

RADT 103

Fundamentals of Radiologic Technology

3 Credits

Community College of Baltimore County Common Course Outline

Description

RADT 103 – Fundamentals of Radiologic Technology: a course in which students are introduced to the art and career of radiography, caring for patients, and understanding imaging equipment. Topics include communication, ethical considerations, vital signs, patient safety and transport, contrast media delivery, medications, medical emergencies, infection control, and aseptic techniques. Also discussed are components of the x-ray machine system, accessory equipment, and x-ray circuitry. Offered fall semester.

Pre-requisites: Admission to the Radiography program

Co-requisites: RADT 104 and RADT 105

Overall Course Objectives

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

1. discuss the roles and responsibilities of the radiographer in providing patient care, including privacy practices, legal and ethical issues and concerns, standards of care, American Registry of Radiologic Technologists (ARRT) standards, and governing and regulating bodies;
2. contrast methods of communication and barriers to communication of patients, including, but not limited to age, culture, and mental capacity;
3. demonstrate the technique for obtaining vital signs;
4. describe medical asepsis and how it pertains to a surgical field and/or a sterile environment;
5. demonstrate Standard Precautions, including proper Centers for Disease Control standards of handwashing and proper application and use of personal protective equipment;
6. explain the infection cycle, different types of infections, and modes of transmission of infections and diseases;
7. distinguish emergencies associated with the field of radiography and patient care, including trauma, shock, allergic reactions, contrast media reactions, anaphylaxis, and how to appropriately handle each situation;
8. describe the construction and operation of the x-ray tube and an x-ray circuit;
9. compare various types of x-ray generators in terms of advantages, disadvantages, and effective voltage use;
10. identify the construction and function of computed radiography image receptors, direct radiography image receptors, and the image intensifier in relationship to image quality output;
11. indicate how electricity and magnetism play a role in x-ray production;

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

12. explain the uses, purposes, and differences of Automatic Exposure Control and manual techniques, and when and why to use them;
13. summarize the use of video tubes, video recorders, cine cameras, spot film cameras, charged coupling devices, and complementary metal-oxide-semiconductors;
14. recognize the significance of quality control in the use of all radiographic equipment; and
15. examine the different types of x-ray interactions from the tube, and the different types of x-ray interactions within the body.

Major Topics

- I. Responsibilities of Radiographer
- II. Methods of Communication
- III. Barriers to Patient Communication
- IV. Immobilization Techniques
- V. Administration of Parental Fluids
- VI. Patient Assessment
 - a. Temperature
 - b. Pulse
 - c. Respiration
 - d. Blood Pressure
 - e. Visualization
- VII. Aseptic Technique
 - a. Antiseptic vs. disinfectant
 - b. Sterile vs. clean
 - c. Sterile area vs. contaminated area
- VIII. Standard Precautions
- IX. Transmission of Diseases
- X. Medical Emergencies
 - a. Cardiac arrest
 - b. Anaphylactic shock
 - c. Seizures
 - d. Hemorrhage
 - e. Apnea
 - f. Vomiting
 - g. Aspiration
 - h. Suspected fractures
 - i. Diabetic coma
 - j. Insulin shock
- XI. Emergency Medical Code System
- XII. Emergency Equipment and Supplies
- XIII. Contrast Media
 - a. Types
 - b. Administration
 - c. Reactions
- XIV. X-ray Tube Construction
- XV. Heat Loading of X-ray Tubes

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- XVI. Calibration of X-ray Generators
- XVII. Fluoroscopic Imaging
 - a. Image intensification
 - b. Recording media and techniques
 - c. Digital fluoroscopy
- XVIII. Digital X-ray Imaging
 - a. Review of computer principles and terminology
 - b. Equipment specifications for imaging
 - c. Applications in imaging

Course Requirements

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

- 2 Homework Assignments
- 10 Discussion Board Assignments
- 1 Group Project
- 10 Quizzes
- 2 Tests
- 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 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.

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