ORTHOPAEDICS- Syllabus

Orthopaedics is branch of modern Medicine which deals with congenital and acquired disorders of musculo-skeletal system. Considering the advances in the modalities of management for orthopaedic illnesses and increased incidence of trauma, basic preliminary knowledge of Orthopaedics must be acquired at MBBS level.

As an undergraduate trainee, students are expected to know the common orthopaedic illnesses and ailments with respect to their etiopathogenesis, diagnostic clinical features and basic management modalities. They are also expected to learn the principles of bracing, splinting and traction and their application techniques as well as skill to perform the same.

COURSE OUTCOMES

KNOWLEDGE: At the end of the course, the student shall be able to:

1. Explain the principles of recognition of bone injuries and dislocation.
2. Apply suitable methods to detect and manage common infections of bones and joint; learn indications for sequestrectomy, amputations.
3. Identify congenital, skeletal anomalies and their referral for appropriate correction or rehabilitation.
4. Recognize metabolic bone diseases relevant to Indian context.
5. Explain etiopathogenesis, manifestations, and diagnosis of neoplasms affecting bones.
6. Enumerate few recent advances in Orthopaedics.

SKILLS: At the end of the course, the student shall be able to:

7. Detect sprains and deliver first aid measures for common fractures and sprains and manage uncomplicated fractures of clavicle, distal radius, forearm and phalanges.
8. Use techniques of splinting, plaster, and immobilization for fractures.

9. To detect and plan treatment algorithm for common deformities of bone and joint.
10. Advise aspects of rehabilitation for Polio, Cerebral Palsy and Amputation.
11. Apply compression bandage for injuries over extremities.

Phase wise teaching program and clinical posting

	Lectures	Seminar, demonstration, integrated teaching	SDL	Clinical posting 3 hours/day
5th semester	15			6 hours orientation program
7th semester	15	15	05	
8th semester	15	20	05	3 Weeks
Total	45 Hours	35 Hours	10 Hours	3 weeks

Course contents and suggested teaching program of Orthopaedics (Total 90 hours)

Lectures, tutorials, seminars, SDL are planned as per the competencies defined in CBME curriculum.

A-Topics for didactic lectures-

5th Semester:

Topic: Skeletal trauma, Poly trauma.

1. Introduction and scope of Orthopaedics Traumatology and Orthopaedic Diseases. Idea about Scheme of Examination. Definition and Classification of Fracture and Dislocation, signs, symptoms and diagnosis of sprain, fracture and dislocation. (OR1.3)
2. Aetiopathogenesis, clinical features and management of shock. (OR1.2)
3. First aid measures in Poly-trauma patient, spinal cord Injury patients, principles of triage and knowledge about various splints. (OR1.1)

4. Principles of Management of Fractures, sprain and dislocations with emphasis on various aspects of closed reduction, immobilization including internal fixation and rehabilitation. (OR1.3)
5. Classification, clinical features, management of compound fractures with emphasis on prevention of infection. (OR2.16)
6. Complications of fracture and its management with specific reference to injury to Muscles, Tendon, nerve and Blood vessels, myositis Ossificans, Sudeck‟s dystrophy, Volkman‟s ischaemia, Avascular Necrosis, Fat embolism. (OR2.15)
7. Complications of fracture and its management with specific reference to malunion, Delayed union, Non union, secondary Osteoarthritis. (OR2.15)
8. Principles of plaster application, technique, plaster complications and plaster disease. (OR13.1)
9. Fracture Healing in cortical and cancellous bones and factors affecting fracture healing.

Topic: Fractures- Orthopaedic Traumatology

10. Fracture clavicle, scapula, neck 3asciit and shaft 3asciit. (OR2.1) (OR2.2)
11. Supracondylar fracture 3asciit with complications. (OR2.4)
12. Fracture of Forearm bones, Monteggia and Galeazzi fracture dislocations, fracture 3asciitis head and neck radius. (OR2.5)
13. Fracture scaphoid, Metacarpals and phalanges. (OR2.5)
14. Distal radius fracture, Colles' fracture and Complications. (OR2.6)
15. Dislocation (Acute and Recurrent) of shoulder and elbow. (OR1.5)

7th Semester

16. Fracture of Vertebrae with complications. (OR2.8)
17. Fracture of Pelvis with complications. (OR2.7) Acetabular fracture (OR2.9)
18. Fracture Neck femur and trochanteric fracture. (OR2.10)
19. Fracture shaft femur and fractures around knee. (OR2.12)
20. Meniscus and ligaments injury at knee. (OR1.3)
21. Fracture Tibia-fibula, fracture in tarsals, Metatarsals and phalanges. (OR2.13)
22. Fracture dislocation around ankle. (OR2.14)
23. Dislocation of Hip, knee, ankle, tarsals and small bones in foot. (OR2.5)

