

Course Description

RTE1418 | Radiographic Technique I | 3 credits

This course is designed to introduce the freshmen radiography students to all the factors that control and influence radiographic quality. It will include the math applications of the related formulas and automatic film processing.

Course Competencies

Competency 1:

The student will be able to convey an understanding of the principles of imaging and the various factors that contribute to accuracy including x-ray production, image formation, and factors related to radiographic quality by:

- discussing practical considerations in setting standards for acceptable image quality
- evaluating the radiographic contrast and spatial resolution on various radiographic images
- explaining the relationships of factors that control and affect image exposure, radiographic contrast and spatial resolution
- differentiating between size and shape distortion
- performing calculations to determine image magnification and percent magnification
- defining sampling frequency
- describing the impact of detector element size on spatial resolution
- describing the Nyquist-Shannon theorem as it relates to sampling frequency

Learning Outcomes:

- Numbers / Data
- Critical thinking
- Information Literacy
- Computer / Technology Usage

Competency 2:

The student will be able to demonstrate knowledge and understanding of the principles of imaging and the various factors that contribute to accuracy including image acquisition and processing, scatter radiation control, and image evaluation by:

- describing the relationship of factors affecting scattered radiation
- explaining the use of radiographic technique charts
- explaining exposure factor considerations involved in selecting techniques
- describing grid types and grid efficiency in terms of grid ratio and frequency
- comparing fixed kilovoltage peak (kVp) and variable kVp systems

- applying conversion factors for changes in the following areas: distance, grid, image receptors, reciprocity law, and 15 percent rule

Learning Outcomes:

- Numbers / Data
- Critical thinking
- Information Literacy
- Computer / Technology Usage

Competency 3:

The student will be able to convey an understanding of the concepts and equipment required of digital image acquisition and display by:

- defining terminology associated with digital imaging systems
- describing the various types of digital receptors
- describing the response of digital detectors to exposure variations
- describing the histogram and the process or histogram analysis as it relates to automatic rescaling and determining an exposure indicator
- explaining the response of PSP systems to background and scatter radiation
- defining the fundamental principles of radiographic exposure to digital detectors
- explaining the potential impact of digital radiographic systems on patient exposure and methods of practicing the as low as reasonably achievable (ALARA) concept with digital systems

Learning Outcomes:

- Numbers / Data
- Critical thinking
- Information Literacy
- Computer / Technology Usage