



## **Jinnah Medical & Dental College**

### **Locomotor Module 1 & 2**

### **Study Guide**



**MBBS  
2021-22**

Education is not the learning of facts  
but the training of the mind to think

Albert Einstein

## **VISION**

To set local and global standards for quality patient outcomes – creating a culture of excellence to promote a transformative experience for the 21st century clinicians, educators and researchers to benefit all humanity.

## **MISSION**

To develop well-rounded academicians, thinkers, clinicians and researchers by strengthening a global view, broadening intellectual foundations and teach effective communication. It is our aspiration to cultivate creative and critical thinking skills for problem solving, sensitive to cultural and ethical values and responsibilities. Our graduates will be role models and society leaders.

## Team Members of Locomotor Module I & II 2021-22

<b>Name</b>	<b>Committee</b>	<b>Department</b>
Professor Dr. Muhammad Baqir Soomro	Member	Anatomy
Professor Dr. Shahid Ahsan	Member	Biochemistry
Professor Dr. Sadaf Fatima	Member	Physiology
Professor Dr. Sanower Ali	Member	Community Medicine
Professor Dr. Imran Afzal	Member	Forensic Medicine
Professor Dr. Mahdev Harani	Member	Pathogen & Microbiology
Professor Dr. Samia Perwaiz Khan	Member	Pharmacology
Dr. Zeelaf Shahid Associate Director	Member	Medical Education

## **Introduction**

Assalam - u-Alaikum and a very warm welcome to medical students in the Locomotor module. This module has been developed to impart integrated teaching as a part of modular curriculum in Jinnah Medical & Dental College, Karachi. Locomotor 1 module (1<sup>st</sup> year) covered in 8 weeks and Locomotor 2 module (3<sup>rd</sup> year) covered in 4 weeks. The modules also popularly known as Musculoskeletal system had been planned to integrate fundamental knowledge of locomotor system to its clinical applications. It will benefit the learners to understand the basic information in relation to applied sciences. It includes diagnosis, treatment and prevention of conditions including from minor ailments of back pain to the more major one's Rheumatoid arthritis. It includes severely disabling limb trauma, accidents and disasters as well.

## **Rationale**

By teaching basic sciences throughout this module with clinical examples help in making connections among concepts and retain information for later clinical education.



## JMDC CURRICULUM SEQUENCE: MBBS 1-5 YEARS

Year	Module 1	E O M	Module 2	E O M	Module 3	E O M	Module 4	E O M	Module 5	E O M	EOM* Exam of Module							
1	Foundation-1 8 weeks		Blood-1 4 weeks		Locomotor-1 8 weeks		Respiratory-1 4 weeks		CVS-1 4 weeks									
	<b>PAKISTAN STUDIES &amp; ISLAMIAT</b>																	
2	Module 6	E O M	Module 7	E O M	Module 8	E O M	Module 9	E O M	Module 10	E O M	Module 11	E O M	Module 12	E O M				
	GIT-1 4 weeks		Head & Neck-1 5 weeks		Neurosciences-1 7 weeks		Special Senses 3 weeks		Endocrine-1 5 weeks		Reproductive-1 4 weeks		Urinary-1 5 weeks					
<b>Communication Skills Patient Safety &amp; Infection Control Professionalism &amp; Ethics</b>																		
3	Module 13	E O M	Module 14	E O M	Module 15	E O M	Module 16	E O M	Module 17	E O M	Module 18	E O M	EOM					
	Foundation 2 10 weeks		Blood-2 5 weeks		Locomotor-2 4 weeks		Respiratory-2 4 weeks		CVS-2 5 weeks		GIT-2 7 weeks							
<b>Clinical Rotations (Each Batch) WT* = Ward test</b>																		
<b>Communication Skills Patient Safety &amp; Infection Control Professionalism &amp; Ethics</b>																		
R1	Medicine 2 weeks		Psychiatry 2 weeks	WT	Surgery 2 weeks	WT	Orthopedics 2 weeks	WT	OBS/ GYN 2 weeks	WT	Pediatrics 2 weeks	WT	Eye 2 weeks	WT	Ent 3 weeks	WT		
R2	Medicine 2 weeks		Psychiatry 2 weeks		Surgery 2 weeks		Orthopedics 2 weeks		OBS/ GYN 2 weeks		Pediatrics 2 weeks		Eye 2 weeks		Ent 3 weeks			
4	Module 19	E O M	Module 20	E O M	Module 21	E O M	Module 22	E O M	Module 23	E O M	Module 24	E O M	Module 25	E O M	Module 26	E O M	Module 27	EOM
	Nervous Sys & Psychiatry 2 8 weeks		H & N & SP Senses 2 (Eye) 4 weeks		H & N & SP Senses 3 (ENT) 4 weeks		Endocrinology 2 4 weeks		Repro 2 6 weeks		Urinary 2 4 weeks		Derma 2 weeks		Orthopedics 2 weeks		Rehab 2 weeks	
<b>Lectures Eye/ENT</b>																		
<b>Clinical Rotations (Each Batch)</b>																		
<b>Communication Skills Patient Safety &amp; Infection Control Professionalism &amp; Ethics</b>																		
R1	Medicine 3 weeks	WT	Psychiatry 3 weeks	WT	Surgery 3 weeks	WT	Orthopedics 3 weeks	WT	OBS/ GYN 3 weeks	WT	Pediatrics 3 weeks	WT	Eye 3 weeks	WT	Ent 3 weeks	WT		
R2	Medicine 3 weeks		WT		Surgery 3 weeks		WT		Eye 3 weeks		WT		Ent 3 weeks		WT			
<b>LECTURES R***= Rotation</b>																		
5	Medicine				Surgery				OBS/Gynae				Pediatrics					
	<b>Clinical Rotations</b>																	
<b>Communication Skills Patient Safety &amp; Infection Control Professionalism &amp; Ethics</b>																		
R1	Medicine 4 weeks				Surgery 4 weeks				OBS/ GYN 4 weeks				Pediatrics 4 weeks					
R2	Medicine 5 weeks				Surgery 5 weeks				OBS/ GYN 5 weeks				Pediatrics 5 weeks					

Final Exam

## Students Assessment

There will be an end of rotation ward test after completion of clinical posting which will comprise the following components: -

### i. Written Assessment

The theory paper will have components of one – best type multiple – choice questions (MCQs).

### ii. Practical / lab examination:

This will comprise Objective Structured Clinical Examination (OSCE) The OSCE will have both observed and non-observed stations. The end of clinical posting will be of 2 hours duration. This will comprise the following components:

The OSPE/ OSCE will be conducted in batches. The students will be having different patterns of OSPE/OSCE in the subject's otolaryngology.

### Summary of marks of each module exam

**Theory (BCQs) = 100 marks**

**OSPE (10 stations) = 100 marks**

**Total = 200 marks**

**Internal Assessment:**

- Continuous monitoring of attendance and practical assessment in short groups By Mini CEX and logbooks.
- It may be in the form of MCQs (BCQs), Ward tests, and OSCE.
- Internal assessment carries 20% weightage

**Course Evaluation:**

Course evaluation will be obtained through a feedback form which will be posted on the JMC website

**Mandatory Policy:****Eligibility for sitting in Professional Examinations is as follows:**

- 75% overall Class Attendance
- 75% Attendance all Clinical Wards with passing marks in all Clinical Ward Tests.
- Minimum 40% aggregate marks on all Internal Examinations (Module Tests, Midterm, Pre-Professional Examinations)
- MBBS 1<sup>st</sup>Year: Complete all Professional Communication assignments with passing marks
- MBBS 1<sup>st</sup>& 2<sup>nd</sup>Year: Obtain passing marks in Behavioral Sciences & Research Module assessments
- MBBS 2<sup>nd</sup>Year: Presentation in Journal club at least twice in a year
- MBBS 4<sup>th</sup>& Final Year: CPC Presentation at least once in a year
- Skills Labs: Must be completed with passing marks
- Research Paper must be completed before MBBS 4 Professional Examination



### **Failure to Meet the Eligibility Requirements:**

- A Student failing to meet the above listed eligibility for sitting in the professional examination will NOT be allowed to sit in 1<sup>st</sup> attempt of the Professional Examination.

The college has the right to withhold all students who however, not met the eligibility requirements from sitting in the 1<sup>st</sup> attempt.

- Such students who have been withheld from sitting in the 1<sup>st</sup> attempt of the Professional exam because of failure to meet the eligibility requirements will be allowed only to sit in the retake of that examination.

It is expected that deficiency in requirements of Professional communication assignments, Behavioral Sciences & Research Module assessments, journal Club presentations, CPC, Skills Labs must be made up and fulfilled before a student will allowed to sit in the retake exam.

### **Details of ATTENDANCE POLICY**

The CR is responsible to bring attendance sheets from Student Affairs Office to each class. At the end of class, the attendance sheet must be signed and returned by the faculty member to the Student Affairs Office. No attendance sheets from students will be accepted.

