अखिल भारतीय आयुर्विज्ञान संस्थान, नागपुर

All India Institute of Medical Sciences, Nagpur

राष्ट्रीय महत्वका एक संस्थान / An institute of National Importance

क्ष किरणशास्त्र विभाग/ Department of Radiodiagnosis

UG CURRICULUM

FROM

RADIODIAGNOSIS

Department of Radiodiagnosis

UG Curriculum

1. **Goals-** The goal of undergraduate teaching in the Radio-diagnosis is to realize the medical students about the importance of radiological procedures in the medical field and making the students understand the accurate radiological technique that can be undertaken in particular clinical situations for the diagnosis of various diseases .

2. **Outcomes (objectives at the end of the course)-**

2.1 Understand basics of X-ray / USG production, its utility and hazards.

2.2 Appreciate and diagnose radiological changes in diseases of Chest, Abdomen, Skeletal system, Gastro-intestinal system, Genito-urinary System & CNS.

2.3 Learn about various Imaging techniques like computerised tomography (CT), Ultrasound, magnetic resonance imaging (MRI), conventional & Digital subtraction Angiography (DSA) and advice appropriate Diagnostic procedures to arrive at an appropriate diagnosis.

2.4 Use basic protective techniques during various Imaging procedures.

3. Syllabus

Name of system	List of topics
1. BONES & JOINTS:	1.Congenital dislocation of hip, Achonodroplasia, Osteogenesis Imperfecta. 2.Infection: Osteomyelitis, Tuberculosis of Bone & Spine. 3.Lesions of Joints: Septic / Tuberculous Arthritis, Rheumatoid Arthritis, Ankylosing Spondylitis, Osteo-Arthritis, Gout. 4.Bone Tumours: Ewing's, Osteogenic Sarcoma, Giant Cell Tumour. 5.Lymphoreticular system& Haemopoietic Disorders: Thalassaemia, Sickle Cell disease, Lymphomas, Multiple myeloma, plasmacytoma, Haemophilia. 6.Metabolic & Endocrine Disorders of Bone: Rickets & Osteomalacia, Scurvy, Osteoporosis, Acromegaly, and Hyperparathyroidism. 7.Skeletal trauma: General Principles.
2. CHEST:	1.Methods of examination, Normal X-ray Chest, Bronchopulmonary Segments. 2.Interpretation of Abnormal Chest X-ray: Silhouette sign, Air Bronchogram,Interstitial Shadows,Alveolar Shadows, Honeycomb Lung, Cavitations, Calcification, Hilar Shadow, Mediastinum, Pleura Miliary Shadows, Pulmonary Tuberculosis, Solitary Pulmonary Nodule, Bronchiectasis.

3.CARDIOVASCUAR SYSTEM	1.Normal Heart borders 2.Cardiomegaly, Pericardial Effusion. 3.Acquired Heart Diseases: Valvular Heart Disease. 4.Congenital Heart Disease. 5.Aortic Aneurysms, Co-arctation of Aorta.
4.GASTROINTESTINAL TRACT& ABDOMEN:	1.Barium Examination of GI Tract. 2.Acute Abdomen. 3.Oesophagus: Carcinoma, Strictures, Varices, Achalasia, and Hiatus Hernia. 4.Stomach &Duodenum: Ulcer disease, Malignancy. 5.Intestine: Intestinal Obstruction, Volvulus, Ulcerative Colitis, 6.Intussusceptions, Malignancy, Hirschsprung's Disease, Koch's Abdomen 7.Diverticular Disease, Polyp's.
5. HEPATO-BILARY SYSTEM, PANCREAS	1.Liver: Abscess, Hepatoma, Cirrhosis, 2.Portal Hypertension, and Spenoportography. 3.Gall-Bladder: Calculus Disease, Malignancy, PTC. 4.Pancreas: Pancreatitis, Malignancy.
6. URORADIOLOGY	1.Method of Examination: Intravenous Urography (IVP) 2.Calculus Disease, 3.PUJ Obstruction, PU Valves. 4.Wilm's Tumour, Renal Cell Carcinoma, 5.GU Koch's.
7.OBSTETRICS&GYNAECOLOGY:	1.Hysterosalpingography (HSG), 2.Intra-Uterine Foetal Death, 3.Fibroid, 4.Ovarian Tumours, 5.Ultrasongraphy& Transvaginal US
8.CENTRAL NERVOUS SYSTEM	1.Raised Intracranial Tension, 2. Intracranial Calcification, 3.Head Injury, 4.Cerebrovascular Accident, 5.Ring Enhancing Lesions in Brain, 6.Spinal Neoplasms, 7.Myelograpy.
9. MISCELLANEOUS	1.Radiation Hazards, Radiation Protection. 2.Imaging Modalities: USG, CT, MRI: Principles, Applications, Advantages, Limitations, Developments. 3.Angiography:SeldingerTechnique, Conventional Angiogram, DSA, Carotid, Renal Angiograms, Aortogram. 4.Contrast Media: Barium Sulphate, Water Soluble & Oily Contrast. 5.Interventional Radiology: Developments, Angioplasty, Embolisation. 6.Mammography: Principles & Applications.

