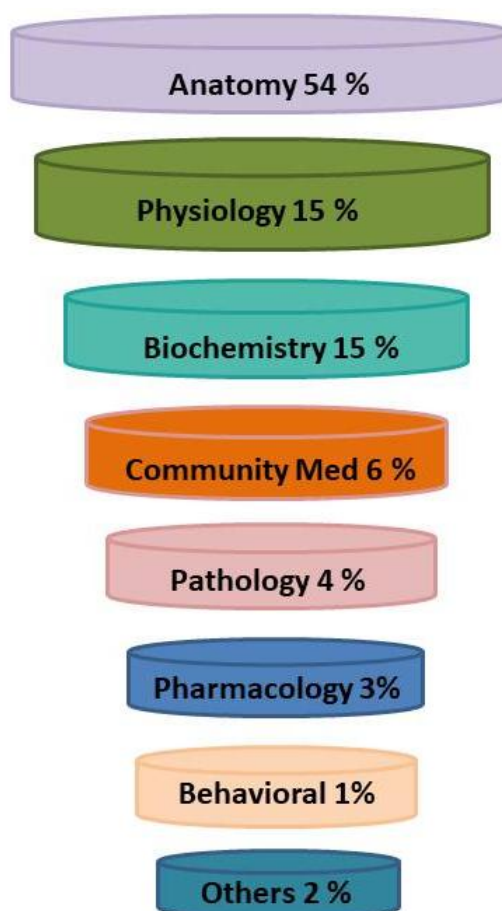
- Conveys details about the organization and management of the module.
- Helps the learners about departmental representatives who can be contacted in case of difficulty.
- Define the learning objectives that should be accomplished by the end of the module.
- Identifies learning methodologies such as lectures, small group discussion, practical that will be implemented during the module.
- Provide a list of learning resource to maximize their learning
- Includes information on the assessment methods and examination related rules and regulations



INTRODUCTION TO MODULE

Program	MBBS
Year	One
Module No.	03
Module Title	Musculoskeletal & locomotion-1 Module
Module weeks	7
Recommended minimum hours	230

Integrated Disciplines of Musculoskeletal & locomotion-1 module



BLOCK 2 MODULE COMMITTEES

Module coordinator

- Anatomy (Prof. Dr. Iffat Badar)

Module co-coordinator

- Anatomy (Dr. Shamaila Ejaz)

Representatives

- Physiology (Prof. Dr. Anser Asrar, Prof. Dr. Sadia Nazir)
- Biochemistry (Prof. Dr. Rubina Bashir, Prof. Dr. Sobia Imtiaz)
- Community Medicine (Prof. Dr. Seema Daud, Prof. Dr. Humayun Mirza)
- Pathology (Prof. Dr. Shazia, Dr. Maimoona)
- Pharmacology (Prof. Dr. Ajaz Fatima, Dr. Amna Zubair)
- Behavioral Sciences (Prof. Dr. Maqbool Ahmad Khan)
- Forensic Medicine (Prof. Dr. Amir Aziz)
- Medical Education (Prof. Dr. Nighat Nadeem)
- Orthopedic (Prof. Dr. Naeem Ahamd, Dr. Muhammad Ali ayub)
- Radiology (Prof. Dr. Khalid Farooq, Dr. Ali Rauf)
- Medicine (Prof. Dr. Shamail Zafar, Prof. Sarah Shoaib)
- Surgery (Prof. Dr. Saquib Zahur, Dr. Sidra Shoaib)
- Gynaecology & obstetrics (Prof. Dr. Fozia Umber Qureshi, Dr. Nabiha Iqbal)
- Pediatrics (Prof. Dr. Rizwan Waseem, Dr. Madeeha Iqbal)

SUBJECT WISE TIME ALLOCATION

Subject	Time allocated (Hours)	Discipline
Anatomy		Anatomy
Gross Anatomy	105	
Embryology & post natal development	06	
Microscopic structure	06	
Histology Practical	08	
Medical Physiology		Physiology
Theory	32	
Practical	2	
Medical Biochemistry		Biochemistry
Theory	30	
Practical	4	
Pathophysiology & Pharmacotherapeutics		
Theory + Practical	4 + 3	Pharmacology & Therapeutics
	7 + 2	Pathology
Disease prevention & Impact		
Theory	14	Community medicine & Public Health
	3	Behavioral Sciences
Aging	4	Geriatrics/ Medicine/ Biochemistry

MODULE DESCRIPTION

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

MODULE OUTCOME

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

THEMES

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

CLINICAL RELEVANCE

- Congenital anomalies of limb
- Joint Dislocation
- Fracture
- Multiple Sclerosis, Astrocytoma, Alzheimer's Disease
- Myopathy, Muscular Dystrophy

LEARNING OBJECTIVES

NORMAL STRUCTURE			
THEORY			
CODE	GROSS ANATOMY	TOTAL HOURS = 105	
	SPECIFIC LEARNING OUTCOMES	DISCIPLINE	TOPIC
UPPER LIMB			
MS-A-001	Describe the topographical anatomy of Pectoral Region	Human Anatomy	Pectoral Region
	Perform dissection of the Pectoral Region or use models to identify the key structures		
	Describe muscles of the Pectoral Region with their origin, insertion, nerve supply and actions.		
MS-A-002	Describe the cutaneous nerves and superficial veins of the Upper Limb.	Human Anatomy	Dermatomes and cutaneous innervation of Upper Limb
	Describe the extent, attachments, and structures passing through Clavipectoral Fascia	Human Anatomy	
MS-A-002	Define the boundaries of auscultation and state its clinical significance	Integrate with Medicine	Pectoral region & Back
	Describe the osteology of the bones in pectoral region.	Human Anatomy	
	Enumerate the superficial muscles of back, connecting shoulder girdle with vertebral column. Describe the 1. Attachments 2. Nerve supply Actions of Trapezius, Latissimus Dorsi, Rhomboid		

	minor and major Mention the neurovascular supply of pectoral region and Correlate with important clinical conditions. Describe superficial muscles of the back with their origin, insertion, nerve supply and actions.		
MS-A-004	Describe the Osteology of Clavicle (Morphological features, side determination, attachments, ossification) Describe the correlates functions of Clavicle (clavicle fracture, its role in terms of weight transmission of upper limb, compression of neurovascular structures) Describe the Osteology of Scapula (morphological features, attachments, ossification) Determine the side and identify the landmarks of scapula Describe the movements of Scapula associated with movements of Shoulder Girdle Tabulate the muscles of scapular region and give their attachments, nerve supply and action Tabulate the attachments, origin, insertion, innervation, and actions of Anterior Axio-appendicular Muscles	Human Anatomy	Bones of Upper Limb: Clavicle & Scapula
MS-A-005	Describe the Sternoclavicular Joint in terms of articulating surfaces, ligaments, articular disc, nerve supply.	Human Anatomy	Bones of thorax, Joints of Upper Limb: Sternoclavicular Joint

MS-A-006	Develop clear concepts of the topographical anatomy of Axilla and its contents	Human Anatomy	Axilla
	Describe the boundaries of Axilla. (Identification of muscles forming the boundaries of axilla)		
	List the contents of Axilla		
	Perform dissection/ Identify the Axilla and its contents		
	Describe Axillary Artery with reference to its 3 parts, <u>their</u> relations, branches, and anastomoses	Human Anatomy	Axilla
	Describe the formation, tributaries, and drainage of Axillary Vein		
	Identify and demonstrate the course/ relation and branches/tributaries of axillary vessels		
	Describe the Axillary Lymph Nodes in terms of location, grouping, areas of drainage and clinical significance		
	Describe the course, relations, root value and distribution of Axillary nerve. Describe the boundaries and contents of quadrangular space.		
MS-A-007	Describe the Osteology of Humerus (Side Determination, morphological features, attachments, ossification)		Bones of upper limb: Humerus
	Describe the Shoulder Joint under the following headings: Articulation, Type/ Variety, Capsule, Ligaments, Innervation, Blood supply, Movements.		

