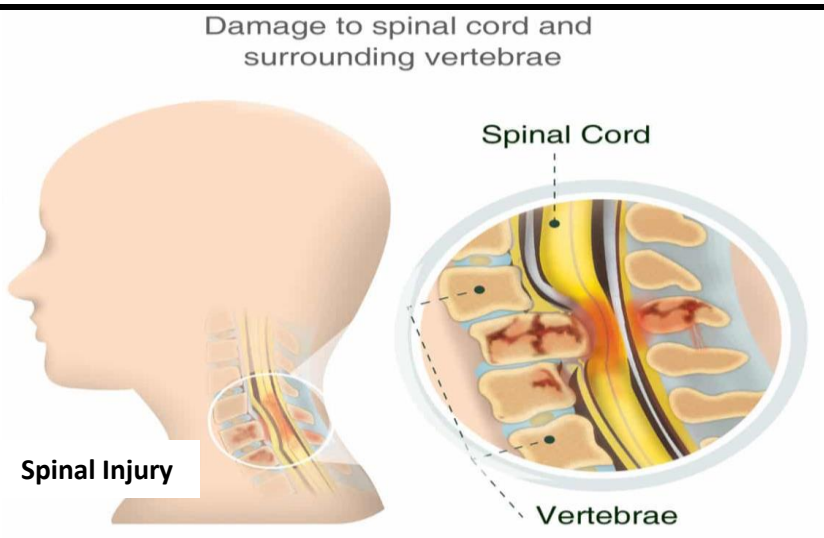


STUDY GUIDE

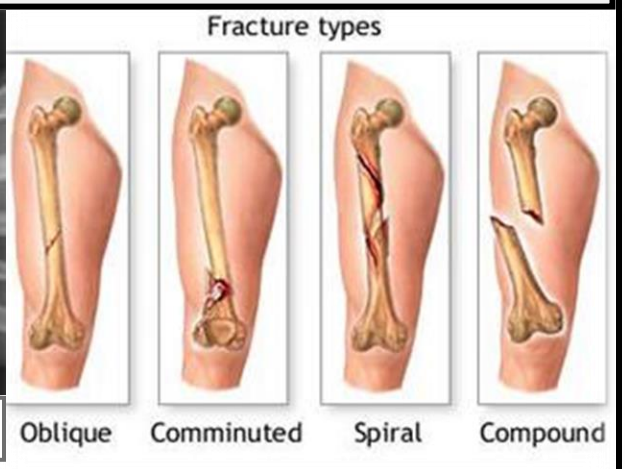
FOURTH YEAR MBBS

29TH MARCH- 21ST MAY 2021

DURATION: 8 WEEKS

ORTHOPAEDICS AND REHABILITATION MODULE

Fracture of the radius and the ulna is dislocated at the wrist



LIAQUAT NATIONAL HOSPITAL AND MEDICAL COLLEGE
INSTITUTE FOR POSTGRADUATE MEDICAL STUDIES & HEALTH SCIENCE

STUDY GUIDE FOR ORTHOPAEDICS & REHABILITATION MODULE

Module name: **Orthopaedics and Rehabilitation**

Year: ***Four*** *Duration:* ***8 weeks (March 2021 - May 2021)***

Timetable hours: **Lectures, Case-Based Discussion (CBD), Clinical Rotations, Task Oriented Learning, Task Presentation, Demonstrations, Skills, Self-Study**

MODULE INTEGRATION COMMITTEE

MODULE COORDINATOR:	Dr. Muhammad Sufyan (**Orthopaedics**)
CO-COORDINATORS:	Prof. Sobia Ali (**DHPE**) Dr. Raman Kumar (**Pediatrics**)

DEPARTMENTS' & RESOURCE PERSONS' FACILITATING LEARNING

BASIC HEALTH SCIENCES	CLINICAL AND ANCILLARY DEPARTMENTS
ANATOMY • Professor Zia-ul-Islam	***ACCIDENT & EMERGENCY*** • Dr. Shaesta Tabassum
	ENDCOCRINOLOGY • Dr. Aqiba Sarfraz
BIOCHEMISTRY • Professor Kashif Nisar	***MAXILLOFACIAL*** • Dr. Tauqeer-ul-Islam
COMMUNITY MEDICINE • Dr. Saima Zainab	***NEUROLOGY*** • Dr. Naveeduddin Ahmed
FORENSIC MEDICINE • Professor Muard Zafar Marri	***NEURO-SURGERY*** • Dr. Salman Yousuf Sharif
PATHOLOGY • Professor Naveen Faridi • Dr. Amna Khursheed	***ORTHOPAEDICS*** • Prof. Syed Shahid Noor • Prof. Intikhab Taufiq • Prof. Zaki Idrees • Dr. Muhammad Asif Paracha
PHARMACOLOGY • Professor Nazir Ahmed Solangi	***PEDIATRICS*** • Dr. Raman Kumar
	PHYSICAL MEDICINE • Mr. Muhammad Ali
PHYSIOLOGY • Professor Syed Hafeez-ul-Hassan	***RADIOLOGY*** • Dr. Misbah Tahir
	RHEUMATOLOGY • Dr. Tahira Perveen
DEPARTMENT of HEALTH PROFESSIONS EDUCATION • Professor Nighat Huda • Professor Sobia Ali • Dr. Afifa Tabassum • Dr. M. Suleman Sadiq	
LNH&MC MANAGEMENT • Professor KU Makki, Principal, LNH&MC • Dr. Shaheena Akbani, Director A.A & R.T LNH&MC	
STUDY GUIDE COMPILED BY: Department of Health Professions Education	

INTRODUCTION

WHAT IS A STUDY GUIDE?

It is an aid to:

- Inform students how student learning program of the module has been organized
- Help students organize and manage their studies throughout the module
- Guide students on assessment methods, rules and regulations

THE STUDY GUIDE:

- Communicates information on organization and management of the module. This will help the student to contact the right person in case of any difficulty.
- Defines the objectives which are expected to be achieved at the end of the module.
- Identifies the learning strategies such as lectures, small group teachings, clinical skills, demonstration, tutorial and case based learning that will be implemented to achieve the module objectives.
- Provides a list of learning resources such as books, computer assisted learning programs, web- links, journals, for students to consult in order to maximize their learning.
- Highlights information on the contribution of continuous and modular examinations on the student's overall performance.
- Includes information on the assessment methods that will be held to determine every student's achievement of objectives.
- Focuses on information pertaining to examination policy, rules and regulations.

