

**SYLLABUS OF  
FINAL PROFESSIONAL  
M.B.B.S.**

- (A). SURGERY
- (B). MEDICINE
- (C). OBSTETRICS
- (D). GYNAECOLOGY
- (E). PAEDIATRICS

# (A) SURGERY

## **Distribution of Subjects:**

**Paper I:** General Surgery, Surgical Anatomy, Principles of Anaesthesia, Principles of Radiology, Principles of Radiotherapy and Chemotherapy.

**Paper II: Systematic and Operative Surgery:** Musculoskeletal system, GIT, Renal system, Male and female reproductive system, Head and Neck, Thorax, Breast, Nervous system, Cardiovascular System, Orthopaedics and Traumatology.

The course outline is as follows :

## **Systems and the Diseases:**

### **Head, Face and Neck**

1. Developmental abnormalities of face, palate, lips.
2. Principles of management of head injuries and its complications.
3. Oral cavity including tongue.
4. Diseases of salivary glands (Inflammation, Calculus, Tumours)
5. Neck lumps including lymph nodes, thyroid and parathyroid

### **Breast**

1. Diseases of the breast, nipple and areola
2. Benign and malignant tumours.

### **Chest Wall & Thorax**

1. Blunt & penetrating injuries and their complications.
2. Lung abscess and empyema thoracis.
3. Tumors and cysts in the lungs.

### **Gastro Intestinal Tract**

1. Diseases causing oesophageal obstruction.
2. Peptic ulcer disease & its complications.
3. Tumours of stomach.

5. Conditions causing chronic abdomen including malignant lesions of small and large bowel
6. Ano-rectal and peri-anal conditions requiring surgery.

### **Abdominal, Pelvic and Genital Trauma and Hernia.**

1. Principles in management of abdominal pelvic and urogenital trauma.
2. Inguinal/ Inguinoscrotal and femoral hernia.
3. Epigastric hernia/umbilical/ para-umbilical hernia.
4. Incisional hernia.

#### **Liver**

1. Trauma.
2. Obstructive jaundice.
3. Liver abscess.
4. Hydatid cyst.
5. Malignancy (Hepatoma & secondaries).

#### **Gall Bladder**

1. Acute and chronic cholecystitis.
2. Cholelithiasis and its complications.
3. Tumours

#### **Pancreas**

1. Acute, relapsing and chronic pancreatitis.
2. Pancreatic masses including cysts
3. Benign and malignant neoplasia.

#### **Spleen**

1. Trauma
2. Surgical aspects of spleen

#### **Urinary Tract**

1. Common congenital anomalies.
2. Infection & its sequelae.
3. Calculus disease and its sequelae.
4. Bladder lesions.
5. Enlarged prostate.
6. Urogenital trauma.
7. Neoplasms of kidney and urinary tract.

### **External Genitalia, Male and Female**

1. Developmental abnormalities.
2. Common pelvic conditions

### **Scrotal and testicular lesions**

1. Scrotal swelling.
2. Testicular swelling.

### **Skin & Soft Tissues**

1. Common benign and malignant skin lesions.
2. Wounds/ulcers/abscesses/sinuses/fistulae.
3. Soft tissue lumps.

### **Orthopaedics and Trauma**

1. Common congenital malformations of locomotive system.
2. Bone fractures & their complications.
3. Sports injuries and affections of tendons and bursae.
4. Bone and joint infections.
5. Arthritis.
6. Bone and cartilage tumours.
7. Spinal trauma.
8. Spinal tumours.
9. Common spinal deformities and other surgically correctable lesions.

### **Vascular and Nerve Disorders**

1. Vascular affections and limb ischaemia.
2. Varicosities
3. Deep venous thrombosis.
4. Peripheral nerve injuries

### **Essential Skills to be acquired**

1. Provide First Aid: Resuscitation (ABC) of polytrauma, CPR.
2. Collect samples of blood, urine, stool, sputum, pus swab etc.
3. Insert Naso-gastric tube, have observed chest intubation and paracentesis.
4. Do IV cannulation, have observed CV-line insertion and cut-down of veins.
5. Catheterize male and female patients.
6. Prepare the patient for and know the procedure of doing X-Ray chest, abdomen, KUB, bones, IVU, barium studies, ultrasound and other imaging investigations.
7. Principles of pre-operative preparations, sterilization/disinfection techniques.
8. Principles of wound care, skin suturing and suture removal, incision

- tissue lumps, needle biopsies, aspiration of localized fluids, etc.
9. Have observed common surgical procedures, treatment of fracture/dislocation and methods of general / local anaesthesia.
  10. Apply bandage and splint/pop cast to the patient's limbs.
  11. Have observed instillation of chemotherapy and principles of radiotherapy.

## **(I) ORTHOPAEDIC SURGERY & TRAUMATOLOGY**

The course outline is as follows :

### **a. Necessary Applied Basic Sciences With Reference To Orthopaedics:**

- Pathophysiology of trauma and shock.
- Mechanical properties of bone & soft tissue.
- Biomechanics of fracture.
- Healing & repair (bone & soft tissues).
- Healing principles of fracture.
- Principles of physiotherapy
- Orthotics – orthopaedic appliances to support and correct deformities
- Prosthesis – artificial substitute for missing body parts.

### **b. Systems and Diseases**

- 1: Congenital & Development Diseases;** Congenital talipes equino varus (CTEV) and talipes valgus; congenital dislocation of hip (CDH); flat foot; Perth's disease; Slipped Capital Femoral Epiphysis.

#### ***Specific required skills***

- Clinical examination and x-ray interpretation of above mentioned diseases
- Observe the manipulation/application of POP cast for CTEV, pelvic harness, Von Rosen splint, hip spica.

- 2: Bone dysplasia (defect intrinsic to bone)**

- Dwarf- Achondroplasia

- 3: Bone and joint infections**

- Acute osteomyelitis and septic arthritis.
- Chronic osteomyelitis.
- Tuberculous arthritis/Caries spine.
- Osteolysis/bone cyst, sequestrum, periosteal reaction

### ***Specific required skills***

- Clinical examination for above mentioned diseases
- Interpretation of related x-ray and laboratory reports
- Observe or assist in joint aspiration, curettage and sequestrectomy, drainage of abscess etc.