These attendances will be compiled together as follows:

**LECTURE ATTENDANCE** = # Lectures Attended / Total # of Lectures

**PRACTICAL ATTENDANCE** = # Practicals Attended / Total # of Practicals

**TUTORIAL ATTENDANCE** = # Tutorials Attended / Total # of Tutorials

**NOTE:** All tutorials will be conducted by a Senior Faculty Member (AP or above), assisted by a Junior Faculty Member (Lecturer)

**FINAL CLASS ATTENDANCE =**

**%Lecture Attendance + %Tutorial Attendance + %Practical Attendance**

## Teaching / Learning Methods

The teaching learning sessions of this module will be of diverse types:

- a. Large group interactive sessions (LGIS)
- b. Small group teaching will include tutorials and, case – based learning session.
- c. Problem – based learning sessions.
- d. Practical session will comprise sessions on early exposure to clinical methods and practical laboratory demonstrations.
- e. Seminars: on different topics, in which students will make oral presentations on different aspects of the allocated topic.
- f. Self-directed learning sessions: This is the time during which students are expected to revise what they have learnt in the class, clear their concepts by consulting different textbooks, reference material and prepare their assignments and projects.

## **Main Content Areas**

### **Anatomy**

- Introduction to the Musculoskeletal System
- Osteology of lower limb & Lower limb
- Compartments of Upper Limb & Lower Limb
- Neuro vasculature of upper limb & Lower Limb with clinical correlates
- Surface Anatomy of Upper limb & Lower limb
- Radiology of upper limb & Lower Limb
- Histology of Bone, Breast, Skeletal muscle & Cartilage
- Development of breast, muscle, Limbs & joints

### **Biochemistry**

- Glycosaminoglycans
- Collagen & Elastin
- Calcium & Phosphate Metabolism
- Ammonia Metabolism
- Urea Cycle
- Phenylalanine & Tyrosine Metabolism
- Metabolism & Disorders of Tryptophan
- Metabolism of Sulphur

### **Physiology**

- Structure and classification of Neurons
- Properties of skeletal muscle
- Neuromuscular junction
- Electromyography

### **Community medicine**

- Occupational health & Diseases
- Accidents and Prevention
- Disaster management
- Sports medicine
- Travel Medicine

### **Forensic Medicine**

- Personal identity
- Mass disasters
- Firearm Injuries

## **Pathology**

- Developmental disorders of bone and cartilage
- Acquired disorders of bone & cartilage
- Fractures & Osteonecrosis
- Inflammatory diseases of bone
- Bone tumors and tumor-like lesions
- Degenerative joint disease
- Auto-immune joint disease
- Juvenile idiopathic Arthritis
- Crystal-induced arthritis
- Soft tissue tumors

## **Pharmacology**

- Prostaglandins & Eicosanoids
- Drugs used in Pain management.
- Drugs used for Rheumatoid arthritis & OA.
- Drugs used for Gout.
- Drugs Used for Osteoporosis & Osteomalacia

## **GENERAL LEARNING OBJECTIVES:**

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

### **ANATOMY**

- Define Musculoskeletal System
- Identify the features of bones and joints of Upper limb & Lower limb
- Describe the components of Compartments of Upper Limb & Lower Limb
- Relate the clinical presentations to the involved Nerve and vessels of Upper limb & Lower Limb
- Mark the Anatomical Surface Landmarks of Upper limb & Lower limb
- Identify the Radiological features of upper limb & Lower limb
- Explain Histology of Bone, Breast, Skeletal muscle & Cartilage
- Describe Development of breast, muscle, Limbs & joints

### **BIOCHEMISTRY**

- Discuss Glycosaminoglycans, Collagen & Elastin
- Explain Calcium & PO<sub>4</sub><sup>-</sup> Metabolism
- Describe Ammonia Metabolism
- Discuss Urea Cycle
- Explain Phenylalanine & Tyrosine Metabolism
- Discuss Metabolism & Disorders of Tryptophan
- Explain Metabolism of Sulphur

### **PHYSIOLOGY**

- Describe Structure and classification of Neurons
- Discuss Properties of skeletal muscle
- Explain Neuromuscular junction
- Describe Electromyography

### **COMMUNITY MEDICINE**

- Explain Occupational health & Diseases
- Discuss Accidents and Prevention
- Describe Disaster management
- Discuss Sports medicine
- Explain Travel Medicine

**FORENSIC MEDICINE**

- Discuss Personal Identity and Mass disasters
- Describe firearm injuries

**PATHOLOGY & MICROBIOLOGY**

- Discuss development disorders of Bone & Cartilage
- Describe acquired disorders of Bone & Cartilage
- Discuss fractures and Inflammatory disease of Bone
- Describe degenerative disease of Bone
- Explain Bone tumors
- Discuss Auto immune joint disease
- Explain Juvenile idiopathic arthritis and crystal induced arthritis
- Discuss Soft tissue tumors

**PHARMACOLOGY**

- Discuss Eicosanoids
- Discuss pain management
- Discuss Anti- Rheumatic Agents
- Describe the drug used in osteoporosis, osteomalacia and Gout

## Recommended Reading Material

### Anatomy

#### A. GROSSANATOMY

1. K.L. Moore, Clinically Oriented Anatomy
2. Gray's Anatomy for Student

#### B. HISTOLOGY

1. B. Young J. W. Health Wheather's Functional Histology
2. diFiore's Atlas of Histology

#### C. EMBRYOLOGY

1. Keith L. Moore. The Developing Human
2. Langman's Medical Embryology

### Biochemistry

#### TEXT BOOKS

1. Harper's Illustrated Biochemistry
2. Lippincott's Illustrated reviews of Biochemistry
3. Lehninger's Principles of Biochemistry
4. Biochemistry by Devlin

### Physiology

#### A. TEXTBOOKS

1. Textbook of Medical Physiology by Guyton And Hall
2. Human Physiology by Lauralee Sherwood
3. Berne & Levy Physiology
4. Best & Taylor Physiological Basis of Medical Practice

#### B. REFERENCEBOOKS

1. Ganong's Review of Medical Physiology

### Community Medicine

- Public Health and Community Medicine by Shah Ilyas Ansari, 8th Edition
  - Park's Textbook of Preventive and Social Medicine by K Park 24th Edition
- Epidemiology and Biostatistics:
- Epidemiology by Leon Gordis, Fifth Edition
  - Basic Statistics for the Health Sciences by Jan W. Kuzma, Fifth Edition.

### **Forensic Medicine**

- Gautam Biswas Book of Forensic Medicine
- Parikh's Book of Forensic Medicine

### **Pathology**

- Basis of Pathology by Robbins & Cotran
- Review of Microbiology by Livingston

### **Pharmacology**

- Katzung. Basic & Clinical Pharmacology. 14<sup>th</sup> Edition.
- Katzung & Trevor's. Pharmacology. 12<sup>th</sup> Edition.
- Rang & Dales. Pharmacology.



## Locomotor Module 1

### Organization

#### Time requirements: Basic Medical Sciences

- |                |           |
|----------------|-----------|
| • Anatomy      | 166 Hours |
| • Physiology   | 41 Hours  |
| • Biochemistry | 20 Hours  |

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**227 Hours**

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## Locomotor Module II

### Organization

#### Time requirements:

- |                            |          |
|----------------------------|----------|
| • Community Medicine       | 6 Hours  |
| • Forensic Medicine        | 13 Hours |
| • Pathology & Microbiology | 22Hours  |
| • Pharmacology             | 7 Hours  |

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**48 Hours**

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**Total = 275 Hours**

# **Locomotor-1 Module**

## ANATOMY

S N o.	LEARNING OBJECTIVES By the end of this module, the student should be able to:	CONTENTS	TEACHING ACTIVITIES (Duration)	ASSESSMENT
<b>GROSS ANATOMY</b>				
1.	<ul style="list-style-type: none"> <li>• Discuss the division and functions of skeletal system</li> <li>• Enumerate the parts of axial and appendicular skeleton</li> <li>• Define pectoral &amp; pelvic girdle</li> <li>• Describe the division and curvature of vertebral column</li> <li>• Discuss the types and number of vertebrae found in adults <b>(K)(S)</b></li> </ul>	Introduction to the Musculoskeletal System	LGIS 50mins + SGDs 1hour (Tutorials)	MCQS OSPE
2.	<ul style="list-style-type: none"> <li>• Identify the features of Clavicle like borders, surfaces and landmarks used for side determination</li> <li>• Discuss the attachments of muscles on Clavicle, their nerve supply and actions <b>(K)(S)</b></li> </ul>	Clavicle (Osteology & muscle attachments)	LGIS 50mins + SGDs 1hour (Tutorials)	MCQS OSPE
3.	<ul style="list-style-type: none"> <li>• Identify Scapula and its sites</li> <li>• Mention the bony landmarks of Scapula like borders, surfaces &amp; landmark used for side determination</li> <li>• Discuss the attachment of muscles on Scapula, their nerve supply and actions</li> <li>• Discuss the Clinical anatomy of Scapula <b>(K)(S)</b></li> </ul>	Scapula (Osteology & muscle attachments)	LGIS 50mins + SGDs 1hour (Tutorials)	MCQS OSPE
4.	<ul style="list-style-type: none"> <li>• Identify Humerus and its site</li> <li>• Mention its bony landmarks like borders, surfaces &amp; landmark used for side determination</li> <li>• Discuss the attachment of muscles on Humerus, their nerve supply and Actions <b>(K)(S)</b></li> </ul>	Humerus (Osteology & muscle attachments)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
5.	Classify types Sternoclavicular and Acromioclavicular of joint Describe their structure Name the muscles acting on these joint Explain the movements at these joint Explain clinical aspects of these joint <b>(K)(S)</b>	Sternoclavicular and Acromioclavicular Joints	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE

