ORTHOPAEDICS

SYLLABUS FOR MBBS PART III ORTHOPAEDIC SURGERY

GOAL

Goal of teaching undergraduate in orthopaedic study is to equip graduates with appropriate knowledge attitude and skill in orthopaedic surgery and impart knowledge to diagnose common Orthopaedic ailments of our country and initial management in both rural and urban area.

SPECIFIC LEARNING OBJECTIVE

A. KNOWLEDGE

At the end of the training, the student should be able to :

Describe the aetiology, pathophysiology, principles in diagnosis and management of common orthopaedic conditions, fractures including emergencies.

B. SKILLS

Elicit relevant history and perform a humane and thorough clinical examination in the locomotor system and related general examination of all systems in adults and children and arrive a clinical diagnosis after history taking and examination without causing discomfort to the patients.

To know the relevant investigations necessary for the patients to confirm or to assist in establishing the diagnosis keeping in mind the Indian economy.

Plan the line of treatment appropriate for ailment taking into consideration of the occupation and need of the patients.

To recognize the conditions which call for early treatment in primary, secondary and tertiary centers.

To establish a good communication skill with the patients and relatives or attenders regarding the condition and its management and its outcome

INTEGRATED TEACHING

Vertical integration with anatomy, pharmacology, pathology, microbiology

1) Fracture mechanisms and fracture healing
2) Non union
3) Mal union
4) Osteomyelitis
5) Infective Arthritis
6) Tubercular Infections
7) Deposition Disorders
8) Orthopaedic problems in Storage Disorders
9) Metabolic bone disorders
10) Bone tumors: Benign and malignant
11) Avascular necrosis (Scaphoid,Talus,Femoral head)
12) Perthes Disease
13) Medical management of Osteoporosis
14) Supracondylar fracture of humerus
15) Shaft of humerus ftracture

Horizontal integration with general surgery, plastic surgery, surgical oncology, vascular surgery, neuro surgery and cardiothroacic surgery.

1) Bone tumors: Benign and malignant
2) Volkmanns Ischaemic Contracture
3) Compartment syndrome
4) Cerebral Palsy
5) Management of Compound fractures
6) Polytrauma
7) Biological reconstruction of bone graft
8) Vascularised Fibular Grafting
9) Rib Fracture
10) Tendon Transfer

TEACHING HOURS

Clinical postings - **TEN** weeks.

II MBBS	(5th semester)	-	4 WEEKS
PREFINAL	(6th semester)	-	4 WEEKS
FINAL	(9th semester)	-	2 WEEKS

THEORY TEACHING HOURS - 100 HOURS

TEACHING METHODOLOGY

40 hours

1. Op Clinics
2. Bed Side Teaching,
3. Operative room learnings.
4. Demonstrating clinical skills.

30 hours

5. Symposium and seminars,
6. Group discussion,
7. Ward Rounds

30 hours

Theory classes using audio video visual aids.

Assessment

Conducting theory and clinical tests,

Internal assessment tests including practicals.

2 THEORY SYLLABUS

The must know, desirable know, nice to know in ANNEURE I, the topics are general orthopaedics, regional orthopaedics, trauma.

PRACTICAL SYLLABUS

1) Mal union
2) Non-union
3) Infection of bones
4) Infection of joints
5) Tumours of bones
6) Recurrent dislocation of joints
7) Myositis ossificans
8) Volksmann's ischemic contracture
9) Mallet finger /trigger finger
10) Depuytren's contracture
11) Ankylosed joints
12) Genu varum/ valgum
13) Cubitus varus / valgus
14) CTEV
15) Flat foot
16) Peripheral nerve injuries
17) Polio limb
18) Cerebral palsy
19) OA Knee with deformity

LECTURE TOPICS FOR UNDERGRADUATES

Semester 4 and 5

1) Fracture: Definition, Classification, Principles of Management
2) Fracture healing, delayed union
3) Infections of bone and joint, Acute Pyogenic Osteomyelitis
4) Chronic Pyogenic Osteomyelitis
5) Septic Arthritis
6) Metabolic and endocrine disorders
7) Developmental disorders of bone
8) Avascular necrosis of bone and epiphyseal osteochondrosis
9) Rheumatoid and other degenerative disorders and Arthritis (Rheumatoid/Ank.Spond.)
10) Deposition disorders (Gout, Pseudogout)
11) Tourniquet
12) Amputations
13) Bone Tumours: Benign tumors
14) Malignant tumours of bone
15) Osteo-articular tuberculosis: General consideration & principles of management