MS-A-008	Describe the 3 parts of Deltoid Muscle and correlate them with its unique functions. Explain its role in abduction of shoulder joint. Explain mechanism of Abduction of arm	Human Anatomy	Joints of Upper Limb: Shoulder Joint
	Identify and demonstrate the movements of scapula and shoulder joint.		
	Draw and label the arterial anastomosis around shoulder joint		
	Describe, in detail, the Scapula-Humeral Mechanism in relation to movements of abduction. Discuss important clinical conditions		
MS-A-009	Describe Rotator Cuff Muscles, state their Anatomical significance and explain Rotator Cuff Tendinitis	Human Anatomy	Rotator Cuff
	Clinical correlates of shoulder joint. (shoulder joint stability, dislocation and shoulder pain)	Integrate with Surgery	
MS-A-010	Describe the formation of Brachial Plexus; Infra and Supraclavicular parts. Discuss Brachial plexus injuries	Human Anatomy	Nerves of Upper Limb
	Demonstrate and identify the formation of brachial plexus and its branches		
	List the branches of brachial plexus and give their areas of distribution and muscles they innervate		

	Enlist and tabulate the muscles of anterior compartment of arm with their attachments, nerve supply and action. Identify & Describe Musculocutaneous Nerve in terms of its Origin, Course, Termination, Relations, Branches, and distribution. Describe and illustrate the cutaneous innervation of the arm.		
MS-A-011	Describe the Brachial Artery in terms of its course, relations, branches, and distribution		Blood supply of arm
	Tabulate the attachments, innervation, and actions of Triceps brachii as a muscle of Posterior Fascial Compartment of Arm		
	Identify & Describe the Profunda Brachii Artery Giving its course, relations, branches, and distribution		
MS-A-012	Describe Cubital Fossa with emphasis on its boundaries, contents, and clinical significance	Human Anatomy	Muscles of Arm
	Demonstrate surface marking of superficial veins of arm and forearm for IV (Intra venous) injections		
	Demonstrate biceps brachii reflex, triceps reflex and brachioradialis reflex		
MS-A-013	Determine the side and identify the landmarks of radius and ulna. Describe the Osteology of Radius (Side Determination, morphological features, attachments).	Human Anatomy	Bones of Forearm
	Describe the Osteology of Ulna (Side Determination, morphological features, attachments).		

MS-A-014	Describe osseofascial compartment of forearm. Tabulate flexor and pronators muscles of forearm, their attachments, actions and nerve supply. Describe the action of paradox with examples	Human Anatomy	Muscle of Anterior/ Flexor Compartment of Forearm
MS-A-015	Tabulate the attachments, innervation, and actions of Extensor Muscles of the Forearm		Muscle of Lateral and Posterior/ Extensor Compartment of Forearm
	Tabulate the attachments, innervation, and actions of Lateral Muscles of the Forearm		
MS-A-016	Identify the muscles and nerves of flexor and extensor compartments of forearm		Nerves of Forearm
	Describe and illustrate the cutaneous innervation of the Forearm		
	Describe ulnar, median and radial nerves in forearm.		
MS-A-017	Describe the Origin, Course, Relations, and branches of Ulnar and radial Artery in Forearm Describe the Origin, Course, Relations and list the tributaries of veins of Forearm. Surface marking of Brachial artery, Cephalic, Median cubital, Basilic Vein, Radial & Ulnar arteries, anterior & posterior interosseous artery		Blood supply of forearm
MS-A-018	Identify the Extensor & Flexor Retinacula and describe their attachments and relations	Human Anatomy	Retinacula of Forearm

MS-A-019	Demonstrate the formation of carpal tunnel and	Human	
	identify the contents Describe Carpel Tunnel Syndrome	Anatomy- Integrate with surgery	Carpal tunnel syndrome
	Describe the features, attachments, relations and structures passing under Flexor Retinaculum		
MS-A-020	Describe the Origin, Course, Relations, and branches of Ulnar Artery in Forearm	Human Anatomy	Forearm: Blood supply and Venous drainage
	Describe the Origin, Course, Relations and list the tributaries of veins of Forearm		
	Surface marking of Brachial artery, Cephalic, Median cubital, Basilic Vein, Radial & Ulnar arteries, anterior & posterior interosseous artery		
	Describe the Elbow Joint in terms of articular surfaces, type, variety, ligaments, muscles producing movements, blood supply {Anastomosis around elbow joint}, nerve supply and radiological imaging.	Human Anatomy	Joints of Upper Limbs: Elbow Joint
MS-A-021	Describe Carrying Angle and justify its importance in limb movement	Integrate with Surgery	
MS-A-022	Describe the Radioulnar Joints in terms of articular surfaces, type, variety, ligaments, muscles producing movements, nerve supply and radiological imaging. Describe the wrist joint in terms of articular surfaces, type, variety, ligaments, muscles producing movements, nerve supply and radiological imaging.	Human Anatomy	Joints of Upper Limbs: Radioulnar Joint

	Demonstrate mechanisms of movements of Pronation & Supination		
MS-A-023	Describe the features of Interosseous Membrane with structures that pierce through it	Human Anatomy	Interosseous membrane
MS-A-024	Describe the features and explain the importance of Fibrous Flexor Sheaths, synovial flexor sheaths and extensor expansion	Human Anatomy	Fascia & Muscles of Hand
MS-A-025	Demonstrate the attachments and actions of the muscles of hand Identify the muscles and neurovasculature of palm. Explain the morphology and tabulate the attachments, innervation and actions of intrinsic muscles of hand. Explain the fascial spaces of palm and pulp space of fingers Describe Dupuytren contracture, mallet finger and buttonaire deformity.	Human Anatomy	Hand & Actions of Muscles of Upper Limb as a Functional Unit
	Describe hand as a functional unit. (position of hand, movement of thumb and fingers while performing different functions) Discuss cupping of hand and fist formation.		
MS-A-026	Draw the Radial Artery course, relation, and termination in hand with its clinical significance in the region	Human Anatomy	Blood vessels of forearm and hand
	Describe the Ulnar Artery's Course, relation and termination in hand with its clinical significance in the region		
	Describe the formation, branches, and areas of distribution of Superficial and Deep Palmar Arch		

MS-A-027	Describe the course, relations and branches of Ulnar, Median and Radial Nerves in the Hand	Human Anatomy	Nerves of forearm and hand
MS-A-028	Describe the First Carpometacarpal Joint in terms of; Type, Variety, Articular Surfaces, Ligaments, Relations, Blood Supply, Innervation, movements.	Human Anatomy	Joints of Hands
	Demonstrate the movements of the 1 st carpometacarpal joint		
	Describe the Metacarpophalangeal & interpharyngeal Joints in terms of; Type, Variety, Articular Surfaces, Ligaments, Relations, Blood Supply, Innervation & Movements		
MS-A-029	Palpate the arteries of the upper limb on a subject	Integrate with Medicine	Skills
	Identify the topographical features of upper limb in a cross-sectional model/ specimen.	Integrate with Radiology	
	Demonstrate and identify the anatomical landmarks of upper limb on radiographs/ CT (Computed tomography)/ MRI (Magnetic resonance imaging)		
	Mark the anatomical landmarks and surface marking on a subject/ simulated model	Human Anatomy	
LOWER LIMB			
THEORY			
CODE	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
	Draw and label the Parts of the hip bone, with its attachments.		
	Describe the parts, attachments of hip bone		

MS-A-030	Identify the parts and bony features of the hip bone, with its attachments, important relations	Human Anatomy	Hip Bone
	Demonstrate the side determination of hip bone, its bony features, attachments		
MS-A-031	Describe the parts, attachments, side determination of femur	Human Anatomy	Femur
	Identify the parts and bony features of the femur, with its attachments.		
	Demonstrate the side determination of femur, its bony features, attachments, and important relations (correlate these with fractures)		
	Describe coxa Vara and coxa valga and their clinical significance		
MS-A-032	Describe the extent, attachments, and modifications of Fascia Lata	Human Anatomy	Fascia Lata
	Demonstrate the attachment of fascia Lata, iliotibial tract		
MS-A-033	Describe the cutaneous nerves and vessels of thigh	Human Anatomy	Neurovascular Supply of thigh
	Draw and label the cutaneous nerve supply of thigh		
	Describe the formation, course, relations, tributaries, and termination of the superficial veins		
	Explain the anatomical justification of venesection, varicose veins, and saphenous venous grafts		
	Describe the lymphatic drainage of the region with special emphasis on afferent and efferent of inguinal lymph nodes		
	Identify the superficial and deep lymph nodes		
	Explain the anatomical justification for enlargement of inguinal lymph nodes		