#### **4: Metabolic Bone diseases**

- Rickets; osteomalacia; osteoporosis; hyperparathyroidism; diabetes.

### ***Specific required skills***

- Interpretation of related X-rays
- Interpretation of laboratory reports of serum Ca, PO<sub>4</sub>, Alk. phosphatase, parathormone.
- Management of diabetes with relation to injury /surgical procedure and infections.

#### **5: Neuromuscular disorders**

- Muscular dystrophies e.g. Duchenne type and Becker's type; spina bifida; cerebral palsy.
- Post-polio paralysis (PPP); neurofibromatosis

### ***Specific required skills***

- Clinical examination of sensations, deep tendon jerks, muscle power and tone clonus.
- Management suggesting and explaining of orthosis, walking aids (walking stick, crutches, walkers), wheel chairs.

#### **6: Bone Tumours**

- a. Benign  
Exostosis/multiple hereditary exostosis/enchondroma, fibroma, lipoma, neuroma, osteoid osteoma, giant cell tumour.
- B. Malignant  
Osteogenic sarcoma, Ewings sarcoma, chondrosarcoma, multiple myeloma, metastatic bone tumors from thyroid, lungs, kidney, breast and prostate.
- c. Principles, indications, techniques and orthotics related to amputation.

### ***Specific Required Skills***

- Observe biopsy – needle and open.
- Observe amputation/limb salvage surgery –

#### **7: Neck Pain, Low Back Pain and Sciatica**

- Deformities of scoliosis, kyphosis.
- Spinal injury, soft tissue injuries (sprains, strains etc.)
- Fractures (stable, unstable), neurological damage

### ***Specific Required Skills***

- Examination and basic management.
- Application of cervical collar, cervical traction, lumbosacral corset.
- Observe internal fixation of spinal fracture
- Log rolling, prevention of bed sores, bladder care/catheter care and rehabilitation.

### **8: Arthritis and Musculoskeletal Painful Disorders**

- Rheumatoid arthritis, ankylosing spondylitis, osteoarthritis.
- Gout; frozen shoulder; tennis elbow, plantar fasciitis, trigger finger, de Quervains disease.

### ***Specific Required Skills***

- Clinical examination of patients with arthritis (differentiate on x-ray)
- Interpretation of related investigations; x-rays and laboratory.
- Management; prescription writing for arthritis and painful muscle disorders.

### **9: Soft Tissue Injuries**

- Sprains/ruptures of muscles, ligaments, tendons; nerve injuries.
- Arterial injuries clean/contaminated wounds.

### **10: Fractures**

- Basic and advanced trauma life support
- Triage of injured patients in emergency room,
- Principles of fracture classification
- Principles of fracture treatment in children.
- Principles of fracture fixation
- Management of common orthopaedic emergencies.
- Mal-united fractures; non-unions.

### ***Specific Required Skills***

- Examination; clinical examination of injured patient; record BP, pulse rate, respiratory rate peripheral pulses and capillary filling; recognition of associated injuries/complications e.g. Vascular, neurological, vascular compartment syndrome etc.
- Investigations; request and interpret urine and blood examination in trauma patient (CBC, ESR, blood urea and sugar etc; interpret x-ray of limbs with fractures and dislocations;
- Catheterize male and female patients.
- Shifting of patient from bed to trolley

- Serving patients with bed pan and urine bottle.
- Prepare patients for surgeries and post operative care.
- Dressing of surgical wounds post operatively.
- Pass nasogastric tube.
- Injections I/V and I/M.
- Interpret and explain the urine, stool and blood findings with relevance to orthopaedic diseases.
- Request and interpret x-rays, ultrasound, CT, MRI scans
- Management; provide first aid to a person with bone injury like common sprains, fractures and dislocations (immobilization of body part, resuscitation of injured patient.
- Apply dressings, splints, plasters and other immobilization techniques in fracture patients in emergency; maintain clear airway of patient; reductions and observation of surgical fixations; internal and external fixation of fractures (plates, nails others); manipulation and application of plaster of paris cast/back slab; use of external fixators in treatment of open fractures; application of traction skin/skeletal.

### **RECOMMENDED BOOKS:**

- **Short Practice Of Surgery** By Bailey And Love's
- **Text Book Of Surgery** By Ijaz Ahsan
- **General Surgery (Lecture Notes Series)** by Harold Ellis, Roy Calne, Chris Watson
- **An Introduction to the Symptoms and Signs of Surgical Disease** by Norman Browse
- **Current Surgical Practice:** by Norman L. Browse, Alan G. Johnson, and Tom. Vol. 6
- **Schwartz's Principles of Surgery** by F. Charles Brunicaudi, Dana K. Andersen, Timothy R. Billiar, and David L. Dunn 8<sup>th</sup> edition. 2004
- **Online Journals and Reading Materials** through HEC Digital Library Facility.



## **(II) ANAESTHESIOLOGY**

The course outline is as follows :

- Pre-operative assessment of patients and pre-medication
- Local anaesthesia
  - Local anaesthetic agents (pharmacology)
  - Regional anaesthesia (spinal and epidural)
- Intravenous anaesthetic agents
- Muscle relaxants
- Inhalational anaesthetic agents
- Anaesthesia and associated diseases.
- Complications of anaesthesia.
- Perioperative management.
- Cardiopulmonary Resuscitation. CPR.
- Recovery from anaesthesia. Pain management and postoperative care.

### **LOG BOOK**

The submission of a complete logbook duly signed by Head of Department should be compulsory to appear in final professional examination.

### **PROCEDURES**

1. Pre-operative assessment of the patient.
2. I/V cannulation and Intra-operative fluid management.
3. Demonstration of induction of general anaesthesia and tracheal intubation.
4. Demonstration of spinal block.
5. Demonstration of epidural block.
6. Demonstration of local blocks in Eye, ENT and General Surgery.
7. Demonstration of CPR.
8. Post-operative care/pain management.
9. Introduction to the ICU.
10. Demonstration of anaesthesia machine and other instruments
11. Demonstration of sterilization procedures in O.T and ICU.
12. Demonstration of vital sign monitors and their application

## **RECOMMENDED BOOKS:**

1. **Textbook of Anaesthesia** by G. Smith and A.R. Aitkenhead
2. **Short Practice of Anaesthesia** by M. Morgan, G. Hall. Latest edition
3. **A Synopsis of Anaesthesia** by J.Alfred Lee
4. **Online Journals and Reading Materials** through HEC Digital Library Facility.

