

DIPLOMA IN MEDICAL RADIO IMAGING TECHNOLOGY – PART THREE

PART THREE			
S. No.	Name of Module	Credits	Total Marks
1	Fundamental of Information Technology	2	100
2	Radiographic Techniques	6	100
3	Clinical Radiography	6	100
4	Professional Management	6	100
5	Patient Care in Diagnostic Radiology	4	100
Total		24	

Module Name: FUNDAMENTAL OF INFORMATION TECHNOLOGY

- Information Concepts & Processing:** Definition of Information, Data VS Information, Introduction to Information System, Information Representation Digital Media, Images, Graphics, Animation, Audio, Video etc. Need a Value & Quality of Information the concept of Information entropy & Numerical.
- Computer Appreciation:** Definition of electronic Computer, History, Generation, Characteristics & Application of Computers, Classification of Computers, RAM, ROM, Computer Hardware, CPU, Various I/O Devices, Peripherals, Storage Media, Software Definition and Concepts.
- Data Communication & Networks:** Computer Networks, Networking of Computers, Introduction to LAN, WAN, MAN, Network Topologies, Basic Concepts in Computer Networks, Introduction to GPRS, CDMA, GSM & FM Technologies.
- Introduction to Internet Technologies:** HTML, DHTML, WWW, FTP, TELNET, Web Browser, Net Surfing, Search Engines, E -Mail, ISP, E-Commerce, Public Key, Private Key, Safety of Business Transaction on Web.
- Concepts in Operating System:** Elementary Concepts in Operating System, GUI, Introduction to DOS, MS Windows.

Module Name: RADIOGRAPHIC TECHNIQUE

Skeletal system

- Upper limb:** Technique for hand, fingers, thumb, wrist joint carpal bones, forearm, elbow joint, radio ulnar joints and humerus supplementary techniques for the above. eg. carpal tunnel view, ulnar groove, head of the radius, supracondylar projections.
- Lower limb:** Technique for foot, toes, great toe, tarsal bones, calcaneum, ankle joint, lower leg, knee, patella & femur.

Supplementary technique: Stress view for torn ligaments -- Subtalar joint and talo calcaneal joint.- Inter condylar projection of the knee-- Tibial tubercle-- Length measurement technique.

1. **Shoulder girdle and thorax:** Technique for shoulder joint, scapular, clavicle, acromio clavicular joints, sternum, ribs, sterno-clavicular joint.

Supplementary projections and technique –

- (i) Recurrent dislocation of shoulder.
 - (ii) Traumatic dislocation of shoulder.
 - (iii) Cervical ribs.
2. **Vertebral column:** Technique for Atlanta-occipital joint, cervical spine, cervico thoracic spine, thoracic spine, thoraco- lumbar spine, lumbo sacral spine, sacrum and coccyx.

Supplementary technique to demonstrate

- (i) Scoliosis
- (ii) Kyphosis
- (iii) Spondylolisthesis
- (iv) Disc lesion
- (v) Union of spinal graft. Adaptation of techniques to demonstrate specific pathologies.

3. **Pelvic girdle and hip region:** Technique for whole pelvis. Ilium, ischium, pubic bones, sacro iliac joint, symphysis pubis, hip joint, acetabulum neck of femur, greater and lesser trochanter.

Supplementary technique- Congenital dislocation of hips: Epiphysis of femur:-Lateral projections for hip joints to show femoral head and neck relationship.

6. **Skeletal survey:** Skeletal survey for metabolic bone disease, metastases, hormonal disorder, renal disorders.
7. **Skull:** Basic projections for cranium, facial bones, nasal bones and mandible. - Technique for petrous temporals for mastoids - Internal auditory canal - Accessory nasal sinuses- Temporomandibular joint - Orbits and optic foramen - Zygomatic arches.- Styloid process. - Pituitary fossa - Jugular foramen.

8. **Dental radiography:** Technique for intra oral full mouth - Occlusal projections Extra oral projections including orthopantomography - Supplementary techniques.

9. **Cardiovascular system:** Routine projections for heart and vessels (without the use of contrast agent) Supplementary views for above.

10. **Upper respiratory system:** Technique for post nasal air ways, larynx, trachea, thoracic inlet, thyroid gland. 1. Valsalva Manoeuvres. 2. Phonation.

Lungs and mediastinum: Technique for routine projections:- Supplementary projections - antero posterior, obliques, lordotic and apical projection. Use of penetrated postero - anterior projection - Expiration technique - Technique for pleural fluid levels and adhesions.

Diaphragm: Inclusion of diaphragm on chest and abdominal films.

11. **Abdominal viscera:** Technique for plain film examination - Projection for acute abdomen patients - Technique to demonstrate (i). foreign bodies (ii). imperforate anus.

12. **Radiography using mobile x-ray unit:** Radiography in the ward - Radiography in the specialised unit. eg. - Intensive care unit - Coronary care.- Neonatal unit - Radiography in the operating theatre.