6.	<ul style="list-style-type: none"> <li>Enumerate the muscles of pectoral Girdle</li> <li>Describe the attachments of muscle of pectoral girdle and its neurovascular supply</li> <li>Explain the role of muscles of pectoral region in stabilizing the pectoral girdle</li> <li>Describe the triangle of auscultation</li> <li>Name the nerves and blood vessels of this region <b>(K)(S)</b></li> </ul>	Pectoral Region	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Discuss the anatomy of breast</li> <li>Explain the relation of breast within pectoral region</li> <li>Describe the blood supply &amp; lymphatic drain age of breast</li> <li>Discuss the relation of breast disease with axilla <b>(K)(S)</b></li> </ul>	Breast	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Classify the types of shoulder joint</li> <li>Describe the structure of shoulder joint</li> <li>Name the muscles acting on the joint/rotator cuff muscles</li> <li>Explain the range of mobility</li> <li>Describe the movements of shoulder joint</li> <li>Explain clinical aspects of the joint <b>(K)(S)</b></li> </ul>	Anatomy of Shoulder joint & its movements	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Describe the position and shape of axilla</li> <li>Name the boundaries of axilla, and the muscles forming these boundaries</li> <li>Discuss the formation course and relations of axillary vessels</li> <li>Describe the groups of axillary lymph nodes and their arrangements <b>(K)(S)</b></li> </ul>	Axilla, boundaries and contents along with axillary artery and veins	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Describe the formation of brachial plexus, with its root value and divisions (roots, trunk, division, and cords)</li> <li>Discuss the relation of brachial plexus also in connection to clavicle (Supra, retro, infraclavicular parts)</li> <li>Enumerate the branches arising from the cords</li> <li>Draw the brachial plexus</li> <li>Name the muscles and skin supplied by the branches of brachial plexus <b>(K)(S)</b></li> </ul>	Brachial Plexus	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Explain the course of muscular cutaneous nerve, its branches and distribution</li> <li>Discuss the large nerves of arm</li> <li>Predict the impact of lesions of main nerves of compartment</li> <li>Enumerate the muscles of anterior compartment of arm</li> <li>Discuss the attachment of muscles, their nerves supply and their actions <b>(K)(S)</b></li> </ul>	Muscles of anterior compartment of arm & neurovascular supply	LGIS 50mins + SGDs 1hour (Tutorials)	MCQS OSPE

<ul style="list-style-type: none"> <li>Name the muscles present in the posterior compartment of arm</li> <li>Describe the actions performed by the muscles of posterior compartment of arm</li> <li>Name the nerve supply of the muscles of this compartment</li> <li>Explain the course of vessels present in this compartment along with the supply to the structures in this compartment</li> <li>Discuss the clinical aspect related to the topic <b>(K)(S)</b></li> </ul>	Muscles of Posterior compartment of arm & neurovascular supply	LGIS 50mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Identify the bones of forearm &amp; hand</li> <li>Determine side of bones</li> <li>Identify the features of bones &amp; muscles attached to bones</li> <li>Describe the nerve supply and actions of muscles</li> <li>Discuss clinical significance of bones <b>(K)(S)</b></li> </ul>	Radius (Osteology & muscle attachments)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Identify the bone</li> <li>Determine the side of bone</li> <li>Describe the surfaces, borders and ends of the bone</li> <li>Identify the bony landmarks of bone &amp; muscles attachment sites on the bone <b>(K)(S)</b></li> </ul>	Ulna (Osteology & muscle attachments)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Describe the boundaries, contents and relationship among structures of cubital fossa</li> <li>Identify the surface anatomy of cubital fossa</li> <li>Discuss the clinical importance of the cubital fossa</li> <li>Describe formation of anastomosis around elbow joint</li> <li>Describe the significance of anastomosis and collateral circulation <b>(K)(S)</b></li> </ul>	Cubital fossa & Anastomosis around elbow	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Identify the morphology of the joint.</li> <li>Discuss the muscles acting on the elbow joint</li> <li>Explain the neurovascular supply of the joint</li> <li>Describe the carrying angle and applied aspect of this joint <b>(K)(S)</b></li> </ul>	Elbow Joint	LGIS 50mins Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE

<ul style="list-style-type: none"> <li>Name the muscles present in the anterior compartment of forearm Explain the division of muscle layer in the anterior compartment</li> <li>Explain actions of the muscles of anterior compartment of forearm</li> <li>Discuss the nerve supply of the muscles of this compartment</li> <li>Describe the course of vessels present in this compartment along with the supply to the structures in this compartment</li> <li>Discuss the clinical aspect related to the topic <b>(K)(S)</b></li> </ul>	Muscles of the anterior compartment of forearm & neurovascular supply	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Name the muscles present in the posterior compartment of forearm</li> <li>Explain the division of muscle layer in the posterior compartment</li> <li>Explain actions of the muscles of posterior compartment of forearm</li> <li>Discuss the nerve supply of the muscles of this compartment</li> <li>Describe the course of vessels present in this compartment along with the supply to the structures in this compartment</li> <li>Discuss the clinical aspect related to the topic <b>(K)(S)</b></li> </ul>	Muscles of the posterior compartment of forearm & neurovascular supply	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Describe the bony arrangement of hand <b>(K)(S)</b></li> </ul>	Osteology of hand	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Describe the morphology of wrist joint</li> <li>Discuss the neurovascular supply of wrist joint</li> <li>Describe radioulnar joints and discuss its neurovascular supply</li> <li>Discuss the movements occurring at these joints <b>(K)(S)</b></li> </ul>	Wrist joint, Radioulnar & small joints of hand	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Discuss the muscles of the hand</li> <li>Locate the different spaces of the hand on both palmar and dorsal aspects. <b>(K)(S)</b></li> </ul>	Muscles & Spaces of Hand	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Enumerate the arterial supply of hand</li> <li>Describe the course and relations of radial and ulnar arteries, and branches of radial and ulnar arteries, with relation to hand</li> </ul>	Blood vessels and nerves of hand	LGIS 50mins + Demonstrations 90 mins +	MCQS/ OSPE

<ul style="list-style-type: none"> <li>Discuss the formation of superficial and deep palmar arch, veins of hand and their tributaries</li> <li>Describe the nerves of the hand and their injuries <b>(K)(S)</b></li> </ul>		SGDs 1hour (Tutorials)	
<ul style="list-style-type: none"> <li>Describe in detail the cutaneous supply and dermatomes of upper limb <b>(K)(S)</b></li> </ul>	Cutaneous supply of upper limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Discuss the normal Anatomy of veins of upper limb</li> <li>Difference between superficial and deep veins</li> <li>Explain the course of major superficial veins of upper limb</li> <li>Describe the applied anatomy of superficial veins of upper limb</li> <li>Describe group and area of drainage of each group of lymph nodes</li> <li>Discuss the commencement, course and termination of superficial lymphatic vessels <b>(K)(S)</b></li> </ul>	Superficial veins and Lymphatic drainage of upper limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS/ OSPE
<ul style="list-style-type: none"> <li>Recall the different nerve of upper limb and their root value</li> <li>Discuss the causes of nerve injuries in upper limb</li> <li>Enumerate the common sites of injury of the nerve injuries <b>(K)(S)</b></li> </ul>	Nerve injuries of Upper limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Perform surface markings for main vessels of upper limb <b>(K)(S)</b></li> </ul>	Surface Anatomy of Upper limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Identify the normal bony landmarks on X-Ray <b>(K)(S)</b></li> </ul>	Radiology of upper limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Enumerate the parts of hip bone</li> <li>Discuss its side determination</li> <li>Describe in detail the osteology of each part of hip bone</li> <li>Discuss its muscle and ligamentous attachments</li> <li>Discuss the clinical conditions related to Hip bone</li> </ul>	Hip Bone (Osteology & muscle attachments)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour	MCQS OSPE

	(K)(S)		(Tutorials)	
	<ul style="list-style-type: none"> <li>Identify Femur and its side</li> <li>Describe its anatomical position</li> <li>Identify its bony landmarks</li> <li>Discuss the muscles and ligaments attached to Femur</li> <li>Discuss the clinical conditions related to femur</li> </ul> <b>(K)(S)</b>	Femur (Osteology & muscle attachments)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Explain the arrangement and attachment of deep fascia of thigh</li> <li>Discuss the location of saphenous opening and its relations</li> <li>Describe the attachments of inguinal ligament</li> <li>Discuss the clinical conditions associated with deep fascia of thigh and inguinal ligament</li> </ul> <b>(K)(S)</b>	Deep fascia of thigh, its modification (Inguinal ligament)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Discuss the formation of lumbar plexus</li> <li>List the branches of lumbar plexus with their root values</li> <li>Discuss relation of the nerves with psoas major muscle Structures supplied by lumbar plexus</li> <li>Explain the formation of sacral plexus</li> <li>Describe the composition and relations of sacral plexus</li> <li>Enumerate branches of this plexus</li> <li>Discuss the cutaneous supply of lower limb</li> </ul> <b>(K)(S)</b>	Formation of lumbosacral plexus, & its injuries	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Discuss the arrangement of thigh into compartments</li> <li>Explain the muscles of anterior compartment of thigh and their respective actions</li> <li>Describe the innervation and blood supply of muscles of anterior compartment of thigh</li> <li>Describe Femoral triangle, its boundaries and contents, and Femoral sheath and its contents</li> <li>Discuss the clinical conditions associated with anterior compartment of thigh, femoral triangle and femoral sheath</li> </ul> <b>(K)(S)</b>	Muscles of Anterior compartment of thigh (Femoral triangle, femoral sheath & Neuro vascular supply)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Describe the location of gluteal region</li> <li>Discuss about bones and ligaments of gluteal region</li> <li>Discuss the muscles of the gluteal region and their respective actions</li> <li>Discuss the nerves and blood vessels of the gluteal region</li> <li>Enumerate different structures entering and leaving the gluteal region</li> <li>Discuss the clinical conditions associated with the gluteal region</li> </ul> <b>(K)(S)</b>	Gluteal Region	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
	<ul style="list-style-type: none"> <li>Describe the formation of hip joint</li> <li>Discuss the characteristics features of synovial joint</li> </ul>	Hip joint; movements & anastomoses around hip joint	LGIS 50mins +	MCQS OSPE



