

Minnesota State College Southeast

RADT 2653: Radiographic Imaging 3

A. COURSE DESCRIPTION

Credits: 2

Lecture Hours/Week: 2

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites: None

Corequisites: None

MnTC Goals: None

This course prepares students for the national certification examination in radiography offered by the American Registry of Radiologic Technologists (ARRT). Review of all program content including radiographic imaging and positioning curriculum, radiation protection and patient care will be covered. Preparing the student for the job market with resume writing, interviewing, and job search/social networking skills will also be part of this class. It will be delivered in a hybrid format to allow students to return to clinical during the last 4 weeks of the semester. An on-line component includes registry practice tests by Corectec. (Prerequisites: RADT2605, RADT2617, RADT2630, ARDT2642) (Co-requisite: RADT2620, RADT2650) (2 credits: 2 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 03/03/2015 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Patient Care
2. Safety
3. Image Production
4. Procedures

D. LEARNING OUTCOMES (General)

1. Summarize the structure, function, and proper use of the x-ray tube
2. Summarize the interactions of radiation with matter, and the factors affecting scatter and secondary radiation
3. Summarize the function, purpose, and use of beam restricting devices
4. Summarize x-ray beam filtration
5. Summarize the structure, function and use of radiographic grids
6. Summarize the function of each component of digital imaging systems
7. Summarize the factors that affect radiographic density and contrast
8. Summarize the factors that affect recorded detail and distortion
9. Summarize the steps in the decision-making process used in image analysis
10. Summarize the steps of an effective image critique
11. Summarize the standards for acceptable image quality
12. Analyze image artifacts
13. Evaluate image for proper anatomical presentation
14. Examine the effect of pathology on exposure technique and radiographic image
15. Differentiate among technical factor problems, procedural problems and equipment malfunctions
16. Analyze exposure factor considerations involved in technique selections
17. Summarize the use of auto exposure control (AEC)
18. Examine the role of the radiographer in the healthcare environment
19. Discuss the origins of medical ethics and analyze legal and ethical issues in healthcare including legal doctrine, patient's bill of rights and patient consent
20. Examine medical emergencies and trauma in radiology and identify symptoms related to specific emergency situations (including contrast reactions)
21. Describe the importance for infection control including sources, modes of transmission of infection and diseases, and institutional control procedures
22. Discuss drug categories of relevance to Radiology (side effects, uses, impacts on medical imaging)
23. Summarize the radiation interactions with matter including radiation energy transfer
24. Contrast the significance of photoelectric effect versus scattering interactions in diagnostic imaging in relation to atomic number, photon energy and part density
25. Apply the different radiation exposure units and quantities as a method of measuring radiation response
26. Summarize the principles of cellular biology and the physical, chemical, and biologic factors influencing radiation response of cells and tissues
27. Categorize between the various effects of radiation exposure by discriminating between direct and indirect ionizing radiation and the mechanisms of radiobiological effects
28. Summarize the effects of radiation exposure to the cell and evaluate factors influencing radiobiologic/biophysical events at the cellular and subcellular level
29. Discuss potential biological damage of ionizing radiation
30. Explain factors influencing radiosensitivity and biological response.
31. Examine effects of limited vs. total body exposure
32. Summarize the early and late radiation effects to the cell and human with acute radiation syndrome
33. Relate short-term and long-term effects as a consequence of high and low radiation doses
34. Differentiate between somatic and genetic radiation effects as well as discuss specific diseases or syndromes associated with them
35. Interpret graphic dose-related relationships
36. Discuss stochastic and nonstochastic effects
37. Discuss embryo and fetal effects of radiation exposure

38. Discuss risk estimates for radiation-induced malignancies

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted