Curriculum

Diploma in Orthopedic Surgery (D. Orth)
(ORTHOPAEDICS & TRAUMATOLGY)

Bangabandhu Sheikh Mujib Medical University

Shahbagh, Dhaka.

CONTENTS

1. Name of the course : **Diploma in Orthopaedic Surgery (D. Orth)**
(Orthopedics & Traumatology)

2. Duration : Two academic years

3. Date of commencement : July of each year

4. Aims and objectives :

To produce competent orthopedecians having strong knowledge, skill, attitude in the field of orthopedics fit to practice independently even in the periphery

5. Eligibility for admission:

a. MBBS or its equivalent degree recognized by BMDC

b. Minimum two years after passing MBBS or its equivalent degree recognized by BMDC

6. Course content:

Paper 1 (Basics): Principle of Surgery, Applied basic Science,

Group A: .....

Group B: .....

Paper II: Principle and Practice of Orthopedics

Group A: ……

Group A: ……

Paper III: Traumatology

Group A: ……..

Group B: ……..

7. Training rotations:

General Surgery Training: 06 months.

Orthopedic Surgery: 01 years 06 months

8. Summative Examination:

8.1. Summative or exit examination will be at the end of the course and then every January and July, the date determined by the university

8.2. Three papers on written examination. Each paper will be sub-divided into Group A & Group B.

8.3. Written questions: In each paper there will be four questions. Two of them will be Long Essay type and two will of SAQ, five in each question.

8.4.1 Clinical-practical:

Clinical: There will be one long case and minimum three short cases. In long case 30 minutes will be for history taking and examination and 15 minutes for crossing by two examiners. Fifteen minutes will be allotted for short cases. Two examiners will assess the candidate in long case. Two examiners will assess short cases of opposite group of students.

Practical/OSCE: 10 stations

8.4.2 **Oral:** There will be two boards: In each board there will be two examiners. Fifteen minutes for each board equally divided into two examiners. There will be 4 examiners, Associate professor and above. 50% of the examiners will be external.

8.5 To pass, the candidate have to secure at least 60% marks in each of the three components of written (three paper combined), clinical-practical and oral examination.

8.6. Examination format

Components of examination	Paper	Marks allotted	Time	Pass marks
a. Written	Paper– I	100	3 hours	
	Paper–II	100	3 hours	
	Paper–III	100	3 hours	
	Total	**300**		**180**
b. Clinical & Practical	Clinical OSCE	100 100		120
c. Oral		100		60
Total		**600**		**360**

9. Formative assessment:

There will formative assessment at the end of each six months of training by the supervisor/ department or by the institute. Three satisfactory certificates will be pre-requisite along with others for appearing in the final exit examination. The last six month will end with summative examination

10. Core clinical Syllabus

10.1. Anatomy

A. Anatomical Knowledge Related to Trauma & Orthopedics:

1). Topographic anatomy (including surface anatomy)

Hand:

- Bones & articulations.
- The wrist/ MCP/ PIP/ DIP joints & CMC joint of the thumb.
- Flexor & extensor mechanics of the fingers including interaction between extrinsic & intrinsic mechanism.
- The posture of the thumb in pinch power & key grip.
- The nerve supply of the hand.
- Close compartments of the hand.

Knee:

- Bones & articulations
- Anatomy-Knowledge of regional anatomy of the knee, surface anatomy, bones and joints.

- Functional anatomy of ligaments& supporting muscles.
- Innervations of the knee including controlling musculature.
- Extent and function of the synovium & bursae of the knee.
- Structure & function of the menisci & articular cartilage.

Ankle & foot:

- Bones & articulations
- Ligament us structures- Ankle/ Hind foot/ Midfoot
- Planter fascia & MTP anatomy
- Surface marking of neural & vascular structures
- Muscle compartments of the foot
- Ankle and subtalar joint.

Hip:

- Bones & articulations
- Development of the hip joint.
- Relationship of bony elements

- Blood supply of the femoral head
- Anatomical course of all major vessels & nerves.
- Capsule, labrum & related ligaments.
- Understanding the action of muscles.

Shoulder & Elbow:

- Bones & articulations
- Detailed anatomy of the sternoclavicular, A-C, Glenohumoral & elbow joint.
- Structure & function of above joint with clear understanding of static & dynamic stabilizer of shoulder & elbow joint.