Semester 6 and 7

1) Classification & Management of open fractures
2) Injuries of shoulder and arm(Management of fracture clavicle, dislocation shoulder & fracture shaft of humerus)
3) Injuries around the elbow
4) Monteggia fracture dislocation & fracture both bones of forearm
5) Injuries of wrist and Hand injuries, Fracture of lower end of radius, fracture scaphoid and metacarpals
6) Ligamentous injuries around the foot and ankle
7) Congenital malformations: coxa vara and Perthes disease
8) Poliomyelitis

Semester 8 and 9

1) Regional conditions of upper limb
2) Regional conditions of lower limb
3) Introduction of fracture management and complications and basic trauma life support
4) Pathological fractures
5) Volksmann's Ischaemic Contracture
6) Injuries of Hip, Fracture pelvis & dislocation of hip
7) Injuries of femur ,Fracture neck of femur, Fracture shaft of femur
8) Fractures around the Knee(Distal Femur and Proximal Tibia)
9) Injuries of leg, Fracture shaft and distal tibia
10) Congenital Malformation : CDH, Pseudoarthrosis tibia etc.
11) Congenital malformations: CTEV, Torticollis
12) Regional conditions of the spine
13) Cerebral palsy
14) Peripheral nerve injuries
15) Fractures in children

ORIENTATION GUIDELINES FOR CRRI (1 DAY)

1) Basic life support measures
2) Examination of patient in emergency ward.
3) Principles of splinting and POP application
4) Communication skills and Bed side manner in emergency ward
5) Orthopaedic operative theatre protocols
6) Approach to Orthopaedics Neurology

SKILLS TO BE PRACTISED BY CRRI ATLEAST 10 TIMES

MUST KNOW

1) Spinal brace application (cervical, dorsal, lumbar)
2) Plaster application
3) Splinting in fractured limbs

4) Examination and stabilization of Poly trauma patient and Triage
5) Neurovascular examination in major fractures and dislocation.
6) Log rolling

DESIRABLE TO KNOW

7) Reduction techniques in fractures and dislocation.
8) Skin traction application
9) Neurological examination in spine cases.

NICE TO KNOW

10) Aspiration of joint effusion and haemarthrosis**.**

REFERENCE LEARNING BOOKS:

1) DAS clinical methods in surgery and Orthopaedics latest edition
2) ADAMS PART 1 fractures and part II Orthopaedics latest edition
3) APLEYS text book of orthopaedics latest edition
4) M.NATARAJAN'S text book of Orthopaedics & Traumatology latest edition

THEORY EXAMINATION

Paper III – Surgery including Orthopedics

Section A

1. Essay	1 x 10 marks	= 10 marks
2. Brief Answers	3 x 5 marks	= 15 marks
3. Short Notes	3 x 2 marks	= 6 marks
	Total	**31 marks**

Section B (Orthopaedics)

1. Essay	1 x 10 marks	= 10 marks
2. Brief Answers	3 x 5 marks	= 15 marks
3. Short Notes	2 x 2 marks	= 4 marks
	Total	**29 marks**

PRACTICAL EXAMINATION

Surgery & Orthopaedics total 100 marks

2 short case	=	20 MARKS (10+10)
1 manned OSCE	=	5 MARKS
Total	=	25 Marks

Total marks for surgery	=	75 marks
Total marks for Orthopaedics	=	25 marks
TOTAL	=	100 marks

MARK SPLIT UP FOR SHORT CASE (10 marks)

Case sheet writing	: 1 marks
Approach to the patient and bedside manners	: 2 marks
Examination and Eliciting Clinical signs	: 4 marks
Discussion	: 3 marks

VIVA VOCE (5 marks)

X rays

Orthopaedics instruments,

Splints

Operative orthopaedic surgery

INTERNAL ASSESSMENT

At the end of each postings report with punctuality, attendance, log book.

Internal assessment by ORTHOPEDIC DEPARTMENT and submitted to General surgery Department

II MBBS	-	5TH Semester	-	Theory 10 marks Practical – 5 marks
III MBBS	-	6th Semester	- .	Theory - 10 marks
III MBBS	-	9TH Semester	-	Theory - 15 marks Practical – 10 marks
Log Book	-			10 marks
Total				**60 Marks**

MEDICAL ETHICS:

(1) Moral Reasoning in Bioethics;

(2) Bioethics and Moral Theories;

(3) Truth-Telling and Confidentiality;

(4) Informed Consent;

Consent for procedures includes benefit, alternate options, complications and outcome.

(5) Human Research;

(6) Genetic Choices;

(7) Dividing Up Health Care Resources

(8)Interdisciplinary team work

(9)Explanation of the neurological outcome of the spine injury patients.

(10)Information about the death, informing relatives about the death of patients and communication skills.