Reference books

1. "Diagnostic Radiography" Glenda.J. Bryan (ELBS)
2. "Positioning in Radiography" Clarks (CBS Publishers, New Delhi.)
3. "Radiographic positions and Radiological procedures" Vinita Merrill (Jaypee Brothers, New Delhi)
4. "Manual of Radiographic Technique" T. Holn & P.E.S. Palmer (World Health Organisation)
5. " Text book of Radiologic -Technology" Jacoby and Paris (Mosby)
6. "Contrast Radiography" Scarrow (Schering Chemical)

7. " A manual of Radiographic positioning" Greenfield and Cooper (Lipincott)
8. "Illustrated guide to X-ray Techniques" Culliman (Blackwell)
9. A Guide to Radiological Procedures" Stephen Chapman & Richard Nakielny. (A Prism books (P) Ltd., Bangalore)
10. Applied angiography for Radiographers Paul & Douglas (W.B. Saunder company)

Module Name: CLINICAL RADIOGRAPHY

1. Ultra Sound: Principle of Ultra Sound, Types of Ultra sound, Description of Equipment, Indication and clinical Application.
2. CT SCAN: Basic principle of CT scan, Description of Equipment, Conventional CT Scan, Indications and Contra Indications.

Module Name: PROFESSIONAL MANAGEMENT

1. **Management Techniques:**
 - a. Leadership, authority, responsibility.
 - b. Functions of Management
2. **Quality Control:**
 - a. Meaning, importance of keeping standard.
 - b. Factors responsible for deviation from standards.
 - c. ISO and 180-9000 to 9006.
 - d. Total quality management.
3. **Financial Management:**
 - a. Sources of finance.
 - b. Brief idea of cash and credit, cheques, drafts, bill of exchanges, promissory note.
4. **Marketing:**
 - a. Basic concept.
 - b. Market promotion, market promotion.
 - c. Branding, packaging, pricing, planning and development.
 - d. Advertisement media and effectiveness.
 - e. Sales forecasting, marketing fix-princing policy, sales promotion and salesmanship.
 - f. After sales services, complaints and their redressal.
5. **Human Relations:**
 - a. Motivating the employers
 - b. Inter personnel relations,
 - c. Grievances and their banding
 - d. Staff requirement, training and monitoring.
6. **Foreign Trade:**
 - a. Export procedure.
 - b. Channels of distribution in export trade.
 - c. Export promotion.

- d. Registration of firm/factory in R.B.I., AEPC or others.

Reference Books:

1. 4. Statistical Quality Control - Manohar Mahajan
2. ISO: 9000 Quality System – 2000 - S. Dalela
3. ISO: 14000
4. Organisation & Management of Small Scale Industries - Desai J.V. Himalaya, Bombay, 1985
5. Management of Small Scale Industries - 3rd, Himalaya, Bombay, 1986

Module Name: PATIENT CARE IN DIAGNOSTIC RADIOLOGY

4. **Preparation of patients for general radiological procedures :** Departmental instructions to out-patients or ward staff; use of aperients, enemas and colonic irrigations, flatulence and flatus; causes and methods of relief; principles of catheterisation and intubation, pre medication; its uses and methods; anaesthetised patients, nursing care before and after special x-ray examination (for example in neurological, vascular and respiratory conditions); diabetic patients special attention to food; hazards of trauma.
5. **Radiological contrast agents :** Opaque agents and gases. Relationship of x-ray transmission to density and atomic number of the elements of contrast medium. Types of Barium sulphate solutions, concentration and its particular uses, flavouring agents.

Iodine preparation : Organic compounds, water - soluble group; significance of iodine content, proprietary preparations, iodised oil, Application of various systems of human body , Volume, contra-indications, methods of administration and route. Sensitivity test, side effects and management, elimination from the body.

Gases : Air, Oxygen and carbon di-oxide application and dangers.

- 3 **Emergencies in the x - ray department and management:** External defibrillation, direct cardiac massage, internal defibrillation, complications; cardiac arrest, respiratory arrest. bronchography, local anaesthetics; reactions, treatment.
4. **Special procedures in diagnosis Radiology:**
 - a. The Gastro intestinal tract: Barium meal, Barium swallow, Small bowel enema, Barium enema.
 - b. The renal tract: Intravenous urography, retrograde pyelography, cysto urethrography. The biliary tract. Oral cholecystography, Intravenous cholangiography, operative and post-operative cholangiography, percutaneous transhepatic cholangiography.

The respiratory tract ;Bronchography. Gynaecology. Hysterosalpingography. Cardio vascular system .Angiography, aortography-cerebral angiography, Splenoportovenography.The Lymphatic system. Lymphangiography. Central nervous system. Myelography. Sialography ; Ultrasound + Guided procedures. General preparation, care and CT scan + guided procedures safety measures. MRI

Reference books:

1. "Care of patient in diagnostic Radiography" Chesney & Chesney (Blackwell Scientific)
2. " Chesney's Care of the patient in Diagnostic Radiography" Pauline J . Culmer. (Blackwell Scientific)
3. " Aid to Tray and Trolley Setting" Marjorie Houghton (Bacilliere)
4. "First Aid' Haugher & Gardner (Hamlyn.)
5. "Practical nursing and first- aid" Ross and Wilson (Livingstone)