<ul style="list-style-type: none"> <li>Describe the articular surfaces of hip joint</li> <li>Discuss the attachment of its joint capsule</li> <li>Explain the ligaments stabilizing the hip joint</li> <li>Discuss the muscles acting on the hip joint and different movements performed at it</li> <li>Describe its innervations and blood supply</li> <li>Describe the arterial anastomosis around the hip joint.</li> <li>Discuss the clinical conditions associated with the hip joint.</li> </ul> <p><b>(K)(S)</b></p>		<p>Demonstrations 90 mins + SGDs 1hour (Tutorials)</p>	
<ul style="list-style-type: none"> <li>Discuss the arrangements of thigh into compartments</li> <li>Explain the muscles of posterior compartment of thigh and their respective actions</li> <li>Describe the innervation and blood supply of muscles of posterior compartment of thigh</li> <li>Discuss the greater and cruciate anastomoses at the back of thigh</li> <li>Discuss the clinical conditions associated with the posterior compartment of thigh</li> </ul> <p><b>(K)(S)</b></p>	<p>Muscles of Posterior compartment of thigh and neurovascular supply</p>	<p>LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)</p>	<p>MCQS OSPE</p>
<ul style="list-style-type: none"> <li>Explain the muscles of medial compartment of thigh and their respective actions</li> <li>Describe the innervation and blood supply of muscles of medial compartment of thigh</li> <li>Discuss the clinical conditions associated with the medial compartment of thigh</li> </ul> <p><b>(K)(S)</b></p>	<p>Muscles, Nerve and vessels of medial compartment of thigh</p>	<p>LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)</p>	<p>MCQS OSPE</p>
<ul style="list-style-type: none"> <li>Identify the Tibia and its side</li> <li>Describe its anatomical position</li> <li>Identify its bony landmarks</li> <li>Discuss the muscles and ligaments attached to Tibia</li> <li>Describe the ossification of tibia and its primary and secondary ossification centers</li> <li>Discuss the fractures and other clinical conditions associated with it</li> </ul> <p><b>(K)(S)</b></p>	<p>Tibia (Osteology &amp; muscle attachments)</p>	<p>LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)</p>	<p>MCQS OSPE</p>
<ul style="list-style-type: none"> <li>Identify Fibula and its side</li> <li>Mark the attachment of muscles and ligaments</li> <li>Elaborate the joints formed by it</li> <li>Describe the nerve injuries related to it</li> </ul> <p><b>(K)(S)</b></p>	<p>Fibula (Osteology &amp; muscle attachments)</p>	<p>LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)</p>	<p>MCQS OSPE</p>
<ul style="list-style-type: none"> <li>Discuss the boundaries of popliteal fossa</li> <li>Enumerate the contents of popliteal fossa</li> <li>Describe the relationship of the contents.</li> <li>Explain how popliteal artery can be palpated</li> </ul>	<p>Popliteal Fossa &amp; its contents</p>	<p>LGIS 50mins + Demonstrations 90 mins + SGDs</p>	<p>MCQS OSPE</p>

<ul style="list-style-type: none"> <li>Discuss clinical conditions related to popliteal fossa (e.g., the Baker's cyst) <b>(K)(S)</b></li> </ul>		1hour (Tutorials)	
<ul style="list-style-type: none"> <li>Classify the knee joint</li> <li>Discuss its articular surfaces, the synovial capsule</li> <li>Explain types of movement performed at knee joint and the muscles responsible for that movement</li> <li>Describe the locking and unlocking mechanism</li> <li>Discuss the neurovascular supply of knee joint <b>(K)(S)</b></li> </ul>	Knee joint, genicular anastomosis and locking, unlocking	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Discuss the facial compartments of leg</li> <li>Explain muscles of anterior and lateral compartment with its neurovascular supply</li> <li>Describe clinical like the compartment syndrome <b>(K)(S)</b></li> </ul>	Anterior & Lateral compartment of leg (muscles, nerves and vessels)	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Enumerate the muscles of posterior compartment of leg</li> <li>Discuss the actions of muscles of posterior compartment of leg</li> <li>Describe nerves and vessels of compartment and their supply <b>(K)(S)</b></li> </ul>	Posterior compartment of leg	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Describe the bony arrangement of foot <b>(K)(S)</b></li> </ul>	Osteology of foot	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Describe the Ankle Joint, the type, articular surface and the synovial capsule</li> <li>Discuss the Superior and Inferior Tibio-Fibular Joints, Sub-talar Joint, transverse tarsal Joint or mid-tarsal joint.</li> <li>Describe the movement performed and the muscles responsible for these movement</li> <li>Discuss the neurovascular supply of the joints <b>(K)(S)</b></li> </ul>	Ankle joint, superior & Inferior tibio-fibular joint	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Describe the architecture of sole of foot.</li> <li>Enumerate the layers of sole of foot.</li> <li>Discuss the muscle presenting the sole of foot.</li> <li>Discuss the blood supply and nerve supply of sole of foot. <b>(K)(S)</b></li> </ul>	Sole of foot & nerves and vessels of foot	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE

<ul style="list-style-type: none"> <li>Describe the architecture of arches of foot and the fact responsible for their maintenance</li> <li>Elaborate the bones which are responsible for forming these arches</li> <li>Describe the ligaments which are holding these arches Describe the function of the arches of foot</li> <li>Describe Plantar Fasciitis and relevant injuries responsible for these movement <b>(K)(S)</b></li> </ul>	Arches of foot	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Describe in detail the cutaneous supply of lower limb <b>(K)(S)</b></li> </ul>	Cutaneous supply of lower limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Enumerate the superficial veins</li> <li>Discuss the course of great and small saphenous veins and their connections with the deep veins of the leg</li> <li>Explain clinical conditions related to the Superficial veins; like venous thrombosis</li> <li>Describe the lymphatic drainage of lower limb <b>(K)(S)</b></li> </ul>	Superficial veins and lymphatic drainage of lower limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Recall the different nerves of lower limb and their root value</li> <li>Discuss the causes of their injuries</li> <li>Enumerate the sites of injury of the most injured nerves</li> <li>Discuss the fracture of bones of lower limb</li> <li>Explain injuries of lower leg and ankle</li> <li>Discuss Pott's fracture</li> <li>Explain Sprain ankle <b>(K)(S)</b></li> </ul>	Injuries of lower limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Mark the different joints of lower limb</li> <li>Mark the course of blood vessels of lower limb</li> <li>Palpate the blood vessels Mark the course of important nerves of lower limb <b>(K)(S)</b></li> </ul>	Surface anatomy of lower limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Identify the normal bony landmarks as seen on X-Ray <b>(K)(S)</b></li> </ul>	Radiology of lower limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE

<ul style="list-style-type: none"> <li>Discuss Overview of compartments of Upper and Lower limb</li> <li>Describe Muscles of anterior compartment of arm muscles &amp; its neurovascular supply</li> <li>Discuss Posterior compartment of arm, muscles &amp; its neurovascular supply</li> <li>Describe Muscles of Anterior compartment of thigh, femoral triangle, femoral sheath &amp; its neurovascular supply</li> <li>Discuss Muscles &amp; Nerve and vessels of medial compartment of thigh</li> <li>Explain Muscles of Posterior compartment of thigh and neurovascular supply</li> <li>Explain Anterior &amp; Lateral compartment of leg (muscles, nerves and vessels) and Posterior compartment of leg <b>(K)(S)</b></li> </ul>	Upper Limb Lower Limb	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<b>HISTOLOGY</b>			
<ul style="list-style-type: none"> <li>Discuss the histological features of breast</li> <li>Identify the breast tissue under microscope <b>(K)(S)</b></li> </ul>	Breast Histology	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Define bone tissue</li> <li>Classify bone macroscopically (compact &amp; spongy) and microscopically.</li> <li>Differentiate compact and spongy bone based on cells and matrix</li> <li>Describe the arrangement of spongy and compact bone in different parts of long bones</li> <li>Define Periosteum &amp; Endosteum</li> <li>Discuss bone formation, growth, remodeling &amp; repair <b>(K)(S)</b></li> </ul>	Histology of bone	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS OSPE
<ul style="list-style-type: none"> <li>Describe the components of cartilage that is cells, fibers and ground substance</li> <li>Differentiate the 3 types of cartilage based on differences in components and presence or absence of perichondrium</li> <li>Discuss chondrogenesis, growth and repair <b>(K)(S)</b></li> </ul>	Histology of cartilage	Lectures Practical Tutorials / SGDs	MCQS OSPE
<ul style="list-style-type: none"> <li>Describe the microscopic features of skeletal muscle</li> <li>Identify skeletal muscle under microscope <b>(K)(S)</b></li> </ul>	Histology of skeletal muscle	Lectures Practical Tutorials / SGDs	MCQS OSPE
<b>EMBRYOLOGY</b>			
<ul style="list-style-type: none"> <li>Define epiblast and hypoblast</li> <li>Explain the differentiation of trilaminar germ disc</li> <li>Discuss the formation of mesoderm and paraxial mesoderm</li> </ul>	Development of Paraxial Mesoderm & muscles	LGIS 50mins + Demonstrations 90 mins + SGDs	MCQS