INTEGRATED CURRICULUM comprises system-based modules such as Orthopedics which links basic science knowledge to clinical problems. Integrated teaching means that subjects are presented as a meaningful whole. Students will be able to have better understanding of basics sciences when they repeatedly learn in relation to clinical examples.

LEARNING EXPERIENCES: Case based integrated discussions, Task oriented learning followed by task presentation, skills acquisition in skills lab, computer-based assignments, learning experiences in clinics, wards.

MODULE 1: ORTHOPAEDICS AND REHABILITATION

INTRODUCTION TO THE ORTHOPAEDICS AND REHABILITATION MODULE

Orthopedics is a medical specialty that focuses on the diagnosis, correction, prevention, and treatment of patients with skeletal deformities - disorders of the bones, joints, muscles, ligaments, tendons, nerves and skin. These elements make up the musculoskeletal system.

Many common problems encountered in daily medical and surgical practice have either manifesting symptoms or actual pathological origins in the musculoskeletal system that also forms the largest system of the body by volume. Integrity and health of this complex system of bones, joints, ligaments, tendons, muscles and nerves allows you to move, work and be active.

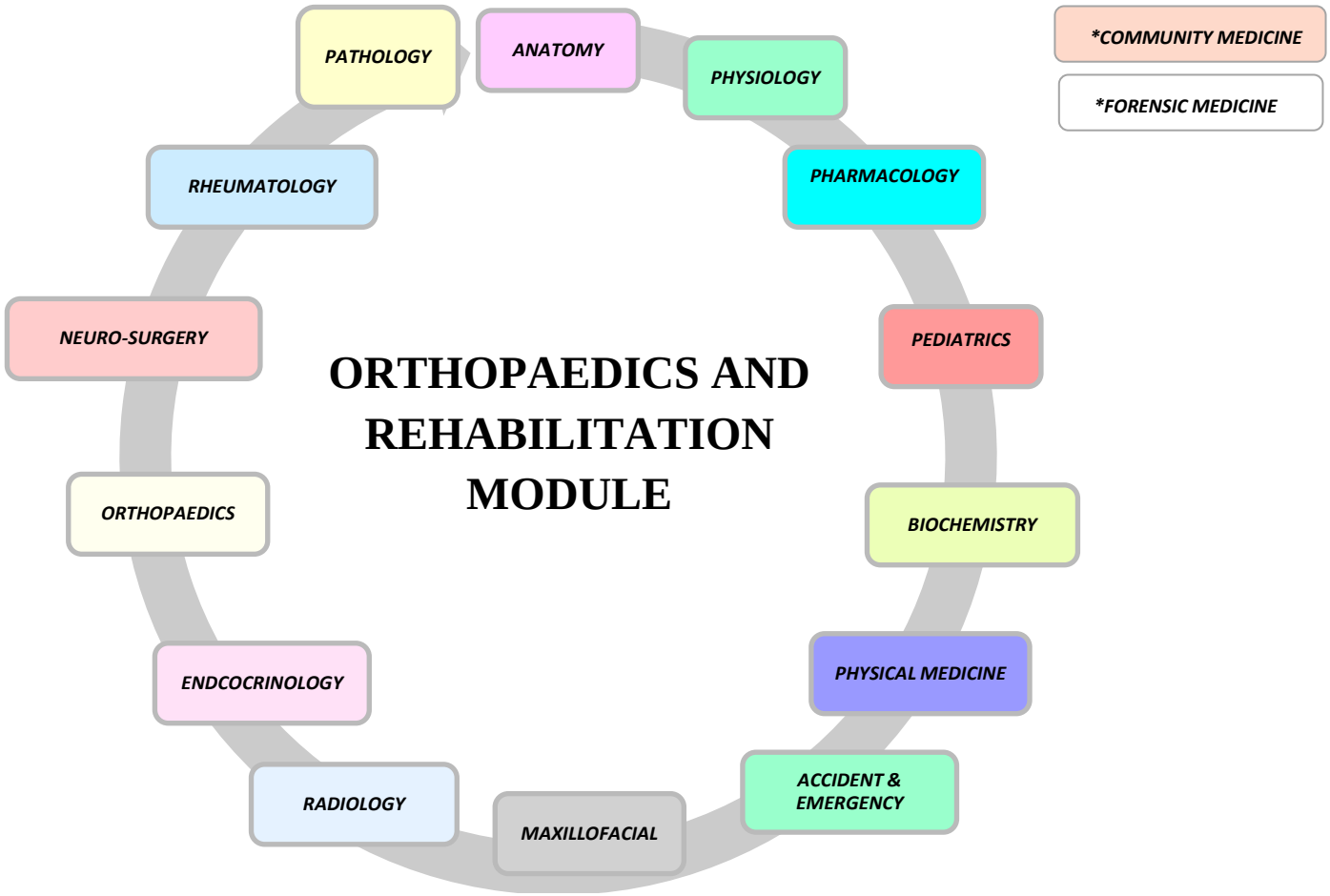
Once devoted to the care of children with spine and limb deformities, orthopedics now cares for patients of all ages, from newborns with clubfeet, to young athletes requiring arthroscopic surgery, to older people with arthritis.

Trauma is a major cause of morbidity and mortality in both the developed and developing world. It is perhaps the disease which has the most negative impact on healthcare systems and societies today, yet up to 90% is preventable. Injuries are the leading cause of death under the age of 40 years in the United States of America (USA) according to trauma registry data.

The stipulated health burden in the developing world is unknown due to lack of data but should theoretically be much higher due to lack of road and civil safety. Presently, injuries account for one in seven health life years lost worldwide, and the WHO predicts that this will increase to one in five by 2020, with low and middle income countries accounting for the majority of the increase.

In the Orthopedic and trauma module, varied teaching learning experiences will enable the student to appreciate disorders of the musculoskeletal system with an integrated approach incorporating knowledge of anatomy, physiology, biochemistry, pathology, pharmacology, radiology, allied medical and surgical disciplines with orthopedic principles.

INTEGRATING DISCIPLINES OF ORTHOPAEDICS AND REHABILITATION MODULE



Note: *Community Medicine & Forensic Medicine curriculum run parallel

LEARNING METHODOLOGIES

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

- Interactive Lectures
- Small Group Discussion
- Case- Based Discussion(CBD)
- Clinical Experiences
  - Clinical Rotations
- Skills session
- Task-Oriented Learning(TOL)
  - Task Presentation
- Case Based interactive learning(CBIL)

INTERACTIVE LECTURES

In large group, the lecturer introduces a topic or common clinical conditions and explains the underlying phenomena through questions, pictures, videos of patients' interviews, exercises, etc. Students are actively involved in the learning process.

