



PRAVARA INSTITUTE OF MEDICAL SCIENCES (DEEMED TO BE UNIVERSITY)

Loni, Tal. Rahata, Dist. Ahmednagar 413736
NAAC Re-accredited with 'A' Grade

SYLLABUS

UG Programme- Orthopaedics (including Trauma)

Phase II (Second MBBS) & Phase III Part 1 (Third MBBS Part One)

(Competency Based Undergraduate Curriculum will be implemented from August 2019, i.e. MBBS batch admitted for first year in 2019)

Orthopaedics (including Trauma)

Competencies: The student must demonstrate:

- Ability to recognize and assess bone injuries, dislocation and poly-trauma and provide first contact care prior to appropriate referral.
- Knowledge of the medico-legal aspects of trauma
- Ability to recognize and manage common infections of bone and joints in the primary care setting
- Recognize common congenital, metabolic, neoplastic, degenerative and inflammatory bone diseases and refer appropriately
- Ability to perform simple orthopaedic techniques as applicable to a primary care setting
- Ability to recommend rehabilitative services for common orthopaedic problems across all ages.

Integration: The teaching should be aligned and integrated horizontally and vertically in order to allow the student to understand the structural basis of orthopaedic problems, their management and correlation with function, rehabilitation and quality of life.

	Large group Teaching	Small group teaching/Practical/Tutorials	SDL	AETCOM	Total	Clinical/Field Posting
2 nd						2 weeks
3 rd part I	10 hours	20 hours			30 hours	4 weeks
3 rd part2	20 hours	25 hours			45 hours	2 weeks
Total	30 hours	45 hours			75 hours	8 weeks

II nd year

Clinical posting

A. Skeletal Trauma, Poly trauma

OR1.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of major joints, shoulder, knee, hip

OR1.6 - Participate as a member in the team for closed reduction of shoulder dislocation / hip dislocation / knee dislocation

B. Fractures

OR12.1 - Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle

OR2.2 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus and intercondylar fracture humerus with emphasis on neurovascular deficit

OR2.5 - Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury

OR2.6 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius

IIIrd Part I

Large group teaching (LGT)

Topic

A. Skeletal Trauma, Polytrauma

OR1.1 - Describe and discuss the Principles of pre-hospital care and casualty management of a trauma victim including principles of triage.

OR1.2 - Describe and discuss the aetiopathogenesis, clinical features, Investigations, and principles of management of shock

OR1.3 - Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of soft tissue injuries

OR1.4 - Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of major joints, shoulder dislocation

OR1.5 - Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of knee, hip

B. Fractures:-

OR2.1 - Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle

OR2.2 - Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fractures of proximal humerus

OR2.4 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus with emphasis on neurovascular deficit

OR2.4 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of Supracondylar fracture humerus and intercondylar fracture humerus with emphasis on neurovascular deficit

OR2.5 - Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury

OR2.6 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius

OR2.7 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of pelvic injuries with emphasis on hemodynamic instability

OR2.8 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of spine injuries with emphasis on mobilisation of the patient

OR2.11 - Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome

OR2.16 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management

SMALL GROUP TEACHING (SGT)

A. Skeletal Trauma, Poly trauma (3hours)

OR1.4 - Describe and discuss the Principles of management of soft tissue injuries

OR1.5 - Describe and discuss the aetiopathogenesis, clinical features, investigations, and principles of management of dislocation of major joints, shoulder, knee, hip

OR1.6 - Participate as a member in the team for closed reduction of shoulder dislocation / hip dislocation / knee dislocation

B. Fractures (14 hrs)

OR2.1 - Describe and discuss the mechanism of Injury, clinical features, investigations and plan management of fracture of clavicle

OR2.3 - Select, prescribe and communicate appropriate medications for relief of joint pain

OR2.4 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of fracture of shaft of humerus and intercondylar fracture humerus with emphasis on neurovascular deficit

