



YENEPOYA

(DEEMED TO BE UNIVERSITY)

Recognized under Sec 3(A) of the UGC Act 1956

Accredited by NAAC with 'A' Grade

YENEPOYA (DEEMED TO BE UNIVERSITY)

Deralakatte, Mangaluru -575018

REGULATIONS AND CURRICULUM GOVERNING

POSTGRADUATE PROGRAM (MS) IN

ORTHOPAEDICS

(REVISED CURRICULUM – AMENDED UP TO 2019)

ATTESTED

Dr.Gangadhara Somayaji K.S.
Registrar
Yenepoya(Deemed to be University)
University Road, Deralakatte
Mangalore-575 018, Karnataka



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NOTIFICATION - 34-ACM/2019 dtd. 20.02.2019

Sub:- Implementation of Competency Based Medical Education PG Curriculum
Ref. : Resolution of the Academic Council at its 34th Meeting held on 08.02.2019 vide
Agenda 33

The Academic Council at its 34th Meeting held on 08.02.2019 and subsequently the 45th meetings of Board of Management held on 09.02.2019 have accepted the proposal for implementation of Competency Based Medical Education (CBME) for the PG Curricula of the following programs as per the MCI Norms.

1. MD in Pathology
2. MD in General Medicine
3. MD in Anaesthesiology
4. MD in Paediatrics
5. MD in Respiratory Medicine
6. MD in Radio-diagnosis
7. MD in Anatomy
8. MD in Physiology
9. MD in Biochemistry
10. MD in Microbiology
11. MD in Pharmacology
12. MD in Forensic Medicine
13. MD in Psychiatry
14. MD in Dermatology
15. MD in Community Medicine
16. MS in General Surgery
17. MS in OBG
18. MS in Otorhinolaryngology
19. MS in Ophthalmology
20. MS in Orthopaedics

This revised curriculum shall come into effect from the academic year 2019-2020 onwards.

REGISTRAR

Yenepoya (Deemed to be) University,
University Road, Deralakatta
Mangalore 575 018

M.S. Orthopaedics Syllabus

Course contents:

1. Basic Sciences

- Anatomy and function of joints
- Bone structure and function
- Growth factors and fracture healing
- Cartilage structure and function
- Structure and function of muscles and tendons
- Tendon structure and function
- Metallurgy in Orthopaedics
- Stem Cells in Orthopaedic Surgery
- Gene Therapy in Orthopaedics

2. Diagnostic Imaging in Orthopaedics

(Should know the interpretation and Clinical Correlation of the following): -

- Digital Subtraction Angiography (DSA)
- MRI and CT in Orthopaedics
- Musculoskeletal USG
- PET Scan
- Radio-isotope bone scan

3. Metabolic Bone Diseases

- Rickets and Osteomalacia
 - Osteoporosis
 - Scurvy
 - Mucopolysaccharoidoses
 - Fluorosis
 - Osteopetrosis
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4. Endocrine Disorders

- Hyperparathyroidism
- Gigantism, Acromegaly

5. Bone and Joint Infections

- Pyogenic Haematogenous Osteomyelitis - Acute and Chronic
- Septic arthritis
- Fungal infections
- Miscellaneous infections
- Gonococcal arthritis
- Bone and joint brucellosis
- AIDS and the Orthopaedic Surgeon (universal precautions)
- Musculoskeletal Manifestations of AIDS
- Pott's spine
- Tubercular synovitis and arthritis of all major joints

6. Poliomyelitis

- General considerations
- Polio Lower limb and spine
- Management of Post Polio Residual Palsy (PPRP)

7. Orthopaedic Neurology

- Cerebral Palsy
- Myopathies

8. Peripheral Nerve Injuries

- Traumatic
- Entrapment Neuropathies

9. Diseases of Joints

- Osteoarthritis
- Calcium Pyrophosphate Dihydrate (CPPD), Gout
- Collagen diseases

10. Systemic Complications in Orthopaedics

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- Shock
 - Crush syndrome
 - Disseminated Intravascular Coagulation (DIC)
 - Acute Respiratory Distress Syndrome (ARDS)