SMALL GROUP SESSION: This format helps students to clarify concepts, acquire skills or desired attitudes. Sessions are structured with the help of specific exercises such as patient case, interviews or discussion topics. Students exchange opinions and apply knowledge gained from lectures, tutorials and self study. The facilitator role is to ask probing questions, summarize, or rephrase to help clarify concepts.

CASE-BASED DISUCSSION (CBD): A small group discussion format where learning is focused around a series of questions based on a clinical scenario. Students' discuss and answer the questions applying relevant knowledge gained previously in clinical and basic health sciences during the module and construct new knowledge.

CLINICAL LEARNING EXPERIENCES: In small groups, students observe patients with signs and symptoms in hospital wards, clinics and outreach centers. This helps students to relate knowledge of basic and clinical sciences of the module and prepare for future practice.

- **CLINICAL ROTATIONS:** In small groups, students rotate in different LNH wards like Medicine, Pediatrics, Surgery, Obs Gynae, ENT, Orthopaedics, Family Medicine clinics and outreach centers and related community Medicine experiences are included as well. Here students observe patients, take histories and perform supervised clinical examinations in outpatient and inpatient settings. They also get an opportunity to observe medical personnel working as a team. These rotations help students relate basic medical and clinical knowledge in diverse clinical areas.

SKILLS SESSION: Skills relevant to respective module are observed and practiced where applicable in RSDC.

SELF-DIRECTED STUDY: Students' assume responsibilities of their own learning through individual study, sharing and discussing with peers, seeking information from Learning Resource Center, teachers and resource persons within and outside the college. Students can utilize the time within the college scheduled hours of self-study.

TASK-ORIENTED LEARNING: (TOL)

TOL is a learning activity that encourages students' self-directed learning, discussion in small groups, and peer to peer collaborative work.

For TOL, those objectives are selected that enhance students' understanding of the basic concepts in relation to its application to medical practice. Tasks are primarily questions that students seek answers through different authentic resources, and prepare presentations that reflect understanding of concepts, and ready to give explanations, or defend their responses through questions and answers to large group.

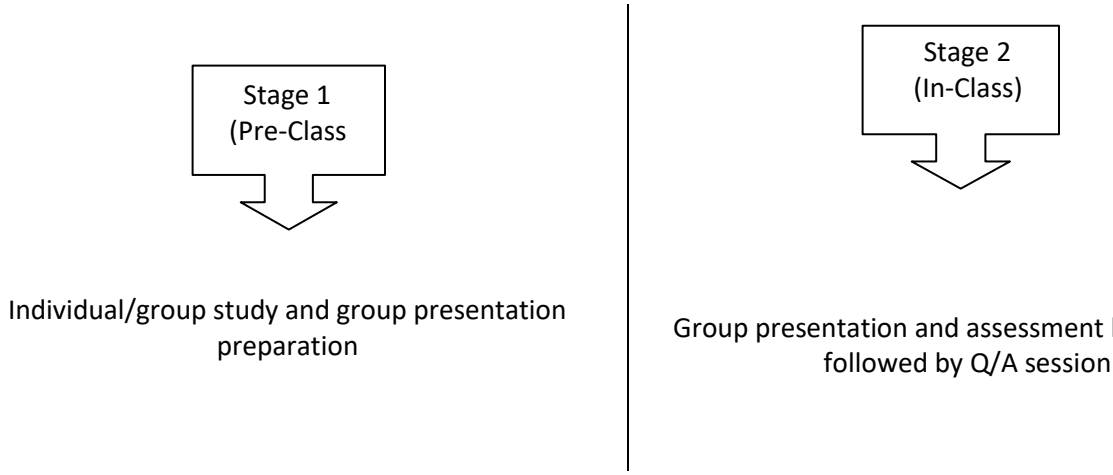
PROCESS of TOL

Learning in this strategy will comprises of two stages

Stage 1. Pre-class learning in groups

Stage 2. In-class group focused active learning

TOL Process: Stage I



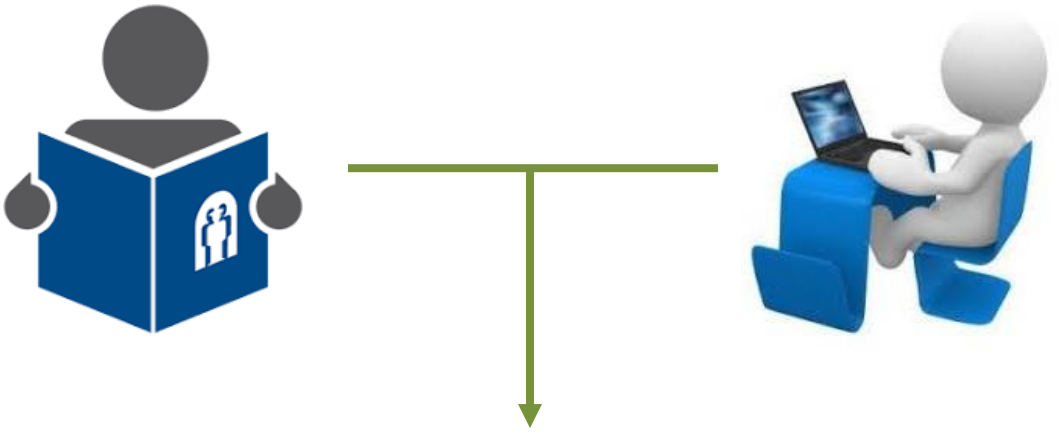
- Each of the four groups (Groups A-D) of 25 students are further divided into three sub groups comprising 8-9 students each (see Appendix A). Every group is given similar Tasks to be completed within the defined time.
- Every day for two hours, *one* group which includes three sub groups meets to discuss the Task, and seek explanation from the recommended authentic sources including website *(patient education websites are strictly NOT ADVISED!!!)* and work in groups to develop presentations during allotted study hours
- Students' prepare presentations for large group discussion on the fifth day.

TOL Process: Stage II

Every group will present its 10 minute power point presentations (PPT) or Prezi to the large group and five minutes for questions supported by concerned faculty

TOL Assessment:

The group presentations and collaborative work will be graded on defined criteria. (**See Appendix: B**). Each week, student is to demonstrate active participation and effective contribution during the group activities. It is mandatory for the students to participate in this activity as their scores will contribute to **internal evaluation**.



COURSE OBJECTIVES AND STRATEGIES

By the end of Orthopaedics and Rehabilitation module, students should be able to:

ANATOMY

OBJECTIVES	*LEARNING STRATEGY*
Describe the morphology, function and neurovascular supply of bones.	Interactive Lecture/ Small Group Discussion
Discuss bone remodeling and repair of bone fractures.	
Describe the development of bones and joints.	
Describe the process of increase in length and width of bone during embryonic life and afterbirth.	

