

Branch Name:	B.Sc. R&IT
Program Code:	AS102
Course Title:	Radiographic Technique
Course Code:	1AS1020302
Pre-requisite Course:	

Course Objectives:

Radiography and Image processing techniques provides construction and working of film, intensifying screen, cassette, dark room and automatic processor.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)		Practical (Marks)		Total (Marks)
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
4	-	6	7	50	50	25	25	150

Course Contents:

Unit No	Topic	Total Hours
I	Photographic Principles: Radiographic film- construction and types; Photographic effect and latent image formation; Film density and log relative exposure; Characteristic curve – its formation and features; Spectral response; Film faults and Artifacts Intensifying Screens: Luminescence-fluorescence and phosphorescence; Construction and types of Intensifying Screens; Intensification Factor, quantum detection and conversion efficiency; Film screen matching; Resolving power of Intensifying Screens; Speed of intensifying screen; Screen film contact tests; Advantages and limitations of Intensifying Screens X-ray Cassette: Construction of X-ray cassettes; Types of cassettes; Mounting Intensifying Screens on cassettes; Care and maintenance of cassettes	9
II	Dark Room – Planning & Construction: Planning for a small & large Hospital; Location of Dark Room; Construction of Dark Room; Ventilation; Wall Protection; Entrance to Dark Room - Single Door, Double Door Dark Room Accessories: Dry bench; Hopper, Drawer, Cupboard; Loading and unloading cassettes; Hangers, types of hangers and storage of hangers; Wet bench; Cleanliness, control of dust, dark room sinks; Hatches; Drier; Safe Lights-types and uses, factors affecting safelight performance, safelight Tests; Viewing room, Film dispensing	7
III	Film Processing: Photochemistry; Developer; Rinsing; Fixer; Washing and drying; Preparation of processing solutions; Manual processing apparatus; Effect of temperature in processing; Rapid processing Automatic processor: Principle of working and features, thermal regulation and replenishment system; Care and maintenance of automatic processor; Advantages and limitations of automatic processor	7
IV	Xeroradiography The Radiographic Image: The emergent beam related to densities on film contrast –objective and subjective Radiation contrast, film contrast and Radiographic contrast- Density, Sharpness, Unsharpness Resolution: Factors affecting resolution, choice of Kilovoltage and Mill amperage, Choice of Short Focus and Broad Focus, selection of Focus to Film Distance and Object to Film Distance selection of cassettes, Avoiding scatter	9

	radiation, magnification, distortion, penumbra Reproduction of Radiographs: Copying Radiographs, Magnification and Minification Radiography Imaging Communication: Hospital Information System, Radiology Information System, PACS, DICOM	
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PRACTICAL

Unit No	Topic	Total Hours
I	Radiographic film; Intensifying Screens; X-ray Cassette	20
II	Dark Room – Planning & Construction	6
III	Film Processing; Photochemistry;	5
IV	The emergent beam related to densities on film contrast – objective and subjective Radiation contrast, film contrast and Radiographic contrast- Density, Sharpness, Unsharpness; Factors affecting resolution; Reproduction of Radiographs	5

Text Books/ Reference Books:

1. Radiographic Imaging by D. N. Chesney & M. O. Chesney — Blackwell Scientific Publications
2. An Introduction to the Physics of Diagnostic Radiography by Christensen, Curry & Dowdey — Lea & Febiger
3. Radiologic Science for Technologists by Stewart C. Bushong — Mosby
4. A Concise Guide on Basic Radiographic Physics, Darkroom Procedures, Radiographic Positioning & Techniques by Lalit Agarwal — JBD Publications

Course Learning Outcomes (CLO):

- 1: Know basic physics of radiography processing system
- 2: Describe construction and working of film, intensifying screen, cassette, dark room and automatic processor
- 3: Explain radiographic film Processing chemistry
- 4: Discuss the factors affecting image quality in radiographic image and their application
- 5: Operate the workflow in x-ray imaging
- 6: Apply knowledge for the use of radiation factors
- 7: Demonstrate process the radiographic film in different systems
- 8: Prepare care and maintenance of radiographic films, cassettes, intensifying screens, darkroom accessories and X-ray equipment