## **(III) RADIOLOGY**

### **The student will be able to:**

- Select/advice the required radiological examination correctly
- Identify gross abnormalities in the films
- List indications and advantages of modern techniques
- Recognize major abdominal viscera and their imaging characters

### **Required Radiological Examinations and Abnormalities**

- **Plain Radiography**

#### **Chest**

- Normal anatomy and projections
- Pneumothorax
- Pneumonia
- Effusion
- Cardiomegaly
- Plumonary oedema
- Fractures
- Surgical emphysema
- Neoplastic Diseases
- Chronic inflammatory disease

#### **Skull**

- Normal anatomy and projections
- Fracture
- Lytic and sclerotic lesion
- Calcifications
- Pituitary fossa
- Paranasal sinuses

#### **Abdomen**

- Normal anatomy and projections
- Renal & urinary tract stones, gall stones and other calcifications

- Free gas under diaphragm, (perforation)
- Enlarged liver and spleen

### **Spine**

- Normal anatomy and projections.
- Disc space reduction
- Vertebral collapse

### **Barium Meal and with double contrast (where applicable)**

- Normal anatomy and various projections
  - Gastric outlet obstruction
  - Stomach mass/filling defect
  - Oesophageal outline/varices/strictures
  - Intussusception
  - Colonic defects
  - Malabsorption pattern
  - Stricture
  - Any filling defect
  - Ulcerative colitis
- **Intravenous Urogram**
    - Hydronephrosis and renal masses
  - **Micturating Cystourethrogram**
    - Reflux
  - **Cholecystogram**
    - Gall bladder diseases and stones
  - **Echocardiogram**
    - Be able to interpret the report
  - **CT Scanning**
    - Be able to interpret the report
  - **MRI**
    - Basic principle

## **RECOMMENDED BOOKS:**

1. **Aids to Radiological Differential Diagnosis** by Chapman S. and Nakielny R. 4th ed. Elsevier Science Limited; 2003.
2. **Online Journals and Reading Materials** through HEC Digital Library Facility.

# **(B) MEDICINE**

## **Distribution of subjects**

**Paper-I All except Paper-II**

***Paper-II will include:***

- |                          |                                     |
|--------------------------|-------------------------------------|
| 1. Infectious Diseases   | 7. Endocrinology including Diabetes |
| 2. Metabolic Diseases    | 8. Genitourinary System             |
| 3. Immunology            | 9. Genetics                         |
| 4. Oncology              | 10. Water and Electrolyte Balance   |
| 5. Acid and Base Balance | 11. Psychiatry                      |
| 6. Dermatology           |                                     |

## **1. CARDIOLOGY**

The course outline is as follows :

- Rheumatic fever and infective endocarditis.
- Valvular heart diseases.
  - Mitral valve
  - Aortic valve
- Ischaemic heart disease.
  - Angina
  - Myocardial infarction
- Cardiac arrhythmias
  - Atrial fibrillation
  - Ventricular tachycardia
  - Premature atrial and ventricular beats.
- Heart failure.
  - Left ventricular failure.
  - Congestive cardiac failure.
  - Cor pulmonale.
- Congenital heart diseases (brief).
  - Cyanotic/acyanotic heart diseases.
  - Fallot's tetralogy
  - Atrial septal defect
  - Ventricular septal defect
  - Patent ductus arteriosus
- Cardiomyopathies
- Pericardial diseases.
- Constrictive pericarditis

- Pericardial diseases
- Pericardial effusion
- Atherosclerosis/arteriosclerosis.
- Hypertension.
- Peripheral vascular disease.
  - Symptoms and signs
  - Arteriosclerosis
  - Acute & chronic ischaemia of the leg
  - Aneurysms
  - Buerger's disease
  - Raynaud's disease
  - varicose veins
  - Venous thrombosis
- Investigations.
  - Electrocardiography, Xray chest, Echocardiography, Thallium Scan, Stress Testing, Holter And Angiography Etc.

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common cardiovascular diseases.

- Systemic hypertension
- Ischaemic heart diseases
- Congestive cardiac failure
- Valvular diseases and infective endocarditis

### **Understand the Symptomatology to reach the Differential Diagnosis:**

Palpitation, breathlessness, chest pain, raised JVP, jaundice etc.

### **Skills To Be Learnt:**

- History taking in CVS.
- GPE in CVS – clubbing, koilonychia, osler's nodes, splinter haemorrhages, cyanosis.
- Pulse, JVP, blood pressure.
- Inspection, palpation of precordium.
- Percussion, auscultation of precordium – mitral, tricuspid, aortic, pulmonary areas.
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in CVS diseases.

### **Procedures (Observe/ Assist):**

- ECG taking and basic reading i.e. Normal, Acute MI, Ischemia, complete heart block, APC, VPC, SVT, VT etc.

- X-ray chest interpretation – (Cardiology).
- Should observe, learn and even may assist electroversion therapy (DC shock) with indications, complications etc.
- Observe Echo and should recognize chambers and valves on echo print.
- Observe pericardial effusion aspiration.
- Should learn thrombolytic therapy, heparinisation/anticoagulation therapy and control, anti-platelet therapy, nitrates infusion, digitalization, treatment of acute pulmonary edema, O<sub>2</sub> therapy.
- Cardiac monitoring.
- Basics of ETT.

## **2. PULMONOLOGY**

### **COURSE OUTLINES:**

- Asthma.
- Environmental lung diseases/occupational.
  - Asbestosis
  - Silicosis
  - Bagassosis
  - Pneumoconiosis
  - Byssinosis
  - Farmer's lung
- Pneumonia
  - Community acquired
  - Nosocomial
  - Lobar and bronchopneumonia
- Adult respiratory distress syndrome
- Acute respiratory failure
- Mechanical ventilation.
- Bronchiectasis.
- Chronic obstructive airway diseases.
  - Chronic bronchitis
  - Emphysema
- Interstitial lung diseases.
- Pulmonary thromboembolism
- Acute cor pulmonale.
- Type-I and type-II respiratory failure
- Pleural effusion.
- Pneumothorax.
- Tuberculosis
- Tumors of the lung
- Disorders of chest wall and pleura
- Chest trauma
- Deformities of the rib cage

- Dry pleurisy, pleural effusion, empyema, pneumothorax.
- Basics of pulmonary function tests.
- Imaging in pulmonary diseases/investigations

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common pulmonary diseases.