MS-A-034	Describe and identify the Boundaries and contents of femoral triangle	Human Anatomy	Femoral Triangle & Canal
	Draw and label the Boundaries and contents of femoral triangle		
	Identify the femoral sheath with its compartments		
	Describe the formation of femoral sheath and its significance		
	Describe the formation of femoral canal and its contents and significance		
	Describe the formation and significance of femoral ring		
	Compare and contrast the anatomical features of femoral and inguinal hernias	Integrate with Surgery	
MS-A-035	Tabulate the muscles of anterior compartment of thigh with their attachments, nerve supply and actions	Human Anatomy	Muscles of Anterior Compartment of Thigh
	Demonstrate and identify the muscles of anterior compartment of thigh with their proximal and distal attachments		
	Demonstrate the actions of muscles of anterior compartment of thigh		
	Explain the anatomical basis of psoas abscess	Integrate with Surgery	
	Identify and demonstrate the nerves and vessels of anterior compartment of thigh along with their branches		
	Describe the origin, course, relations, branches, distribution, and termination of femoral artery		

MS-A-036	Describe the origin, course, relations, tributaries, area of drainage and termination of femoral vein	Human Anatomy	Neurovascular supply of Anterior Compartment of Thigh
	Describe the origin, course, relations, branches, distribution, and termination of femoral nerve		
	Tabulate the muscles of anterior compartment of thigh with their attachments, nerve supply and actions.		
MS-A-037	Describe the formation, boundaries, contents of adductor canal	Human Anatomy	Adductor Canal
	Identify and demonstrate the boundaries and contents of adductor canal		
MS-A-038	Describe Muscles of medial compartment of thigh with their proximal and distal attachments, innervation and actions		Muscles of Medial Compartment of Thigh
	Identify the muscles of medial compartment of thigh with their proximal and distal attachments		
	Demonstrate the actions of the muscles of the compartment on self/ subject		
MS-A-039	Describe the origin, course, relations, branches/ tributaries, distribution, and termination of neurovascular structures of medial compartment of thigh	Human Anatomy	Neurovascular supply of Medial Compartment of Thigh
	Identify the nerves and vessels of medial compartment of thigh along with their branches		
	Describe and identify the lumbar and sacral plexus and its branches supplying the lower limb		
	Describe the cutaneous nerve supply and lymphatics of the region		

MS-A-040	List the structures passing through the greater and lesser sciatic foramen.		Gluteal Region
	Describe the muscles of gluteal region with their proximal and distal attachments, innervation, and actions		
	Identify the muscles of gluteal region with their proximal and distal attachments		
	Describe the origin, course, relations, branches/ tributaries, distribution, and termination of neurovascular structures of gluteal region		
	Demonstrate the actions of the muscles of gluteal region		
	Explain the anatomical basis of the consequences of wrongly placed gluteal intramuscular injections Damage to Gluteus medius & minimus due to poliomyelitis	Integrate with Medicine	
	Demonstrate and identify the origin, course, relations, branches/tributaries and termination of nerves and vessels of gluteal region	Human Anatomy	Gluteal Region
MS-A-041	Describe the Attachments of muscles of posterior compartment of thigh with the innervation and action	Human Anatomy	Muscles of Posterior Compartment of Thigh
	Identify the muscles of posterior compartment of thigh with their proximal and distal attachments		
	Demonstrate the actions of muscles of posterior compartment of thigh		
	Describe the anatomical basis of signs and symptoms of sciatica.	Integrate with Surgery	

MS-A-042	Describe the origin, course, relations, branches, distribution, and termination of Profunda femoris artery	Human Anatomy	Blood supply of Posterior compartment thigh
	Describe blood supply on back of thigh		
MS-A-043	Describe the origin, course, relations, branches, distribution, and termination of sciatic nerve	Human Anatomy	Sciatic Nerve
	Describe the anatomical basis, signs, and symptoms of compression of or injury to sciatic nerve	Integrate with Surgery	
MS-A-044	Describe the hip joint with its type, articulations, ligaments, stabilizing factors		
	Movements, and neuro-vascular supply with clinical significance.	Human Anatomy	
	Perform the movements of hip joint at various angles and be able to describe the muscles producing the movement. Discuss important associated clinical conditions (Hip dislocation, Arthritis, Hip joint stability and Trendelenburg sign) movements and neuro- vascular supply with clinical significance.		
MS-A-045	Describe the Boundaries and contents of popliteal fossa. Discuss clinical correlates (Popliteal aneurysm, Palpation of Popliteal artery, semi membranous bursa swelling and Baker’s cyst	Human Anatomy	Popliteal Fossa
	Draw and label boundaries and contents of popliteal fossa		

	Identify the boundaries and contents of popliteal fossa		
	Describe the origin, course, relations, branches/tributaries, distribution and termination of popliteal artery and vein		
MS-A-046	Describe parts of tibia and fibula, with their attachments, important relations and side determination	Human Anatomy	Knee Joint
	Identify the parts and bony features of the tibia & fibula, their bony features, attachments, important relations.		
	Draw and label Parts of patella with its attachments		
	Describe features of patella, and name the factor responsible for stabilizing Patella		
	Describe the knee joint with its type, articulations, ligaments, movements, and neuro-vascular supply		
	Explain the mechanism of locking and unlocking of knee joint with the foot on ground and off the ground Describe the attachments and role of popliteus in locking and unlocking of the knee joint		
	Describe the factors responsible for stability of knee joint. Discuss important associated clinical conditions.		
	Describe the Muscles of anterior, lateral, and posterior compartments of leg with their proximal & distal attachments, innervation, and actions		Muscles of leg

MS-A-047	Identify the muscles of anterior, lateral, and posterior compartments of leg with their proximal and distal attachments	Human Anatomy	Neurovascular supply of Leg
MS-A-048	Describe the origin, course, relations, branches/tributaries and termination of nerves and vessels of anterior, lateral, and posterior compartments of leg- Compartment Syndrome, Foot Drop		Neurovascular supply of Leg
	Describe the cutaneous nerves and veins of leg.		
	Draw and label the cutaneous nerve supply and dermatomes of leg		
MS-A-049	Identify the extensor, flexor, and peroneal retinacula and demonstrate the structures related to them		Flexor, Extensor, and peroneal Retinacula
	Describe the attachments, relations, and structures passing under cover of, extensor, peroneal, and flexor retinacula		
	Identify and demonstrate the nerves and vessels of anterior, lateral, and posterior compartments of leg along with their branches		
	Describe the formation of noncalcaneous (Achilles tendon)		
MS-A-050	Describe the articulations, muscles and nerve supply and movements at Tibiofibular joints	Human Anatomy	Tibio-fibular Joint
	Describe the ankle joint with its type, articulations, ligaments, movements, and nerve supply		
	Describe the factors stabilizing the ankle joint.		
	Discuss important associated clinical conditions.		

MS-A-051	Identify and demonstrate the articulating surfaces and ligaments of ankle joint	Human Anatomy	Ankle Joint
MS-A-052	Describe the formation, attachments, and clinical significance of plantar aponeurosis	Human Anatomy	Plantar Fascia
	Explain the anatomical basis of the signs and symptoms of plantar fasciitis.	Integrate with Orthopedics	
MS-A-053	Identify the parts and bony features, attachments, and important relations of the articulated foot	Human Anatomy	Muscles of foot
	Describe the muscles of the dorsum and sole of foot with their proximal & distal attachments, innervation and actions emphasizing the role of interossei and lumbricals.		
	Draw and label the muscles of the layers of sole of foot		
	Demonstrate and identify the muscles and tendons with their proximal and distal attachments in the sole of foot		
MS-A-054	Describe the interphalangeal, subtalar and midtarsal joints with their types, articulation, movements, and ligaments.	Human Anatomy	Small joints Of foot
MS-A-055	Describe the formation, components, stabilizing and maintaining factors of the arches of foot	Integrate with Orthopedics	Arches of foot
	Describe the clinical significance of arches of foot with respect to flat foot, claw foot.		
MS-A-056	Describe the fibrous flexor sheaths, extensor expansions and synovial flexor sheaths	Human Anatomy	Retinacula of foot