ACCIDENT & EMERGENCY

OBJECTIVES	*LEARNING STRATEGY*
Describe the sequence of a trauma patient evaluation	Small Group Discussion
Describe the appropriate triage of a trauma patient	

BIOCHEMISTRY

OBJECTIVES	*LEARNING STRATEGY*
Describe the main characteristics and function of connective tissue	Tutorial
Calcium, Phosphate and Vit. D	
Explain the classification and biochemical role of calcium, phosphate and vit D	
Effects of Parathyroid hormone on bone mineral metabolism	
Define the importance of calcium in bone mineral metabolism	Interactive Lecture
Explain the action of parathyroid hormone on gut, bone and kidney	
Describe the role of 1,25-dihydroxy VitaminD and Calcitonin in calcium homeostasis	
Uric acid metabolism & Gout	
Define gout, its types and complications.	
List the defective enzymes involved in purine nucleotide metabolism	
Explain the causes of hyperuricemia.	
Synovial fluid composition	
Explain the composition and function of synovial fluid in a typical Synovial joint	Tutorial

COMMUNITY MEDICINE

OBJECTIVES	*LEARNING STRATEGY*
Occupational health &diseases	Interactive Lecture/Tutorial
Describe occupational health	
Explain Occupational health practice	
Enumerate occupational health diseases	
Discuss the control and prevention of occupational health hazards	
Describe Lead poisoning	
Accidents and Prevention	
Describe accidents & different types of injuries	Interactive Lecture
Explain the risk factors for different types of injuries	
Enumerate the issues surrounding the road traffic accidents	
Discuss the control and prevention of Accidents	
Describe injury-specific prevention & control measures	
Level of prevention	
Define concepts of primary, secondary and tertiary prevention in the context of rehabilitation medicine	
Describe the potentially disabling consequences of disease, disorders & injury	
Disaster management	
Describe disaster and its management	
Classify the types of disaster	
Enumerate the steps in planning disaster management	
Describe the steps of surveillance cycle	
Sports Medicine	
Describe Sport Medicine	
Explain the role of sports physician in the practice of sports medicine	
Discuss the female triad	
Describe pharmacological & legal aspects of Ergogenic Aids in athletes	
Statistical tests analysis & interpretation	Interactive Lecture/Tutorial
Apply common statistical tests to Analyze data using SPSS	
Interpret research findings and write a discussion	
Develop a manuscript for submission in Research Journal	
Critically analyze a research paper	
Epidemiology of disability	Interactive Lecture
Define concepts of primary, secondary and tertiary prevention in the context of rehabilitation medicine	
Explain the general concept of Primary, Secondary and Tertiary prevention	
Define the terms disability, injury, accident, impairment and handicap	
Describe the epidemiology of disability	
Explain the quantification of disease in terms of **DALYs** (disability adjusted life years), **QALYs** (quality adjusted life years), **YLD** (years live with disability) and **YLL** (years of life lost)	

ENDOCRINOLOGY

OBJECTIVES	*LEARNING STRATEGY*
Parathyroid disorders	
Diagnose hyper-and hypo-parathyroid disorders based on clinical manifestations and investigation findings	Interactive Lecture
Develop treatment plans for hyper and hypoparathyroid disorders	

FORENSIC MEDICINE

OBJECTIVES	*LEARNING STRATEGY*
Spinal injuries	Interactive Lecture
Describe whip lash injuries, fractures of cervical spine, and railway spine	
Discuss the injuries to thoracic and lumbar spine, and sacrum	
Describe the medicolegal aspects of spinal injuries	

MAXILLOFACIAL SURGERY

OBJECTIVES	*LEARNING STRATEGY*
Describe the mechanism of injury, assessment and management of a patient with maxillofacial trauma	Interactive Lecture

NEUROSURGERY

OBJECTIVES	*LEARNING STRATEGY*
Describe the evaluation and Management of non- traumatic pain of spine	Interactive Lecture
Identify the most common conditions causing back pain	
Diagnose and manage non-traumatic neck and back problems	

ORTHOPEDICS

OBJECTIVES	*LEARNING STRATEGY*
Fractures	Interactive Lecture
Classify the different types of fractures	
Describe the specific types of fractures (hip fractures, Colles' fracture, pelvic fractures)	
Discuss the general principles of management of fractures	
Describe the therapeutic measures for different fractures, principles of fracture treatment in children and common complications of fractures	
Discuss the management of fractures and the principles of fracture fixation	
Musculoskeletal diseases	
Describe the clinical features, laboratory tests, and imaging of the following musculoskeletal diseases:	
i. Rheumatoid Arthritis	
ii. Seronegative Spondylo-arthtropathies	
iii. Systemic Lupus Erythematosus	
iv. Osteoarthritis and Osteoporosis	
v. Achondroplasia	
vi. Osteogenesis imperfecta	
vii. Osteomyelitis	
viii. Paget's disease (Osteitis Deformans)	
ix. Bone tumors	
x. Duchenne muscular dystrophy	
xi. Myotonic dystrophy	
Develop a treatment plan for Osteoporosis	
Trauma	
Describe the rapid assessment of a patient with spinal trauma	
Describe the etiology, pathophysiology, and the appropriate management of patients with spinal cord injury	
Develop a plan for diagnosis and treatment of patients with torso trauma	
Describe the classification of pelvic fractures and the associated complications	
Describe the mechanisms, assessment, and management of maxillo-facial injuries	
Back pain	
Identify the most common conditions causing back pain	
Diagnose and manage non-traumatic neck and back problems	
Bone tumors	
Correlate pathological findings with clinical presentation of bone tumors	
Justify diagnosis, investigations and treatment plans for primary bone tumors	

PATHOLOGY

OBJECTIVES	*LEARNING STRATEGY*
Introduction of bone structure and diseases	Small Group Discussion
Classify developmental disorders of bone and cartilage according to pathogenesis	
Explain the defect in nuclear proteins and transcription factor/s related to the developmental disorders of bone and cartilage	
Enumerate the defects in hormones and signal transduction proteins, extracellular structural proteins, and metabolic pathway that are responsible for developmental disorders of bone and cartilage	
Describe the diseases associated with defect in degradation of macro-molecules	
Acquired disorder of bone	
Describe acquired disorders of bone (Paget's disease, hyperparathyroidism and renal osteodystrophy)	
Synovial fluid analysis	
Correlate synovial fluid analysis and clinical implication of synovial fluid in various forms	Small Group Discussion
Metabolic disorders of bones	
List developmental and congenital anomalies related to skeletal system	Interactive Lecture
Differentiate between acquired/metabolic syndromes of bones and cartilages	
Differentiate between the features of hyper and hypoparathyroidism.	
Describe and classify the etiological organisms, route of spread and pathophysiology and morphology of various types of osteomyelitis	
Discuss Disorders of calcium & phosphate metabolism	Small Group Discussion
Discuss pathophysiology, diagnosis of osteoporosis, rickets and osteomalacia	
Differentiate between osteoporosis, rickets and pagets' disease osteomalacia on the basis of lab test	
Inflammatory Conditions of Joints	Interactive Lecture
Discuss crystal induced Arthritis (Gout and pseudogout)	
Musculoskeletal Infections & Tumors	Small Group Discussion
Name the major pathogenic organisms causing joint infection.	
Describe the pathophysiology and elements of prevention and management of joint infection	
Outline the main clinical features and laboratory tests to recognize Joint Infections (Septic, Viral,Tuberculosis arthritis)	
Classify etiological organisms, route of spread and pathophysiology of osteomyelitis	
Soft tissue tumors	Interactive Lecture
Classify soft tissue tumors	
Describe tumors of adipose tissue (lipoma, liposarcoma) and fibrous tumors, and their morphology	

Describe skeletal muscle tumors (leiomyoma leiomyosarcoma) and their morphology	
Bone forming tumors	Interactive Lecture
Describe bone forming tumors and their WHO classification	
Describe their etiology, pathogenesis, morphology and radiology	
Describe osteiod osteoma and its morphology	
Describe osteoblastoma and its morphology	
Describe osteosarcoma and its morphology	
Cartilage forming tumors	
Describe osteochondroma, chondroma and osteosarcoma	
Tumors of unknown origin	
Describe Ewing sarcoma, giant cell tumor, aneurysmal bone cyst and metastatic tumors	
Joint tumors	Small Group Discussion
Describe joint tumors, diseases and tumor like conditions	
Describe ganglion and synovial cyst	
Describe tenosynovial giant cell tumors	
Describe pathogenesis, morphology and clinical features of important bone tumors	

PEDIATRIC MEDICINE

OBJECTIVES	*LEARNING STRATEGY*
Describe Infection control protocol in hospital setting	Interactive Lecture
Differentiate between Osteogenesis imperfacta & Achondroplasia	
Describe Muscular dystrophies	

PHARMACOLGY

OBJECTIVES	*LEARNING STRATEGY*
Drug management of Osteoporosis & Osteomalacia	Interactive Lecture/Tutorial
Describe the rationale of management of osteoporosis & osteomalacia	
Enumerate drugs used to treat osteoporosis & osteomalacia	
Describe the kinetics & dynamics of these drugs	
Drugs used in Gout	
Describe the rationale of management of Gout	Interactive Lecture
Enumerate the drugs used to treat Gout	
Describe the kinetics & dynamics of these drugs	
Discuss the classification of drug used in Gout	
Describe the kinetics and dynamics of these drugs	
Treatment of Rheumatic Arthritis & Osteoarthritis (OA & RA)	
Discuss the classification of drug used in OA & RA	CBL
Describe the kinetics and dynamics of these drugs	

PHYSICAL MEDICINE

OBJECTIVES	*LEARNING STRATEGY*
Physical Medicine	Interactive Lecture
Explain the purpose of rehabilitation	
Describe current tools and systems for the measurement of impairment, disability and activity limitation or participation restriction	
Identify the steps in the clinician's assessment of AT for individuals with disabilities	
Discuss the adaptive techniques and assistive devices for ADL	
Describe assessment methods and rehab interventions for peadiatric patients which includes Cerebral Palsy, TalipesEquinoVarus	
Community based rehabilitation	
Define community based rehabilitation	
Describe the strategies of incorporating rehabilitation in the community	
List the benefits of community based rehabilitation	
Describe the potential role and benefit of specific medical and rehabilitation therapies in the assessment and management of disability	
Interpret relevant diagnostic investigations, including radiological and electro-diagnostic tests	
Assessment of disabilities	
Describe the potential role and benefit of specific medical and rehabilitation therapies in the assessment and management of disability	
Interpret relevant diagnostic investigations, including radiological and electro-diagnostic tests	
Pediatric Rehabilitation	Small Group Discussion
Summarize the theories of development and normal developmental milestones	
Describe assessment methods and rehab interventions for pediatric patients (of Cerebral Palsy, TalipesEquinoVarus, Myopathies, Spina Bifida)	
Rehabilitation of Amputee	
Describe epidemiology of major limb loss including etiology, incidence, morbidity and mortality	
Summarize surgical principles of limb amputation and levels of amputation including digit(s), thumb, partial hand, trans-carpal wrist disarticulation trans-radial, elbow disarticulation etc.	

PHYSIOLOGY

OBJECTIVES	*LEARNING STRATEGY*
Bone modeling and remodeling	Interactive Lecture
Compare the processes of bone modeling and remodeling	
Explain the functions of osteoblasts and osteoclasts in bone formation and bone resorption	
Hormonal control of bone metabolism	
Discuss the impact of calcium, vitamin D, and parathyroid hormone on bone formation and resorption	

RADIOLOGY

OBJECTIVES	*LEARNING STRATEGY*
Imaging of musculo-skeletal system	Small Group Discussion
Explain the role of radiologic imaging in musculo-skeletal system diseases	
Describe the principles of MRI, isotope bone scans, DEXA scans and CT scans	
Imaging of bone tumors	
List the techniques involved in diagnosis of bone tumors	
Identify common skeletal injuries on radiographic films (e.g. fractures and dislocations)	

RHEUMATOLOGY

OBJECTIVES	*LEARNING STRATEGY*
Gout	Interactive Lecture
Classify gout	
Describe the pathogenesis, morphological and clinical features of gout	
Differentiate among various types of gout, based on clinical presentations	
Develop a plan for treating acute gouty arthritis	
Discuss the diagnosis and management of crystal induced arthropathies (gout and pseudogout)	
Vasculitis	
Classify vasculitis	
Describe the pathophysiology of vasculitis	
Discuss the clinical manifestations and treatment of vasculitis	
Systemic sclerosis	