<ul style="list-style-type: none"> <li>Discuss the developmental relation of hypaxial and epaxial muscles</li> <li>Describe the process of myogenesis in the 3 types of muscle <b>(K)(S)</b></li> </ul>		1hour (Tutorials)	
<ul style="list-style-type: none"> <li>Explain the development of breast <b>(K)(S)</b></li> </ul>	Breast Development	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS
<ul style="list-style-type: none"> <li>Discuss the site and time of appearance of upper and lower limb buds</li> <li>Define apical ectodermal ridge (AER)</li> <li>Describe the mesenchymal proliferation under the influence of AER and differentiation into cartilaginous models of future limb bones</li> <li>Define the source of mesoderm forming the limb muscles</li> <li>Discuss the hand plate and formation of digital rays resulting into digits</li> <li>Describe the muscles involved in and process of rotation of both limb</li> <li>Discuss the differentiation of mesenchyme to form fibrous, cartilaginous and synovial joints</li> <li>Discuss the congenital anomalies of both limbs &amp; joints <b>(K)(S)</b></li> </ul>	Development of limbs & joints and their congenital anomalies	LGIS 50mins + Demonstrations 90 mins + SGDs 1hour (Tutorials)	MCQS

## BIOCHEMISTRY

S. N O.	LEARNING OBJECTIVES <b>By the end of module, the students should be able to</b>	CONTENTS	MODE OF TEACHING	ASSESSMENT
1.	<ul style="list-style-type: none"> <li>• Describe the biochemical structure and composition of extracellular matrix</li> <li>• Discuss the functions of extracellular matrix</li> <li>• Describe the structure of Glycosaminoglycans</li> <li>• Classify the Glycosaminoglycans</li> <li>• Discuss the biochemical functions of Glycosaminoglycans.</li> <li>• Discuss the clinical significance of the diseases associated with Glycosaminoglycans <b>(K)</b></li> </ul>	Glycosaminoglycans	LGIS 50mins +  SGD's 1hour (Tutorials)	MCQ's
2.	<ul style="list-style-type: none"> <li>• Describe the structure of Collagen &amp; Elastin</li> <li>• Classify Collagen &amp; Elastin.</li> <li>• Discuss the biochemical functions of Collagen &amp; Elastin</li> <li>• Discuss the clinical significance of the diseases associated with Collagen &amp; Elastin <b>(K)</b></li> </ul>	Collagen & Elastin	LGIS 50mins +  SGD's 1hour (Tutorials)	MCQ's
3.	<ul style="list-style-type: none"> <li>• Explain the dietary sources and daily recommended allowance of Vitamin C.</li> <li>• Discuss the metabolism of vitamin C in the human body.</li> <li>• Describe the physical and chemical properties of vitamin C</li> <li>• Discuss the biochemical functions of vitamin C specially with respect to Collagen and extracellular matrix</li> <li>• Discuss the clinical significance of vitamin C deficiency. <b>(K)</b></li> </ul>	Vitamin C	LGIS 50mins + SGD's 1hour (Tutorials)	MCQ's
4.	<ul style="list-style-type: none"> <li>• Explain the dietary sources and daily recommended allowance of Vitamin D.</li> <li>• Discuss the metabolism of vitamin D in the human body.</li> <li>• Discuss the regulation of serum calcium in relation to bone metabolism.</li> <li>• Discuss the biochemical functions of vitamin D</li> <li>• Discuss the clinical significance of vitamin D deficiency and its prevention. <b>(K)</b></li> </ul>	Vitamin D	LGIS 50mins +  SGD's 1hour (Tutorials)	MCQ's
5.	<ul style="list-style-type: none"> <li>• Explain the dietary sources and daily recommended allowance of Calcium &amp; PO<sub>4</sub>-</li> <li>• Discuss the metabolism of Calcium &amp; PO<sub>4</sub>- in the human body.</li> <li>• Discuss the regulation of serum calcium in relation to bone metabolism.</li> </ul>	Calcium & PO <sub>4</sub> - Metabolism	LGIS 50mins + Demonstrations 90 mins + SGD's 1hour (Tutorials)	MCQ's OSPE

	<ul style="list-style-type: none"> <li>Discuss the biochemical functions of Calcium &amp; PO<sub>4</sub><sup>-</sup></li> <li>Discuss the clinical significance of Calcium &amp; PO<sub>4</sub><sup>-</sup> deficiency and its prevention.</li> </ul> <b>(K)(S)</b>			
6.	<ul style="list-style-type: none"> <li>Describe various sources and utilization of amino acid.</li> <li>Define and explain the reactions of amino acids (Deamination, Transamination etc.)</li> <li>Explain the nitrogen balance in the body</li> <li>Discuss the diagnostic value of plasma Aminotransferases</li> <li>Discuss the clinical significance of biomarkers</li> </ul> <b>(K)</b>	Reactions of Amino acids	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's
7.	<ul style="list-style-type: none"> <li>Discuss the major sources of ammonia.</li> <li>Discuss the utilization, formation and secretion of ammonia in human body.</li> <li>Explain Ammonia metabolism and its detoxification</li> <li>Discuss the clinical significance and management of Ammonia toxicity</li> </ul> <b>(K)</b>	Ammonia Metabolism	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's
8.	<ul style="list-style-type: none"> <li>Discuss the process of amino acid oxidation and the production of urea.</li> <li>Describe the metabolic pathway of Urea synthesis</li> <li>Discuss the fate of urea</li> <li>Describe the regulation of urea cycle</li> <li>Discuss the clinical significance of urea cycle disorders</li> </ul> <b>(K)</b>	Urea Cycle	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's
9.	<ul style="list-style-type: none"> <li>Discuss the metabolism of Phenylalanine &amp; Tyrosine and its related disorders</li> <li>Discuss the metabolism of Melanin and its related disorder (Albinism)</li> <li>Discuss the metabolism of Thyroid hormones and their related disorder</li> <li>Discuss the metabolism of neurotransmitters and their related disorder</li> </ul> <b>(K)</b>	Phenylalanine & Tyrosine Metabolism	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's
10.	<ul style="list-style-type: none"> <li>Discuss the metabolism of tryptophan and its related disorders</li> <li>Describe the importance of tryptophan derived biologically important compounds</li> <li>Explain clinical significance of disorders of tryptophan</li> </ul> <b>(K)</b>	Metabolism & Disorders of Tryptophan	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's OSPE
11.	<ul style="list-style-type: none"> <li>Discuss the metabolism of Sulphur containing amino acids</li> <li>Describe the functions of Sulphur containing amino acids</li> <li>List the steps of formation of cysteine and methionine</li> <li>Explain clinical significance of disorders of</li> </ul>	Metabolism of Sulphur Containing Amino Acids	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's

	Sulphur containing amino acids <b>(K)</b>			
12.	<ul style="list-style-type: none"> <li>• Discuss the metabolism of branched chain amino acids</li> <li>• Describe the functions of branched – chain ++amino acids</li> <li>• Explain the clinical significance of disorders of branched chain amino acids</li> </ul> <b>(K)</b>	Branched -chain amino acid	LGIS 50mins + SGDs 1hour (Tutorials)	MCQ's OSPE
13.	<ul style="list-style-type: none"> <li>• Explain the catabolism of carbon skeleton of amino acids</li> <li>• List the Glucogenic &amp; Ketogenic amino acids</li> <li>• Explain the significance of carbon skeleton of Amino acids</li> <li>• Describe the mechanism of entry of carbon skeleton in amino acid metabolism</li> <li>• Discuss the process of vitamin B12 as a co-factor and methyl donor in metabolism of amino acids</li> </ul> <b>(K)</b>	Catabolism of Carbon Skeleton of Amino Acids	LGIS 50mins	MCQ's



**BIOCHEMISTRY****Practical's**

<b>S.N O.</b>	<b>LEARNING OBJECTIVES</b>  <b>By the end of module, the students should be able to</b>	<b>CONTENTS</b>	<b>MODE OF TEACHING</b>	<b>ASSESSMENT</b>
1.	<ul style="list-style-type: none"> <li>• Outline the bio-techniques for detection of Calcium &amp; Phosphate in a sample</li> <li>• Perform the estimation of serum Calcium &amp; Phosphate.</li> <li>• Interpret clinical conditions correlated with their laboratory investigations.</li> </ul> <b>(K)(S)</b>	Calcium & PO <sub>4</sub>	LGIS 50mins + Demonstrations 90 mins + SGD's 1hour (Tutorials)	MCQ's OSPE
2.	<ul style="list-style-type: none"> <li>• Outline the bio-techniques for detection of Alkaline Phosphatase in a sample</li> <li>• Perform the estimation of serum Alkaline Phosphatase.</li> <li>• Interpret clinical conditions correlated with their laboratory investigations.</li> </ul> <b>(K)(S)</b>	Alkaline Phosphate	LGIS 50mins + Demonstrations 90 mins + SGD's 1hour (Tutorials)	MCQ's OSPE
3.	<ul style="list-style-type: none"> <li>• Describe the principle of chromatography</li> <li>• Describe different types of chromatography and HPLC</li> <li>• Describe the instruments used in different types of chromatography</li> <li>• Interpret clinical conditions correlated with its laboratory investigations</li> <li>• Describe the principle of paper chromatography</li> <li>• Describe the method of performance of paper chromatography</li> <li>• Perform amino acids detection on paper chromatography.</li> <li>• Interpret clinical conditions correlated with its laboratory investigations</li> </ul> <b>(K)(S)</b>	Chromatography and Paper Chromatography	LGIS 50mins + Demonstrations 90 mins + SGD's 1hour (Tutorials)	MCQ's OSPE