MS-A-057	Describe the origin, course, relations, branches/tributaries, distribution, and termination of plantar vessels	Human Anatomy	Neurovascular supply of foot
	Identify the nerves and vessels on the foot along with their branches		
	Describe the cutaneous nerves of foot		
	Draw and label the cutaneous nerve supply and dermatomes of foot		
	Identify the nerves and vessels in the sole of foot along with their branches		
	Describe the palpation of dorsalis pedis artery & explain the clinical significance of dorsalis pedis artery		
MS-A-058	Describe the surface anatomy, course, relations, tributaries, and communications of the superficial veins of the lower limb	Human Anatomy	Arterial and Venous drainage of lower limb
	Draw a concept map of the superficial veins of lower limb		
	List the factors favoring venous return of the lower limb		
MS-A-059	Explain the anatomical basis of the formation, and signs and symptoms of deep venous thrombosis	Integrate with Surgery	Human Gait
	Discuss Clinical correlations of Lower Limb Arteries (palpation of femoral, popliteal, posterior tibial & dorsalis pedis arteries, collateral circulation, intermittent claudication, occlusive arterial disease)	Integrate with Medicine	

MS-A-060	Draw a concept map of the lymphatic drainage of lower limb	Human Anatomy	Lymphatic drainage of lower limb
MS-A-061	Draw and label the cutaneous nerves & dermatomes of the lower limb Discuss clinical correlates of Lower limb nerves (Femoral nerve injury, Sciatic Nerve injury, Common fibular, tibial & obturator nerve injury) Describe the anatomical basis of knee jerk, ankle jerk, and plantar reflex	Human Anatomy	Cutaneous dermatomes & nerve supply of lower limb
MS-A-062	Demonstrate the surface marking of nerves and vessels of lower limb		Topographical and radiological anatomy of lower limb
	Demonstrate the surface marking of bony landmarks of lower limb		
	Identify the topographical features of lower limb in a cross-sectional model		
	Demonstrate and identify the features of bones and joints of lower limb on radiograph/ CT scan/ MRI	Integrate with Radiology	
MS-A-063	Describe the common fractures of the following bone with the risk factors, clinical presentations, and management: 1. Clavicle 2. Humerus 3. Radius 4. Ulna 5. Small bones of hand 6. Hip bone	Orthopedics and trauma	Bone Fracture

	7. Femur 8. Tibia 9. Fibula 10. Small bones of foot		
MS-A-064	Describe the dislocations of the following joints with the risk factors and clinical presentations, and brief management: Shoulder joint 1. Elbow joint 2. Interphalangeal joint of hand 3. Hip joint 4. Knee joint 5. Ankle joint	Orthopedics and trauma	Joint Dislocation
THEORY			
CODE	EMBRYOLOGY & POST-NATAL DEVELOPMENT	TOTAL HOURS = 06	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-A-065	Describe the development of skeletal muscle and innervation of axial skeletal Muscles-developmental basis of myotome	Human Embryology	Development of Muscles
	Briefly discuss the development of cardiac and smooth muscle (Detail to be covered in respective modules later).		
MS-A-066	Describe the process of limb development and limb growth	Human Embryology	Development of Limb
MS-A-067	Describe the embryological basis of cutaneous innervation of limb	Human Embryology	Development of Nerve supply of
	Describe the embryological basis of blood supply of		

	limbs and concept of axial artery		limbs
MS-A-068	Describe the embryological basis of congenital anomalies related to muscular system.	Human Embryology	Congenital anomalies of limbs
	Describe the clinical presentations and embryological basis of; i. Amelia ii. Meromelia iii. Phocomelia iv. Cleft Hand and Foot v. Polydactyly, Brachydactyly, Syndactyly vi. Congenital club foot	Integrate with Paedriatics	
MS-A-069	Describe the developmental process of cartilage and bone	Human Embryology	Development of Cartilage
	Describe the process of histogenesis of cartilage and bone		
THEORY			
CODE	MICROSCOPIC ANATOMY	TOTAL HOURS = 06	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-A-071	Describe the microscopic structure and ultramicroscopic structure of skeletal muscle	Histology	Histology of Muscles
	Explain the basis of myasthenia gravis.	Integrate with Medicine	
	Describe the microscopic andultramicroscopic structure of cardiac muscle	Histology	
	Describe the microscopic and ultramicroscopic structure of smooth muscle Compare and contrast the histological features of three types of muscle tissue		

MS-A-072	Describe Myosatellite Cells & their role in Regeneration of muscle, hyperplasia, and hypertrophy of muscle fiber	Histology/ Integrate with Pathology	Functional Histology
	Explain the histopathological basis of leiomyoma	Histopathology	
MS-A-073	Describe the light and electron microscopic structure of bone cells Describe the light and electron microscopic structure of compact and spongy bone	Histology	Histology of Osseous tissue
	Describe the histological justification for osteoporosis, Osteopetrosis	Integrate with Pathology	
	Describe the histological basis for bone repair after fractures.		
MS-A-074	Compare and contrast the microscopic features of compact and spongy bone	Histology	Histology of Bone
	Explain the characteristic features of ossification (Intramembranous & Endochondral ossification)		
	Describe the zones seen in an epiphyseal growth plate		
MS-A-075	Describe the metabolic role of bone	Integrate with Medicine	Functional Histology of Bone
	Describe the clinical presentation of osteoporosis, osteopenia	Integrate with Orthopedics	
MS-A-076	Describe the microscopic and ultramicroscopic structure of all types of cartilage	Histology	Histology of Cartilage
	Compare and contrast the structure of cartilage and bone matrix		
	Tabulate the differences between three types of cartilage		

MS-A-077	Describe the histological basis for bone & Cartilage growth and repair	Histology	Mechanism of Bone growth
NORMAL FUNCTION			
THEORY			
CODE	MEDICAL PHYSIOLOGY	TOTAL HOURS = 32	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-P-001	Explain the Physiological basis of membrane potential	Medical Physiology	Diffusion/ Equilibrium Potentials
	Explain diffusion potentials of Na & K		
MS-P-002	Define Nernst potential		Nernst potential
	Explain Physiological Basis of Nernst potential		
	Write the Nernst equation.		
	Calculate Nernst potential for Na & K		
	Explain the effects of altering the concentration of Na ⁺ , K ⁺ , Ca on the equilibrium potential for that ion		
MS-P-003	Describe the normal distribution of Na ⁺ , K ⁺ , Ca and Cl ⁻ across the cell membrane		Goldman Equation
	Explain physiological basis of Goldman equation		
	Clarify the role of Goldman equation in generation of Resting Membrane Potential (RMP).		
MS-P-004	Describe the Physiological basis of generation of RMP.		Resting Membrane Potential in Neurons
	Explain the effects of hyperkalemia and Hypokalemia on the Resting Membrane Potential(RMP)		
	Name the membrane stabilizers		

	Explain the physiological basis of action of Local Anesthetics.	Medical Physiology Integrate with Anesthesiology	
MS-P-005	Describe the Physiological anatomy of Neurons	Medical Physiology	Neurons
	Discuss the axonal transport		
	Enlist & give functions of Neuroglial cells		
	Explain process of myelination in Central Nervous System (CNS) & Peripheral Nervous System (PNS)		
MS-P-006	Classify neurons functionally.		Classification of Neurons & Fibers
	Classify nerve fibers according to Erlanger & Gasser Classification		
	Enlist properties of nerve fibers		
MS-P-007	Discuss components of ANS (Autonomic nervous system)		Autonomic nervous system
	Explain the physiological anatomy of sympathetic and parasympathetic nervous system		
	Describe the types of adrenergic and cholinergic receptors and their functions		
	Explain the effects of sympathetic and parasympathetic on various organs/system of body		
MS-P-008	Define Action Potential		Action Potential of Neurons
	Enlist the Properties of action potential		
	Describe the ionic basis of an action potential.		
	Explain the phases of action potential.		
	Explain the effects of hyperkalemia and Hypokalemia on the action potential.		

	Draw monophasic action potential.		
	Explain absolute and relative refractory period		
MS-P-009	Explain the role of other ions in action potential.		Role of other ions in action potential
	Elaborate the effect of hypocalcemia on neuron excitability		
MS-P-010	Explain Physiological basis & properties of Graded potential		Local / Graded potentials
	Draw & explain Physiological basis & properties of compound action potential.		
	Contrast between action potential and graded potential		
	Describe the ionic basis of excitatory Post Synaptic Potential (EPSP), Inhibitory Post Synaptic Potential (IPSP), End Plate Potential (EPP).		
MS-P-011	Classify and explain Physiological basis of different types of synapses	Medical Physiology	Synapse
	Elaborate how signal transmission takes place across chemical synapse		
MS-P-012	Explain the mechanism of conduction of Nerve impulse in myelinated and unmyelinated nerve fibers.		Conduction of Nerve Impulse
	Elaborate significance of saltatory conduction		
MS-P-013	Enlist the types of nerve injury	Medical Physiology Integrate with	Nerve Degeneration
	Explain Wallerian degeneration.		
	Describe the process of regeneration of nerve fiber.		
	Describe the causes, features & pathophysiology of Multiple sclerosis, GB syndrome.		