THEORY SYLLABUS

A.TRAUMA

1) General principles in diagnosis, first aid and treatment methods of closed fractures and open fractures, open reduction including principles of internal fixation and external fixation, their complications. Preservation of amputated parts before transfer.

2) General principles of diagnosis and management of non-unions and delayed unions.

GENERAL PRINCIPLES

1) ABCDE for stabilization of a trauma patient.
2) MODS
3) Crush Syndrome.
4) Fat Embolism.
5) Principles of Fractures and Management.
6) External Fixation and Internal Fixation.
7) Physeal Injuries of Children.

COMPLICATIONS OF FRACTURE

1) Compartment Syndrome.
2) Gas Gangrene.
3) Complex regional pain Syndrome(CRPS).
4) Mal union
5) Non union
6) Delayed Union

1. UPPER LIMB

MUST KNOW

1) Clavicle Fracture.
2) Scapular Fracture.
3) Anterior Dislocation Shoulder.
4) Distal Humerus Fracture of Adult and Children.
5) Elbow Dislocation.
6) Fracture Head and Neck of Radius

7) Fracture Both Bones Forearm and its types.
8) Distal Radius Fracture.
9) Fracture Phalanx.
10) Metacarpal Fracture.

DESIRABLE TO KNOW

1) Posterior Dislocation Shoulder.
2) Fracture Proximal Humerus.
3) Scaphoid Fracture.

NICE TO KNOW

1) Intra-Articular Fracture.
2) Open Injuries of Hand.

2. LOWER LIMB

MUST KNOW

1) Examination assessment and immediate resuscitation in a patient with Pelvic Fracture.
2) Posterior dislocation of Hip.
3) Fracture Neck of Femur.
4) Inter Trochanteric Fracture Femur.
5) Fracture Patella.
6) Recurrent Dislocation of Patella.
7) Ligamentous Injuries of Knee.
8) Fracture Proximal Tibia.
9) Compartment Syndrome of Leg.
10) Malleolar Fractures.
11) Metatarsal Fracture.

DESIRABLE TO KNOW

1) Anterior Dislocation of Hip.
2) Treatment and Complication of Fracture Neck of Femur.
3) Supracondylar Fracture Femur.
4) Calcaneal Fracture.

NICE TO KNOW

1) Treatment Principles in Fracture Pelvis.
2) Injuries of Talus.

3.INJURIES OF SPINE

MUST KNOW

1) Examination Assessment supportive care and Transport of a Spinal Injury Patient.

NICE TO KNOW

1) Treatment Principles in Spine Fractures.

B. GENERAL ORTHOPAEDICS

1.INFECTION OF BONE AND JOINTS

MUST KNOW

Etiology, Pathogenesis, Clinical Features, Diagnostic Imaging, Investigation, Differential Diagnosis, Treatment and Complications of

1) Osteomyelitis: Pyogenic, Tubercular, Fungal (Madura foot), Syphilitic and parasitic infection of bone.
2) Arthritis: Septic and Tubercular
3) Turberculosis of Spine.

2. ARTHRITIS

MUST KNOW

A) INFLAMMATION

1) Types, Causes, Pathology, Clinical Features, Diagnostic Imaging, Investigation, Differential Diagnosis, Treatment and Complications of various Inflammatory Arthritis.

B) CRYSTAL DEPOSITION DISORDERS

C) OSTEO ARTHRITIS

D) HAEMO PHILIC DISORDERS.

NICE TO KNOW

1) Arthritis in connective tissue disorders.

3.TUMORS

Diagnosis and Principles of Management:-

MUST KNOW:

BENIGN LESIONS

1) Multiple exostosis
2) Enchondroma
3) Osteoid osteoma
4) Osteoblastoma
5) Osteochondroma,
6) Fibrous Dysplasia.
7) Giant cell tumour
8) Aneurysmal bone cyst

MALIGNANT

1) Osteosarcoma
2) Ewing's sarcoma
3) Chondrosarcoma
4) Multiple Myeloma
5) Secondary deposits

The undergraduate is expected to be familiar with the **common tumour** encountered in orthopaedic practice. The student should be able to diagnose common bone tumors and should know principles of treatment.

4. PERIPHERAL NERVE INJURIES

Basic Anatomy, Physiology of Nerve Cells. Pathology, Classification, Clinical features, Principles of Treatment of

1) All Peripheral Nerve Injuries.
2) Nerve Compression Syndrome.