- Bronchial asthma
- Pleural effusion
- Pneumonia
- Hemoptysis
- Pulmonary tuberculosis
- Chronic obstructive airway disease
- Type-I and type-II respiratory failure
- Bronchogenic carcinoma

### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Breathlessness
- Wheezing
- Haemoptysis
- Orthopnoea
- Paroxysmal nocturnal dyspnoea (PND)
- Pain in calf on walking
- Undue coldness, redness or blueness of extremities
- Chest pain
- Cough/expectoration/sputum

### **Skills To Be Learnt:**

- History taking in respiratory system – dyspnoea, cough, expectoration, haemoptysis.
- Chest pain, wheezing.
- Inspection, palpation, percussion, auscultation front of chest.
- Inspection, palpation, percussion, auscultation back of chest.
- Interpretation of related radiological and laboratory investigations.
- Interpretation of pulmonary function tests.
- General medication and prescription writing in pulmonology
- Any deficient program.

### **Procedures (Observe/ Assist):**

- How to start O<sub>2</sub> therapy, indications, complications.
- Learn pleural aspiration and assist
- Endotracheal suction, assist

- Pleural biopsy, observe
- FNA biopsy, observe
- Under water seas aspiration, observe/assist
- Management of respiratory failure
- Observe bronchoscopy

### **3. DERMATOLOGY**

#### **COURSE OUTLINES:**

- Anatomy, physiology of skin related to clinical dermatology
- Infestations: scabies, pediculosis.
- Bacterial and mycobacterial infections
- Fungal and viral diseases.
- Acne vulgaris
- Eczemas.
- Psoriasis
- Lichen planus
- Bullous disorders.
- Pigmentary disorders
- Disorders of nails.
- Disorders of hairs.
- Sexually transmitted diseases.

#### **CLINICAL TRAINING:**

##### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common dermatological diseases.

*Should recognize lesions of:*

- Leprosy
- Syphilitic lesions (chancre, secondary syphilis, gumma)
- Tinea (corporis, capitis, inguinale, unguam)
- Candida (oral, skin)
- Scabies
- Lice
- Mosquito bite
- Acute & chronic eczema
- Lesions of small pox, chicken pox, herpes simplex, herpes zoster
- SLE.
- Psoriasis
- Lichen planus
- Impetigo contagiosum
- Moluscum contagiosum
- Acne vulgaris



- Seborrhoea
- Exfoliative dermatitis
- Skin neoplasm like squamous cell carcinoma, basal cell carcinoma and melanoma
- Leukoderma
- Pityriasis versicolor
- Alopecia and hirsutism
- Sexually transmitted diseases
- Furunculosis, cellulitis
- Drug eruption

**Understand the Symptomatology to reach the Differential Diagnosis:**

- Alopecia
- Eruption and rashes
- Itching
- Pigmentation and depigmentation

**Skills To Be Learnt:**

- History taking in Dermatology
- Clinical examination of various skin lesions
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in Dermatology

**Procedures (Observe/ Assist):**

- Scraping for fungus
- Use of magnifying glass
- Observe skin biopsy
- Use of Wood's lamp

## **4. Neurology and Central Nervous System**

**COURSE OUTLINES:**

- Infections and inflammatory lesions
  - Meningitis
    - Bacterial.
    - Tuberculous.
    - Viral etc.
  - Brain abscess
  - Encephalitis
  - Hydrocephalus
- Epilepsy and other convulsive disorders
- Cerebrovascular diseases (stroke).
  - Ischemic
  - Embolism
  - Infarction

- Haemorrhage
  - Intra-cerebral
  - Subarachnoid
- Dementia and Alzheimer's disease.
- Parkinson's disease and other movement disorders.
- Motor neuron disease.
- Multiple sclerosis.
- Cranial nerve disorders.
  - Transient mono-ocular blindness (amaurosis fugax).
  - Trigeminal neuralgia.
  - Facial palsy (Bell's).
  - Vertigo, nystagmus
- Spinal cord disorders.
  - Spinal cord compression
  - Hemiplegia, paraplegia, quadriplegia
  - Myelitis.
  - Spondylosis.
  - Syringomyelia and syringobulbia.
- Peripheral nerve disorders.
  - Peripheral polyneuropathy
  - Gullian Barry syndrome
  - Mononeuritis multiplex.
- Space occupying lesions of brain and spinal cord.
- Muscular dystrophies
- Myopathies, myasthenia gravis

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common CNS disorders:

- Cerebrovascular accident
- Paraplegia
- Polyneuropathy
- Muscular dystrophies and Motor neuron disease
- Parkinsonism
- Meningitis
- Tetanus
- Hemiplegia
- Facial Palsy

### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Behaviour
- I.Q
- Speech disturbances

- Memory
- Confusional states
- Dementia
- Tremor
- Fasciculations
- Athetosis
- Chorea
- Gait abnormalities
- Convulsions/fits
- Coma
- Syncope/dizziness
- Vertigo
- Deafness
- Blindness
- Numbness, tingling, sensory loss
- Rigidity / paralysis.
- Movement disorders

**Skills To Be Learnt:**

- History taking in CNS.
- Higher mental functions – level of consciousness, behaviour, speech, memory.
- Examination of cranial nerves.
- Examination of motor system.
- Examination of sensory system – crude touch, pain, temperature.
- Fine touch, pressure, vibration, joint position.
  - Cortical sensations
  - Two point localization, two point discrimination.
  - Reflexes
  - Examination of cerebellar system
- Examination of nystagmus
- Examination of rigidity
- Assessment of movement disorders
  - Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in Neurology

