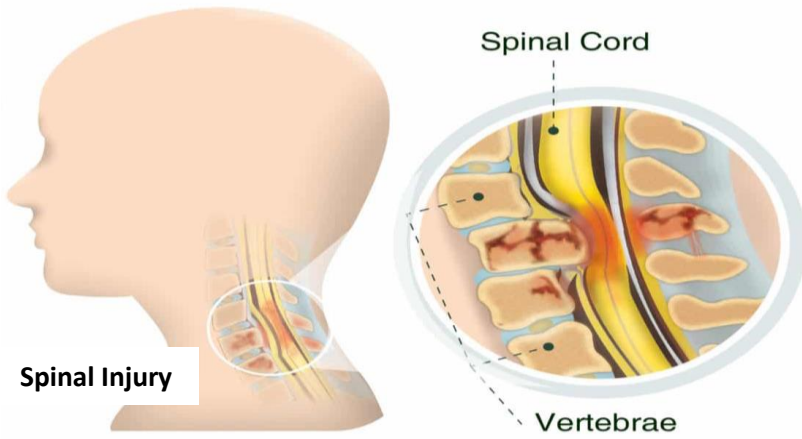


Damage to spinal cord and surrounding vertebrae



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

Fracture types



Oblique Comminuted Spiral Compound



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



STUDY GUIDE FOR ORTHOPAEDICS & REHABILITATION MODULE

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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)

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	ENDOCRINOLOGY <ul style="list-style-type: none"> Dr. Aqiba Sarfraz
BIOCHEMISTRY <ul style="list-style-type: none"> Professor Kashif Nisar 	MAXILLOFACIAL <ul style="list-style-type: none"> Dr. Tauqeer-ul-Islam
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LNH&MC MANAGEMENT	
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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.

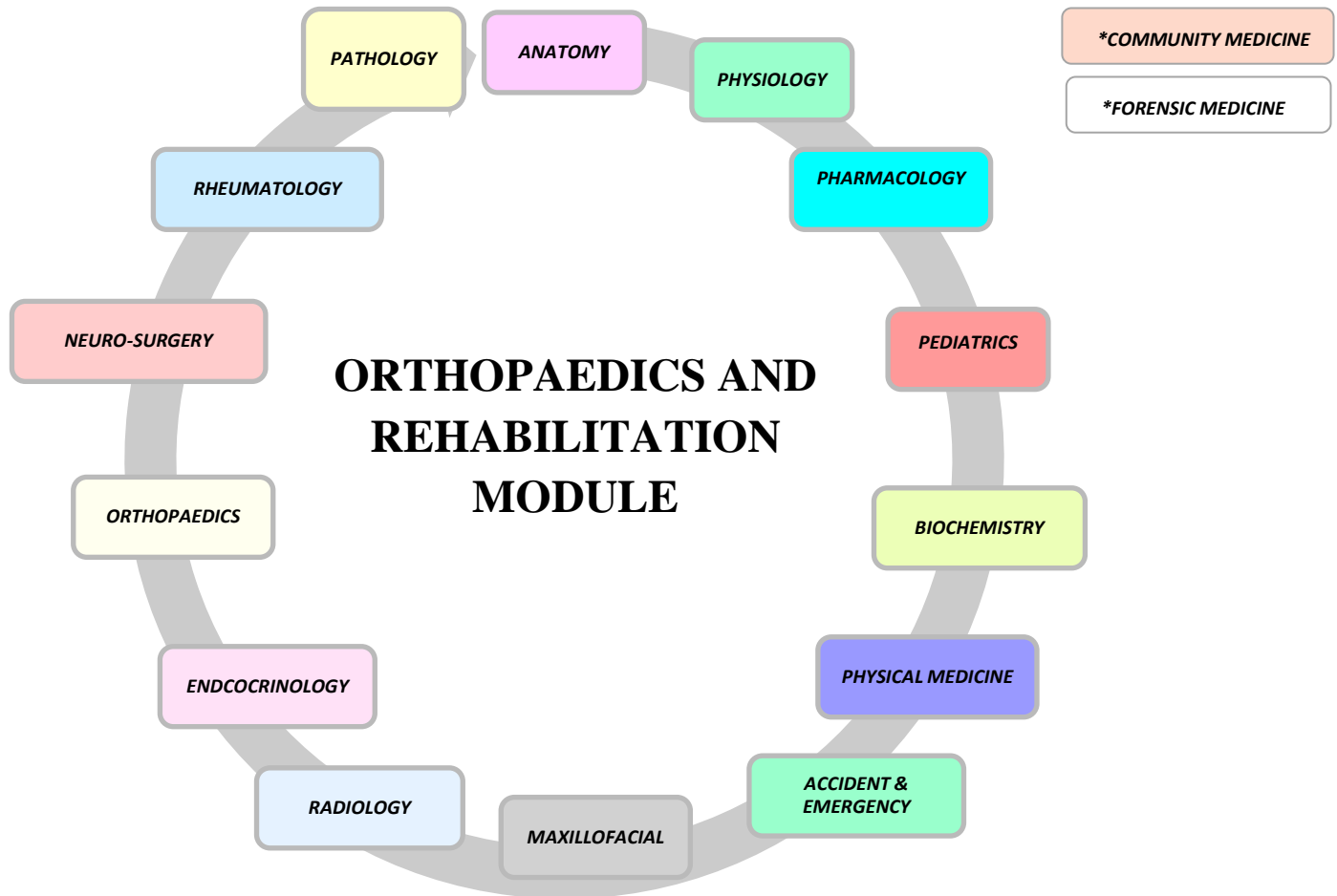
Many common problems encountered in daily medical and surgical practice have either manifesting symptoms or actual pathological origins in the musculoskeletal system that also forms the largest system of the body by volume. Integrity and health of this complex system of bones, joints, ligaments, tendons, 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 DISCUSSION (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.