		Medicine	
MS-P-014	Discuss the physiological anatomy of skeletal muscles.	Medical Physiology	Skeletal muscle
	Differentiate b/w skeletal, smooth, and cardiac muscle		
	Describe the structure of Sarcomere		
MS-P-015	Differentiate between isometric and isotonic contraction by giving examples.		Characteristics of whole muscle contraction
	Compare the fast and slow muscle fibers.		
MS-P-016	Explain the mechanism of summation and Tetanization.	Medical Physiology	Mechanics of muscle contraction
	Describe staircase effect/Treppe phenomena		
	Discuss the mechanism of skeletal muscle fatigue.		
	Explain the remodeling of skeletal muscle to match the function. Describe the development of macro motor units in poliomyelitis.		
	Explain the physiological basis of rigor mortis	Medical Physiology Integrate with Forensic Medicine	
MS-P-017	Describe the physiological anatomy of Neuro Muscular Junction (NMJ)	Medical Physiology	Neuromuscular junction
	Mechanism of Neuromuscular transmission & generation of End Plate Potential		
	Explain features, pathophysiology & treatment of myasthenia Gravis	Medical Physiology Integrate with Medicine	

	Describe the enhancers or blockers of neuromuscular transmission at the neuromuscular junction.	Medical Physiology	
	Discuss the steps/ events of excitation contraction coupling in skeletal muscle.	Medical Physiology	
MS-P-018	Differentiate between types of smooth muscles.	Medical Physiology	Smooth Muscle
	Describe mechanism of smooth muscle contraction in comparison to skeletal muscle.		
	Explain the physiological anatomy of neuromuscular junction of smooth muscle		
	Explain the excitatory and inhibitory transmitters secreted at Neuro Muscular Junction (NMJ) of smooth muscles.		
	Explain the depolarization of multiunit smooth muscles without action potentials. Explain the local tissue factors and hormones that can cause smooth muscle contraction without action potential.		
	Explain the regulation of smooth muscle contraction by calcium ions.		
	Explain membrane potential and action potentials in smooth muscles.		
	Explain the phenomena of stress relaxation and reverse stress relaxation in smooth muscles.		
	Explain the LATCH mechanism		
	Describe the significance of LATCH mechanism .		
	Explain the nervous and hormonal control of Smooth Muscle Contraction.		

THEORY			
CODE	MEDICAL BIOCHEMISTRY	TOTAL HOURS = 30	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-B-001	Classify carbohydrates along with the structure and biomedical importance of each class	Biochemistry	Classification carbohydrates
MS-B-002	Explain the isomerization of carbohydrates	Biochemistry	Carbohydrates
MS-B-003	Describe the physical and chemical properties of carbohydrates	Biochemistry	Extracellular matrix
	Differentiate between proteoglycan and glycoproteins		
	Describe the components of extracellular matrix: 1. Describe structure, functions, and clinical significance of glycosaminoglycans. 2. Discuss structure and functions of Fibrous proteins (collagen and Elastin) 3. Interpret diseases associated with them on basis of sign/symptoms and data 4. Interpret the importance of vitamin C in collagen synthesis 5. Describe sources, active form, functions and deficiency diseases of vitamin C 6. Identify the defects in collagen synthesis based on given data (Osteogenesis Imperfecta)	Biochemistry	
	Interpret genetic basis of Duchene muscular dystrophy	Biochemistry	
	Explain the transport and uptake of glucose in cells, steps of glycolysis and citric acid cycle along with enzymes, co enzymes and cofactors involved		

MS-B-004	Discuss the provision of energy to the muscles and cells through glycolytic pathway and TCA cycle	Biochemistry	Glycolysis and Tricarboxylic acid cycle (TCA)
MS-B-005	Describe the digestion and absorption of proteins in mouth, stomach and small intestine. Discuss the uptake of amino acids by cells Define amino acid pool and nitrogen balance Explain ATP –dependent & ATP independent systems of protein degradation	Biochemistry	Protein Digestion & Transport across cell
MS-B-006	Explain following reactions with enzymes involved in it: 1. Transamination 2. Deamination decarboxylation 3. Deamidation 4. Trans deamination. 5. Oxidative deamination.	Biochemistry	Reactions involve in catabolism
MS-B-007	Role of pyridoxal phosphate, glutamate, glutamine, alanine	Biochemistry	Transportation of ammonia to the liver
MS-B-008	Illustrate steps of urea cycle with enzymes and its importance Discuss ammonia intoxication	Biochemistry	Urea cycle
MS-B-009	Interpret different types of hyperammonia on basis of sign symptoms and data		
MS-B-010	Discuss the catabolic pathways of aliphatic, aromatic, branched chain, sulfur containing, hydroxyl group containing amino acids with the products formed and enzymes and vitamins involved in them	Biochemistry	Protein metabolism

MS-B-011	Interpret the following on basis of given data: 1. Phenylketonuria 2. Tyrosinemia 3. Albinism 4. Homocystinuria 5. Maple syrup urine disease 6. Alkaptonuria	Biochemistry	Inborn errors of amino acid metabolism
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PATHOPHYSIOLOGY AND PHARMACOTHERAPEUTICS			
THEORY			
CODE	SPECIFIC LEARNING OBJECTIVES	TOTAL HOURS = 4+7=11	
		DISCIPLINE	TOPIC
MS-Ph-01	Explain the mechanism by which drugs can stimulate NMJ.	Pharmacology & Therapeutics	Drugs acting on Neuromuscular Junction (NMJ)
	Explain the mechanism by which drugs can block NMJ.		
MS-Ph-02	Discuss briefly the therapeutic effect of drugs used in myasthenia gravis.		Drugs in Myasthenia Gravis
MS-Ph-03	Discuss briefly the therapeutic effect of drugs used as local anesthetics.		Local Anesthetics
MS-Pa-01	Describe the hyperplasia, hypertrophy, and atrophy of muscle fiber	Pathology	Muscle remodeling
	Explain the histopathological basis of leiomyoma		
MS-Pa-02	Describe the histological basis of Duchenne Muscular Dystrophy and myopathy.		Diseases of Muscle
	Describe the clinical presentation and histological justification for osteoporosis, osteopetrosis		Diseases of Bone

MS-Pa-03	Briefly enlist the steps of repair		
MS-Pa-04	Describe the histological basis for bone repair after Fractures and cartilage growth and repair		Disease of Cartilage
AGING			
THEORY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 04	
		DISCIPLINE	TOPIC
MS-Ag-01	Discuss the effect of age on bone fragility and its implications with management.	Geriatrics/ Medicine/ Biochemistry	Bone
MS-Ag-02	Discuss the effect of age on loss of cartilage resilience and its implications and management		Cartilage
MS-Ag-03	Discuss the effect of age on Muscular strength and its implications and management		Muscle
MS-Ag-04	Explain the protective effect of estrogen (female sex hormone) on bone mineral density and relate it to increased prevalence of postmenopausal fractures in women.		Effect of estrogen on BMD
DISEASE PREVENTION AND IMPACT			
THEORY			
CODE	SPECIFIC LEARNING OUTCOMES	TOTAL HOURS = 14+3 = 17	
		DISCIPLINE	TOPIC
MS-CM-001	Explain causes of low back pain		Back Pain
	Describe prevention of low back pain		

MS-CM-002	Describe work related musculoskeletal disorders addition with its burden/epidemiology	Community Medicine and Public Health	Work related Musculoskeletal disorders
	Identify risk factors of Musculoskeletal disorders MSD at workplace		
	Describe prevention of exposure to risk factors related to workplace		
MS-CM-003	Describe MSD related to mobile addition with its burden/epidemiology	Community Medicine and Public Health	MSD related to mobile usage
	Describe MSD related to mobile usage (Text neck, Trigger thumb, DeQuervain Syndrome, Carpel Tunnel Syndrome)		
	Identify risk factors related to MSD due to excessive mobile usage.		
	Describe the preventive strategies for mobile addiction-related MSD.		
MS-CM-004	Describe the application of ergonomics in MSD related to the above disorders.	Community Medicine and Public Health	Ergonomics
MS-CM-005	Describe the concept of non-communicable Musculoskeletal diseases		Noncommunicable disease
MS-CM-006	Identify the risk factors in the community for Osteoporosis		Risk factor assessment of musculoskeletal diseases
	Learn and apply interventions to prevent the risk factors for various musculoskeletal diseases in the community.		
MS-BhS-001	Identify and deal with the various psychosocial aspects of Musculoskeletal conditions (such as Osteoarthritis, Osteomyelitis, Rheumatoid arthritis, Gout, chronic back pain, psychosomatic complaints) and Neuromuscular conditions (Muscular Dystrophy,		Psychosocial factors influencing chronic illnesses

	Myesthenia Gravis, Sclerosis) on individual, family and society	Behavioral Sciences	
MS-BhS-002	Identify the psychosocial risk factors as mediating factors between illness and its effect		Psychosocial Impact of Disease and its management
	Discuss the role of psychological variables like coping, social support, and other health cognitions in mediating between illness and its effect.		

