

Introduction to Imaging, Radiation Safety and CDRH Compliance Testing



RADIOLOGICAL SERVICE TRAINING INSTITUTE

Introduction

Principles of Servicing Diagnostic X-Ray Systems is a skills development program that teaches the new service professional the cognitive skills necessary to understand the X-ray system and its applications in the medical community. The program is divided into four major learning units:

- O Introduction to radiography
- O Radiation safety
- O Dosimetry
- O Compliance

The course contains lecture, demonstration, and hands-on training, which teach participants proper operation, radiation safety, image quality assessment, and global understanding of the X-ray system.

Upon completion of the course, the student will be able to perform first level service on the radiographic system.

Prerequisites

To attend this course, the professional must hold a position in the medical imaging field.

Objectives

At the conclusion of this course, participants will be able to:

- Have a thorough understanding of X-rays and X-ray production
- Follow safety procedures for patients, physicians and individuals

Course Outline

Day 1

- Introduction to radiography
 - O X-rays: an overview
 - A brief history
 - What they are
 - How they are produced
 - What they do
 - O The radiographic system, an overview
 - O The radiograph, an overview
 - O Image receptor types
 - O Measurements of beam quality and quantity
 - O Half Value Layer
 - O Operation of the overtable system
 - O Operation of the undertable system
 - O Patient positioning

Day 2

- Radiation safety, principles and practices
 - O Radiation and its biological effects
 - Atom
 - X-ray beam
 - Compton effect
 - Photoelectric effect
 - O Radiation safety, working with radiation
 - Rules governing working with radiation
 - Time, distance, and shielding
 - Radiation protective devices
- Lab Activities
 - O Learn safety rules in working with radiation

Day 3

- The production of X-rays
 - O How X-rays are produced
 - Where X-rays are produced
 - How X-rays are controlled
 - Bremsstrahlung radiation theory
 - Characteristic radiation Theory
 - O The X-ray tube
 - X-ray tube construction
 - Functions of basic elements
 - Electrical and mechanical requirements
 - Tube protection
- Lab Activities
 - O X-ray tube warmup
 - O Radiographic overtable operation & CR operation
 - O Diagnostic workstation operation
 - O Noninvasive test equipment
- CDRH Compliance
 - O kV and mA Accuracy
 - O Reproducibility and Linearity
 - O HVL
 - O Time and mAs Accuracy
 - O Fluoro Entrance Dose
- System review
- Final exam
- Course evaluation