OR2.5 - Describe and discuss the aetiopathogenesis, clinical features, mechanism of injury, investigation & principles of management of fractures of both bones forearm and Galeazzi and Monteggia injury

OR2.6 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of distal radius

OR2.7 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of spine injuries with emphasis on mobilisation of the patient

OR2.9 - Describe and discuss the mechanism of injury, Clinical features, investigations and principle of management of acetabular fracture

OR2.10 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur

OR2.11 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome

OR2.12 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication

OR2.13 - Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of

- a) Fracture of bone of leg
- b) calcaneus
- c) small bones of foot

OR2.14 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of ankle fractures

OR2.15 - Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome.

OR2.16 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection, prevention and management.

C. Musculoskeletal Infection (3hours)

OR3.1 - Describe and discuss the aetiopathogenesis, clinical features, management of bone and joint infections a) Acute Osteomyelitis, Subacute Osteomyelitis & Chronic Osteomyelitis b) Septic Arthritis

OR3.3 - Participate as a member in team for aspiration of joints under supervision, participate as a member in a team for procedures like drainage of abscess, sequestrectomy/ saucerization and arthrotomy

CLINICAL POSTING:-

A. Fractures

OR2.10 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur

OR2.11 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome

OR2.12 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication

OR2.13 - Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of:
 (a) Fracture both bones leg
 (b) Calcaneus
 (c) Small bones of foot

OR2.14 - Describe and discuss the aetiopathogenesis, clinical features investigation and principles of management of ankle fractures

OR2.15 - Plan and interpret the investigations to diagnose complications of fractures like malunion, non-union, infection, compartmental syndrome

OR2.16 - Describe and discuss the mechanism of injury, clinical features, investigations and principles of management of open fractures with focus on secondary infection prevention and management

B. Musculoskeletal Infection

OR3.1 - 1) Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections

a) Acute Osteomyelitis

b) Subacute osteomyelitis & Chronic osteomyelitis

c) Acute Suppurative arthritis & Septic arthritis

OR3.2 - Participate as a member in team for aspiration of joints under Supervision

OR3.3 - Participate as a member in team for procedures like drainage of abscess, sequestrectomy/ saucerisation and arthrotomy

C. Skeletal Tuberculosis

OR4.1 - Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess and caries spine

D. Rheumatoid Arthritis and associated inflammatory disorders

OR5.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of various inflammatory disorder of joints

E. Degenerative disorders

OR6.1 - Describe and discuss the clinical features, investigations and principles of management of degenerative condition of spine (Cervical Spondylosis, Lumbar Spondylosis, PID)

F. Bone Tumors

OR10.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of benign and malignant bone tumours and pathological fractures

IIIrd Part I

Large group teaching

A. Fractures:-

OR2.10 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur (Fracture Neck of Femur)

OR2.10 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of fractures of proximal femur (Fracture Trochanter and Subtrochanter)

OR2.11 - Describe and discuss the aetiopathogenesis, mechanism of injury, clinical features, investigations and principles of management of (a) Fracture patella (b) Fracture distal femur (c) Fracture proximal tibia with special focus on neurovascular injury and compartment syndrome

OR2.12 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of fracture shaft of femur in all age groups and the recognition and management of fat embolism as a complication

OR2.13 - Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of: Fracture both bones leg, Calcaneus and Small bones of foot

OR2.14 - Describe and discuss the aetiopathogenesis, clinical features, Investigation and principles of management of ankle fractures

B. Musculoskeletal Infection

OR3.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections Acute Osteomyelitis, Subacute osteomyelitis and Chronic Osteomyelitis

OR3.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of Bone and Joint infections

OR3.1 - Acute Suppurative arthritis, Septic arthritis, Skeletal Tuberculosis

C. Skeletal Tuberculosis

OR4.1 - Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess

OR4.1 - Describe and discuss the clinical features, Investigation and principles of management of , caries spine and cold abscess