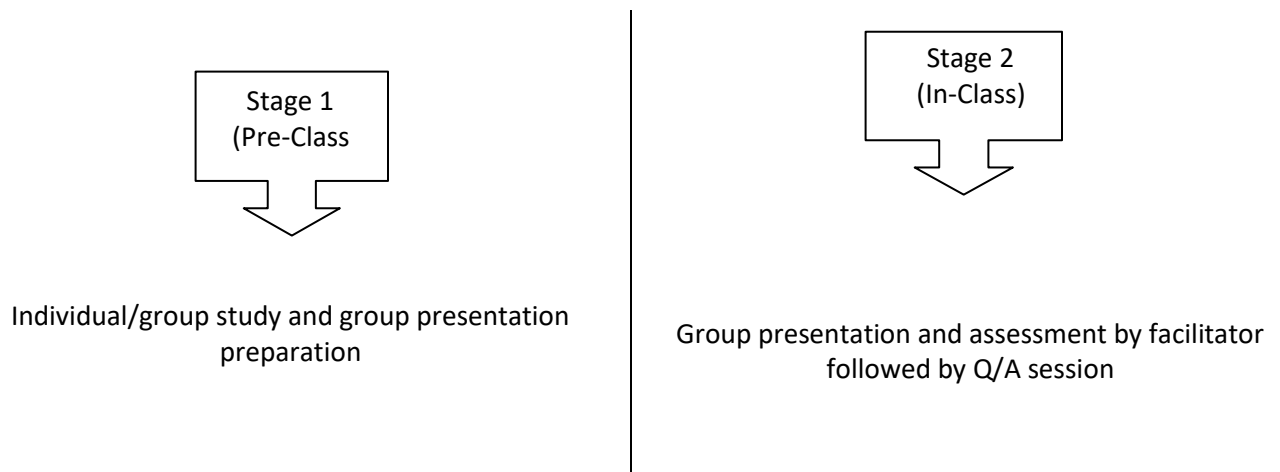
For TOL, those objectives are selected that enhance students' understanding of the basic concepts in relation to its application to medical practice. Tasks are primarily questions that students seek answers through different authentic resources, and prepare presentations that reflect understanding of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