## PHYSIOLOGY

<b>S. NO.</b>	<b>LEARNING OBJECTIVES</b> By the end of module, the students should be able to	<b>Contents</b>	<b>LEARNING ACTIVITIES</b> (Duration)	<b>ASSESSMENT</b>
1.	1. Define neuron 2. Classify neurons 3. Discuss the importance of myelination 4. Explain salutatory conduction 5. Describe the process of neuron function (K)	Structure and classification of Neurons	LGIS 50mins	MCQs
2.	1. Discuss the Resting membrane potential & its importance 2. Define Nernst potential 3. Explain significance of Nernst potential (K)	Membrane potential	LGIS 50mins	MCQs
3.	1. Discuss graded potential (K)	Graded potential	LGIS 50mins	MCQs
4.	1. Discuss the action potential, its propagation in myelinated and non-myelinated nerve fibers. 2. Describe the graph of action potential 3. Differentiate between graded and action Potentials (K)	Action potential, its properties and propagation	LGIS 50mins	MCQs
5.	1. Define contractility (isometric & isotonic) & excitability, fatigue, summation (spatial & temporal) and motor unit 2. Differentiate among tetanization, tetanus & tetany 3. Briefly describe the staircase phenomenon (treppe) (K)	Properties of skeletal muscle	LGIS 50mins	MCQs
6.	1. Discuss the parts of neuromuscular junction (NMJ) 2. Discuss the steps of impulse transmission through neuromuscular junction 3. Discuss the physiological basis of disorders of NMJ (K)	Neuromuscular junction	LGIS 50mins	MCQs
7.	1. Define power stroke. 2. Discuss mechanism of skeletal muscle contraction and relaxation at molecular level 3. Describe the role of ATP in muscle contraction (K)	Skeletal muscle contraction	LGIS 50mins	MCQs

8.	1. Describe the types of muscle fibers (type I & II) 2. Determine the effect of exercise on muscular blood flow 3. Briefly state the effect of training, endurance & resistance on muscle fibers <b>(K)</b>	Muscle adaptation to exercise	LGIS 50mins	MCQs
9.	1. Describe different parts of power lab & their application in different experiments. <b>(S)</b>	Introduction to power lab	Demonstrations 90 mins	OSPE
10.	1. Determine nerve conduction velocity in human <b>(S)</b>	Nerve conduction velocity	Demonstrations 90 mins	OSPE
11.	1. Explain the physiology of muscle contraction & changes during EMG recording <b>(S)</b>	EMG	Demonstrations 90 mins	OSPE
12.	1. Define simple muscle twitch & summation 2. Identify the graphs of SMT & summation <b>(S)</b>	SMT	Demonstrations 90 mins	OSPE
13.	1. Define tetanization & fatigue 2. Identify the graphs of tetanization & Fatigue <b>(S)</b>	Tetanization & Fatigue	Demonstrations 90 mins	OSPE

# **Week 8**

**End of locomotor Module**

**Locomotor Module 1 Test Theory**

**Locomotor Module 1 Test OSCE**

# **Locomotor-2 Module**

# Community Medicine

# Lectures

<b>S No</b>	<b>Learning Objectives</b> By the end of the session, students will be able to:	<b>Content Areas</b>	<b>Learning Activity (Duration)</b>	<b>Assessment</b>
1.	Occupational health & Diseases <input type="checkbox"/> Describe occupational health <input type="checkbox"/> Explain occupational health practice <input type="checkbox"/> Enumerate occupational health diseases <input type="checkbox"/> Discuss the control and prevention of occupational health hazards <input type="checkbox"/> Describe Lead poisoning <b>(K)</b>	Occupational health & Diseases	LGIS 50mins	MCQs
2.	Ergonomics <input type="checkbox"/> Define Ergonomics <input type="checkbox"/> Explain the aim of ergonomics <input type="checkbox"/> Describe the role of ergonomics in work place <input type="checkbox"/> Explain environmental ergonomics <b>(K)</b>	Ergonomics	LGIS 50mins	MCQs
3.	Accidents and Prevention <input type="checkbox"/> Describe accidents & different types of injuries <input type="checkbox"/> Explain the risk factors for different types of injuries <input type="checkbox"/> Enumerate the issues surrounding the road traffic accidents <input type="checkbox"/> Discuss the control and prevention of accidents, and injury-specific prevention & control measures <b>(K)</b>	Accidents and Prevention	LGIS 50mins	MCQs
4.	Disaster management <input type="checkbox"/> Describe disaster and its management <input type="checkbox"/> Classify the types of disaster <input type="checkbox"/> Enumerate the steps in planning disaster management <input type="checkbox"/> Describe the steps of surveillance cycle <b>(K)</b>	Disaster management	LGIS 50mins	MCQs
5.	Sports medicine <input type="checkbox"/> Describe sport medicine <input type="checkbox"/> Explain the role of sports physician in the practice of sports medicine <input type="checkbox"/> Discuss the female triad <input type="checkbox"/> Describe the pharmacological & legal aspects of Ergogenic aids in athletes <b>(K)</b>	Sports medicine	LGIS 50mins	MCQs
6.	Travel Medicine <input type="checkbox"/> Explain the risk for travelers <input type="checkbox"/> List the pathogens causing common travelers' diseases <input type="checkbox"/> Discuss the control measures for disease prevention among travelers <input type="checkbox"/> Describe the role of international health regulation for travelers <b>(K)</b>	Travel Medicine	LGIS 50mins	MCQs

## Forensic Medicine

## Lectures

<b>S No</b>	<b>Learning Objectives</b> By the end of the session, students will be able to:	<b>Content Areas</b>	<b>Learning Activity (Duration)</b>	<b>Assessment</b>
1.	Personal identity-I <input type="checkbox"/> Define complete and partial identification <input type="checkbox"/> Describe the different methods of identification viz Third party, Subjective and Objective <input type="checkbox"/> Discuss the role of identification in living and dead bodies with examples <input type="checkbox"/> Describe the parameters of identification <input type="checkbox"/> Mention the criteria of determination of race <b>(K)</b>	Personal identity-I	LGIS 50mins	MCQs
2.	Personal identity-II <input type="checkbox"/> Discuss sex determination and intersex states <input type="checkbox"/> Highlight the role of dactylography in identification <b>(K)</b>	Personal identity-II	LGIS 50mins	MCQs
3.	Personal identity- III <input type="checkbox"/> Describe the molecular basis of DNA <input type="checkbox"/> Explain the DNA Typing techniques (RFLP, PCR, STR, MT DNA, Y Chromosome Analysis) <input type="checkbox"/> Discuss the methods of collection and uses of DNA evidence <input type="checkbox"/> Justify the use of DNA in forensic sciences <b>(K)</b>	Personal identity- III	LGIS 50mins	MCQs
4.	Personal identity-IV <input type="checkbox"/> Explain the identification of dead and decomposed bodies <input type="checkbox"/> Discuss the medico legal importance of scars, acquired and congenital deformities, tattoo marks and hair in identification <b>(K)</b>	Personal identity-IV	LGIS 50mins	MCQs
5.	Mass disasters <input type="checkbox"/> Define Mass disasters according to World Health Organization <input type="checkbox"/> Describe Triage and its types i.e. Simple, Advance and Reverse <input type="checkbox"/> Explain the methods of identification of decomposed bodies, mutilated & burnt bodies, skeletal & fragmentary remains <input type="checkbox"/> Describe Super-imposition photography <b>(K)</b>	Mass disasters	LGIS 50mins	MCQs

6.	Firearm Injuries lecture –I <input type="checkbox"/> Describe basic terms related to ballistics & its types, types of cartridges/projectiles, and parts of a firearm weapon <input type="checkbox"/> List the types of gun powder <input type="checkbox"/> Explain the mechanism of fire in firearm weapons <b>(K)</b>	Firearm Injuries lecture –I	LGIS 50mins	MCQs
7	Firearm injuries lecture – II <input type="checkbox"/> Describe characteristic features of wound of entry and exit of firearms <input type="checkbox"/> Estimate distance of fire <input type="checkbox"/> List the features of fabricated firearm injuries <input type="checkbox"/> Explain the postmortem findings in cases of firearm injuries <b>(K)</b>	Firearm injuries lecture – II	LGIS 50mins	MCQs

