

RADT 180C : Radiographic Physics

A basic review of the physical principles of matter, leading to tube production of electricity with its ramifications pertinent to the field of radiologic technology. Basic radiation producing circuitry is discussed including closed circuit television along with digital radiography.

Credits 3

Lab/Practicum/Clinical Hours 0

Lecture Hours 3

Co-Requisite Courses

RADT 103C

RADT 109C

Learning Outcomes

- Explain the basic characteristics of the atom, subatomic particles and discuss ionization and the emission of alpha, beta, and gamma radiation, and their effects on the nucleus.
- Define the characteristics of waves, with particular attention to electromagnetic waves, their electrical and magnetic components, and magnetism and electrostatics.
- Define electrical current, circuits, power, and frequency; and distinguish between AC and DC waveforms, and describe electromagnetic induction and transformers.
- Describe the basic layout of an X-ray machine circuit and explain the various components of the circuit, to include the materials, components, and function of the X-ray tube including the cathode, high speed rotating anode, glass envelope, and induction motor, and explain the process of thermionic emission and the creation of the space charge.
- Describe the Bremsstrahlung and characteristic interactions, their effects on the X-ray beam spectrum and impact on the image, and describe the effects of target material, mAs, filtration, kVp, and the type of generator used on the X-ray beam spectrum.