Spine:

- Bones, articulations, muscles & ligaments of joints.
- Development of spine, spinal cord & nerve roots.
- Biomechanics of spine.

Pediatric Anatomy:

- Detailed knowledge of growth of bones, physical anatomy & its application.

2). **Surface Anatomy:**

Vessels and nerves of extremities

Important land mark of Spine & limbs

3). **Clinical Anatomy:**

a. Clinical biased questions, including problem-based question

4). **Development and Related Anomalies:**

a. Development of the musculoskeletal system and CNS.

b. Congenital Anomalies of Limb & Spine

5). Histology:

a) Thyroid gland

b) Parathyroid gland

c) Tissue

- Bone- structure & function
- Cartilage-Articular, meniscal structure and function
- Muscle & tendon- structure & function
- Synovium- structure & function
- Ligament- structure & function
- Nerve- structure & function
- Intervertebral disc- structure & function

6). Biomechanics:

- Ankle & Foot joints
    i. Knee joint
    ii. Hip joint
    iii. Spine
    iv. Shoulders joint
    v. Elbow Joint
    vi. Wrist joint

7). Visual Exposure of the Above Topics by Using:

a. Dissection Viscera
b. Cadavers
c. Specimen
d. Models
e. Figures

8). Practical and Clinical Exposure to the above Topics:

Identification skills for different anatomical parts and structures in cadaver / viscera / skeleton/bone/model/figure/living body.

B. Skill:

1) Drawing and labeling skills for anatomical structures and phenomena
   a. Superficial veins of the extremities
   b. Arteries of the whole body.
   c. Lymphatic drainage of the limbs.
   d. Venous drainage of the thyroid gland, prostate, breasts & all extremities.
   e. Transverse section of the neck & limbs at various levels.
   f. Blood supply & nerve supplies of both upper & lower limbs.

2) **Human Musculoskeletal System Related General Skills**
   a. Preparing and staining histological sections.
   b. Setting a binocular light compound microscope and focusing the histological slide.

c. Identifying different parts of the human body (Related to T&O).
d. Drawing and labeling different models of human body (Related to T&O).
e. Identifying of different models of human body (Related to T&O).
f. Dissecting cadaver (hand, knee, elbow and disc).

3) Clinical Procedure

a) Palpation of the cervical auxiliary and inguinal lymph nodes.
b) Tracheotomy
c) Testing of muscles tone, power and jerk
d) Musculoskeletal System

10.2 Physiology

A). General physiology

The trainee should have a basic knowledge of the following:

General and Cellular basis of Medical Physiology, Physiology of the nerve and muscle cells, Functions of the nervous system, reflexes, cutaneous, deep and visceral sensation, Vision, hearing and equilibrium, smell and taste. Arousal mechanisms.

Sleep and electrical activity of the brain. Posture and movement. Autonomic nervous system. Central regulation of visceral function. Different Sensory receptors of body. Machines of contraction muscles.

Endocrinology, Metabolism and Reproduction:
Energy balance, metabolism and nutrition, Thyroid gland, Endocrine function of pancreas and carbohydrate metabolism, Adrenal medulla and cortex, Hormonal control of calcium metabolism and bone, Pituitary gland, General information about reproductive system, Endocrine function of kidney, Heart and Pincal gland.

Gastrointestinal system:
Digestion and absorption, Regulation.

Cardiovascular system:
Circulating body fluid, Electrical activity of the hear, Heart as a pump, Dynamics of blood and lymph flow, Cardiovascular regulatory mechanism, Circulation through the special organs, Cardiovascular homoeostasis in health and disease.

Respiratory System:

Pulmonary function, Gas transport between lungs and tissues, Regulation of respiration, Respiratory adjustment in health and disease.

Kidney and Urinary System:

Renal function and physiology of Micturation, Regulation of Extra cellular fluid composition and volume.

