VRM-102 Fundamentals of Radiology and Imaging

Objective - To enable the students to gain knowledge on the field of radiation along with the basic atomic and electric physics to the designing of x-ray circuits and its system

UNIT – 1 Basic concepts: Basic Units, Heat, Acoustics etc. Basic concepts of power, work, force, energy - Einstein's formula - Electronics, Electricity & Magnetism, -electromagnetic waves -Units and measurements - temperature and heat-SI units of above parameters- atomic structure- Nucleus - Atomic Number, Mass Number electron orbit and energy levels-Periodic table -Isotopes-Isobars-Ionization and excitation.

UNIT – 2 Electromagnetic induction: Electric charges-electric induction, Magnetism-Magnetic effect of an electric current, Radioactivity

UNIT – 3 Interaction of X-and Gamma rays, Physics of Diagnostic, X-ray circuits – self rectifying circuits – half wave pulsating voltage circuits – full valve pulsating voltage circuits - measurement of high voltage – control of KV circuit – mA circuit. X-ray beam quality; X-Ray generators and circuits-Filament current and voltage, X-Ray circuits, primary circuit, X-ray tables-floating top table & variable height table. X-Ray Grids /Bucky

UNIT – 4 Scattered Radiation, types of Grids - vertical bucky- versatile bucky -Stationary grid, parallel grid, focused grid – crossed grid, moving grid – Potter Bucky Diaphragm- Control of scattered radiation and grids/Bucky, Effects of scatter radiation on radiograph image quality, patient dose and occupational exposure, X-Ray Cassettes & Intensifying screens: Fluorescence

Recommended Books:

- Merrill's Pocket Guide to Radiography by Bruce Long & Tammy Curtis & Barbara Smith
- Medical X-Ray Techniques in Diagnostic Radiology: A Textbook for Radiographers and Radiological