D. Rheumatoid Arthritis and associated inflammatory disorders

OR5.1 - 1)Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of various inflammatory disorder of joints

E. Degenerative disorders

OR6.1 - 1)Describe and discuss the clinical features, investigations and principles of management of degenerative condition of spine (Cervical Spondylosis, Lumbar Spondylosis, PID)

F. Metabolic bone disorders

OR7.1 - Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteoporosis, Paget's disease

OR7.1 - Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteomalacia, rickets,

G. Bone Tumors

OR10.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of benign bone tumours

OR10.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of malignant bone tumours and pathological fractures

H. Peripheral nerve injuries

OR11.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like , wrist drop, claw hand, palsies of Radial, Ulnar, Median Nerves

OR11.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like foot drop, palsies of Lateral Popliteal and Sciatic Nerves

I. Congenital lesions

OR12.1 - Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of: limbs and spine - Scoliosis and spinal bifida Congenital Torticollis,

OR12.1 - Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of: Congenital dislocation of Hip and congenital talipes equino varus

SMALL GROUP TEACHING (SGT)

A. Skeletal Tuberculosis

OR4.1 - Describe and discuss the clinical features, Investigation and principles of management of Tuberculosis affecting major joints (Hip, Knee) including cold abscess and caries spine

B. Rheumatoid Arthritis and associated inflammatory disorders

OR5.1 - Describe and discuss the etiopathogenesis, clinical features, investigations and principles of management of various inflammatory disorder of joints

C. Degenerative disorders

OR6.1 - Describe and discuss the clinical features, investigations and principles of management of degenerative condition of spine (Cervical Spondylosis, Lumbar Spondylosis, PID)

D. Metabolic bone disorders

OR7.1 - Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteoporosis, osteomalacia, rickets, Paget's disease

E. Poliomyelitis

OR8.1 - Describe and discuss the aetiopathogenesis, clinical features, assessment and principles of management a patient with Post Polio Residual Paralysis

F. Cerebral Palsy

OR9.1 - Describe and discuss the aetiopathogenesis, clinical features, assessment and principles of management of Cerebral palsy patient

G. Bone Tumors

OR10.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of benign and malignant bone tumours and pathological fractures

H. Peripheral nerve injuries

OR11.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like foot drop, wrist drop, claw hand, palsies of Radial, Ulnar, Median, Lateral Popliteal and Sciatic Nerves

I. Congenital lesions

OR12.1 - Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of:

- a. limbs and spine - Scoliosis and spinal bifida
- b. Congenital dislocation of Hip, Torticollis,
- c. congenital talipes equino varus

J. Procedural Skills

OR13.1 - Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins / simulated patients in the following:

- a. Above elbow plaster
- b. Below knee plaster
- c. Above knee plaster
- d. Thomas splint
- e. splinting for long bone fractures
- f. Strapping for shoulder and clavicle trauma

OR13.2 - Participate as a member in team for Resuscitation of Polytrauma victim by doing all of the following:

- a. I.V. access central - peripheral
- b. Bladder catheterization
- c. Endotracheal intubation
- d. Splintage

K. Counselling Skills

OR14.1 - Demonstrate the ability to counsel patients regarding prognosis in patients with various orthopedic illnesses like

- a. fractures with disabilities
- b. fractures that require prolonged bed stay
- c. bone tumours
- d. congenital disabilities

OR14.2 - Demonstrate the ability to counsel patients to obtain consent for various orthopedic procedures like limb amputation, permanent fixations etc..

