

Syllabus

Course contents:

Anatomy

Gross and cross sectional anatomy of all the body systems.

Pathology

Gross morphology of pathological conditions of systemic diseases affecting all organ systems.

Radiology Course

This would cover imaging and interventions of diseases affecting all the body systems:

- Chest
- Cardiovascular system
- Musculoskeletal including soft tissue
- Gastrointestinal system
- Hepato-biliary-pancreatic system
- Urogenital (genito-urinary) system
- CNS including head and neck
- Obstetrics and gynaecology
- ENT, eye, dental, breast
- Endocrine and metabolic system
- Clinically applied radionuclide imaging

Radiological Physics

1. Introduction of general properties of radiation and matter: Fundamentals of nuclear physics and radioactivity
2. Interaction of x-rays and gamma rays with matter and their effects on irradiated materials
3. X-ray Generating Apparatus
4. Screen-film radiography
5. Film processing: Dark room, dry processing, laser /dry chemistry cameras, artifacts.
6. Fluoroscopy: Digital including flat panel units, fluoroscopy cum radiography units
7. Digital radiography: Computed Radiography, Flat panel radiography
8. Other equipments: Ultrasound including Doppler, CT, MRI and DSA
9. Contrast Media (Iodinated, MR & Ultrasound) - types, chemical composition, mechanism of action, dose schedule, route of administration, adverse reaction and their management
10. Nuclear Medicine: Equipments and isotopes in various organ systems and recent advances
11. Picture Archiving and Communication System (PACS) and Radiology Information System (RIS) to make a film-less department and for Teleradiology
12. Radiation protection, dosimetry and radiation biology

13. Image quality and Quality Assurance (QA)
14. Recent advances in radiology and imaging

The student should have knowledge of the following physics experiments:

- Check accuracy of kVp and timer of an X ray unit
- Check accuracy of congruence of optical radiation field
- Check perpendicularity of x ray beam
- Determine focal spot size
- Check linearity of timer of x ray unit
- Check linearity of mA
- Verification of inverse square law for radiation
- Check film screen contact
- Check film screen resolution
- Determine total filtration of an x ray unit
- Processor quality assurance test
- Radiological protection survey of an x ray unit
- Check compatibility of safe light
- Check performance of view box
- Effect of kVp on x ray output

Radiography and processing techniques

1. Processing techniques: includes dark room and dry processing.
2. Radiography of the musculo-skeletal system including extremities.
3. Radiography of the chest, spine, abdomen and pelvic girdle.
4. Radiography of the skull, orbit, sinuses.
5. Contrast techniques and interpretation of GI tract, hepato-biliary tract, pancreas etc.
6. Contrast techniques and interpretation of the Central Nervous system.
7. Contrast techniques and interpretation of the cardiovascular system including chest.
8. Contrast techniques and interpretation of the genito - urinary system including Obstetrics and Gynaecology.
9. Paediatric radiology including MCU, genitogram, bone age.
10. Dental, portable and emergency (casualty) radiography.

Course Name: MD

Course Code: 0132301

A. PROGRAMME OBJECTIVES:

1. National:

To produce competent specialists and/or Medical teachers;

- i. Who shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy
- ii. Who shall have mastered most of the competencies, pertaining to the speciality, that are required to be practiced at the secondary and the tertiary levels of the health care delivery system;
- iii. Who shall be aware of the contemporary advance and developments in the discipline concerned;
- iv. Who shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology.
- v. Who shall have acquired the basic skills in teaching of the medical and paramedical professionals;

2. Institutional:

At the end of the postgraduate training in the discipline concerned the student shall be able to;

- i. Recognize the importance to the concerned speciality in the context of the health needs of the community and the national priorities in the health section.
- ii. Practice the speciality concerned ethically and in step with the principles of primary health care.
- iii. Demonstrate sufficient understanding of the basic sciences relevant to the concerned speciality.
- iv. Identify social, economic, environmental, biological and emotional determinants of health in a given case, and take them into account while planning therapeutic, rehabilitative, preventive and primitive measure/strategies.
- v. Diagnose and manage majority of the conditions in the speciality concerned on the basis of clinical assessment, and appropriately selected and conducted investigations.

- vi. Plan and advise measures for the prevention and rehabilitation of patients suffering from disease and disability related to the speciality.
- vii. Demonstrate skills in documentation of individual case details as well as morbidity and mortality rate relevant to the assigned situation.
- viii. Demonstrate empathy and humane approach towards patients and their families and exhibit interpersonal behaviour in accordance with the societal norms and expectations.
- ix. Play the assigned role in the implementation of national health programme, effectively and responsibly.
- x. Organize and supervise the chosen/assigned health care services demonstrating adequate managerial skills in the clinic/hospital or the field situation.
- xi. Develop skills as a self-directed learner, recognize continuing education needs; select and use appropriate learning resources.
- xii. Demonstrate competence in basic concepts of research methodology and epidemiology, and be able to critically analyze relevant published research literature.
- xiii. Develop skills in using educational methods and techniques as applicable to the teaching of medical/nursing students, general physicians and paramedical health workers.
- xiv. Function as an effective leader of a health team engaged in health care, research or training.

B. PROGRAMME OUTCOMES:

PO 1- Independently conducts, interpret and report radiographs and radiographic procedures.

PO 2- Provide radiological services in acute emergency and trauma including medicolegal aspects.

PO 3- Independently conduct, interpret and report ultrasonography with due care to PCPNDT regulations and able to perform basic USG interventions.

PO 4- Independently conduct, interpret and report CT.

PO 5- Independently conduct, interpret and report MRI.

PO 6- Elicit indication, diagnostic features and limitation of application of x-ray, USG, CT and MRI and should be able to describe cost effective algorithm of various

CO-PO MAPPING AND ATTAINMENT - MD RADIODIAGNOSIS

imaging technique in a given problem setting.

PO 7- Good knowledge about AERB guidelines and work accordingly.

C. COURSE OBJECTIVES:

1. Acquire good basic knowledge of the various sub – specialties of Radiology such as Neuroradiology, GI radiology, Uroradiology, Vascular Radiology, Musculoskeletal, Interventional Radiology, Emergency Radiology, Paediatric Radiology and Imaging of breast.
2. Independently conduct and interpret all routine and special radiological and imaging investigations.
3. Provide radiological services in acute emergency and trauma including its medicolegal aspects.
4. Elicit indications, diagnostic features and limitations of applications of ultrasound, CT and MRI and should be able to describe proper cost effective algorithm of various imaging techniques in a given problem setting.

D. COURSE OUTCOMES:

CO 1- Resident should acquire good knowledge about Basic sciences related to Radiology (consists of Anatomy, Pathology, Basic and Radiation Physics, Imaging Techniques, and Film processing).

CO 2- Residents should acquire good knowledge about Chest, CVS, CNS including Head & Neck, Eye, ENT, musculo-skeletal, pediatric radiology and Mammography.

CO 3- Resident should acquire good knowledge about Abdominal Imaging including GI, GU, Hepatobiliary, endocrine and metabolic, Obstetrics, Gynaecology and Interventional radiology

CO 4- Resident should acquire good knowledge about recent advances, nuclear medicine; Radiology related to clinical specialties

E. CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	1	-	1	1	1	2
CO2	2	2	2	2	2	2	-
CO3	2	2	2	2	2	2	-
CO4	2	2	2	2	2	2	2

CO-PO MAPPING AND ATTAINMENT - MD RADIODIAGNOSIS

AV G	2	1.75	2	1.75	1.75	1.75	2
-----------------	----------	-------------	----------	-------------	-------------	-------------	----------