B) Applied physiology and biochemistry

- Physiology of musculoskeletal system.
- Pathway of different modalities of sensation especially, touch, pain, temparative, sense of posture and vibration.
- Mechanism of muscle contraction.
- Reflex are and its related disorder.
- Acid base balance.
- Analysis of electrolytes imbalance in DM, COPD, heart fracture, renal fracture, trauma.
- Physiological changes during anesthesia (Local, Region & General)

10.3 Pathology

General Pathology

Cellular injury and Cellular death, Cellular growth and Differentiation: Normal regulation and adaptations, Inflammation and repair, Homodynamic disorder-Thrombosis and shock, Genetic disorders, Immune system and its disorder, Neoplasia, Infection and infectious diseases and hospital infection, Ionizing radiation and disorder of nutrition and metabolism, General reaction to trauma, hemorrhage and shock, Diseases of white cells, lymph nodes and spleen, Diseases of white cells, lymph nodes and spleen, Blood vessels-Arteriosclerosis, Hypertension, Temporal arthritis, Polyarteritis nodosa, Varicose veins, Thrombophlebitis, Aneurysm.

Systemic Pathology:

The Heart:

General information's about **-**

Congestive Heart Failure, Ischemic Heart Disease, Hypertension.

The Lungs:

Congenital anomalies, Diseases of vascular oregin, chronic obstructive pulmonary disease, pulmonary infections, Diffuse infiltrative disease, Tumors etc.

Musculoskeletal System:

- Bone modeling and remodeling, bone growth and development
- Developmental abnormalities of Musculoskeletal System
- Disease associated with abnormal matrix
- Disease associated with abnormal mineral and hormones
- Basic concept of arthritic

Endocrinology:

Pituitary gland: Anterior lobe tumors, Hyperpituitarism, Disorders associated with Hyperituitarism, Thyroid gland, Parathyroid gland, Andrenal gland and kidney, Pancreas.

Applied pathology:

Achondroplasia, Collagen disease, osteogenesis imperfeceta, osteoporosis, osteopetrosis, paged disease, Rickets and osteomalasia, Hyperparathyroidism, Renal osteodyseropsy, Fracture, osteonecrosis. Bone tumors and tumors like lesions. Soft tissue tumors & tumors like lesion synovial sarcoma, Rhabdomyo sarcoma, Myositis ossificans.

Arthritis: Osteoarthritis, Rheumatoid arthritis, JRA, Seronagative, Spondyloar thropathsis, Gout and gouty arthritis.

Hematological diseases:

Pathology of manifestations of Purpura, Haemophilia, Thrombosis, Embolism, Chrismas disease, Von willebrand's disease, ITP, Agranulocytosis, Leukaemia, Polycythemia, Anaemia, Infectous mononucleosis, Dengue fever, Lymphoma.

Others:

Congenital diseases & malformations in musculoskeletal system & CNS

Cysts, sinuses, fistulas in extremities.

Hazards of transfusions and infusions.

Pathology of spine diseases, TM joint malfunction.

Basic concepts about AIDS & Hepatitis.

10.4 Pharmacology

General Pharmacology:

- General information about drug and drug action.
- Pharmacodynamics, Pharmacokinetics.
- Drug interaction and toxicity.
- General information about antibiotic.
- Irrational of use abuse and dangers of antibiotics, drug resistance.

Systemic Pharmacology:

- Drug acting on Autonomic Nervous system
- Diuretics
- Anti Hypertensive drugs
- NSAIDS, Anti Rheumatoid drugs

- Drugs acting on CNS- opoids, Anxiolytic & hypnotics
- Anesthetic agents – local/ general
- Haematinics, coagulation & anti coagulants
- Anti diabetics
- Chemotherapeutics: -
    - Principles of Antimicrobial drugs action
    - Antibacterial drugs
    - Chemotherapy of viral, fungal, protozoal & helmenthic
    - Cancer chemotherapy
- Vaccine, Immunization
- Vitamins

10.5. General Surgery

1) Preoperative Preparation of Surgical Patients:
    - Approach to a patient.
    - Counseling
    - Taking informed consent
    - Preoperative order
    - Special cases

2) Screening of surgical diseases
3) Prevention of Infection in Surgical practice
4) Good surgical practice
5) Clinical audit
6) Operation theatre management
7) The risks to surgeon of nosocomial virus transmission
8) Surgery in patients with co-morbidities
9) Incisions and management of wounds
10) Response of body to surgery
11) Postoperative care
12) Cyst, ulcer, sinus, swellings
13) Day case surgery
14) Suture materials
15) Special equipments:
    - Diathermy
    - Fibreoptics
    - LASER
    - Cryosurgery
    - Ultrasonic harmonic scalpel
    - Microscope
    - Endoscope

2) Approach to Surgery in Patient with Co-morbidities

- Describe the complications of surgery in diabetic patients.
- Explain protocol for diabetic control in patient having surgery.
- Describe the protocol for surgery in patient having hypertension.
- Describe the protocol for surgery in patient having bronchial asthma.
- Describe the protocol for surgery in patient having hepatic insufficiency.
- Describe the protocol for surgery in patient having renal insufficiency.
- Describe the protocol for surgery in patient having heart disease.
- Describe the protocol for surgery in patient having coagulation disorder.
- Describe the protocol for surgery in a obese patient.