**Procedures (Observe/ Assist):**

- Observe and learn lumbar puncture

# 5. ALIMENTARY SYSTEM

## COURSE OUTLINES:

- Oral cavity
  - Infections and inflammatory disorders
  - Benign and malignant diseases
- Esophagus.
  - Dysphagia with special reference to
  - Ca oesophagus
  - GERD
  - Achalasia
  - Candidiasis of oral cavity and oesophagus
- Stomach
  - Gastritis.
  - Peptic ulcer
- Intestines
  - Malabsorption syndromes.
    - Tropical sprue
    - Coeliac disease
  - Inflammatory bowel diseases.
    - Ulcerative colitis
      - Crohn's disease
  - Irritable bowel syndrome (IBS).
- Liver
  - Ascites.
  - Jaundice.
    - Congenital hyperbilirubinaemia
    - Gilbert syndrome
    - Dubin Johnson syndrome
    - Rotor syndromes
    - Haemolytic
    - Obstructive
    - Hepatitis
      - Viral, acute and chronic
      - Toxic
      - Drugs
  - Auto immune hepatitis.
  - Cirrhosis of liver.
  - Hepatic encephalopathy.
  - Carcinoma liver and transplant.
  - Acute and chronic pancreatitis.
  - Upper GI bleeding, lower GI bleeding
  - Drugs contraindicated in liver diseases

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common gastrointestinal and hepatobiliary diseases.

- Acid peptic disease
- Tender hepatomegaly
- Hepatosplenomegaly
- Jaundice
- Chronic liver disease
- Acute and chronic diarrhoea
- Variceal bleeding and peptic ulcer bleeding.
- Abdominal Koch's infection

### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Oral ulceration
- Dysphagia
- Heart burn
- Nausea/vomiting
- Indigestion/flatulence
- Diarrhoea and constipation
- Melena, haematemesis, bleeding per rectum
- Jaundice
- Hepatomegaly
- Abdominal distension/ascites

### **Skills To Be Learnt:**

- History taking in GIT – vomiting, diarrhoea, pain abdomen, constipation, haematemesis, melena, dyspepsia, distension.
- Examination of GIT –
- Inspection, palpation.
- Percussion, auscultation.
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in GIT diseases.
- Any deficient programme.

### **Procedures (Observe/ Assist):**

- Learn N/G tube passing and feeding
- Learn and observe aspiration of peritoneal fluids
- Learn and observe endoscopies, upper and lower GIT
- Preparing a patient for GI endoscopies

## **6. KIDNEYS AND URINARY SYSTEM**

### **COURSE OUTLINES:**

- Acute renal failure.
- Chronic renal failure
- Nephrotic syndrome.
- Nephritic syndrome.
- Urinary tract infections
  - Infections of the kidneys
  - Infections of the lower urinary tract
- Inflammatory lesions of the kidneys
- Introduction to dialysis & renal transplant
- Drugs causing renal disease (brief).
  - Analgesic nephropathy.
  - Lead, uric acid, hypercalcemia, radiation & hypersensitivity
  - Nephropathy.
  - Drugs contra indicated in renal insufficiency
  - Drugs to be used with caution in renal disease.
- Polycystic kidneys.
- Renal vascular disorders
  - Renal artery stenosis
  - Renal vein thrombosis
  - Tumours
- Hemolytic uremic syndrome.
- Prostatic diseases

### **CLINICAL TRAINING:**

#### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common Renal & Urinary system diseases

- Nephrotic syndrome
- Nephritic syndrome
- Acute renal failure
- Chronic renal failure

#### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Lumbar /pelvic pain
- Anuria, oliguria
- Hematuria
- Dysuria, pyuria
- Urgency / frequency of micturation

- Urinary retention
- Urinary incontinence
- Nocturia

**Skills To Be Learnt:**

- History taking – lumbar pain, anuria, oliguria, hematuria, dysuria, urgency/frequency of micturition, pyuria, urinary retention, nocturia, urinary incontinence, pelvic pain.
- Examination of abdominopelvic and lumbar area
- Inspection, palpation, percussion, auscultation.
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in upper & lower urinary tract diseases.

**Procedures (Observe/ Assist):**

- Observe and assist insertion of Foley’s catheter/Red rubber catheter
- Learn and observe peritoneal and hemodialysis
- Indications and outcomes of renal transplant
- Observe I/V urograms

## **7. ENDOCRINOLOGY**

**COURSE OUTLINES:**

- Anterior pituitary.
  - Growth hormone disorders
    - Acromegaly
    - Gigantism.
    - Short stature
  - Infertility
- Diseases of hypothalamus and posterior pituitary.
  - Empty sella syndrome
  - Diabetes insipidus
  - Syndrome of inappropriate ADH secretion (SIADH).
- Thyroid gland.
  - Hyperthyroidism (thyrotoxicosis)
  - Hypothyroidism (myxedema, cretinism)
  - Inflammatory lesions
  - Benign and malignant tumors
- Adrenal Gland.
  - Cushing Syndrome
  - Aldosteronism Primary/Secondary.
  - Hirsutism.
  - Addison’s disease
  - Acute Addisonian crisis

- Inflammatory lesions
- Adrenocortical tumors including Pheochromocytoma
- Endocrine Pancreas
  - Diabetes mellitus and hypoglycaemic states
  - Other associated endocrine disorders
- Testes
  - Sexual precocity
  - Heterosexual precocity
  - Gynaecomastia
  - Inflammations
  - Tumours
- Multiple endocrine neoplasia
  - Type I
  - Type II

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common endocrine disorders

- Diabetes mellitus
- Thyroid diseases
- Cushing's disease
- Infertility and common reproductive disorders

### **Skills To Be Learnt:**

- History taking and correlate with a specific diagnosis.
- Examination of thyroid gland, male and female genital organs etc.
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in endocrinology

## **8. RHEUMATOLOGY**

### **COURSE OUTLINES:**

- Osteoarthritis
- Osteoporosis
- Rheumatoid arthritis and related arthropathies
- Paget's disease of the bone.
- Osteopetrosis (marble bone disease).
- Multiple myeloma
- **Multi-System Immunological Diseases**
- Systemic lupus erythematosus (SLE)
- Serum sickness



- Systemic sclerosis (scleroderma).
- Mixed connective tissue diseases (brief).
- Sjogren's syndrome (brief).
- Ankylosing spondylitis.
- Bechet's syndrome (brief).
- Vasculitis syndromes (brief).
- Anaphylactoid purpura
- Polyarteritis nodosa
- Hypersensitivity vasculitis
- Wegner's granulomatosis
- Temporal arteritis
- Takayasu's arteritis
- Thromboangitis obliterans (Burger's disease)
- Sarcoidosis (brief).