## Forensic Medicine

## Tutorial

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	Personal identity I (Forensic odontology) <input type="checkbox"/> Determine age from Odonatological data and x-rays <b>(K)</b>	Personal identity I (Forensic odontology)	SGDs 1hour (Tutorials)	MCQs
2.	Personal identity II (Age estimation by Radiology) <input type="checkbox"/> Describe the medico legal importance of age <input type="checkbox"/> Explain the medicolegal importance of general examination and ossification data in age determination <input type="checkbox"/> Determine age in at least 3 x-rays of long bones <b>(K)</b>	Personal identity II (Age estimation by Radiology)	SGDs 1hour (Tutorials)	MCQs
3.	Personal identity III (Sex determination from bones) <input type="checkbox"/> Discuss the features of male vs female skeleton <input type="checkbox"/> Determine sex from the following bones: i. Skull ii. Mandible iii. Thorax iv. Pelvis <input type="checkbox"/> Describe the determination of sex in intersex states <b>(K)</b>	Personal identity III (Sex determination from bones)	SGDs 1hour (Tutorials)	MCQs
4.	Personal identity IV (Optometric indices) <input type="checkbox"/> Describe the role of Optometric indices of bones in determination of age, sex, and race <b>(K)</b>	Personal identity IV (Optometric indices)	SGDs 1hour (Tutorials)	MCQs



# Pathology

# Lectures

<b>S No</b>	<b>Learning Objectives</b> By the end of the session, students will be able to:	<b>Content Areas</b>	<b>Learning Activity (Duration)</b>	<b>Assessment</b>
1.	Overview of bone diseases <input type="checkbox"/> Briefly discuss matrix and cellular components of bone (osteoblast, osteoclast, osteocytes) <input type="checkbox"/> Summarize the development, homeostasis and remodeling of bone <b>(K)</b>	Overview of bone diseases	LGIS 50mins	MCQs
2.	Developmental disorders of bone and cartilage <input type="checkbox"/> Discuss defects in: i. nuclear proteins & transcription factors (Brachydactyly, Cleidocranial dysplasia) ii. hormones & signal transducing proteins (Achondroplasia) iii. extracellular structural proteins [(Osteogenesis Imperfecta), diseases associated with mutations of Types II, IX, X, and XI collagen] iv. metabolic pathways (Osteopetrosis) <b>(K)</b>	Developmental disorders of bone and cartilage	LGIS 50mins	MCQs
3.	Developmental disorders of bone and cartilage <input type="checkbox"/> Discuss defects in: i. nuclear proteins & transcription factors (Brachydactyly, Cleidocranial dysplasia) ii. hormones & signal transducing proteins (Achondroplasia) iii. extracellular structural proteins [(Osteogenesis Imperfecta), diseases associated with mutations of Types II, IX, X, and XI collagen] iv. metabolic pathways (Osteopetrosis) <b>(K)</b>	Developmental disorders of bone and cartilage	LGIS 50mins	MCQs
4.	Acquired disorders of bone & cartilage II <input type="checkbox"/> Define Rickets & Osteomalacia <input type="checkbox"/> Discuss the morphology & clinical features of Rickets & Osteomalacia <input type="checkbox"/> Discuss the role of Parathyroid hormone in calcium homeostasis <input type="checkbox"/> Describe the morphological features of hyperparathyroidism <input type="checkbox"/> Define Renal Osteodystrophy <input type="checkbox"/> Discuss the pathogenesis of Renal Dystrophy <b>(K)</b>	Acquired disorders of bone & cartilage II	LGIS 50mins	MCQs
5.	Fractures & Osteonecrosis <input type="checkbox"/> Define fractures <input type="checkbox"/> List the types of fractures <input type="checkbox"/> Describe the mechanism of bone repair after fractures <input type="checkbox"/> Define osteonecrosis <input type="checkbox"/> List the conditions causing osteonecrosis <input type="checkbox"/> Discuss the morphology & clinical course of osteonecrosis	Fractures & Osteonecrosis	LGIS 50mins	MCQs

	<b>(K)</b>			
6.	<p>Inflammatory diseases of bone</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Define osteomyelitis</li> <li><input type="checkbox"/> Discuss the routes &amp; causes of Pyogenic Osteomyelitis</li> <li><input type="checkbox"/> Describe the morphological &amp; clinical features of Pyogenic Osteomyelitis</li> <li><input type="checkbox"/> Briefly discuss Mycobacterial Osteomyelitis &amp; Skeletal Syphilis</li> <li><input type="checkbox"/> Briefly discuss bone infections due to Staphylococcus &amp; Salmonella</li> </ul> <p><b>(K)</b></p>	Inflammatory diseases of bone	LGIS 50mins	MCQs
7.	<p>Bone tumors and tumor-like lesions I</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Briefly discuss Osteoid Osteoma and Osteoblastoma.</li> <li><input type="checkbox"/> Describe pathogenesis, morphology, clinical course of Osteosarcoma, Osteochondroma, Chondromas, and Chondrosarcoma.</li> </ul> <p><b>(K)</b></p>	Bone tumors and tumor-like lesions I	LGIS 50mins	MCQs
8.	<p>Bone tumors and tumor-like lesions II</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Describe pathogenesis, morphology, and clinical course of Ewing Sarcoma, Giant Cell Tumor, and Aneurysmal Bone Cyst</li> <li><input type="checkbox"/> Discuss Fibrous Cortical Defect, Non-Ossifying Fibroma, Fibrous Dysplasia, and Metastatic Tumors</li> </ul> <p><b>(K)</b></p>	Bone tumors and tumor-like lesions II	LGIS 50mins	MCQs
9.	<p>Degenerative joint disease {Osteoarthritis (OA)}</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Define osteoarthritis</li> <li><input type="checkbox"/> Describe the pathogenesis of osteoarthritis</li> <li><input type="checkbox"/> Discuss morphological &amp; clinical features of osteoarthritis</li> </ul> <p><b>(K)</b></p>	Degenerative joint disease {Osteoarthritis (OA)}	LGIS 50mins	MCQs
10.	<p>Auto-immune joint disease {Rheumatoid Arthritis (RA)}</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Define rheumatoid arthritis (RA)</li> <li><input type="checkbox"/> Describe the pathogenesis &amp; morphological features of RA</li> <li><input type="checkbox"/> Discuss clinical &amp; specific laboratory diagnostic features of RA</li> <li><input type="checkbox"/> Discuss treatment &amp; complications of RA</li> </ul> <p><b>(K)</b></p>	Auto-immune joint disease {Rheumatoid Arthritis (RA)}	LGIS 50mins	MCQs
11.	<p>Juvenile idiopathic Arthritis (JIA), Seronegative Spondyloarthropathies, Infectious Arthritis</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Define Juvenile Idiopathic Arthritis (JIA)</li> <li><input type="checkbox"/> Compare JIA with Rheumatoid Arthritis</li> <li><input type="checkbox"/> Briefly discuss risk factors &amp; sub classification of JIA</li> <li><input type="checkbox"/> Enumerate the features of Seronegative Spondylo-arthritis</li> </ul>	Juvenile idiopathic Arthritis (JIA), Seronegative Spondyloarthropathies, Infectious Arthritis	LGIS 50mins	MCQs

	<input type="checkbox"/> Briefly discuss Ankylosing Spondylitis, Reactive Arthritis, Enteritis associated Arthritis & Psoriatic Arthritis <input type="checkbox"/> Discuss the causative agents & presentation of suppurative, mycobacterial, Lyme & Viral Arthritis <b>(K)</b>			
12.	Crystal-induced arthritis (Gout & Pseudogout), Joint tumors & tumors like conditions <input type="checkbox"/> Classify gout <input type="checkbox"/> Describe the pathogenesis, morphology & clinical features of Gout & Pseudo-gout <input type="checkbox"/> Briefly discuss Ganglion & Synovial cyst <input type="checkbox"/> Discuss pathogenesis, morphology & clinical features of Teno-Synovial Giant Cell Tumor <b>(K)</b>	Crystal-induced arthritis (Gout & Pseudogout), Joint tumors & tumors like conditions	LGIS 50mins	MCQs
13.	Soft tissue tumors <input type="checkbox"/> Classify soft tissue tumors <input type="checkbox"/> Discuss the clinical manifestations, prognosis and management of soft tissue tumors (tumors of adipose tissue, fibrous, skeletal muscle, and smooth muscle tumors, and tumors of uncertain origin) <b>(K)</b>	Soft tissue tumors	LGIS 50mins	MCQs

## Pathology

## Tutorial

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	Clinical implication of synovial fluid analysis <input type="checkbox"/> Correlate synovial fluid analyses with their representative diseases <b>(K)</b>	Clinical implication of synovial fluid analysis	SGDs 1hour (Tutorials)	MCQs