PRACTICAL

CODE	HISTOLOGY	TOTAL HOURS = 08	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-A-077	Draw and label the histology of skeletal muscle	Histology	Histology of Muscles
	Draw and label the histology of smooth muscle		
	Draw and label the histology of cardiac muscle		
MS-A-078	Draw and label the histological picture of compact bone	Histology	Histology of Bones
	Draw and label the histological picture of spongy bone		
MS-A-079	Draw and label the microscopic structure of hyaline cartilage	Histology	Histology of Cartilage
	Draw and label the microscopic structure of elastic cartilage		
	Draw and label the microscopic structure of fibro cartilage		
CODE	PHYSIOLOGY	TOTAL HOURS = 02	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-P-019	Demonstrate and categorize the following movements: Pushing against the wall, Biceps curls, squats, yoga chair pose, standing on toes, running on an inclined treadmill, yoga tree pose, deadlift as isotonic and isometric skeletal muscle contraction.	Physiology	Locomotion

MS-P-020	Interpret the graph of local/action potential/compound action potential from the recording of nerve fibers, & nerve trunk	Physiology	Nerve fibers
MS-P-021	Interpret the graph of local/action potential/compound action potential from the recording of skeletal and smooth muscles	Physiology	Muscles
MS-P-022	Interpret the graph of frequency summation and tetanization	Physiology	
CODE	BIOCHEMISTRY	TOTAL HOURS = 04	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-B-012	Estimation of total proteins by kit method	Biochemistry	Total proteins
MS-B-013	Estimate serum albumin level Calculate serum globulin level		Albumin/ globulin
CODE	PHARMACOLOGY	TOTAL HOURS = 03	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-Ph-004	Label the diagram of the neuromuscular junction showing non depolarizing/ depolarizing blockage	Pharmacology	NMJ Blockers
	Enumerate drugs for myasthenia gravis.		
	Label the diagram to show the effect of neostigmine in the treatment of myasthenia gravis		
	Identify ampules of neuromuscular blocking agents (eg. Succinylcholine and atracurium) and local anesthetics (or their pictures) with their MOA, clinical uses and adverse effects		

CODE	PATHOLOGY	TOTAL HOURS = 02	
	SPECIFIC LEARNING OBJECTIVES	DISCIPLINE	TOPIC
MS-Pa-005	Identify the salient gross and microscopic features of leiomyoma	Pathology	Leiomyoma
MS-Pa-006	Identify the salient gross and microscopic features of steps of bone healing (Pictorial) with factors and complications affecting bone healing		Bone Healing

LEARNING METHODOLOGIES

Delivery of curriculum needs diversity of teaching strategies for better understanding. Thus, the following teaching methodologies may be used to facilitate students.

- large group interactive session
- Team based learning
- Problem based learning
- Tutorials
- Laboratory practical
- Demonstration
- Clinical case based conferences
- Skill Laboratories

Large group interactive session

Lecture format is the most widely used approach to teaching especially in a large class size with average attention span of 20-30 mins. Interactive lecturing involves a two-way interaction between the presenter and the participants. Interactive methods like brainstorming buzz group, simulation, role play and clinical cases can be used.

Significance of its usage:

- Relaxed environment, diverse opinions, active involvement
- Increased attention and motivation
- Independence and group skills
- Cost effective
- Suitable for taking advantage of available audiovisual technologies
-

Team based learning (TBL)

BL is a uniquely powerful form of small group learning. It provides a complete coherent framework for building a flipped course experience. There are four essential elements of TBL which includes;

- Teams must be properly formed and managed (5-7 students)
- Getting students ready
- Applying course concepts
- Making students accountable

Significance of its usage:

- Students are more engaged.
- Increased excitement in TBL classroom
- Teams outperforms best members
- Students perform better in final and standardized exams.

Problem based learning (PBL)

It is an instructional student-centered approach in which students work in small groups on a health problem, identifying their own educational needs and being responsible for the acquisition of the knowledge required to understand the scenario.

Significance of its usage:

- Teamwork
- Critical evaluation of literature
- Self-directed learning and use of resources
- Presentation skills
- Leadership
- Respect for colleagues' views

Tutorials

Tutorial is a class or short series of classes, in which one or more instructors provides intensive instruction on some subject to a small group. Its purpose is to explore students' point of view, allowing time for discussion, and inculcating self-directed, reflective learning skills.

Significance of its usage

- Develop and assess the extent of background knowledge of students, which enables them to properly understand concepts which may not have been understood in lectures.

- Develop problem-solving skills.
- Develop practice of self-learning.
- Reduced time to understand the topic.

Laboratory Practical

Lab practical involve things like identifying a structure, a type of stain through a microscope, a problem with a preparation, reading biochemical test results and answering safety questions. These simulations allow students to attempt the experiments in the laboratory in a risk-free way that provides the opportunity to make mistakes and learn how to correct them using the immediate feedback generated.

Significance of its usage

- Enhance mastery of subject matter.
- Develop scientific reasoning.
- Develop practical skills.
- Develop teamwork abilities.

Demonstrations

The demonstration method in teaching can be defined as giving a demo or performing a specific activity or concept. It is a teaching-learning process carried out in a very systematic manner.

Significance of its usage

- Promotes learning and correlates theory with practice.
- Sharpens the observation skills.
- Sustain interests in learning environment.
- Helps teacher to evaluate students' response

Clinical case based conferences

Clinical Case based conferences allow clinicians and medical students to present difficult case material and include discussions of diagnostic, clinical formulation, and/or treatment issues.

Significance of its usage

- Provides detailed (rich qualitative) information.
- Provides insight for further research.
- Permitting investigation of otherwise impractical (or unethical) situations.

Skill Laboratories

It refers to specifically equipped practice rooms functioning as training facilities offering hands on training for the practice of clinical skills within non-threatening environment prior to their real- life application. This applies to both basic clinical skills as well as complex surgical skills.

Significance of its usage

- Controlled, anxiety-free, and risk-free learning environment to students.
- A platform for repeated practice for mastery in relevant clinical skills
- Increase the preparedness of student learners before transitioning to the real hospital setting.
- Build strong communication skills
- Enable learners to make critical decisions.



Assessment policy

REGULATIONS:

1. Professional examination shall be open to any student who:-
 - a. has been enrolled/registered and completed one academic year preceding the concerned professional examination in a constituent/affiliated college of the University.
 - b. has his/her name submitted to the Controller of Examinations, for the purpose of examination, by the Principal of the college in which he / she is enrolled & is eligible as per all prerequisites of the examination.
 - c. has his/her marks of internal assessment in all the Blocks/Clinical Clerkships sent to the Controller of Examinations through office of the Principal of the concerned college, at the end of each Block/Clinical Clerkships, as well as at the conclusion of the academic session along with the admission form for the professional examination.
 - d. Has been certified by the principal of his/her college:
 - i. of good character;
 - ii. of having attended not less than cumulative 75%* of the full course of lectures delivered, practical and clinical rotations conducted in the particular academic session, while maintaining 75 % attendance in each Block/Clinical Clerkship,
 - iii. of having appeared at the Block/Clinical Clerkship Examinations conducted by the college of enrolment with at least 50 % marks* in each Block/Clinical Clerkship examination, as well as in aggregate score of all Blocks/Clinical Clerkships examinations for the concerned year;
2. Written/Theory paper in all Professional Examinations in Modular Integrated MBBS or BDS Curricula shall consist of MCQs alone, with effect from Annual 2026 Examinations. (Ref: No. UHS/REG-25/2379, dated 17.11.2025)
3. The minimum number of marks required to pass the professional examination for each Block/Clinical Clerkship shall be fifty percent (50%) in Written and fifty percent (50%) in the 'Oral/Practical/Clinical' examinations and fifty percent (50%) in aggregate, independently and concomitantly, at one and the same time.
4. A candidate failing in one or more Blocks/Clinical Clerkships in the annual examination shall be provisionally allowed to join the next professional class till the commencement of supplementary

examinations. The candidate, however, shall have to pass the failed Block/s or Clinical Clerkship in this supplementary examination failing which he / she shall be detained in the professional year. Under no circumstances, a candidate shall be promoted to the next professional class till he/she has previously passed all the Blocks/Clinical Clerkships in the preceding professional examination.