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common rheumatological diseases.

- Rheumatoid arthritis
- Osteoarthritis
- Multiple Myeloma
- SLE etc.

### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Joint pain and joint swelling
- Joint deformities
- Muscle cramps
- Muscle weakness
- Muscular wasting
- Other related systemic signs and symptoms

### **Skills To Be Learnt:**

- History taking and correlate with a specific diagnosis.
- Examination and assessment of the pattern of involvement of bones, joints, skin and other organs
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in rheumatology.

### **Procedures (Observe/ Assist):**

- Observe aspiration of fluids from joints (knee)
- Observe bone marrow aspiration/terphine

## **9. METABOLIC DISORDERS**

### **COURSE OUTLINES:**

- Hyperlipidemia
- Hemochromatosis
- Porphyrrias
- Wilson's disease
- Gout and hypercalcemia
- Storage diseases.
- Lipid.
  - Leukodystrophies
  - Niemann pick disease.
  - Gaucher's disease.
- Glycogen.
  - Fabry's disease.
- Hereditary connective tissue disorders
- Osteogenesis imperfecta.
- Ehler's danlos syndrome.
- Chondrodysplasias.
- Marfan syndrome.
- Alport syndrome.
- Disorders of amino acid metabolism and storage
  - Homocystinuria.
  - Alkaptonuria.
  - Hartnup disease.
- Renal glycosuria

## **10. INFECTIOUS DISEASES**

### **COURSE OUTLINES:**

- Clinical syndromes.
  - Sepsis and septic shock, meningococcaemia
  - Acute infectious diarrhoeal diseases and bacterial food poisoning.
  - Hospital acquired infections.
- Common disease syndromes caused by the following bacteria and their drug therapy.
  - Pneumococci
  - Staphylococci.
  - Streptococci.
  - Hemophilis influenzae.
  - Shigella.
  - Gonococci.

- Pseudomonas.
- Following diseases in detail.
  - Tetanus.
  - Enteric fever/salmonellosis.
  - Cholera.
  - Tuberculosis.
  - Leprosy.
  - Amoebiasis/giardiasis/trichomoniasis.
  - Malaria.
  - AIDS.
  - Rabies.
  - Infectious mononucleosis.
- Helminthic infestations
  - Ascariasis
  - Hookworm
  - Whipworm (trichuriasis)
  - Threadworm (enterobiasis)
  - Taenia (tapeworm)
  - Hydatid diseases

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common infectious diseases in Pakistan

- Malaria
- Typhoid fever
- Acute diarrhoeal diseases
- Acute / chronic respiratory tract infections
- Generalized septicemia etc.

### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Fever
- Headache, pain
- Anorexia/ weight loss
- Haemoptysis/ chest pain/ epigastric
- Cough/expectoration/sputum
- Dysuria, pyuria
- Diarrhoea / vomiting
- Melena, hematemesis
- Jaundice/hepatomegaly
- Eruption and rashes
- Itching
- Joint pain and joint swelling etc.

## **Skills to Be Learnt:**

- History taking and correlate with a specific diagnosis.
- Examination and assessment of the pattern of fever, involvement of organ systems and any positive findings.
- Interpretation of related radiological and laboratory investigations
- Symptomatic treatment and prescription writing in infectious diseases.

## **Procedures:**

### **Perform:**

- Injection I/V, I/M, S/C, intradermal
- Oxygen therapy
- Urinary catheterisation – collection of samples
- Collection of blood samples/ blood film preparation

### **Observe:**

- Observe I/V lines/Fluids/Blood/Blood products, direct, branula, cutdown, CVP
- N/G tube passing and feeding
- Foley's catheter/Red rubber catheter
- IOP record maintenance
- Aspiration of fluids (Pleural, Pericardial, Peritoneal, Knee)
- Lumbar Puncture
- O<sub>2</sub> therapy
- Nebulisation etc.

# **11. HAEMATOLOGY**

## **COURSE OUTLINES:**

### Anaemias.

- Classification
- Iron deficiency
- Megaloblastic
  - B-12 deficiency
  - Folic acid deficiency
- Anaemia of chronic disorder
- Haemolytic anaemia
  - Hereditary
  - Acquired
  - Intra-corporcular
  - Extra-corporcular
- Aplastic anemia

### Haemoglobinopathies.

- Sickle cell syndromes

- Thalassaemias

Myeloproliferative diseases.

- Chronic myeloid leukemia (CML)
- Polycythemia vera
- Myelofibrosis
- Essential thrombocytosis
- Leukemias.
  - Acute
  - Chronic
- Lymphomas
  - Non-Hodgkin's
  - Hodgkin's

Blood groups and blood transfusion.

Bone marrow transplantation.

Disorders of haemostasis.

- Thrombocytopenia
- Idiopathic thrombocytopenic purpura (ITP)
- Von Willebrand's disease.
- Vessel wall disorders.
- Disorders of coagulation.
- Haemophilia
- Vitamin K deficiency.
- Disseminated intravascular coagulation (DIC).

Anticoagulants Therapy

- Heparin
- Oral (warfarin etc.)
- Vit. K infusion
- Antiplatelet drugs

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common haematological disorders

- Anaemias
- Bleeding disorders
- Myeloproliferative or lymphoproliferative diseases

### **Understand the Symptomatology to reach the Differential Diagnosis:**

- Lassitude
- Dyspnoea
- Infections
- Edema
- Gum hypertrophy

- Bleeding tendency
- Bruising purpura
- Lymph node enlargement
- Weight loss
- Facial swelling
- Bone pain
- Jaundice
- Hepatosplenomegaly
- Hypersensitivity/ allergic reactions etc.

**Skills To Be Learnt:**

- History taking in general
- General physical examination, pallor, cyanosis, jaundice, clubbing, koilonychia, lymph nodes, edema, pulse, cyanosis, fever, headache, anorexia, weight loss, pain, facial swelling etc.
- Examination and assessment of the extent of the disease
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in Haematology.