- Describe the protocol for surgery in a AIDS patient.
- Explain the precaution for surgery in elderly.

10.6. Orthopedics Course content:

Epidemiology, Etiology, Pathology, Clinical Features, Diagnosis, differential diagnosis, Complications and Management including Prevention and Rehabilitation of the following:

1) Developmental diseases and congenital anomalies affecting musculoskeletal system.
2) Dystrophies pertaining to musculoskeletal system
3) Dysphasia of musculoskeletal system
4) Neurologic diseases affecting musculoskeletal system
5) Degenerative diseases of musculoskeletal system
6) Arthropathies
7) Infective diseases of musculoskeletal system

8) Tumors and tumor-like conditions of musculoskeletal system
9) Genetic disorder, skeletal dysphasia and malformation
10) Musculoskeletal tumor
11) Metabolic bone disease and endocrine disorders
12) Bone infection- Specific and non specific.
13) Joints infection (Pyogenic, Tubercular, Fungal)
14) Congenital deformity, affecting musculoskeletal system
15) Diseases of the joints
16) Orthopaedics neurology
17) Orthosis, prosthesis, Brace & Splint
18) Radiology of bones & articular system
19) Rehabilitation
20) Regional Orthopaedics (upper & lower limbs)
21) Rheumatoid disease & bone deformities.
22) Poliomyelitis & cerebral palsy
23) Arthroscopy & arthoplastic surgery
24) Osteonecnosis & relative disorders
25) Degenerative disease in joints

26) Surgical exposure/Procedure
27) Other relevant Orthopedics problem
28) Skin and bone grafting
29) Nerve entrapment syndromes, Painful foot, Arthrodesis.
30) Poliomyelitis & its Complication/Tendon Transfer
31) Reconstruction Surgery
32) Hemophilic Arthropathies
33) Osteotomy & Correction of deformity.

10.7. Traumatology Course Content:

1) General principles of diagnosis and management of injuries to musculoskeletal system and their complications.
2) Epidemiology, Mechanism, clinical features, Diagnosis, complications, management including prevention and rehabilitation of musculoskeletal injuries in all age groups
3) Diagnosis and management of sports injury
4) Principles of 'first aid', 'basic trauma life support' and 'advanced trauma life support'
5) Management of mass casualties

6) Management of shock & multi trauma patients
7) Spinal & pelvis injury
8) Chest injury (Various types)
9) Peripheral nerve injury
10) Hand injuries
11) ATLS/Polytrauma
12) Tendon & vascular injuries
13) Other emergency problems
14) Children fractures/Epiphytical injury
15) Adult fracture in individual bone special emphasis on upper & lower limbs & vertebral.
16) Ntroduction & general management of fractures and dislocation
17) Complications of fractures (Early & late)
18) Amputation/Disarticulation
19) Other relevant traumatic problems
20) Orthopedics Implants & Instruments
21) Some major & minor Orthopedic Surgery skill.

11. Procedural skill

12. Writing case-note

Each student will write at least 10 case-notes (History, Examination, Investigation, Treatment, follow up, and Procedure / Operation note etc).

13. Eligibility for appearing in the final examination:

a) Two years in-course training
b) 3 satisfactory 6 monthly report of formative assessment
c) 75% attendance in lectures and other academic activities
d) Satisfactorily completed logbook including case notes

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Shahbag, Dhaka

Diploma trainee's Block progress report

Name of the trainee : Session :

Name of the course : Reg. No:

Name of the institute :

Period of block :

Performance	Poor	Satisfactory	Good	Excellent
Written*				
Clinical-Practical*				
Oral*				
Attendance*				
Attitude				

* Poor: <50%, Satisfactory: ≥50-60%, Good: >60-75%, Excellent : >75%

Note: "Poor" grade in more than two performance during a particular block means deficient training and also cause disqualification for appearing in the final examination unless training in particular block is complete.

Signature: .....
Head of the Department
(Seal)

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