Topic- Musculoskeletal infections

24. Acute Osteomyelitis, Chronic Osteomyelitis. (OR3.1) (OR3.3)

25. Pyogenic arthritis of Hip, knee. (OR3.1) (OR3.2) Fungal Infections and leprosy in Orthopaedics. (OR3.1)

Topic- Skeletal tuberculosis

26. Osteo-articular Tuberculosis with special reference to Tuberculosis of Hip, knee and elbow.- Tuberculosis spine and paraplegia. (OR4.1)

Topic- Inflammatory arthritis-

27. Rheumatoid arthritis and other seronegative arthropathies. (OR5.1)

Topic- Degenerative disorders

28. Degenerative disorders of spine- lumbar, cervical disc disorders. (OR6.1)
29. Degenerative arthritis. Osteoarthritis of knee joint. (OR6.1)
30. Frozen shoulder, Tennis Elbow, Dequervain's disease, Dupuytren's Contracture, Osgood – Schlatter's disease, Plantar 4asciitis. (OR6.1)

8th Semester

Topic- Metabolic bone disorders

31. Metabolic bone disease: Rickets, Osteomalacia and Osteoporosis. (OR7.1)

Topic – Poliomyelitis

32. Post Polio Residual Palsy with stress on preventive and rehabilitation aspect. (OR8.1)

Topic- Cerebral palsy

33. Cerebral palsy, Diagnosis and rehabilitation. (OR9.1)

Topic- Bone tumours

34. Tumours of bones and its classification. Benign: - Osteochondroma, Giant cell tumour. Unicameral Bone cyst, Aneurysmal cyst. (OR10.1)
35. Malignant- Osteogenic sarcoma, Ewing's tumour, (OR10.1) Chondrosarcoma
36. Multiple Myeloma, Secondaries from Primary Carcinoma (Metastatic tumours) (OR10.1)

Topic- Peripheral nerve injuries.

37. Nerve injuries and principles of management. (OR11.1)

Topic: Congenital lesions

38. Congenital skeletal anomalies with emphasis on congenital Talipes Equino varus (CTEV). (OR12.1)
39. Congenital dislocation of hip (CDH), Osteogenesis Imperfecta (OR12.1)
40. Spina Bifida and Torticollis. Ostecochondritis – various types. (OR12.1)
41. Revision Class
42. Revision Class
43. Revision Class
44. Revision Class
45. Revision Class

B- Demonstration Classes, in MBBS in Orthopaedics Once a week class for ONE hours during 8th Semester

Topics of Demonstrations (Total -10, 10 hours)

1. Plaster technique and splint applications. (OR13.1)

2. Traction application, Orthopaedic appliances demonstration, Demonstration of Physiotherapy equipments. (OR13.1)

3. Specimens of sequestrum and Tumours, Madura foot etc.

4. Common instruments and Implants.

5 to 7. Common X-rays of traumatology, bony infection, joint infection and Tuberculosis, Malunited Colle‟s fracture, forearm or Supracondylar Humerus fracture.

8. Chronic Osteomyelitis case, knee effusion case.

9. Non union of fracture.

10. Bone tumour

C- Seminar in 8th & 9th semester (Total -5, Total 2 hours)

1. Osteomyelitis.
2. Tuberculosis.
3. Bone tumours.
4. First aid and acute trauma Lifesaving measures.
D- Fractures around proximal femur.

E- Tutorial to be taken in 8th & 9th semester

Total 10- 1 hour each.

1. Supracondylar fracture Humerus.
2. Colle‟s fracture.
3. Fracture neck femur.
4. Spine examination, Pott's spine and paraplegia
5. CTEV.
6. Shoulder, Elbow and wrist examination.
7. Hip examination.
8. Knee, ankle foot examination.
9. Nerve examination and nerve injuries.
10. Amputation and Disarticulation – Indications methods and complications.

F- Self directed learning sessions in 8th & 9th semester - 10 hours

Total 10 sessions of 1 hour each

SDL sessions, Case based learning, Problem based learning, Group discussion.

G- Integrated teaching- 1 hour each in 8th & 9th semester - 10 hours

	Topic	Department	Phase
1.	Bone infections	Anatomy, Microbiology, Pathology, Radiology	8th semester
2.	Joint infections	Anatomy, Microbiology, Pathology, Radiology	8th semester
3.	Mechanical injuries and wounds certification medico legal aspects.	Forensic medicine	8th semester
4.	Skeletal tuberculosis	Microbiology, Pathology, Radiology, Pharmacology	8th semester
5.	Bone tumours	Anatomy Pathology, Radiology	8th semester
6.	Basic life support	Surgery, Anaesthesia.	8th semester
7.	Metabolic disorders	Anatomy, Pathology, Radiology	9th Semester

8.	Inflammatory arthritis	Pathology, Medicine, Pharmacology	9th Semester
9.	Rehabilitation in Orthopaedics	PMR	9th Semester
10.	Cerebral palsy and PPRP	PMR	9th Semester

Topics to learn in clinical postings (Including Clinical Clerkship)- 3 weeks in 8th semester