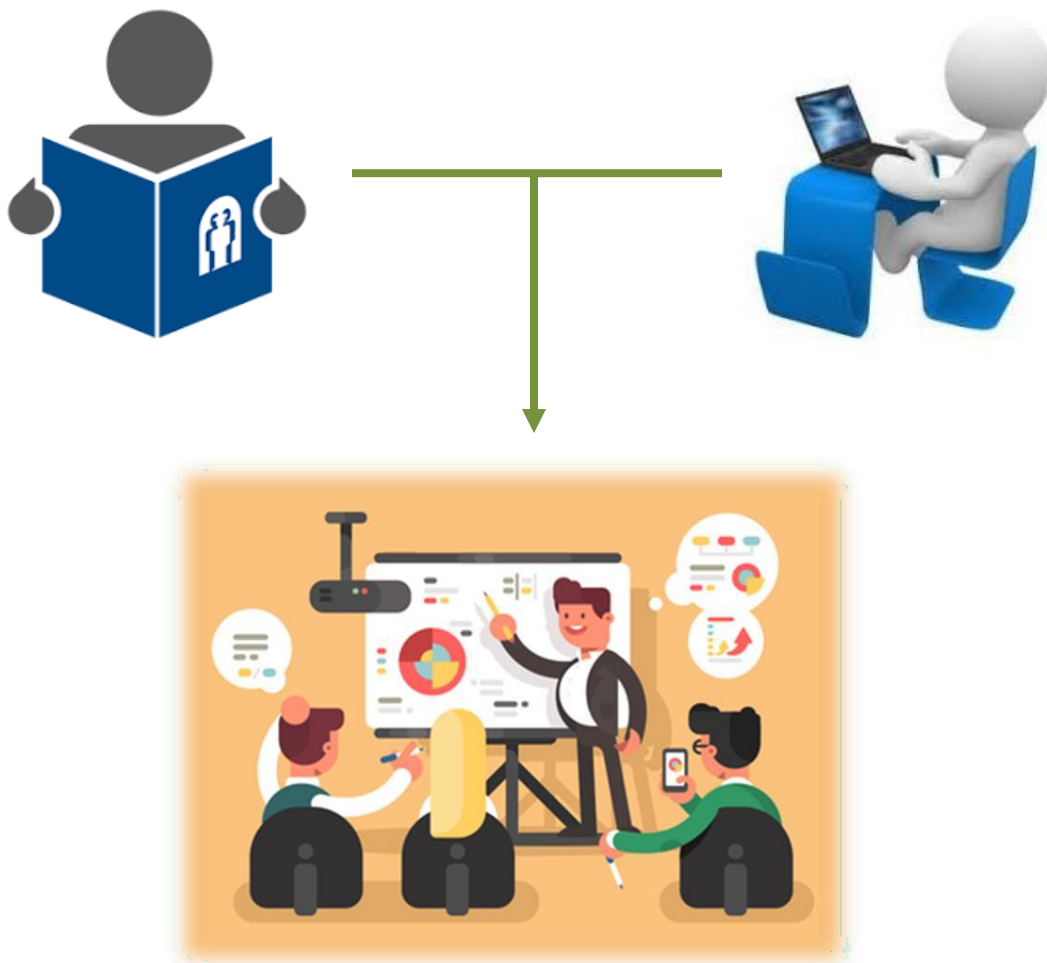
- Each of the four groups (Groups A-D) of 25 students are further divided into three sub groups comprising 8-9 students each (see Appendix A). Every group is given similar Tasks to be completed within the defined time.
- Every day for two hours, *one* group which includes three sub groups meets to discuss 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	Interactive Lecture
Effects of Parathyroid hormone on bone mineral metabolism	
Define the importance of calcium in bone mineral metabolism	
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.	Tutorial
Synovial fluid composition	
Explain the composition and function of synovial fluid in a typical Synovial joint	

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	Interactive Lecture
Describe accidents & different types of injuries	
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	
Describe whip lash injuries, fractures of cervical spine, and railway spine	Interactive Lecture
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-arthropathies	
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	
Discuss crystal induced Arthritis (Gout and pseudogout)	Interactive Lecture
Musculoskeletal Infections & Tumors	
Name the major pathogenic organisms causing joint infection.	Small Group Discussion
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	
Classify soft tissue tumors	Interactive Lecture
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	
Describe bone forming tumors and their WHO classification	
Describe their etiology, pathogenesis, morphology and radiology	
Describe osteoid osteoma and its morphology	
Describe osteoblastoma and its morphology	
Describe osteosarcoma and its morphology	Interactive Lecture
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	
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	Small Group Discussion