11. Bone Tumors

- Benign bone tumors
- Malignant bone tumors
- Tumor like conditions
- Metastatic bone Tumors

12. Miscellaneous Diseases

- Diseases of muscles
- Fibrous Dysplasia
- Unclassified diseases of bone
- Paget's disease
- Peripheral vascular disease
- Orthopaedic manifestations of bleeding disorders

13. Regional Orthopaedic Conditions of Adults and Children

- The spine
- The shoulder
- The elbow
- The hand
- The wrist
- The hip
- The knee
- The foot and ankle
- The pelvis

14. Biomaterials

- Orthopaedic metallurgy
 - Bio-degradable implants in Orthopaedics
 - Bone substitutes
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- Bone Banking

15. Fracture and Fracture-Dislocations

General considerations

- Definitions, types, grades, patterns and complications
- Pathology of fractures and fracture healing
- Clinical and Radiological features of fractures and dislocations
- General principles of fracture treatment
- Recent advances in internal fixation of fractures
- Locking plate osteosyntheses
- Less Invasive Stabilisation System (LISS)
- Ilizarov technique
- Bone grafting and bone graft substitutes
- Open fractures and soft tissue coverage in the lower extremity
- Compartment syndrome
- Fractures of the upper extremity and shoulder girdle
- Fractures of the lower extremity
- Fractures of the hip and pelvis
- Malunited fractures
- Delayed union and non union of fractures
- Fractures/dislocations and fracture - dislocations of spine

16. Dislocations and Subluxations

- Acute dislocations
- Old unreduced dislocations
- Recurrent dislocations

17. Traumatic Disorders of Joints (Sports Injuries)

- Ankle injuries
- Knee injuries
- Shoulder and elbow injuries
- Wrist and hand injuries

18. Arthrodesis

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- Arthrodesis of lower extremity and hip
 - Arthrodesis of upper extremity
 - Arthrodesis of spine

19. Arthroplasty

- Biomechanics of joints and replacement of the following joints.
- Knee
- Ankle
- Shoulder
- Elbow

20. Minimally Invasive Surgery

(MIS) Arthroscopy

- General principles of Arthroscopy
- Arthroscopy of knee and ankle
- Arthroscopy of shoulder and elbow

21. Amputations and Disarticulations

- Amputations and disarticulations in the lower limb
- Amputations and disarticulations in the upper limb

22. Rehabilitation - Prosthetics and Orthotics

23. Paediatric orthopaedics:

- Fractures and dislocations in children
- Perthes' disease
- Slipped capital femoral epiphysis
- Congenital Dislocation of Hip (CDH)
- Neuromuscular disorders

24. Spine

- a) **Spinal trauma:** diagnosis and management including various types of fixations
 - i. Rehabilitation of paraplegics/quadriplegics
 - ii. Management of a paralyzed bladder
 - iii. Prevention of bed sores and management of established bed sores
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- iv. Exercise programme and Activities of Daily Living (ADL)
 - v. Psychosexual counseling

b) Degenerative disorders of the spine

- i. Prolapsed Inter Vertebral Disc (PIVD)
- ii. Lumbar Canal Stenosis (LCS)
- iii. Spondylolysis/Spondylolisthesis
- iv. Lumbar Spondylosis
- v. Ankylosing Spondylitis
- vi. Spinal fusion: various types and their indications.

25. Triage, Disaster Management, BTLS and ATLS

26. Recent advances in orthopaedics

- Autologous chondrocyte implantation
- Mosaicplasty
- Video assisted Thoracoscopy (VATS)
- Endoscopic spine surgery
- Metal on metal arthroplasty of hip
- Surface replacements of joints
- Microsurgical techniques in Orthopaedics
- Designing a modern orthopaedic operation theatre
 - Sterilization
 - Theatre Discipline
 - Laminar air flow
 - Modular OTs

Essential diagnostic skills - instrumentation

Radiology

- a) General musculoskeletal radiology – plain X-ray.
 - b) MRI.
 - c) CT Scan.
 - d) Scintigraphy and Bone scan.
 - e) Stress radiography.
 - f) Ultrasonography
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Interventional Radiography

- a) Sinogram
- b) Myelography
- c) Epidurogram
- d) CT Guided biopsy
- e) Arthrogram