**Procedures (Observe/ Assist):**

- Injection I/V, I/M, S/C, intradermal
- Collection of samples of blood/blood film preparation
- Perform I/V lines/fluids/blood/blood products, direct branula, cutdown, CVP etc.
- Observe bone marrow aspiration/ trephine

## **12. PSYCHIATRY**

**COURSE OUTLINES:**

- Mood disorders.
- Major depressive episodes
  - Unipolar
  - Bipolar
  - Dysthymic
  - Atypical
- Maniac episodes
- Anxiety disorders.
- Acute anxiety states
- Panic disorders
- Generalized anxiety disorders
- Psychic Traumatic disorders
- Obsessive-compulsive disorders
- Phobic disorders

- Schizophrenia.
- Alcoholism.
- Addiction.
- Psychosexual disorders in men and women.

## **CLINICAL TRAINING:**

### **Important Topics To Be Discussed:**

Case discussion for diagnosis and management of common Psychiatric disorders like-

- Anxiety
- Depression
- Schizophrenia
- Manic depressive psychosis
- Phobias
- Eating disorders

### **Understand the Symptomatology to reach the Differential Diagnosis:**

#### **Skills To Be Learnt:**

- History taking in psychiatry
- Clinical examination of patients
- Counseling and psychoanalysis especially in patients with suicidal and homicidal attitude.
- Interpretation of related radiological and laboratory investigations
- General medication and prescription writing in psychiatry

#### **Procedures:**

- Psychotherapy
- Electroconvulsive Therapy (ECT)
- Electroencephalogram (EEG)

## **13. MISCELLANEOUS AND EMERGENCIES**

- Heat stroke
- Snake bite
- Electric shock
- Poisoning etc.

### **Procedures To Be Performed/Observed/Assisted:**

#### **Perform:**

- Injection I/V, I/M, S/C, intradermal
- Oxygen therapy
- Urinary catheterisation – collection and samples of blood

**Observe:**

- Observe I/V lines/fluids/blood/blood products, direct, branula, cutdown, CVP
- N/G tube passing and feeding
- Foley's catheter/Red rubber catheter, IOP record maintenance
- Endotracheal tube placement
- Endotracheal suction/maintenance of airway/nursing on side etc.
- Aspiration of fluids (Pleural, Pericardial, Peritoneal, Knee)
- Lumbar puncture
- O<sub>2</sub> therapy
- Nebulisation
- ECG taking/reading
- X-ray chest reading
- Barium series
- I/V urograms
- Bone and joint X-ray reading for medical problems (Rheumatoid arthritis, osteoarthritis, collapse vertebra, caries spine, multiple myeloma, cervical rib etc.)
- Preparing a patient for endoscopies, upper and lower GIT

**THE LOG BOOK/CLINICAL CARD RECORD**

The student is expected to make a record of his/her achievements in the log book. The log book is a collection of evidence that learning has taken place, it is a reflective record of achievements. The log book shall also contain a record of the procedures which student would have performed in 3<sup>rd</sup>, 4<sup>th</sup> & 5<sup>th</sup> year.



## **RECOMMENDED BOOKS:**

1. **Practice of Medicine** by Davidson.
2. **Clinical Medicine** by Parveen J Kumar & Michael Clark
3. **Hutchison's Clinical Methods** by Michael Swash. 21<sup>st</sup> edition
4. **Basic psychiatry** by Myre Sim, e. B. Gordon
5. **Oxford Text Book of Psychiatry**
6. **ABC of Dermatology**. Latest Edition.
7. **Smith's General Urology** by Emil A. Tanagho and Jack W. McAninch  
15<sup>th</sup> edition. 2007
8. **Online Journals and Reading Materials** through HEC Digital Library Facility

# (C) OBSTETRICS

The course outline is as follows :

1. Introduction.
2. Obstetric history taking and examination.
3. Conception, implantation and development of placenta, fetal circulation, abnormalities of placenta.
4. Foetal skull and bony pelvis.
5. Diagnosis of pregnancy.
6. Physiological changes associated with pregnancy.
7. Ante-natal care.
8. Early pregnancy loss and its management (Abortions)
9. Physiology of labour.
10. Mechanism of labour.
11. Management of labour.
12. Complications of 3<sup>rd</sup> stage of labour.
13. Abnormal labour e.g. Prolonged labour/obstructed labour.
14. Pre-term labour.
15. Induction of labour.
16. Pre-maturity.
17. Post-maturity.
18. Conduction of normal delivery.
19. Operation delivery.
20. Forceps delivery.
21. Vacuum delivery.
22. Caesarean section.
23. Ante-partum haemorrhage.
24. Hydramnios.
25. Hyperemesis gravidarum.
26. Medical Disorder associated with pregnancy e.g.
  - Pregnancy with anaemia
  - Pregnancy with heart disease
  - Pregnancy with diabetes
  - Pregnancy with jaundice/hepatitis
  - Renal problems during pregnancy
  - Pyrexia in pregnancy
27. Hypertensive disorders of pregnancy e.g.
  - PET
  - Eclampsia
  - Essential hypertension
28. Obstetric shock.
29. Intra uterine growth retardation and its management.
30. Fetal distress and its management.

31. Fetal Monitoring.
32. Fetal presentations.
33. Breech presentation.
34. Occipito posterior position.
35. Brow presentation.
36. Face presentation.
37. Cord prolapse/compound presentation.
38. Transverse lie/unstable lie.
39. Multiple pregnancy.
40. Puerperium (normal and abnormal).
41. Examination of the new-born baby.
42. Resuscitation of new-born.
43. Minor problems of the new-born.
44. Breast feeding and its importance.
45. Obstetric injuries/ruptured uterus.
46. Haematological disorder of pregnancy e.g.
  - Rh incompatibility
  - Thalassemia major/minor
47. Role of Ultrasound in obstetric.
48. Foetal congenital abnormalities.
49. Vital statistics.

### **Practical:**

Log Book of 20 assisted deliveries.

### **RECOMMENDED BOOKS:**

1. **Obstetrics by Ten Teachers** by Stuart Campbell and Christoph Lees. 17th Ed 2000
2. **Essentials of Obstetrics and Gynecology** by Neville F. Hacker, J. George Moore, and Joseph C. Gambone. 4th ed. 2004
3. **Notes on Obstetrics & Gynecology.** Stirrat, Mills, Draycott. 5th Ed. 2003.
4. **Text book of Obstetrics and Gynecology** by Rashid Lateef
5. **Obstetrics and Gynecology** by Arshad Chauhan
6. **Online Journals and Reading Materials** through HEC Digital Library Facility.