PEDIATRIC MEDICINE

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

PHARMACOLGY

OBJECTIVES	LEARNING STRATEGY
Drug management of Osteoporosis & Osteomalacia	
Describe the rationale of management of osteoporosis & osteomalacia	Interactive Lecture/Tutorial
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	
Enumerate the drugs used to treat Gout	
Describe the kinetics & dynamics of these drugs	Interactive Lecture
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	
Describe the kinetics and dynamics of these drugs	CBL

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 paediatric 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 mimic Osteomalacia?
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 , 26 th Edition
	WEBSITES (ORTHOPAEDICS): www.orthobullets.com
NEUROLOGY, RHEUMATOLOGY & ENDOCRINOLOGY	REFERENCE BOOKS: 1. Hutchison's Clinical Methods, 23 rd Edition 2. MacLeod's clinical examination 13 th edition 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 (8 th Edition Pervez Akbar)
ANATOMY	A. <u>GROSSANATOMY</u> 1. K.L. Moore, Clinically Oriented Anatomy B. <u>EMBRYOLOGY</u> 1. Keith L. Moore. The Developing Human 2. Langman's Medical Embryology
BIOCHEMISTRY	A. <u>TEXTBOOKS</u> 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. Ilyas 3. Basic <i>Statistics</i> for the Health Sciences by Jan W Kuzma
PHARMACOLOGY	A. <u>TEXTBOOKS</u> 1. Lippincot Illustrated Pharmacology 2. Basic and Clinical Pharmacology by Katzung
PATHOLOGY/MICROBIOLOGY	TEXTBOOKS 1. Robbins & Cotran, Pathologic Basis of Disease, 9 th edition. 2. Rapid Review Pathology, 4 th edition by Edward F. Goljan MD

	<p><u>WEBSITES:</u></p> <ol style="list-style-type: none"> 1. http://library.med.utah.edu/WebPath/webpath.html 2. http://www.pathologyatlas.ro/
PHYSIOLOGY	<p><u>A. TEXTBOOKS</u></p> <ol style="list-style-type: none"> 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	<p><u>TEXT BOOKS</u></p> <ol style="list-style-type: none"> 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. <p><u>REFERENCE BOOKS</u></p> <ol style="list-style-type: none"> 3. Knight B. Simpson's Forensic Medicine. 11th ed.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. 4th edition. 2010. 8. Rao. Atlas of Forensic Medicine (latest edition). 9. Rao. Practical Forensic Medicine 3rd ed,2007. 10. Knight: Jimpson's Forensic Medicine 10th 1991,11th ed.1993 11. Taylor's Principles and Practice of Medical Jurisprudence.15th ed.1999 <p><u>CDs:</u></p> <ol style="list-style-type: none"> 1. Lectures on Forensic Medicine. 2. Atlas of Forensic Medicine. <p><u>WEBSITES:</u></p> <p>www.forensicmedicine.co.uk</p>

ADDITIONAL LEARNING RESOURCES

<u>Hands-on Activities/ Practical</u>	Students will be involved in Practical sessions and hands-on activities that link with the Orthopaedics Module to enhance learning.
<u>Museum</u>	Models available in the museum are a rich learning resource for quick review of anatomy and related educational activities
<u>Skills Lab</u>	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
<u>Videos/Podcasts</u>	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
<u>Internet Resources</u>	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
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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	4 th Year	MONTH
WEEK 1	ORTHOPEDICS & REHABILITATION MODULE	29 th March 2021
WEEK 2		
WEEK 3		
WEEK 4		
WEEK 5		
WEEK 6		
WEEK 7		
WEEK 8		21 st May 2021
WEEK 1	DERMATOLOGY MODULE	31 st May 2021
WEEK 3		19 th June 2021
WEEK 1	GENETICS MODULE	21 st June 2021
WEEK 2		3 rd July 2021
Mid Term Examination 08-07-2021 to 10-07-2021		
WEEK 1-9	REPRODUCTIVE SYSTEM II MODULE	12 th July 2021
		18 th September 2021
WEEK 1-9	NEUROSCIENCES II MODULE	20 th September 2021
		20 th 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	
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	