1. Bedside history taking in ward.
2. Observing procedures in Operation theatre and casualty. (OR13.2)
3. Examine indoor (medical; preoperative and postoperative) patients.
4. Learn examination, principles of treatment and techniques of traction, wound care and splintage. (OR13.1)
5. Attend OPD, operation theatre and emergency operations for acclimatization. (OR13.1)
6. Attending ward rounds.
7. Learn plaster application, post plaster care. (OR13.1)
8. Learn to explain prognosis of fractures/ diseases to patients posted for surgery, breaking bad news. (OR14.1)
9. Participate in the teaching sessions in ward for bedside clinical examination.
10. Learn about common x-ray findings, common orthotics and prosthetics.
11. Attend subspecialty clinics- arthritis, spine disorder, sports medicine clinics.
12. Learn common pathological specimen, instruments in Orthopaedics.
13. Learn how to take written informed consent for Orthopaedics procedures.
14. Learn to council patients for amputations and explaining care of amputation stump. (OR13.2).
15. Learn referral of patients to other departments based on warning signs. (OR14.3)

CERTIFIABLE PROCEDURAL SKILLS

The undergraduate learns:

1. Application of basic splints and slings (I)
2. Basic fracture and dislocation management (O)
3. Compression bandage (I)

Assessment plan-

Formative assessment- Internal assessment:

Internal assessment examinations will be conducted at the end of 6th, 8th Semester and 9th Semester.

	Theory	Timing	Practical at the end of semester
IA 1	15Marks (Five SAQ of 3 marks each)	End of 6th semester	-
IA 2	15 Marks (Five SAQ of 3 marks each)	End of 8th semester clinical posting	20 Marks(Short case, Table Viva) (To be converted out of 10)
Prelims	20 Marks in Surgery Paper II- Section A- Part 2 (Que.- 3- One Structured Long Answer Question of 10 marks Que. 4-Five Short Answer Questions of 2 marks each)	End of 9th semester	25 Marks (1 Short case of 15 Marks + Viva Voce 10 marks)

***Prelim examination will be conducted in accordance with the pattern of the final examination for practical.**

Summative assessment at the end of 9th semester

Final professional examination will be conducted along with General Surgery paper

- Theory examination- Total Marks 20 in Surgery Paper II- Section A- Part 2
  - Que.- 3- One Structured Long Answer Question of 10 marks
  - Que. 4- Five Short Answer Questions of 2 marks each
- Practical examination- Will be conducted along with Surgery dept.
  - Total marks- 25 (1 Short case 15 Marks + Viva Voce 10 Marks)

Recommended books for reading-

1. Outlines of Fractures, Adams, Crawford Churchill Livingstone.
2. Apley's Systems of Orthopaedics and fracture, Louis Solomon, Hodder Arnold.
3. Essentials of Orthopaedics, J Maheshwari, Jaypee Publications.
4. Clinical Orthopaedic Examination, Ronald Mcrae, Churchill Livingstone Elsevier.

Reference books-

1. Campbell's Operative Orthopaedics, Elsevier.
2. Rockwood and Green's Fractures in Adults, Lippincott Williams and Wilkins.
3. Tachdjian's Pediatric Orthopaedics, Saunders/ Elsevier.

Internship – ORTHOPAEDICS

1 month of internship in Orthopaedics' (Including PMR) after passing final professional examination.

Goals of internship in Orthopaedics

The aim of teaching the undergraduate student in Orthopaedics and Physical Medicine and Rehabilitation is to impart such knowledge and skills that may enable him to diagnose and treat common musculoskeletal ailments. He/she shall have ability to diagnose and suspect presence of fracture, dislocation, acute osteomyelitis, acute poliomyelitis and common congenital deformities such as congenital talipes equino varus (CTEV) and developmental dysplasia of hip (DDH).

(A) THERAPEUTIC- An intern must assist in:

a) Splinting (plaster slab) for the purpose of emergency splintage, definitive splintage and postoperative splintage and application of Thomas splint,

b) Manual reduction of common fractures – phalangeal, metacarpal, metatarsal and Colles' fracture,
c) Manual reduction of common dislocations – interphalangeal, metacarpophalangeal, elbow and shoulder dislocations,

d) Plaster cast application for undisplaced fractures of arm, fore arm, leg and ankle,

e) Emergency care of a multiple injury patient,

f) Transport and bed care of spinal cord injury patients.

(B) Skill that an intern should be able to perform under supervision:

a) Advise about prognosis of poliomyelitis, cerebral palsy, CTEV and CDH,

b) Advise about rehabilitation of amputees and mutilating traumatic and leprosy deformities of hand.

(C) An intern must have observed or preferably assisted the following operations:

a) Drainage for acute Osteomyelitis,

b) Sequestrectomy in chronic Osteomyelitis,

c) Application of external fixation,

d) Internal fixation of fractures of long bones.

The student will record all the activities during the internship posting in a Log Book and competencies will be certified using appropriate evaluation methods.