

P.G Curriculum
Postgraduate Courses in Orthopaedics (M.S.)

- A series of P.G. Lectures by P.G. teachers.
- A series of seminars by the P.G. Students.
- P.G. Cases discussions
- P.G. Tutorial classes- chapter of subject- wise.
- Attending and performing clinical work
- Participation in undergraduate theory and practical teaching.
- Undergoing training when posted in different sections of the department.
- Short periods of posting in the other clinical departments
- Perusing the thesis work/dissertation work as allotted by the P.G. Teacher.
- Participation in the departmental research work.

[A] THE BASIC SCIENCE :

- (i) Development of Skeleton
 - cartilage, Bone & Joints
 - Morphogenesis of axial & appendicular skeleton
- (ii) Histology of bone & cartilage
 - Remodeling of bone
- (iii) Histopathology of bone
 - Repair of simple fracture of long bone
 - Transplantation of bone & bone induction principle

[B] GENERAL ORTHOPAEDIC CONDITIONS:

- (i) Metabolic bone diseases
 - 1. Calcium metabolism & primary hyper parathyroidism
 - 2. Rickets, scurvy & gout.
 - 3. Osteoporosis & osteomalacia
- (ii) Bone infections
 - 1. Acute, Chronic, sclerosing osteomyelitis
 - 2. Tuberculosis of bone & Joints
 - 3. Mycotic infections of bone
- (iii) Congenital deformities
 - 1. Etiology
 - 2. Upper extremity
 - congenital high scapula
 - congenital radio-ulnar synostosis
 - 3. Lower extremity
 - congenital dislocation of hip (CDH)
 - congenital Talipes equino varus(Club foot)
 - congenital flat feet
 - 4. Cervical Spine
 - Klippel feel syndrome
- (IV) Developmental conditions :

1. Osteogenesis imperfecta
2. Hereditary multiple exostosis & achondroplasia

(V) Disease of Joints

1. Synovial fluid & classification of disease affecting joints
2. Suppurative arthritis & gonococcal arthritis
3. Rheumatoid arthritis & Juvenile R.A.
4. Degenerative joint disease
5. Reider's syndrome & psoriatic arthritis

(VI) Orthopaedic Neurology

1. Introduction, Neurodiagnosis & electrodiagnosis
2. Etiopathology, clinical diagnosis & Treatment of Polio.
3. Peripheral nerve injury & reconstructive surgery
4. cerebral palsy (Basic only)

(VII) Tumours of bone

1. Exostosis or osteochondroma
2. Osteogenic sarcoma
3. Ewing's sarcoma
4. Osteoid osteoma & unicameral bone cysts
5. Giant cell tumours Benign & malignant
6. Secondaries in bone

(VIII) Disease of muscles :

1. Tumours of skeletal muscles
2. Myositis ossificans progressiva & congenita
3. The compartment syndrome
4. Muscle dystrophies- Duschenn type & others

(IX) Unclassified disease of Bones

1. Paget's disease & fibrous displasia of bone

[C] REGIONAL ORTHOPAEDIC CONDITIONS :

(I) The cervical spine

1. Cervical disc & spondulosis
2. Thoracic outlet syndrome, cervical rib & scalenes anticus syndrome
3. Torticollis 1

(II) The Shoulder :

1. Surgical anatomy of rotator cuff & Lesions of rotator cuff
2. The frozen shoulder

3. Dislocation of shoulder

(III) The Elbow :

1. Surgical anatomy, Tennis elbow 1
2. Pulled elbow, Myositis, ossificans in the elbow

(IV) The hand & wrist :

1. Dupuytren's contracture
2. The carpal tunnel syndrome
3. de quervain's disease & madlung deformity
4. Tuberculosis, compound palmar ganglion & ganglion
5. Mallet finger, trigger finger & thumb

(V) The Hip :

1. surgical anatomy & mechanics of hip
2. Tuberculosis of hip & thomas's test
3. Transient synovitis of hip
4. Idiopathic AVN of femoral head
5. Perthe's disease & protrusio acetabuli

(VI) The Knee joint :

1. Surgical anatomy & recurrent dislocation of patella
2. Osgood schlatter disease & osteochondritis of Knee Joint
3. Osteoarthritis of knee Joint & genu varum
4. Triple deformity & tuberculosis of knee Joint

(VII) The foot & Anxle :