4. Teaching programme

4.1 Semester wise teaching hours

Semester	Lectures (hrs)	Seminar, Demonstration, integrated Teaching, Tutorial (hrs)	SDL (hrs)	Practicals/Clinical (hrs)
1st semester	-	-	-	-
2nd semester	-	-	-	-
3rd semester	-	-	-	-
4th semester	-	-	-	-
5th semester	-	-	-	-
6th semester	5hrs	4hrs	1hrs	
7th semester	5hrs	4hrs	1hrs	
8th semester				4 clinics in a month
9th semester	-	-	-	-
Total	10 hrs	8 hrs	2hrs	72 hrs

4.2 Teaching Learning Method

S.No	List of topics	Lecture (Hours)	Tutorial (Hours)	Integrated teaching (Hours)	Practical/Clinics (Hours)
1	1.Evolution of Radio-diagnosis and about various radiological equipments in the current era. 2.Radiation and the interaction of radiation and importance of radiation protection including in pregnant women. 3.Role of Interventional Radiology in common clinical conditions. 4.The role of Emergency Radiology. miscellaneous & applied aspects. 5.Preparation of patient for common imaging procedures. 6.Indications for various common radiological investigations and interpret findings in common conditions pertaining to disorder of surgery. 7.Indications for various common radiological investigations and interpret findings in common conditions	10			

	pertaining to disorder of ENT. 8.Indications for various common radiological investigations and interpret findings in common conditions pertaining to disorder in obstetrics and Gynaecology and PCPNT ACT. 9.Indications for various common radiological investigations and interpret findings in common conditions pertaining to disorder in internal medicine. 10.Indications for various common radiological investigations and interpret findings in common conditions pertaining to disorder in Paediatrics.				
2	1.Film reading in plain chest X Ray. 2.Signs on chest X Ray in common pathologies of chest. 3. Film reading in plain X Ray Abdomen. 4.Radiographic findings in Bone tumors. 5.Film reading in cases of acute abdomen. 6.Barium studies. 7.Radiographic findings in metabolic and endocrine disorders in bone. 8.Discussion on common spotters		8		
3	1.Tuberculosis-pathophysiology and various radiological manifestations 2.Acut abdomen –causes and relevance of radiological investigationss			2	
4	1.Reading of radiographs of common lung conditions 2.Reading of radiograph of cardiovascular conditions 3.Demontration of various radiological techniques and relevant radio anatomy 4.System wise relevant investigations and presentation of cases				Four clinics /month

5. Assessment plan

5.1 List certifiable competencies ---Nil

5.2 Examination will be conducted at the end of clinical posting and will include MCQ and spotters.

5.3 The result will be submitted to department of Surgery for 10 marks as formative assessment.

5.4 Internal Assessment

IA number	Theory (question types & marks	Theory Timing (semester)	Practical (Pattern & marks)	Practical Timing (semester)
IA 1	MCQ and Spotters	VIII		
IA 2				
IA3				
Pre professional				

Note

1. Eligibility criteria to appear in final professional exam: Students must score minimum 35% marks in theory and practicals separately
2. A minimum attendance of 75% in clinical posting is mandatory to appear for Internal Assessment Practical exam (End posting examination)
3. A minimum of 75% attendance is mandatory in both theory and practical for appearing in Final Professional Exam
4. Internal Assessment marks will not be added in the final professional exam

5.5 Summative Assessment

Theory (Pattern & marks)	Total Marks	Professional Practical (Pattern & Marks)	Total Marks
-	-		-

5.6 Topic distribution for theory papers (wherever applicable)

Paper number	Topic
-	-
-	-
-	-

6. Recommended Reading List

6.1 Textbooks -

Sutton: Text book of Radiology and Imaging volume-I-II.

Grainger and Allison's Diagnostic Radiology: Text book of Medical Imaging

6.2 Reference books-

Jacobson's: Radiology of skeletal disorders

Mittelstaedt CA : General ultrasound

Callen: Ultrasonography in obstetrics and gynaecology