Arthroscopy

Biopsy

- a) Trocar
- b) FNAC

I. SURGICAL SKILLS

Anaesthesia

Regional anaesthesia

- a) Wrist block and digital block
- b) Femoral block
- c) Ankle block
- d) Brachial block and inter scalene block
- e) Spinal anaesthesia
- f) IVRA

II. SURGICAL PROCEDURES

Pelvic girdle and lower limb

- a) Fracture fixation.
 - b) Osteotomies and Arthrodesis in lower limb.
 - c) HRA in Hip joint.
 - d) Soft tissue surgeries.
 - e) Foot and ankle surgery.
 - f) Management of non union of fractures with ilizarov.
 - g) Deformity correction with ilizarov.
 - h) Ligamentious reconstruction of knee joint.
 - i) Plastic reconstruction and other reconstructive procedures in musculoskeletal trauma.
 - j) Arthroscopic surgeries.
 - k) Total hip arthroplasty.
 - l) Total knee arthroplasty.
 - m) Total ankle arthroplasty.
 - n) Stabilisation of pelvic fracture by external fixator.
 - o) Acetabular fracture fixation and pelvic osteotomies.
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III. SHOULDER GIRDLE AND UPPER LIMB

- a) Fracture fixation, Osteotomies and Arthrodesis in upper limb.
- b) Reconstructive surgeries in shoulder joint.
- c) Soft tissue surgeries.
- d) Elbow and Hand surgery.
- e) Management of non-union of fractures with illizarov.
- f) Deformity correction with illizarov.
- g) Plastic reconstruction and other reconstructive procedures in musculoskeletal tumours.
- h) Arthroscopic surgeries.
- i) Total shoulder arthroplasty.
- j) Total elbow arthroplasty.

IV. SPINE SURGERIES

- a) Posterior spinal fusion.
- b) Disc surgery and decompressive procedures in spine.
- c) Instrumentation in spine.
- d) Endoscopic surgery in spine.
- e) Deformity correction in spine.
- f) Surgical procedures in TB Spine.

V. SURGICAL PROCEDURES – EMERGENCY

- a) Primary wound debridement and External fixator application.
- b) Emergency amputations.
- c) Primary internal fixation for compound fractures.

2.1 Graded responsibility in care of patients and operative work

I YEAR

Trauma care

- Closed reductions of fractures, Plaster application.
- Debridement of open fractures, External fixations.
- Internal fixations of minor fractures with K wire.
- Non-traumatic conditions
- Manipulative correction of congenital problems like CTEV
- Biopsies
- Excision of benign lesions.
- Tendon lengthening.

II year

Trauma

- Tension band wiring of fracture patella, fracture olecranon, etc
 - DCP of forearm bones, tibia, etc.
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DHS

Non- traumatic conditions:

Carpal tunnel release

Bone grafting

Soft tissue release under supervision

III Year

Trauma

Hemi replacement arthroplasty of femur.

Dynamic condylar screw fixation

Interlocking nailing of long bone fractures

Non- traumatic conditions

Osteotomies

Soft tissue release

Tendon transfers

Basic arthroscopy (diagnostic)

Scheme of Examination

A. Theory:

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions each question carrying 20 marks and 6 short essay questions each carrying 10 marks. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

Paper I - Basic and clinical sciences as applied to Orthopaedics

Paper II - Musculo-skeletal Trauma.

Paper III - General Orthopaedics, Joint Disorders and Spine.

Paper IV - Regional Orthopaedics

B. Clinical: 200 Marks

There shall be one long case and three short cases to be examined and presented by each candidate. Marks shall be 200.

C. Viva Voce : 100 Marks

1) Viva- voce Examination : (80 Marks)

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression and interpretation of data. It includes all components of course contents. In addition candidates may be also be given case reports, charts, gross specimens, pathology slides, instruments, X-rays, ultrasound, CT scan images, etc., interpretation. It includes discussion on dissertation also.

2) Pedagogy Exercise: (20 Marks)

A topic is given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes.

D.

Maximum marks for M.S. in Orthopaedics	Theory	Practical	Viva	Grand Total
	400	200	100	700