1. Carpal tunnel syndrome & angke sprain
2. Metatarsalgia & march fracture
3. Flat foot & tarsal coalition
4. The longitudinal arch & heel pain

(VIII) The Back :

1. Prolapse intervertebral disc lumbar region

2. Spina Bifida + meningocele & meningo myelocele
3. Spondylolisthesis, Diastatomyelia.
4. Ankylosis spondylosis + Adolescent Kyphosis
5. Tuberculosis of spine with pott's paraplegia

(IX) The pelvis :

1. Coccygodynia
2. Sacroiliac Sprain
3. Tuberculosis of SI Joint

• [D] **SPECIAL SUBJECT :**

(I) Amputations :

- Indication & principle of Amputation technique
- Biomechanics of Human locomotion
- Suction socket prosthesis & prosthesis of lower limbs

- (II) - Bone scanning & scintigraphy
- MRI & CT scanning of bones
 - Ilizarov technique & limb lengthening principle

(E) TRAUMATOLOGY

(I) Principles of fractures & dislocations

(II) Open fractures

(III) Complications of fractures :

1. Generalised complications like shock, cardiac arrest, Haemorrhagic conditions,
2. thromboembolism, Disseminated intravascular coagulation (D.I.C.) etc.
2. Fat embolism, gas gangrene
3. Tetanus & Volkman's ischaemic contracture

(IV) Pathological fractures

(V) Healing of fractures

- Normal healing
- Slow delayed & Non union

(VI) Adhesions, joint stiffness & traumatic ossifications

Sudek's osteodystrophy

(VII) Early management of Injured patients

(VIII) Fracture in children :

- Birth fracture

- Congenital pseudoarthrosis of clavicle & tibia
- The battered baby syndrome
- Epiphyseal injuries
- # of shaft of long bones
- # with osteogenesis imperfecta.

(IX) Bone grafting

(F) FRACTURES & JOINT INJURIES

(I) Injuries of the shoulder

Painful arc syndrome or supraspinatus tendinitis

of clavicle ant. dislocation of shoulder & sprain dislocation of acromioclavicular

Joint

(II) Injuries of arm

(III) Injuries of elbow

- supracondylar fracture of humerus

- Dislocation of elbow

(IV) Injuries of forearm & wrist

- Galeazzi's & Monteggia fracture dislocation

- Colle's # & Smith #

- Scaphoid # & nerve palsy in wrist injuries

(V) Injuries of the fingers & hand :

- Bennett's fracture & Boatman deformity

- Tendon injuries & infection of hand

(VI) Injuries of Spine:

- Nursing of traumatic paraplegia patient 1

- The paralysed bladder

- Resettlement of paraplegic patient

(VII) Injuries of pelvis :

- Avulsion of muscle insertion

- complication of injuries of sacrum & coccyx

(VIII) Injuries of Hip :

1. Traumatic, post, dislocation of hip

2. Intracapsular fracture of femur 1

3. Trochanteric fracture of femur 1

4. Non union of # of neck of femur & displacement of upper femoral Epiphysis

(IX) Injuries of Thigh :

- Conservative treatment. of # of shaft of femur.

- The Thomas splint & Knee stiffness offer femoral #

- Application of traction & skin traction & Hamilton Russell traction

- IM Nailing of # of femur

(X) Injuries of the Knee Joint

- Traumatic synovitis & hemarthrosis

- Lateral popliteal nerve palsy following injuries

- Athrography & arthroscopy
 - Rupture of Ext. mechanism with # patella
 - Injuries of semilunar cartilage
 - (XI) Injuries of Leg
 - (XII) Injuries of Ankle
 - (XIII) Injuries of foot
 - fracture of calcaneum, neck of talus & metatarsal
 - (XIV) Rehabilitation after fracture
- Clinical / Practical Training: Rotation postings in other departments

Internal Evaluation of P.G. Student's Performance During Three Years

Internal evaluation

It shall be as per the institutional rules.

Purpose is to ensure clinical expertise of student with practical & communication skills and balance broader concept of diagnostic and therapeutic challenges.

- All resident doctors are evaluated combinally by all seniors teaching staff members at interval of 6 months by taking personal interview.
- Following things are looked in and checked and necessary guidance given .
- Dissertation topics, Ethical committee presentation with justification ,periodic check up and assessment of clinical acumen and practical skill type of work carried out and assessment of relevant theory.
- Instruction regarding departmental discipline doctor patient relationship ,record keeping ,patient care are given and supervise periodically for the same.
- Made aware of the rules regarding Anti Ragging and instructed to strictly follow the same.

