



Western Technical College

10526195 Radiographic Image Analysis

Course Outcome Summary

Course Information

Description	Prepares radiography students to analyze radiographic images for quality. Students apply quality control tests to determine the causes of image problems including equipment malfunctions and procedural errors.
Career Cluster	Health Science
Instructional Level	A.A.S. - Associate in Applied Science
Total Credits	2
Total Hours	54

Pre/Corequisites

Prerequisite 10526158 Introduction to Radiography

Textbooks

Radiographic Imaging Analysis – with Access. 5th Edition. Copyright 2020. McQuillen Martensen, Kathy. Publisher: Elsevier Science. **ISBN-13:** 978-0-323-52281-6. Required.

Success Abilities

1. Live Responsibly: Foster Accountability
2. Refine Professionalism: Improve Critical Thinking

Program Outcomes

1. Carryout the production and evaluation of radiographic images
2. Apply critical thinking and problem-solving skills in the practice of diagnostic radiography

Course Competencies

1. Summarize the steps in the decision-making process used in image analysis

Assessment Strategies

- 1.1. Oral, written, graphic and/or skill assessment

Criteria

- 1.1. summary identifies the key steps in the decision-making process used in image analysis
- 1.2. summary lists the steps in the correct order
- 1.3. summary describes the desired result for each step in the decision-making process

Learning Objectives

- 1.a. State the characteristics of an optimal image
- 1.b. Discuss the difference between an optimal and acceptable radiographic image
- 1.c. List eleven (11) categories of image analysis
- 1.d. Identify and characterize the specific evaluation criteria of image analysis

2. Apply the process for evaluating images

Assessment Strategies

- 2.1. Oral, written, graphic and/or skill assessment

Criteria

- 2.1. you follow an established process for evaluating images
- 2.2. you use appropriate equipment when conducting the evaluation
- 2.3. you document your findings
- 2.4. you justify your conclusions
- 2.5. evaluation determines if the image exhibits adequate IR exposure
- 2.6. evaluation determines if the image exhibits adequate contrast
- 2.7. evaluation determines if the image contains an adequate level of spatial resolution
- 2.8. evaluation determines if the image falls within acceptable limits of distortion
- 2.9. evaluation determines if the image contains adequate beam restriction
- 2.10. evaluation determines if the image exhibits appropriate identification markers
- 2.11. you make required adjustments to bring image into acceptable limits

Learning Objectives

- 2.a. Discuss the factors exposure and state what adjustments, and to what degree
- 2.b. Explain how to recognize if an image demonstrates poor exposure
- 2.c. Explain the procedural factors that affect the recorded detail, sharpness of an image, and how they are identified on the resulting image

3. Summarize the standards for acceptable image quality

Assessment Strategies

- 3.1. Oral, written, graphic and/or skill assessment

Criteria

- 3.1. you identify the purpose of the standards
- 3.2. you describe the role of the radiographer in establishing imaging standards
- 3.3. you define a process for establishing and maintaining image standards in the department

Learning Objectives

- 3.a. Identify the purpose of image quality standards
- 3.b. Determine the necessary steps in establishing image quality standards
- 3.c. Explain who is responsible for maintaining the image quality standards in the Radiology department
- 3.d. Describe the radiologic technologist's role in establishing these standards
- 3.e. Identify the acceptable limits for quality images
- 3.f. Explain twelve (12) criteria items for analyzing a radiographic image

4. Analyze image artifacts

Assessment Strategies

- 4.1. Oral, written, graphic and/or skill assessment

Criteria

- 4.1. you identify the artifact(s) on the recorded image
- 4.2. you determine where in the image chain the artifact occurred
- 4.3. you classify types of artifacts
- 4.4. you determine the cause of the artifact(s)
- 4.5. you recognize the effects of artifacts on images
- 4.6. you identify and suggest corrective and preventive measures

Learning Objectives

- 4.a. Describe the specific characteristic of the types of artifacts
- 4.b. Classify the different types of image artifacts
- 4.c. Identify artifacts on a recorded image
- 4.d. Identify where in the imaging chain the artifact occurred
- 4.e. Determine the specific cause for the image artifact
- 4.f. Recognize the effects of artifacts on radiographic images
- 4.g. Identify and suggest corrective and preventative measures to eliminate and prevent artifacts

5. Evaluate image for proper anatomical presentation

Assessment Strategies

- 5.1. Oral, written, graphic and/or skill assessment

Criteria

- 5.1. you determine the purpose of the exam
- 5.2. you determine the proper position on the image
- 5.3. you identify the anatomy on the image
- 5.4. you determine if anatomical presentation meets the requirements of the exam
- 5.5. you suggest corrective measures if needed

Learning Objectives

- 5.a. Describe how positioning of anatomic structures as they relate to the x-ray beam and image receptor affect how they are visualized on the radiographic image
- 5.b. State how similarly appearing structures can be identified on radiographic images
- 5.c. Explain how the CR may improve the radiographic image quality of the visible anatomical structures

6. Identify the purpose of quality management programs

Assessment Strategies

- 6.1. Oral, written, graphic and/or skill assessment

Criteria

- 6.1. you differentiate between quality improvement/management, quality assurance, and quality control
- 6.2. you detail the main purposes of quality management programs including cost savings, technologist morale, high quality image, and radiation protection
- 6.3. you detail the components of a quality management program

Learning Objectives

- 6.a. Identify the need for quality management in diagnostic imaging
- 6.b. Discuss the impact of government regulation and The Joint Commission accreditation of quality management
- 6.c. Explain the differences between quality assurance, quality control, and quality management

7. Evaluate the image considering the patient's age and condition

Assessment Strategies

- 7.1. Oral, written, graphic and/or skill assessment

Criteria

- 7.1. you recognize variances in body habitus
- 7.2. you recognize common radiographic pathology
- 7.3. you recognize effects of physical limitations
- 7.4. you recognize the effects of cognitive limitations

Learning Objectives

- 7.a. Determine image acceptability based on patient's age

- 7.b. Determine image acceptability based on patient's cognitive limitations
- 7.c. Determine image acceptability based on patient's physical limitations