## Pharmacology

## Lectures

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
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1.	Pharmacology of Eicosanoids <input type="checkbox"/> Discuss the synthesis & classification of Eicosanoids <input type="checkbox"/> Explain the pharmacological functions of Eicosanoids in different body systems <b>(K)</b>	Pharmacology of Eicosanoids	LGIS 50mins	MCQs
2.	Pain management – I (NSAIDs) <input type="checkbox"/> Discuss the rationale of pain management <input type="checkbox"/> Discuss the classification of analgesics and the basic and clinical pharmacology of NSAIDs <b>(K)</b>	Pain management – I (NSAIDs)	LGIS 50mins	MCQs
3.	Pain management –II (Opioid analgesics) <input type="checkbox"/> Discuss role of opioids in the management of severe pain <input type="checkbox"/> Classify narcotic analgesics <input type="checkbox"/> Describe their pharmaco-kinetics and dynamics <b>(K)</b>	Pain management –II (Opioid analgesics)	LGIS 50mins	MCQs
4.	Anti- Rheumatic Agents I & II <input type="checkbox"/> Discuss the classification with basic & clinical pharmacology of drugs used in treatment of Rheumatoid arthritis and osteoarthritis (RA & OA) <b>(K)</b>	Anti- Rheumatic Agents I & II	LGIS 50mins	MCQs
5.	Drug used in Osteoporosis & Osteomalacia <input type="checkbox"/> Describe the rationale of management of osteoporosis & Osteomalacia <input type="checkbox"/> Discuss the classification with basic & clinical pharmacology of drugs used in treatment of Osteoporosis & Osteomalacia <b>(K)</b>	Drug used in Osteoporosis & Osteomalacia	LGIS 50mins	MCQs
6.	Drug used in Gout <input type="checkbox"/> Describe the rationale of management of Gout <input type="checkbox"/> Enumerate the drugs used to treat Gout <input type="checkbox"/> Describe kinetics & dynamics of these drugs <b>(K)</b>	Drug used in Gout	LGIS 50mins	MCQs

## Pharmacology

## Tutorials

S No	Learning Objectives By the end of the session, students will be able to:	Content Areas	Learning Activity (Duration)	Assessment
1.	Pain management <input type="checkbox"/> Discuss basic and clinical pharmacology of NSAIDs& Opioids <b>(K)</b>	Pain management	SGDs 1hour (Tutorials)	MCQs

2.	Treatment of Rheumatic Arthritis & Osteoarthritis □ Discuss the classification, kinetics and dynamics of drug used in OA & RA <b>(K)</b>	Treatment of Rheumatic Arthritis & Osteoarthritis	SGDs 1hour (Tutorials)	MCQs
3.	Drug Management in Osteoporosis & Osteomalacia □ Discuss the classification, kinetics and dynamics of drug used in Osteoporosis & Osteomalacia <b>(K)</b>	Drug Management in Osteoporosis & Osteomalacia	SGDs 1hour (Tutorials)	MCQs
4.	Treatment of Gout □ Discuss the classification, kinetics and dynamics of drug used in Gout <b>(K)</b>	Treatment of Gout	SGDs 1hour (Tutorials)	MCQs

## Pharmacology

## Practical

<b>S No</b>	<b>Learning Objectives</b> By the end of the session, students will be able to:	<b>Content Areas</b>	<b>Learning Activity (Duration)</b>	<b>Assessment</b>
1.	Review of power lab system □ Identify various parts of the Power Lab System and their functions <b>(S)</b>	Review of power lab system	Demonstrations 90 mins	OSCE
2	Review of power lab system □ Identify various parts of the Power Lab System and their functions <b>(S)</b>	Review of power lab system	Demonstrations 90 mins	OSCE

## Problem Based Learning (PBL)

- 1   PBLs will be conducted in this module
- Each will be introduced in one week and will be discussed the next week

Learning Tool	Theme	PBL Trigger	Subjects integrated in PBL
PBL 1	Bilateral Knee Pain	A 60 year old female, came to orthopedic OPD with complaint of Bilateral knee pain. Pain gets worse on climbing stairs and squatting. She feels better in the morning. She has no history of trauma. On examination crepitus and swelling was noticed on both knees. Swelling was more prominent on the right knee.	Learning objectives will be from Anatomy, Biochemistry and Physiology
PBL 2	Swelling of both hands and feet	An 18-year-old male student brought to emergency of tertiary care hospital with history of swelling in small joints of hands and feet since last 4 months.	Learning objectives will be from Anatomy, Biochemistry and Physiology

### Learning Resources:

The students will be guided to look for the relevant study material from the books, internet guided by each discipline in the study guide in their relevant section in addition to other reference books from the college library

## Medical Education

## Lectures / Workshop

S.NO	Learning Objectives (domain) At the end of session, student will be able to:	Content Areas	Teaching Activity (Duration)	Assessment
1.	From School into College <ul style="list-style-type: none"> <li>Appreciate the journey of medical education from learning biomedical to clinical science <b>(K)</b></li> </ul>	<ul style="list-style-type: none"> <li>Plan of medical education in college</li> <li>Organization of undergraduate medical curriculum</li> <li>Integrated Curriculum</li> </ul>	LGIS 50 mins	–
2.	<b>Study skills– 1 &amp; 2</b> <ul style="list-style-type: none"> <li>Describe the methods of learning knowledge in a medical college. <b>(K)</b></li> </ul>	<ul style="list-style-type: none"> <li>Difference in teaching and learning in school / college and a medical institution</li> <li>Learning knowledge</li> <li>Learning skills</li> </ul>	LGIS 50 mins	–
3.	<b>Problem – based Learning</b> <ul style="list-style-type: none"> <li>Describe the basis of problem – based learning. <b>(K)</b></li> <li>Follow the process / steps of problem – based learning session. <b>(S)</b></li> </ul>	<ul style="list-style-type: none"> <li>Basics of problem-based learning</li> <li>Process / steps of problem – based learning</li> <li>Practical demonstration of PBL session</li> </ul>	Workshop (2 hours)	–
4.	<b>Leadership skills</b> <ul style="list-style-type: none"> <li>Describe leadership skills <b>(K)</b></li> </ul>	<ul style="list-style-type: none"> <li>Leadership Skills</li> </ul>	LGIS 50 mins	–
5.	<b>Management skills</b> <ul style="list-style-type: none"> <li>Explain the importance of Management skills</li> </ul>	<ul style="list-style-type: none"> <li>Management Skills</li> </ul>	LGIS 50 mins	–

**Learning resource:** How to succeed at medical school, Dason Evans & Jo Brown, 2009

# TIME TABLES



**Jinnah Medical & Dental College**  
**MBBS I - Batch 24 (2021)**  
**LOCOMOTOR I MODULE 2021 - WEEK 1**

Lecture Venue: LH101

MON May 31 ABC	BLOOD MODULE TEST					
TUES June 1 DEF	BLOOD MODULE TEST					
WED June 2 ABC	8:30-9:20 ANATOMY Musculo-Skeletal System Introduction	9:25-10:30 ANATOMY DEMONSTATION Clavicle & Sternum Osteology & Attachment		11:00-12:30 ANATOMY DEMONSTATION Scapula Osteology & Attachment		
THUR June 3 DEF	8:30-9:20 ANATOMY Pectoral Region	9:25-10:15 ANATOMY Mammary Gland Gross & Development		10:45-11:35 PHYSIOLOGY Neuron Structure Dr. Sara	11:40-12:30 BEHAVIORAL SCIENCES IQ & EQ	
FRI June 4 ABC	8:30-9:20 ANATOMY Histology: Mammary Gland & Cartilage	9:25-10:15 ANATOMY Sternoclavicular & Acromio- clavicular Joints		PHYSIOLOGY Resting Membrane Potential Dr. Sadaf		Group 1: M24001-M24025 Group 2: M24026-M24050 Group 3: M24051-M24075 Group 4: M24076-M24100

REVISED May 26, 2021

**Jinnah Medical & Dental College**  
**MBBS 3 - Batch 22**  
**LOCOMOTOR MODULE-Week 1**

Lecture Venue: Wednesday (AB), Thursday (CD), Friday (EF): JMDC LH 103; Monday, Tuesday, Saturday: LH1 &amp; LH 2 Korangi

MON 31 May	CLINICS (Rotation ; Week ) (9:00 – 12:00)			12:10-1:00 COMMUNITY MEDICINE Occupational Health & Diseases Dr. Shagufta	1:10-2:00 FORENSIC MEDICINE Personal Identity I Dr. Imran Afzal
TUES 1 June	CLINICS (Rotation ; Week ) (9:00 – 12:00)			12:10-1:00 COMMUNITY MEDICINE Ergonomics Dr. Faryal	1:10-2:00 FORENSIC MEDICINE Personal Identity II Dr. Imran Afzal
WED 2 June	8:30-9:20	9:30-10:20	10:30-11:20	12:00-1:30	1:45-3:15
	PATHOLOGY Basic Bone Structure & Function	PHARMACOLOGY Ecosanoids Dr. Samia	PATHOLOGY Bone & Cartilage Developmental Disorders	PHARMACOLOGY PRACTICAL DRY LAB Power Lab & Skeletal Muscle Relaxants GROUP AB	
THURS 3 June	PATHOLOGY Bone & Cartilage Acquired Disorders I	PHARMACOLOGY Pain Management - NSAIDS Dr. Nasir	PATHOLOGY Bone & Cartilage Acquired Disorders II	PHARMACOLOGY PRACTICAL DRY LAB Power Lab & Skeletal Muscle Relaxants GROUP AB	
FRI 4 June	PATHOLOGY Fractures & Osteonecrosis	PHARMACOLOGY Pain Management - Opioids Dr. Nasir	PATHOLOGY Inflammatory Bone Diseases	PHARMACOLOGY PRACTICAL DRY LAB Power Lab & Skeletal Muscle Relaxants GROUP AB	
SAT 5 June	CLINICS (Rotation ; Week ) (9:00 – 12:00)				

**TRANSPORT WILL LEAVE JMDC FOR KORANGI AT 8:15 AM MONDAY, TUESDAY, SATURDAY**

NOTE: Groups to attend on campus classes as noted above. Groups not on campus will attend lectures via ZOOM

# **Week 4**

**End of locomotor Module II**

**Locomotor Module 2 Test Theory**

**Locomotor Module 2 Test OSCE**