If a student appears in the Supplementary Examination for the first time as he/she did not appear in the annual examination for any reason and failed in any Block/Clinical Clerkship in the Supplementary Examination, he/she will be detained in the same class and will not be promoted to the next class.

*Notification No. UHS/REG-25/2351 Dated 13-11-2025

5. Only one annual and one supplementary of each Professional Examination shall be allowed in a particular academic session. However, in exceptional situations, i.e., national calamities, war or loss of solved answer books in case of accident; special examination may be arranged after having observed due process of law. This will require permission of relevant authorities, i.e., Syndicate and Board of Governors.
6. Any student who fails to clear the First or Second Professional MBBS / First Professional BDS Examination, in four consecutive attempts, each, inclusive of both availed as well as un-availed attempts, after becoming eligible for the examination, and has been expelled on that account shall not be eligible for continuation of studies and shall not be eligible for admission as a fresh candidate in either MBBS or BDS.
7. The application for admission of each candidate to the professional examination shall be submitted to the Controller of Examination, through the Principal of the College, on the prescribed format, as per notified schedule, accompanied by the prescribed fee.
8. The candidates shall pay their fee through the principal of their respective Colleges, who shall forward the Examination Forms along with the duly paid challan of the examination fee generated from the Online Examination Form.
9. The continuous internal assessment through the Block/Clinical Clerkship, conducted by the college of enrollment, shall carry 20% weightage in the total allocated marks for the concerned Block/Clinical Clerkship in the Professional Examination conducted by the university. The score will be equally distributed to the Written and “Oral/Practical/Clinical” Examinations.

10. The marks of internal assessment through Blocks/Clinical Clerkships examination and attendance record shall be submitted to Controller of Examinations, along with question papers and keys for the Block/Clinical Clerkship examination, within two weeks of completion of each Blocks/Clinical Clerkships examination.

Further, parent-teacher meetings shall be arranged by the colleges after every Block/Clinical Clerkship examination to share feedback on the progress of students with their parents. Minutes of parent teacher meetings, academic timetables/schedule of Blocks/Clinical Clerkships and academic year study guides shall be submitted to the Department of Medical Education UHS, as well.

11. It is emphasized that fresh internal assessment or a revision of assessment for supplementary examination shall not be permissible. However, a revised internal assessment for the detained students can be submitted. The internal assessment award in a particular year will not be decreased subsequently detrimental to the detainee candidate. A proper record of the continuous internal assessment shall be maintained by the concerned department/s in the colleges.

12. The colleges may arrange remedial classes and one re-sit for each Block/Clinical Clerkship examination after fulfillment of prescribed requirements given below. The remedial classes and re-sit examination can be conducted during summer vacation/weekends, before or during preparatory leave for the concerned professional examination, subject to the following conditions:

Block/Clinical Clerkship Attendance	Remedial Classes
<75%, ≥ 50% (50-74%)	i. Principal of the college may conduct remedial classes and submit result to the Examination Department, UHS, independently. ii. Principal of the college may conduct remedial classes for detained students, who have short attendance in the first Block/Clinical Clerkship of a professional year after detention. The college may submit record of the remedial classes to the Examination Department, UHS, independently.

< 50%	i. Principal of the college may submit attendance record of such students to Department of Medical Education, UHS, and seeking permission for conduct of remedial Classes. The conduct of remedial classes in such cases shall be arranged only after permission from the Competent Authority in the university. ii. The colleges shall also have to provide the university with the reasons submitted by the candidates for short attendance along with documentary evidence for the same duly verified by the principal. iii. The following shall be considered as valid reasons for short attendance of the students for consideration of permission for remedial classes: • Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS.
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Marks in Blocks/Clinical Clerkship Examination	Re-sit Examination
	i. Principal of the college may submit record of such students to Department of Medical Education, UHS, and seeking permission for conduct of re-sit examination. ii. The conduct of re-sit examination in all cases shall be arranged

<50% Marks/ Absence from Block /Clinical Clerkship Examination	only after permission from the Competent Authority in the university. iii. The colleges shall also have to provide the university with the reasons submitted by the candidates for absence from the Block/Clinical Clerkship examination, along with documentary evidence for the same duly verified by the principal. iv. The following shall be considered as valid reasons for absence of a student from Block/Clinical Clerkship examination, and for consideration of permission for re-sit examination: • Illness/accident/surgery of the student or sickness/death of an immediate relative/being afflicted by a natural/man-made calamity or disaster or detained students (missed the first Block/Clinical Clerkship of the year), students clearing their preceding professional examination in supplementary, or late admitted students who have been permitted for joining by UHS.
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13. The following policy shall be applicable for transition of students From Traditional Subject-Based Scheme to the Modular Integrated Curriculum Scheme:

- i. The students who fail in all subjects of the professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall follow the Modular Integrated Curriculum Scheme for their teaching and assessment.
- ii. The students who fail in one or more subjects but not all the subjects of a professional examination, either by taking the examination or due to non-appearance, and are detained in the respective professional year, shall attend classes with students following the Modular Integrated Curriculum Scheme, but they will be examined in the failed subject/s according to their parent scheme, i.e., the Traditional Subject-Based Curriculum Scheme.

Assessment Tools

- Written examination: MCQs
- Oral/Practical/Clinical: OSPE, OSCE, Structured Viva (OSVE)

Block -2 Module (Musculoskeletal & locomotion-1)	Part I MCQs (140)	140 Marks	Practical/ Clinical Examination	11 OSPE 02 OSCE 03 OSVE	Marks 88 10 42	350
	Internal Assessment 10%	35 Marks	Internal Assessment 10%	35 Marks		
	Total	175	Total	175		

Note:

- Time for 140 MCQS will be 2 hours 30 mins
- Time for each OSPE, OSCE and OSVE station will be six (06) minutes
- No grace marks shall be allowed in any examination or practical under any guise or name

TABLE OF SPECIFICATIONS (TOS)

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

LEARNING RESOURCESS



Anatomy

- Clinical Anatomy by Regions – Snell R.S. – 10th ed – Lippincott Williams & Wilkins (Wolters Kluwer) – 2019
- Langman's Medical Embryology – Sadler T.W. – 12th ed – Lippincott Williams & Wilkins (Wolters Kluwer) – 2012
- Medical Histology: Text & Atlas – Siddiqui L.H. – 8th ed – Paramount Books (Karachi)
- Anatomy: Regional and Applied – Last R.J. – 11th ed – Churchill Livingstone (Edinburgh)

Physiology

- Guyton and Hall Textbook of Medical Physiology. John E. Hall & Michael E. Hall – 14th ed – Elsevier – 2021
- Ganong's Review of Medical Physiology – Kim E. Barrett, Susan M. Barman et al. – 27th ed – McGraw-Hill – 2024

Biochemistry

- Harpers illustrated Biochemistry – Rodwell.V.W – 32nd ed – MCGraw-Hill – latest edition
- Lippincott illustrated Reviews: Biochemistry – Wolters Kluwer – 9th edition – 2025
- Essentials of Medical Biochemistry (Vol 1 & 2) – Mushtaq Ahmed – Vol 1, 9th ed – Nishtar Publications – 2019

Pathology

- Robbins & Cotran pathologic basis of diseases – Kumar V., Abbas A.K., Aster J.C. – 11 th ed – Elsevier – 2025
- Pocket companion to Robbins & Cotran Pathologic Basis of Diseases Mitchell R. N., Kumar V., Abbas A.k, Aster J.C. – 10 th ed – Elsevier – 2022
- Review of Medical Microbiology & Immunology-Levinson W. - 18th ed McGraw – Hill -2024