Describe the pathology, prevalence, etiology, symptoms, and diagnosis of systemic sclerosis	
Polymyositis and Dermatomyositis	
Describe the pathology, prevalence, etiology, symptoms, and diagnosis of Polymyositis and Dermatomyositis	
Discuss the current management strategies for Polymyositis and Dermatomyositis	
Joint infections	
Name the major pathogenic organisms causing joint infections	
Describe the pathophysiology, elements of prevention, and management of joint infections	
Outline the main clinical features and laboratory tests to diagnose joint infections (Septic,Viral, Tuberculous arthritis)	
inflammatory conditions of joints	
Discuss the diagnosis and management of systemic inflammatory conditions affecting the joints (rheumatoid arthritis, SLE induced arthritis, Psoriatic arthritis)	

Apart from attending daily scheduled sessions, students too should engage in self-study to ensure that all the objectives are covered

Objectives for Task Oriented Learning (TOL)

WEEK 5

Task 1

A 75-year old female presented in Orthopaedics OPD with complaint of worsening backache after lifting weight about 5 days back. She was unable walk after onset of pain. She has also history of distal radial fracture about one year back after minor fall. There have been a gradual change in the posture of spine and she is unable to walk straight. She is also having generalized bone and joint pains for many years. X-ray of dorso-lumbar spine is given below.

S.No	Groups	Questions
1	**A1/C1**	What are the differential diagnoses and why?
2	**A2/C2**	How other anatomical areas are involved?
3	**A3/C3**	What is the patho-physiology of this disease?
4	**B1/D1**	How will you further investigate her and what will be the interpretation of findings?
5	**B2/D2**	What will be the management plan for this patient?
6	**B3/D3**	What are the complications of this disease?

WEEK 5

Task 2

A 39-year old woman who was admitted to hospital after experiencing systemic bone pain and muscle weakness for more than 2 years. The patient had bilateral thigh pain and was unable to walk. Laboratory results showed a high alkaline phosphatase concentration. Nodules were visible on the thyroid and parathyroid glands during ultrasound examination. X ray was done as a part of investigation

S.No	Groups	Questions
1	**B3/D3**	What are the differential diagnoses?
2	**B2/D2**	What are the causes and patho-physiology of Osteomalacia?
3	**B1/D1**	What are the risk factors for developing Osteomalacia?
4	**A3/C3**	How other conditions can mimicOsteomalacia?
5	**A2/C2**	What are the biochemical findings and laboratory investigations relevant to osteomalacia?
6	**A1/C1**	What is the management protocol and possible complications?

WEEK 7

Task 1

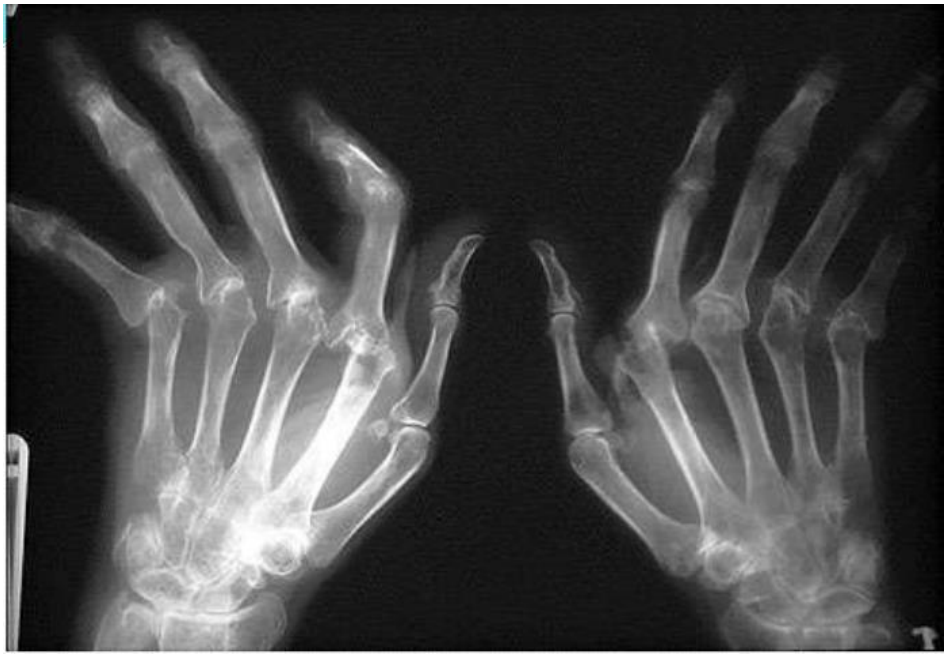
A 62-year old patient presents with complaints of aching pain in the right groin that varies in severity and extends down the anterior thigh to the knee. The pain began gradually about 3 months before. Initially the patient felt stiffness whenever he sat for prolonged periods of time or after a night's sleep. The patient reports that he can no longer walk as far as he once did, and that negotiating stairs was especially painful. The patient's past medical history is significant for a long history of osteoarthritis of the spine and occasional twinges of pain in the right groin. The patient also has history of right-sided sciatica. Radiographs of the right hip are provided.

S.No	Groups	Questions
1	**A1/C1**	What are the differential diagnoses of this pathology?
2	**A2/C2**	List the anatomical areas which can be affected with this problem and How?
3	**A3/C3**	What is the patho-physiology of this disease?
4	**B1/D1**	What are the laboratory investigations and their findings for osteoarthritis?
5	**B2/D2**	What are the management issue regarding non-operative and operative management? Why or why not?
6	**B3/D3**	What are the complications of this disease?

WEEK 7

Task 2

A 34-year old female presented with complaints of pain and stiffness in both hands. Stiffness in hands, wrists and ankles lasts more than 1 hour every morning. She also had increasing difficulty standing for long periods at work or at home due to foot and ankle pain. She began feeling extremely tired and short tempered. She had no energy to do her usual activities. She gradually started having ulnar deviation of her hands and swan neck deformity of fingers along with nodules in soft tissues. Some preliminary investigations show raised ESR and high RA factor. X-rays were done as part of investigations.



1	**B3/D3**	What are the systemic manifestations of the disease?
2	**B2/D2**	What is the patho-physiology of this disease?
3	**B1/D1**	What are the criteria for the diagnosis of the disease?
4	**A3/C3**	What are the differential diagnoses?
5	**A2/C2**	What are the management options for the control of the disease?
6	**A1/C1**	What are the complications of this disease?