OR14.3 - Demonstrate the ability to convince the patient for referral to a higher centre in various orthopedic illnesses, based on the detection of warning signals and need for sophisticated management

CLINICAL POSTING

A. Metabolic bone disorders

OR7.1 - Describe and discuss the aetiopathogenesis, clinical features, investigation and principles of management of metabolic bone disorders in particular osteoporosis, osteomalacia, rickets, Paget's disease

B. Peripheral nerve injuries

OR11.1 - Describe and discuss the aetiopathogenesis, clinical features, investigations and principles of management of peripheral nerve injuries in diseases like foot drop, wrist drop, claw hand, palsies of Radial, Ulnar, Median, Lateral Popliteal and Sciatic Nerves

C. Congenital lesions

OR12.1 - Describe and discuss the clinical features, investigations and principles of management of Congenital and acquired malformations and deformities of:

- a. Limbs and spine - Scoliosis and spinal bifida
- b. Congenital dislocation of Hip, Torticollis,
- c. Congenital talipes equino varus

D. Procedural Skills

OR13.1 - Participate in a team for procedures in patients and demonstrating the ability to perform on mannequins / simulated patients in the following:

- a. Above elbow plaster
- b. Below knee plaster
- c. Above knee plaster
- d. Thomas splint
- e. Splinting for long bone fractures
- f. Strapping for shoulder and clavicle trauma

OR13.2 - Participate as a member in team for Resuscitation of Polytrauma victim by doing all of the following:

- a. I.V. access central - peripheral
- b. Bladder catheterization
- c. Endotracheal intubation
- d. Splintage

Internal Assessment

Subject: General surgery and allied including Orthopedics Applicable for batches admitted from 2019 and onwards

Phase	IA - 1 -Exam			IA - 2 -Exam		
	Theory General Surgery Only (January)	Practical EOP	Total Marks	Theory General Surgery Only (May)	Practical of Allied EOP	Total Marks
Second MBBS	50	50	100	50	Orthopedics = 25 Radiodiagnosis= 25	100

Phase	IA - 3 -Exam			IA - 4 -Exam		
	Theory General Surgery + allied (January)	Practical EOP	Total Marks	Theory General Surgery + allied (April)	Practical of Allied EOP	Total Marks
III MBBS Part I	50	50	100	50	Orthopaedics =25 Anaesthesia =25	100

Phase	IA - 5 - Exam			Prelim Exam (As per university pattern)		
	Theory General Surgery + Allied (May)	Practical End of 8 Weeks posting	Total Marks	Theory (November)	Practical (November)	Total Marks
III MBBS Part II	100	100	200	100 x 2 papers = 200	200	400

(There will be FORMATIVE ASSESSMENT at the End of four weeks Clinical Posting of General Surgery NOT to be added to INTERNAL ASSESSMENT).

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**Internal Assessment Practical Examinations
II MBBS**

Internal Assessment - 2

Orthopaedics and Radiodiagnosis (to be conducted at the end of respective clinical postings)

Subject: General Surgery Allied Practical (IA - 2)			
Examination in Orthopaedics			
Case	OSCE 1	Viva (Surgical Pathology, Radiology, Instruments and Surgical Procedure, Journal / log book)	Practical Total
10	5	10	25

III MBBS Part - I

Internal Assessment - 4 Orthopaedics and Anaesthesia

Subject: General Surgery Allied Practical (IA - 2)			
Examination in Orthopaedics			
Case	OSCE 1	Viva (Surgical Pathology, Radiology, Instruments and Surgical Procedure, Journal / log book)	Practical Total
10	5	10	25

Seat No.	Long Case General Surgery including communication skill (60)		Short Case 1 General Surgery (30)		Short Case 2 Ortho (30)		General Surgery (60) OSCE # & Table viva			Ortho (20)	Grand Total
	Long case	Communication skills *	Short case	Clinical signs demo	Short case	Clinical signs demo	Instruments +Procedure+ Log book	X rays + Surgical Pathology +Journal	OSCE	OSCE (10) + Table (10)	
	50	10	20	10	20	10	20	20	20	20	200

OSCE Stations may include General examinations, Local examinations, psychomotor skills, Communication skills, AETCOM etc.