5. BONE DYSPLASIAS

Diagnosis and Principles of Management

MUST KNOW

1) Osteogenesis imperfecta.
2) Achondroplasia.
3) Osteopetrosis
4) Diaphyseal Aclasia.
5) Enchondromatosis.
6) Marfans syndrome

DESIRABLE TO KNOW

1) Orthopaedic problems in Storage disorders

NICE TO KNOW

1) Multiple Epiphyseal dysplasia
2) Spondylo epiphyseal dysplasia
3) Chromosomal disorders

6.METABOLIC BONE DISORDER

MUST KNOW

1) Rickets, Osteomalacia
2) Scurvy
3) Hyperparathyroidism

DESIRABLE TO KNOW

1) Paget's disease
2) Renal Osteodystrophy
3) Osteoporosis

NICE TO KNOW

1) Endocrine disorders affecting bone

7. NEURO-MUSCULAR DISORDERS

Diagnosis and Principles of Management:-

MUST KNOW:

1) Post-polio residual Paralysis.
2) Cerebral palsy
3) Spina bifida.
4) Peripheral Neuropathy

DESIRABLE TO KNOW

1) Arthrogryposis
2) Muscular Dystrophies

NICE TO KNOW

1) Myotonia

8.ORTHOPAEDIC OPERATIONS

Students should know the basic principles of Orthopaedic surgeries.

C.REGIONAL ORTHOPAEDICS

1.SHOULDER

MUST KNOW

1) Glenohumeral Arthritis
2) Acromio Clavicular arthritis
3) Rotator cuff disorders
4) Impingement syndrome
5) Calcifications
6) Adhesive capsulitis

DESIRABLE TO KNOW

1) Milwaukee Shoulder
2) Shoulder arthrodesis

NICE TO KNOW

1) Instability of shoulder joint

2.ELBOW AND FOREARM

MUST KNOW

1) Pulled Elbow in children
2) Cubitus varus and Cubitus valgus
3) Loose bodies in elbow joint
4) Post traumatic stiffness
5) Tennis Elbow
6) Golfer's Elbow

DESIRABLE TO KNOW

1) Avulsion of Biceps tendon
2) Bursitis

NICE TO KNOW

1) Instability of elbow joint

3.WRIST

MUST KNOW

1) Dequervian's Tenosynovitis
2) Ganglion and Compound Palmar Ganglion
3) Keinbock's Disease
4) Overgrowth(Macrodactyly)
5) Undergrowth (Brachydactyly)

NICE TO KNOW

1) Failure of differentiation
2) Duplication
3) Instability of wrist

4.HAND

MUST KNOW

1) Duputyren's Contracture
2) Trigger Finger
3) Trigger Thumb
4) Acute Infections Of Hand

DESIRABLE TO KNOW

1) Vascular disorders of the Hand

5.NECK AND BACK

MUST KNOW

1) Torticollis
2) Tuberculosis of spine
3) Disc Prolapse
4) Spondylolisthesis
5) Spinal Stenosis

NICE TO KNOW

1) Spinal Deformities
2) Facet joint disorders

6.HIP

MUST KNOW

1) DDH
2) Transient synovitis of the hip

DESIRABLE TO KNOW

1) Coxa vara
2) Slipped capital femoral epiphysis
3) Total Hip Replacement

NICE TO KNOW

1) Perthes Disease

7.KNEE

MUST KNOW

1) Genu varum/valgum
2) Genu Recurvatum
3) Meniscal injuries

4) Ligamentous Injuries
5) Recurrent Dislocation of patella
6) Chondromalacia Patella
7) Loose bodies of knee

DESIRABLE TO KNOW

1) Rupture of Extensor apparatus
2) Total Knee Replacement

NICE TO KNOW

1) Synovial Chondromatosis

8.ANKLE

MUST KNOW

1) CTEV
2) Metatarsus adductus
3) Pes planus
4) Diabetic foot
5) Achilles tendon rupture
6) Hallux valgus

DESIRABLE TO KNOW

1) Pes cavus
2) AVN talus

NICE TO KNOW

1) Hallux rigidus

BASIC PRINCIPLES OF PHYSIOTHERAPY, OCCUPATIONAL THERAPY AND ORTHOTICS / PROSTHETICS

1) Introduction- History, Scope, Definition, Terminology and facets of rehabilitation
2) Treatment modalities used in physical medicine and Rehabilitation- Heat, Cold, other Modalities, Exercise, Traction.
3) Rehabilitation different conditions: CVA, Paraplegia, Cerebral Palsy, PRPP, Myopathy,arthritis
4) Rehabilitation of Amputation, Prosthesis, Orthosis and aids to mobility.

Text book of choice

1) ADAMS PART 1 Fractures and part II Orthopaedics (Current Edition)
2) APLEYS text book of Orthopaedics (Current Edition)
3) M.NATARAJAN's text book of Orthopaedics & Traumatology. (Current Edition)

LOG BOOK

Log Book should be followed as recommended by the University.