Maintenance of Log Book

- Every candidate shall maintain a Log book/work diary and record his/her participation in the training programs conducted by the department such as journal reviews, seminars etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any, conducted by the candidate.
- All the procedures performed by the post graduate students should be entered in the Log book. All the daily activities including the postmortem duty, casualty rounds etc. and the routine procedures performed on day to day basis should be entered in the Log book and it should be verified and signed by the faculty member.
- The Log book shall be scrutinized and certified by the Head of the Department and Head of the Institution and presented in the University practical/clinical examination.

Research Activities

- All post-graduate students shall be encouraged to carry out research activities in the department other than dissertation work in conjunction with the faculty of the department. They are sent to attend national level conferences and encourage to present research paper in conference. Also encourage to attend various PG course and CME pertaining to Orthopaedics.

[All the PG students are expected to attend and actively participate in journal club, subject seminars, case discussions, discuss and enter in log book the relevant details. The presentations would be evaluated using check lists and would carry weightage for internal assessment. A monthly time table for each with names of the students shall be announced in advance for them to prepare]

Dissertation

Objective: The student should be able to demonstrate capability in research by planning and conducting systematic scientific enquiry, data analysis and deriving conclusion. Also he should be able to effectively communicate scientific information for health planning. Guide for dissertation, submission and assessment: As per institutional rules

- Every candidate pursuing MS degree course is required to carry out work on a selected research project under the guidance of a recognised post graduate teacher. The results of such a work shall be submitted in the form of a dissertation.
- The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions.
- Chief guide will be from the department of Orthopaedics while co-guides will be from either the department of Orthopaedics or other disciplines related to the dissertation topic.
- Every candidate shall submit a thesis protocol to the Dean of the Institute in the prescribed proforma containing particulars of proposed dissertation work four months from the date of commencement of the course. The thesis protocol shall be sent through the proper channel.
- Protocol in essence should consist of:-
 - Introduction and objectives of the research project.
 - Brief review of literature
 - Suggested material and methods
 - Bibliography
 - Such thesis protocol will be reviewed and the dissertation topic will be registered by the Institute.

- No change in the dissertation topic or guide shall be made without prior approval of the Dean of the Institute.
- Submission of thesis.
- Thesis will be submitted at the end of two and a half (2.5) years.
- Thesis should consist of
 - Introduction
 - Review of literature
 - Aims and objectives
 - Material and methods
 - Results
 - Discussion
 - Summary and Conclusions
 - Tables
 - Annexures
 - Bibliography

External Evaluation of P.G. Student's Performance

Scheme of Examination

Theory	400 Marks
Clinical / Practical Examination	600 Marks

Candidates will be allowed to appear for examination only if attendance (minimum 80%) and internal assessment are satisfactory and dissertation is accepted. As standard, one has to have scored 50% marks independently in theory and practical [to follow MCI guidelines].

Details of Examination

Paper	Course Content
Paper-1	Basic Science
Paper-II	Orthopaedics diseases
Paper -III	Traumatic Orthopaedics
Paper IV	Recent Advances in orthopaedics

[The distributions of chapters/topics shown against the papers are suggestive only and are liable to overlap]

Total marks of each paper will be 100. Questions on recent advances may be asked in any or all the papers. The format of each paper will be same as shown below.

Type of Questions*	Number of Questions	Marks for Each Question	Total Marks
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Long answer question	03	25	75
Short notes	04	6.25	25
Grand Total			100

Practical examination-Include case study & viva-voce

Practical's

Every candidate should be examination on at least one long case, two short cases, one spot & two table .There will be discussion on all aspects of diagnosis, investigations and modern trends.

Types of Cases	No. of Cases	Marks
Long Case	01	225
Short Cases	02	75 each
Spots	01	75
Table	02	75 each
Total		600

Every candidate should be examination on at least one long case two short cases and spot examination. There will be discussion on all aspects of diagnosis, investigations and modern trends (including instruments/equipments).

Viva-voce examination will elicit knowledge about investigation procedure, modern concept of all aspects of the subject.

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all of course contents. The course content defined shall be divided into 4 parts; each examiner given a particular part and allowed to ask questions bearing his part [idea being covering of the whole subject and avoiding duplication].