# (D) GYNAECOLOGY

The course outline is as follows :

1. Introduction.
2. Anatomy of female
  - i. Genital organs
  - ii. Development of female genital organs
3. Puberty and adolescence.
4. Ovulation and its clinical importance.
5. Normal menstruation.
6. Menstrual abnormalities.
7. Gynaecological history taking and examination
8. Minor gynaecological operative procedures.
9. Amenorrhoea
10. Infertility.
11. Contraception.
12. Ectopic pregnancy.
13. Trophoblastic tumours.
14. Vulval lesions
15. Tumours of vagina.
16. Tumours of cervix.
17. Tumours of uterus.
18. Tumours of ovaries.
19. Tumours of fallopian tubes.
20. Menopause, Hormone replacement therapy.
21. Genital prolapse.
22. Pelvic floor injuries.
23. Urogynaecology.
24. Problems of marriage and sex.
25. Vaginal discharges.
26. Infections of female genital tract
  - i. Infections of upper genital tract
  - ii. Infections of lower genital tract
27. Pre-operative preparations.
28. Post-operative complications and its management.
29. Role of USG in gynaecology

## **Practical:**

Log Book of 20 patients of Gynaecology.

## **RECOMMENDED BOOKS:**

1. **Gynaecology by Ten Teachers** by Stanley G. Clayton and Ash Monga 2006.
2. **Essentials of Obstetrics and Gynecology** by Neville F. Hacker, J. George Moore, and Joseph C. Gambone. 4th ed. 2004
3. **Notes on Obstetrics & Gynecology** by Stirrat, Mills, Draycott. 5th Ed. 2003.
4. **Text book of Obstetrics and Gynecology** by Rashid Lateef
5. **Obstetrics and Gynecology** by Arshad Chauhan
6. **Online Journals and Reading Materials** through HEC Digital Library Facility.

# (E) PAEDIATRICS

The course outline is as follows :

List of suggested topics for teaching the undergraduates is given below, however the individual faculties can alter/add topics as per their discretion in respective institution:

- Common problems of children in Pakistan and statistics of Pakistani children
- Clinical methods in paediatrics
- Nutrition (breast feeding, infant feeding , weaning) and nutritional disorders:(PEM, rickets, vitamin A deficiency, iodine deficiency, iron deficiency )
- Growth and development.
- Common pediatric infections: measles, tetanus, polio, diphtheria, whooping cough, aids
- Malaria, enteric fever, tuberculosis, chicken pox, common skin infections
- Expanded program of immunization (EPI) .newer vaccines
- Diarrheal diseases.
- Acute respiratory infections (ARI).
- IMCI (integrated management of childhood illness).
- Neonatology: resuscitation of new born, care of normal new born, birth asphyxia, premature and low birth weight babies, neonatal jaundice, neonatal sepsis, neonatal fits, respiratory distress of new born, common skin conditions of neonates; pyloric stenosis, myelomeningocele, hydrocephalus, common congenital abnormalities and birth trauma.
- Neurology: meningitis, febrile, convulsions, epilepsy, cerebral palsy, mental handicap, cerebral malaria, encephalitis
- Cardiology: congenital heart diseases [VSD, PDA, TOF, ASD], rheumatic fever. Congestive cardiac failure, clinical assessment of a cyanotic neonate/infant.
- Haematology: anaemias, thalassemia, leukemias, bleeding disorders.
- Nephrology: nephrotic syndrome, urinary tract infections, acute glomerulonephritis
- Endocrinology: hypothyroidism, short stature, diabetes
- Pulmonology: croup, asthma, tuberculosis, pneumonias , pleural effusions.
- Gastroenterology: abdominal pain, malabsorption, hepatitis, cirrhosis, acute liver failure
- Diarrhea[acute/chronic] dysentery, worm infestations, giardia, amoebiasis, rectal polyp.
- Genetics: patterns of inheritance, Down's syndrome,

- Social pediatrics: right of child, child abuse, enuresis, encoparesis, hyperactivity
- Dyslexia, attention deficit disorder
- Miscellaneous: poisoning, prevention of home accidents, behavioral disorders.
- Pediatric surgery: hernia, intussusceptions, intestinal obstruction, talipes, congenital dislocation of hip, vesico ureteral reflux.

## **SKILLS:**

1. Students will demonstrate his ability to obtain a relevant clinical history from a parent or an older child.
2. Student will demonstrate his ability to perform adequate clinical examination of a child of any age (including newborn).
3. Student will be able to interpret clinical and laboratory data to arrive at a diagnosis.
4. Student will be able to advise appropriate nutritional measures for healthy and sick children (Breast feeding, avoidance of bottle, proper weaning)
5. Student will be able to counsel the parents on health promotive and disease preventive strategies for the child e.g. immunization procedures; hand washing)
6. Student will be able to recognize and manage common health problems of children.
7. Student will recognize the danger signs of disease in children and be able to appropriately refer children with severe disease to appropriate specialists/hospitals.
8. Student will demonstrate his ability to perform essential clinical procedures relevant to children e.g.
  - Resuscitation of newborn.
  - Basic cardio-pulmonary resuscitation.
  - Anthropometric measurements.
  - Measuring blood pressure
  - Starting intravenous lines/ draw blood sample
  - Administration of oxygen therapy
  - Giving nebulizer therapy [bronchodilator]
  - Use of growth chart

### **OBSERVE THE FOLLOWING SKILLS:**

1. Lumbar puncture
2. Bone marrow aspiration
3. Supra pubic puncture
4. Subdural tap
5. Thoracentesis
6. Pericardiocentesis
7. Liver biopsy
8. Renal biopsy
9. Observe passing of catheter
10. Observe pericardial tap

### **RECOMMENDED BOOKS:**

1. **Text book of paediatrics** by Pervaiz Akbar
2. **Essentials of Paediatrics** by Nelson. Latest Edition.
3. **Online Journals and Reading Materials** through HEC Digital Library Facility