Pharmacology

- Lippincott Illustrated Reviews: Pharmacology-Whalen K.L., Lerchenfeldt S.M., Giordano C.R.- 8th ed- Wolters Kluwer / Lippincott- 2022

- Katzung's Basic & Clinical Pharmacology-Katzung B.G., Vanderah T.W. - 16th ed -McGraw-Hill-2024

Forensic Medicine

- Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology – Parikh C.K.- 10th ed - Prince Books (RWP) – 2019
- Principles & Practice of Forensic Medicine - Nasib R.Awan - 2nd ed - Zubair Books(Lahore)- 2018

Community Medicine

- Park's Textbook of Preventive and Social Medicine - K. Park - 27th ed - Banarsidas Bhanot Publishers
- Public Health and Community Medicine - Muhammad Irfanullah Siddiqui & Shah Ilyas Ansari- 8th ed - Time Publishers

Family Medicine

- Oxford Handbook of General Practice - Chantal Simon & Hazel Everitt - 5th ed – Oxford University Press-2020

Behavioural Sciences

- Handbook of Behavioural Sciences - Mowadat H. Rana-3rd ed-2016

Medicine

- Davidson's Principles and Practice of Medicine - 24th ed – Elsevier - 2022
- Kumar & Clark's Clinical Medicine - ParveenKumar & Michael Clark - 9th ed - Elsevier 2017
- ABC of Dermatology - 7th ed - Wiley-Blackwell - 2021 (Dermatology)

Clinical Skills

- Hutchison's Clinical Methods: An Integrated Approach to Clinical Practice - 24th ed - Elsevier- 2022.
- MacLeod's Clinical Examination -15th ed – Elsevier - 2023

Surgery

- Bailey & Love's Short Practice of Surgery - 28th ed - CRC Press - 2023

Obstetrics and Gynaecology

- Gynaecology by Ten Teachers - edited by Ash Monga & Stephen Dobbs -19th ed-CRC Press-2011·
- Obstetrics by Ten Teachers - Louise C. Kenny & Fergus McCarthy (Editors) - 21st ed -CRC Press-2024

Pediatrics

- Nelson Textbook of Pediatrics - Robert M. Kliegman & Joseph W.St. Geme III - 22nd ed – Elsevier
- Basis of Pediatrics - Pervez Akbar Khan -11thed

Islamiyat & Pakistan Studies

- Standard Islamiyat (compulsory)for B.A, BSc, MA, MSc, MBBS by Prof M Sharif Islahi·
- Pakistan Studies (compulsory) by Mian Muhammad Ashraf

Orthopedics

- Apley and Solomon's system of Orthopaedics and Trauma by Ashley Blom (Editor)

TIMETABLE



Lahore Medical & Dental College
Canal Bank North, Tulpura, Lahore
Phone No. 0346-4418891-98
No. LMDC/14/39-60 /2026, Dated: 27-4-26

1st YEAR M.B.B.S TIMETABLE SESSION 2025-2026 w.e.f. 11-05-2026 to 14-08-2026 BLOCK 2 (MUSCULOSKELETAL & LOCOMOTION MODULE) 10 weeks

DAYS & TIME	08:00 a.m. to 09:30 a.m.	09:30 a.m. to 11:00 a.m.	11:00 a.m. to 11:30 a.m.	11:30 a.m. to 12:15 p.m.	12:15 p.m. to 01:00 p.m.	01:00 p.m. to 01:45 p.m.	01:45 p.m. to 03:00 p.m.
MONDAY	Histo. Practical/Patho. Prac (A+B) CFRC/Physio Practical (C+D) Physio tutorial (E+F) Biochem Tutorial (G+H) Biochem Practical (I+J)	Anatomy Dissection Dissection Hall	Break	Physiology Lecture theatre No. 1	Biochemistry Lecture theatre No. 1	³ Aging/Disease Prevention & Impact Lecture theatre No. 1	Anatomy Dissection Dissection Hall
TUESDAY	Histo. Practical/Patho. Prac (I+J) CFRC/Physio Practical (A+B) Physio tutorial (C+D) Biochem Tutorial (E+F) Biochem Practical (G+H)	Anatomy Dissection Dissection Hall		Physiology Lecture theatre No. 1	Biochemistry Lecture theatre No. 1	⁴ Pathophysiology and Pharmacotherapeutics Lecture theatre No. 1	Anatomy Dissection Dissection Hall
WEDNESDAY	Histo. Practical/Patho. Prac (G+H) CFRC/Physio Practical (I+J) Physio tutorial (A+B) Biochem Tutorial (C+D) Biochem Practical (E+F)	Anatomy Dissection Dissection Hall		Physiology Lecture theatre No. 1	⁵ Pathophysiology & Pharmacotherapeutic Lecture theatre No. 1	Anatomy Lecture theatre No. 1	Anatomy Dissection Dissection Hall
THURSDAY	Histo. Practical/Patho. Prac (E+F) CFRC/Physio Practical (G+H) Physio tutorial (I+J) Biochem Tutorial (A+B) Biochem Practical (C+D)	Anatomy Dissection Dissection Hall		Anatomy Lecture theatre No. 1	⁶ Physiology / Biochemistry Lecture theatre No. 1	⁷ Disease Prevention & Impact Lecture theatre No. 1	Anatomy Dissection Dissection Hall
FRIDAY	Histo. Practical/Patho. Prac (C+D) CFRC/Physio Practical (E+F) Physio tutorial (G+H) Biochem Tutorial (I+J) Biochem Practical (A+B)	09:30 a.m. to 10:10 a.m. Biochemistry Lecture theatre No. 1	10:10 a.m. to 10:50 a.m. ⁸ PERL / Disease Prevention & Impact Lecture theatre No. 1	10:50 a.m. to 11:00 a.m. Break	11:00 a.m. to 11:40 a.m. ⁹ Disease Prevention & Impact Lecture theatre No. 1	11:40 a.m. to 12:20 p.m. Physiology Lecture theatre No. 1	12:20 p.m. to 01:00 p.m. ⁹ SDL Lecture theatre No. 1

CC:-

- Principal, LMDC
- Vice Principal, LMDC
- Heads of All Departments, LMDC/GTTH
- HOD Medical Education, LMDC
- Chief Administrative Officer / Director F&A, LMDC
- Director HR, LMDC
- Director Skills Lab, LMDC
- Director IT, LMDC
- Medical Superintendent, GTTH
- Chairperson Timetable Committee, LMDC
- Assessment & Examination Cell, LMDC
- Transport Incharge, LMDC
- Manager Audio Visual / (Lecture Theatre Incharge), LMDC
- Warden / Assistant Warden Hostels (Boy/Girl)
- Security Supervisor, LMDC
- Class Representative (Boy/Girl)
- M/s Ali Tours, LMDC
- Notice Board

- 1st 9 weeks Histo Pract. & last week Patho Pract.
- 1st 8 weeks C-FRC & last 2 weeks Physio Pract.
- 1st 6 weeks Aging & last 4 weeks Disease Prevention & Impact.
- Pathophysiology and Pharmacotherapeutics: 10 weeks Pathology.
- Pathophysiology and Pharmacotherapeutics: 10 weeks Pharmacology.
- 1st 6 weeks Physiology & last 4 weeks Biochemistry.
- Disease Prevention & Impact (Thur & Fri): 10 weeks Community Medicine.
- 1st 4 weeks PERL & last 6 weeks Disease Prevention & Impact.
- SDL: Will be scheduled between Anatomy, Physiology & Biochemistry.
 - Clinical Foundation Rotation Clerkship (C-FRC) will be held in Ward / Skill Lab in practical time and issued separately.
 - In ward time of CFRC, students should be relieved 15 min before time to travel back to LMDC.
 - Monitoring Session will be scheduled & issued separately.
 - UHS Mandatory Clinical Workshop (BLS/CFR) for 2 days will be scheduled & issued separately.
 - SDL for 1 hour practical time.
 - Expository writing (To be managed by Anatomy, Physiology & Biochemistry).
 - Every Friday SDL from 01:00 p.m. to 02:00 p.m. and Library time from 02:00 p.m. to 03:00 p.m.

MAJ. GEN. (R) PROF. DR. NAEEM NAQI
PRINCIPAL