LEARNING RESOURCES

SUBJECT	RESOURCES
GENERAL SURGERY, ORTHOPAEDIC, NEROSURGERY	**TEXT BOOK** 1. Bailey & Love's Short Practice of Surgery , 26th Edition **WEBSITES (ORTHOPAEDICS):** www.orthobullets.com
NEUROLOGY, RHEUMATOLOGY & ENDOCRINOLOGY	**REFERENCE BOOKS:** 1. Hutchison's Clinical Methods, 23rdEdition 2. MacLeod's clinical examination 13thedition 3. Davidson's Principles and Practice of Medicine 4. Kumar and Clark's Clinical Medicine 5. HCAI guidelines CDC
PEDIATRICS	1. Textbook of Pediatrics by PPA, preface written by S. M. Haneef 2. Basis of Pediatrics (8th Edition Pervez Akbar)
ANATOMY	**A. GROSSANATOMY** 1. K.L. Moore, Clinically Oriented Anatomy **B. EMBRYOLOGY** 1. KeithL. Moore. The Developing Human 2. Langman's Medical Embryology
BIOCHEMISTRY	**A. TEXTBOOKS** 1. Harper's Illustrated Biochemistry 2. Lehninger Principle of Biochemistry 3. Biochemistry by Devlin
COMMUNITY MEDICINE	**TEXTBOOKS** 1. Preventive and Social Medicine by K Park 2. Community Medicine by M. llyas 3. Basic *Statistics* for the Health Sciences by Jan W Kuzma
PHARMACOLOGY	**A. TEXTBOOKS** 1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung
PATHOLOGY/MICROBIOLOGY	**TEXTBOOKS** 1. Robbins & Cotran, Pathologic Basis of Disease,9th edition. 2. Rapid Review Pathology,4th edition by Edward F. Goljan MD

	WEBSITES: 1. http://library.med.utah.edu/WebPath/webpath.html 2. http://www.pathologyatlas.ro/
PHYSIOLOGY	**A. TEXTBOOKS** 1. Textbook Of Medical Physiology by Guyton and Hall 2. Ganong'S Review of Medical Physiology 3. Human Physiology by Lauralee Sherwood 4. Berne & Levy Physiology 5. Best &Taylor Physiological Basis of Medical Practice
FORENSIC MEDICINE	**TEXT BOOKS** 1. Nasib R. Awan. Principles and practice of Forensic Medicine 1st ed.2002. 2. Parikh, C.K. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology. 7th ed. 2005. **REFERENCE BOOKS** 3. Knight B. Simpson's Forensic Medicine. 11thed.1993. 4. Knight and Pekka. Principles of forensic medicine. 3rd ed.2004 5. Krishan VIJ. Text book of forensic medicine and toxicology (principles and practice). 4th ed.2007 6. Dikshit P.C. Text book of forensic medicine and toxicology. 1st ed.2010 7. Polson. Polson's Essential of Forensic Medicine. 4thedition. 2010. 8. Rao. Atlas of Forensic Medicine (latest edition). 9. Rao. Practical Forensic Medicine 3rd ed,2007. 10. Knight: Jimpson's Forensic Medicine 10th 1991,11thed.1993 11. Taylor's Principles and Practice of Medical Jurisprudence.15th ed.1999 **CDs:** 1. Lectures on Forensic Medicine. 2. Atlas of Forensic Medicine. **WEBSITES:** www.forensicmedicine.co.uk

ADDITIONAL LEARNING RESOURCES

Hands-on Activities/ Practical	Students will be involved in Practical sessions and hands-on activities that link with the Orthopaedics Module to enhance learning.
Museum	Models available in the museum are a rich learning resource for quick review of anatomy and related educational activities
Skills Lab	Skills acquisition in a simulated environment in the skills lab involving experiential learning will ensure patient safety and will also help to build confidence in approaching the patients
Videos/Podcasts	Videos and podcasts will familiarize the student with the procedures and protocol which they can watch and listen to at any time and wherever they are, as part of task oriented learning
Internet Resources	Students will use easily accessible internet resources with added time flexibility to enrich and update their knowledge and its application

ASSESSMENT METHODS:

- **Best Choice Questions(BCQs)** also known as MCQs (Multiple Choice Questions)
- **Objective Structured Practical/Clinical Examination (OSPE or OSCE)**

BCQs:

- A BCQ has a statement or clinical scenario of four options (likely answers).
- **Correct answer carries one mark, and incorrect 'zero mark'. There is NO negative marking.**
- Students mark their responses on specified computer-based sheet designed for LNHMC.

OSCE:

- All students rotate through the same series of stations in the same allocated time.
- At each station, a brief written statement includes the task. Student completes the given task at one given station in a specified time.
- Stations are observed, unobserved, interactive or rest stations.
- In unobserved stations, flowcharts, models, slide identification, lab reports, case scenarios may be used to cover knowledge component of the content.
- Observed station: Performance of skills /procedures is observed by assessor
- Interactive: Examiner/s ask questions related to the task within the time allocated.
- In Rest station, students in the given time not given any specific task but wait to move to the following station.

Internal Evaluation

- Students will be assessed comprehensively through multiple methods.
- 20% marks of internal evaluation will be added to JSMU final exam. That 20% may include class tests, assignment, practicals and the internal exam which will all have specific marks allocation.

Formative Assessment

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

For JSMU Examination Policy, please consult JSMU website!

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

LNH&MC EXAMINATION RULES & REGULATIONS

- Student must report to examination hall/venue, 30minutes before the exam.
- **Exam will begin sharp at the given time.**
- No student will be allowed to enter the examination hall after 15 minutes of scheduled examination time.
- Students must sit according to their roll numbers mentioned on the seats.
- **Cell phones are strictly not allowed in examination hall.**
- If any student is found with cell phone in any mode (silent, switched off or on) he/she will not be allowed to continue their exam.
- No students will be allowed to sit in exam without University Admit Card, LNMC College ID Card and Lab Coat
- Student must bring the following stationary items for the exam: Pen, Pencil, Eraser and Sharpener.
- In discipline in the exam hall/venue is not acceptable. Students must not possess any written material or communicate with their fellow students.

