

## **RADT 123**

### **Image Production and Processing**

3 Credits

## Community College of Baltimore County Common Course Outline

### **Description**

**RADT 123 – Image Production and Processing:** a course in which students discuss the multiple factors that control and influence the production of the radiographic image. Topics include radiographic exposure factors, components of a quality radiographic image, and radiation safety techniques. Also discussed are the equipment and the methods for processing digital radiographic images, including processing errors, image storage, and data privacy and management. 3 credit hours: 3 lecture hours per week; 15 weeks. Offered spring semester.

**Pre-requisites:** RADT 121

**Co-requisites:** RADT 124, RADT 125

### **Overall Course Objectives**

Upon completion of this course, students will be able to:

1. define the four components of a quality radiographic image;
2. analyze the relationships of factors affecting radiographic exposure, radiographic contrast, recorded detail, and distortion;
3. relate the purposes of beam-limiting devices and filtration in terms of patient dosage, scattered radiation production, radiographic exposure and contrast;
4. describe a grid in terms of its purpose, construction, and use;
5. solve multiple technique problems using formulas and relationships discussed in class;
6. define terminology associated with digital imaging systems;
7. compare the various types of digital receptors and their responses to exposure variations;
8. describe the histogram and the process of histogram analysis as it relates to automatic rescaling and determining an exposure indicator;
9. relate the receptor exposure indicator values to technical factors, system calibration, part/beam/plate alignment and patient exposure;
10. associate impact of image processing parameters to the image appearance;
11. examine 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;
12. describe Picture Archival and Communications System (PACS) and its function;
13. define Digital Imaging and Communications in medicine (DICOM); and
14. describe privacy and data-security concerns with electronic information.

### **Major Topics**

The Common Course Outline (CCO) determines the essential nature of each course.  
For more information, see your professor's syllabus.

- I. Qualities of the Radiographic Image
- II. Digital Image Characteristics
- III. Digital Receptors
- IV. Image Formation
- V. Exposure Indicators
- VI. Histogram Analysis
- VII. Patient Exposure
- VIII. Artifacts
- IX. Display Monitor
- X. Data Management
- XI. Multiple Technique Problems
- XII. Radiographic Techniques and Patient Dosage
- XIII. Radiographic Exposure
  - a. Measurement
  - b. Controlling Factor
  - c. Influencing Factors
- XIV. Radiographic Contrast
  - a. Subject Contrast
  - b. Scale of Contrast
  - c. Controlling Factor
  - d. Influencing Factors
- XV. Recorded Detail
  - a. Definitions
  - b. Motion Unsharpness
  - c. Materials Unsharpness
  - d. Geometric Unsharpness
- XVI. Distortion
  - a. Size Distortion
  - b. Shape Distortion

### **Course Requirements**

Grading will be determined by the individual faculty member, but shall include the following, at minimum:

- 8 Homework Assignments
- 2 Group Projects
- 10 Quizzes
- 3 Tests
- 1 Cumulative Final Exam

Written assignments and research projects: Students are required to use appropriate academic resources in their research and cite sources according to the style selected by their professor.

### **Other Course Information**

The Common Course Outline (CCO) determines the essential nature of each course.  
For more information, see your professor's syllabus.

The American Registry of Radiologic Technologists (ARRT) has established a minimum scaled passing score of 75%. The Radiography program has developed standards of grading that are consistent with grading systems of other programs. Letter grades will be distributed according to the following standards:

92 -100 A

83 -91 B

75 -82 C

65 -74 D

Below 65 F

This course is a required course in the AAS Radiography program within the Medical Imaging Department. All RADT courses must be passed with a grade of C or better.

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