

RADT123C : Radiation Protection

Topics covered in this course include radiation quantities and units; interaction of radiation with the body tissues; molecular, and cellular radiation biology; dose limits; equipment design for radiation protection; early and late effects of radiation; management of patient and imaging personnel doses during diagnostic x-ray procedures; and methods of monitoring.

Credits 3

Lab/Practicum/Clinical Hours 0

Lecture Hours 3

Prerequisites

Students are required to pass prerequisite courses with a grade of C or higher. Exceptions apply; please consult your department chair.

RADT180C

RADT151MC

RADT116C

RADT203C

Corequisite Courses

RADT294C

Learning Outcomes

(Clinical Portion)

- Discuss ionizing radiation in the healing arts, justification and responsibility for imaging procedures, and patient education. List different forms of ionizing radiation and identify the units of measurement. Explain how ionizing radiation can cause biologic damage in body tissue.
- Describe the process of absorption of ionizing radiation and explain the events that occur when ionizing radiation passes through matter. List x-ray photon interactions with matter and describe the effect of kVp on image quality and patient dose. Describe the radiation quantities and units used to measure and limit radiation exposure.
- Describe the various monitoring devices and their functions. Discuss the importance of cell biology and the effects of ionizing radiation on the human body. Discuss the effects of ionizing radiation on living systems and the sequence of events occurring after the absorption of energy from ionizing radiation; the action of the living system to compensate for consequence of x-ray absorption and the injury to the living system that may occur from irradiation.
- List the early tissue reactions, stochastic effects, and late tissue reactions of radiation and their effects on organ systems. Discuss and explain dose limits for exposure to ionizing radiation in order to limit the stochastic and late tissue reactions of ionizing radiation exposure.
- Describe the radiographic equipment design and how they can optimize image quality and reduce radiation exposure to the patient. Identify ways to manage patient and imaging personnel radiation dose during diagnostic x-ray procedures. List the special considerations on radiation safety in computed tomography and x-ray breast imaging.