SCHEDULE:

WEEKS	4th Year	MONTH
WEEK 1	ORTHOPEDICS & REHABILITATION MODULE	29th March 2021
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		
WEEK 8		21st May 2021
WEEK 1	DERMATOLOGY MODULE	31st May 2021
WEEK 3		19th June 2021
WEEK 1	GENETICS MODULE	21st June 2021
WEEK 2		3rd July 2021
Mid Term Examination 08-07-2021 to 10-07-2021		
WEEK 1-9	REPRODUCTIVE SYSTEM II MODULE	12th July 2021
		18th September 2021
WEEK 1-9	NEUROSCIENCES II MODULE	20th September 2021
		20th November 2021

APPENDIX: A

LIAQUAT NATIONAL MEDICAL COLLEGE

FOURTH YEAR MBBS, ORTHOPAEDICS & REHABILITATION MODULE

Criteria: Group Task Presentation

Speaker/Group: _____

Assignment: _____

This criteria is designed to clarify the grading process for Oral Presentations	Not Acceptable	Poor	Average	Good	Excellent
	0	1	2	3	4
Content					
1. Objectives were achieved during the presentation					
2. Information in presentation was clear and organized.					
3. Material presented was derived from authentic sources					
4. Queries were answered appropriately					
Collaboration					
5. Every member of the group contributed to the presentation.					
6. There was smooth transition (of group members) from one presenter to another during presentation.					
Presentation Style/ Professionalism					
7. Appropriate interaction with audience members.					
8. Readiness to present at scheduled time.					
9. Presentation completed within assigned time					

Marks obtained out of 36:_____

Facilitators' signature:_____,_____,_____

APPENDIX B:

SR.#	Roll #	Name of Students	Sub Group
Group-A			
1	**MC/2023/001**	Abdullah Moiz	**A1**
2	**MC/2023/002**	Aizaz Masood	
3	**MC/2023/003**	Ali Muhammad Bajwa	
4	**MC/2023/004**	Alishba Ali Khan	
5	**MC/2023/005**	Aliza Fatima Zafar	
6	**MC/2023/006**	Altamash Wajid	**A2**
7	**MC/2023/008**	Aqsa Ali	
8	**MC/2023/009**	Aradhna	
9	**MC/2023/010**	Areeba Rehman	
10	**MC/2023/011**	Attaullah Abban	
11	**MC/2023/012**	Ayesha Khalid	**A3**
12	**MC/2023/013**	Ayra Jazim Ali	
13	**MC/2023/014**	Bharat Kumar	
14	**MC/2023/015**	Bhavish Kumar	
15	**MC/2023/016**	Bisma Khan	
16	**MC/2023/017**	Farwa	**A4**
17	**MC/2023/018**	Fatima Abdullah Amim	
18	**MC/2023/019**	Fatima Iqbal	
19	**MC/2023/020**	Fehmeeda Gul Muhammad	
20	**MC/2023/021**	Gharira Batool	
21	**MC/2023/022**	Gulrukh Shaikh	**A5**
22	**MC/2023/023**	Haadia Jawad	
23	**MC/2023/024**	Hafiz Omais Ahmed	
24	**MC/2023/025**	Hafsa Noor	
25	**MC/2023/026**	Haya Kamal	
26	**MC/2023/027**	Hiba Arif	**A6**
27	**MC/2023/028**	Hiba Hanif	
28	**MC/2023/029**	Hina	
29	**MC/2023/030**	Humna Shaikh	
30	**MC/2023/031**	Imaad Syed Imam	
31	**MC/2023/032**	Iqra Alam	

SR.#	Roll #	Name of Students	Sub Group
		Group-B	
32	**MC/2023/033**	Iqra Javed	**B1**
33	**MC/2023/034**	Kiran Abdullah	
34	**MC/2023/035**	Komal Saleem	
35	**MC/2023/036**	Laiba Dilawar	
36	**MC/2023/037**	Laraib Iqbal	
37	**MC/2023/038**	Maheen Siddiqui	**B2**
38	**MC/2023/039**	Manahil Arshad	
39	**MC/2023/040**	Manahil Tariq	
40	**MC/2023/041**	Marium Malik	
41	**MC/2023/042**	Marium Qazi	
42	**MC/2023/044**	Mirza Huzaifa Baig	**B3**
43	**MC/2023/045**	Mohammad Sarim Sharaf	
44	**MC/2023/046**	Muhammad Ahmed Khan	
45	**MC/2023/047**	Muhammad Ali	
46	**MC/2023/048**	Muhammad Faiz Shad	
47	**MC/2023/049**	Muhammad Farrukh Siddiqui	**B4**
48	**MC/2023/050**	Muhammad Luqman Rafique	
49	**MC/2023/052**	Muhammad Zaki	
50	**MC/2023/053**	Musfirah Moin	
51	**MC/2023/054**	Nijah Varia	
52	**MC/2023/055**	Nimra Ahmed	**B5**
53	**MC/2023/056**	Nimra Nadir	
54	**MC/2023/057**	Noor Fatima	
55	**MC/2023/058**	Qazi Waqas Uddin	
56	**MC/2023/059**	Rabbiya Jawad	
57	**MC/2023/060**	Rabeet Tariq	**B6**
58	**MC/2023/061**	Rabyee Anees	
59	**MC/2023/062**	Rameesha Irfan	
60	**MC/2023/063**	Ramsha Adeel	
61	**MC/2023/064**	Saba Ayub	
62	**MC/2023/065**	Safa Alam	

SR.#	Roll #	Name of Students	Sub Group
Group-C			
63	**MC/2023/066**	Sana	**C1**
64	**MC/2023/067**	Sana Waheed	
65	**MC/2023/068**	Sania	
66	**MC/2023/069**	Saniya Ejaz	
67	**MC/2023/070**	Sanjna Devi	
68	**MC/2023/071**	Savanti	**C2**
69	**MC/2023/072**	Shafiq Ur Rehman	
70	**MC/2023/073**	Shahzeb Ali	
71	**MC/2023/074**	Sheronia Farrukh	
72	**MC/2023/075**	Sheryar Karim	
73	**MC/2023/077**	Sofia Sajid Abbasi	**C3**
74	**MC/2023/078**	Suhira Tariq	
75	**MC/2023/079**	Sukaina Aquil Walji	
76	**MC/2023/080**	Suleman Ayub	
77	**MC/2023/081**	Sumaiya Khan	
78	**MC/2023/082**	Syeda Abeeha Zehra	**C4**
79	**MC/2023/083**	Syeda Hira Ejaz	
80	**MC/2023/084**	Syeda Khadija Farooq	
81	**MC/2023/085**	Syeda Ramsha Kafil	
82	**MC/2023/086**	Syeda Saroosh Abidi	
83	**MC/2023/087**	Syeda Tayyaba Fatima Abidi	**C5**
84	**MC/2023/088**	Tahreem Shaikh	
85	**MC/2023/089**	Tooba Sabir	
86	**MC/2023/090**	Umar Ahmed Siddiqui	
87	**MC/2023/091**	Um-E-Rubab	
88	**MC/2023/092**	Yusra Saleem Siddiqui	**C6**
89	**MC/2023/093**	Zenab Shahzad	
90	**MC/2023/094**	Zoha Mohsin	
91	**MC/2023/095**	Zoya Haq	
92	**MC/2023/096**	Fatima Iftikhar	
93	**MC/2022/107**	Kaleem Ullah Zulfiqar	