*Communication skills to be assessed by Kalamazoo Consensus, clinical signs to be assessed by either GLOBAL Rating Scale or OSCE, Psychomotor Skills to be assessed by OSCE with checklist. If the skills are small, 2 or 3 skills may be combined

Format / Skeleton of question paper for 3rd and 4th internal Assessment Theory Examinations (III MBBS Part I)

Question No.	Section	Type of question	No. of questions	Max. Marks
1.	A	MCQ's	10 (General surgery)	10 (1*10)
2.	B	Long question	2 (any 2 out of 3)(General surgery)	20 (10*2)
3.	B	Short question	2 (From AETCOM) (General surgery)	10 (5*2)
4.	C	Short question	2 (any 2 out of 3) (Orthopaedics)	10 (5*2)

Format / Skeleton of question paper 5th internal assessment Theory Examinations (III MBBS Part II)

Question No.	Section	Type of Questions	No. of Questions	Max. Marks
1.	A	MCQ's	20 (2 from orthopaedics)	20 (1*20)
2.	B	Long question	2 (general surgery)	30 (15*2)
3.	B	Short question	3 (3 out of 4)(General surgery)	15 (5*3)
4.	C	Long question	1 (Orthopaedics)	15 (15*1)
5.	C	Short question	4 (1 form orthopaedics)	20 (5*4)

Format / Skeleton of question paper for University Theory Examinations (III MBBS Part II)

Question No.	Sections	Type of questions	No. of questions	Max. Marks
1.	A	MCQ's	20 (2 from orthopaedics)	20 (1*20)
2.	B	Long questions	2 (General surgery)	30 (15*2)
3.	B	Short questions	5 (5 out of 6)	25 (5*5)
4.	C	Long questions	1 (orthopaedics)	15 (15*1)
5.	C	Short questions	2 (2 out of 3) (orthopaedics)	10 (5*2)

Paper wise distribution of topics for Prelim

Year: III-II MBBS

Subject: _General Surgery and allied

Paper	Section	Topics
I	A	MCQs on all topics of paper I of Surgery
	B	Metabolic response to injury, Shock, Blood and blood components, Burns, Wound healing and wound care, Surgical infections, Surgical Audit and Research, Nutrition and fluid therapy, Transplantation, Biohazard disposal, Trauma, Skin and subcutaneous tissue, Developmental anomalies of face, mouth and jaws, Oropharyngeal cancer, Disorders of salivary glands, Endocrine General Surgery: Thyroid and parathyroid, Adrenal glands, Breast, Vascular diseases, Ethics & AETCOM (module 4.3,4.5,4.6)
	C	
II	A	Abdomen- including Hernia, Peritoneum, GIT tract including esophagus, stomach, small intestine, colon rectum and anal canal, Liver , Spleen, Pancreas, Biliary tract , Minimally invasive Surgery, Pediatric surgery
	B	MCQs on all topics of the paper II including orthopaedics, anaesthesia, radiology , radiotherapy and dentistry .
	C	Cardio-thoracic - Chest - Heart and Lungs ,Urinary System- Kidney ureter and urinary bladder , Penis, Testis and scrotum, Plastic surgery, Oncology, Investigation of surgical patient, Pre, intra and post- operative management Radiology, Radiotherapy, Anesthesia and pain management , Dentistry Orthopedics ,

Reference Books -

- Essential of Orthopedics, 6th edition, Maheswari & Mhaskar, Jaypee Publication.
- Adam's Outline of Orthopedics, 14th edition, David L. Hamblen, A. Hamish R.W. Simpon; Elsevier Publications
- Adma's Outline of fractures, 12th edition:: David L. Hamblen, A. Hamish R.W. Simpon; Elsevier publication
- Apley & Solomon's System of Orthopedics & Trauma, 10th edition ::Ashley Bloom, David Wrwick, Michael R. Whitehouse ; CRC Press.



h. Deshpande
Registrar
Pravara Institute of Medical Sciences
(Deemed to be University)
Loni - 413736, Tal. Rahata
Dist. Ahmednagar (M.S. India)