

Common Course Outline

RADT 202

Radiography IV

8 Semester Hours

The Community College of Baltimore County

Description

RADT 202 - 8 credits – Radiography IV is the sixth course in the sequence of radiography courses that comprise the professional portion of the radiography curriculum. It consists of both a didactic portion and a clinical portion. The didactic portion of RADT 202 consists of four (4) modules: Radiation Protection/Radiobiology, Sectional Anatomy, Trauma, Mobile and Surgical Radiography (to include pediatric imaging), and Advanced Medical Imaging. During the clinical portion of RADT 201 students will continue to achieve additional clinical skills by participating in the actual procedures performed in a radiology/medical imaging department.

Credit Hours: 4 lecture hours, 24 clinical hours, and 2 lab hours per week

Pre-requisites: RADT 201

Overall Course Objectives

Upon successful completion of Module 1. Radiation Protection/Radiobiology, students will be able to:

1. state the goal of radiation protection and identify the responsibility of the radiographer for radiation protection;
2. list major natural and artificial sources of background radiation;
3. differentiate between particulate and electromagnetic radiations;
4. discuss interactions of radiation with matter and their relevance to radiation protection;
5. discriminate among various units of radiation, both traditional and SI units;
6. describe the concept of dose equivalent limits and differentiate between whole body and body part dose equivalent limits for radiation exposed workers and the general public;
7. discuss the methods used to reduce both patient and radiographer exposure;
8. discuss personnel monitoring devices in terms of types, purpose, characteristics, advantages and disadvantages;
9. list and discuss basic equipment designs that are required to protect patients and radiographers from excessive exposure to radiation; and
10. discuss the methods and practices that reduce both operator and patient exposure to ionizing radiation.

Upon successful completion of Module 2. Sectional Anatomy, students will be able to:

1. discuss the normal appearance of anatomy on radiographs;
2. identify gross anatomical structures on radiographs, diagrams and models;

3. describe the location of anatomical structures in relation to each other and discuss their relevance in medical imaging;
4. describe the three anatomical planes used in medical imaging;
5. discuss the three-dimensional relationship of anatomical structures discussed in class: and
6. identify major anatomical structures on CT and MR images of the head, thorax, abdomen and pelvis.

Upon successful completion of Module 3. Trauma, Mobile and Surgical Radiography (to include pediatric imaging) students will be able to:

1. position patients for trauma radiographic exams;
2. manipulate radiographic equipment around a immobile trauma patient;
3. set the correct exposure techniques for trauma radiographic exams;
4. manipulate a c-arm and its locks in an OR setting;
5. operate the c-arm by knowledge of what functions to use on the machine;
6. describe various types of surgical procedures that require imaging;
7. operate a portable radiographic machine and set techniques on its panel;
8. position patients for portable radiographic exams;
9. position pediatric patients for radiographic exams;
10. set the proper techniques for the pediatric patient; and
11. interact with the pediatric patient in an imaging setting.

Upon successful completion of Module 4. , Advanced Medical Imaging, students will be able to:

1. describe the relationship between the various medical imaging modalities discussed in class;
2. compare the major advantages and disadvantages of each medical imaging modality;
3. explain the basic imaging principles of each modality;
4. identify and briefly explain the operation of the equipment used in each imaging modality;
5. describe the three-dimensional relationship of anatomical structures discussed in class;
6. identify major anatomical structures on US, CT and MR images;
7. identify equipment and supplies used to obtain a routine venous specimen;
8. describe the steps for performing venipuncture; and
9. perform venipuncture using standard precautions.

During the clinical education portion of RADT 202, students will:

1. complete demonstration/practice sessions for contrast studies, digestive and urinary and category VI;
2. complete laboratory evaluations (simulations) for contrast studies, digestive and urinary, skull/face, trauma procedures, and pediatrics;
3. present films for image evaluation in spine and bony thorax, contrast studies, (digestive and urinary), and skull/face;

4. complete 2 preliminary image evaluations (PIE's) for lower extremity by **October 21, 2011**, and 2 PIE's for spine/thorax **by the end of the semester**;
5. perform competency tests for upper extremity, lower extremity, spine/ bony thorax), and contrast studies, (digestive and urinary). A minimum of 16 successful competency tests is required during RADT 202;
6. complete the corresponding chapters in the Bontragers workbook and MRO;
7. submit a scientific essay/exhibit for competition at the annual MSRT meeting;
8. complete area-specific performance objectives for scheduled RADT 202 clinical areas; and
9. demonstrate appropriate professional behavior while on clinical duty.

Major Topics

List of major topics in outline form.

- I. Radiation Protection/Radiobiology
 - a. Goal of radiation protection
 - b. Radiographer's responsibilities
 - c. Major natural and artificial sources of radiation
 - d. Particulate and electromagnetic radiation
 - e. Interactions of radiation with matter
 - f. Units of radiation
 - g. Dose equivalent limits
 - h. Methods of reducing radiation exposures
 - i. Personnel monitoring devices
 - j. Equipment designs
 - k. Reducing operator and patient exposure
 - l. Direct and indirect effects of radiation
 - m. Cellular radiosensitivity
 - n. Whole-body radiation effects
 - o. Fetal radiation effects
 - p. Radiation mutagenesis and radiation carcinogenesis
 - q. Extrinsic factors
- II. Sectional Anatomy
 - a. Appearance of normal sectional anatomy
 - b. Gross anatomy
 - c. Three anatomical planes
 - d. Major structures on images
- III. Trauma, Mobile and Surgical Radiography
 - a. Trauma radiographic exams
 - b. Manipulating radiographic equipment
 - c. Mobile exposure techniques
 - d. C-arm
 - e. Surgical procedures
 - f. Pediatric patients
- IV. Advanced Medical Imaging
 - a. Ultrasound

- b. CT
- c. MRI
- d. Tomography
- e. Nuclear Medicine
- f. Radiation therapy
- g. Venipuncture

Course Requirements

Grading/exams:

- | | |
|---|-------------------|
| I. Attendance, Dress Code, & Ethics | 2.5 points |
| minus 0.5 points for each absence or late, minus 1.0 points for a "NO-CALL"
Absence from three (3) or more classes or three (3) or more absences from clinical may lower the course grade one letter unless accompanied by a physician's written reason, minus 0.5 points for each infraction of uniform policy minus 1.0 points for each infraction after 1st notice
Students must be appropriately attired to be permitted in the clinical areas. | |
| II. Performance Objectives | 7.5 points |
| Papers are due on the Thursday morning following completion of rotation. | |
| III. Clinical Evaluations | 5 points |
| Clinical evaluations are completed weekly by supervising clinical staff and are due on the Thursday morning following completion of rotation. | |
| IV. Laboratory Evaluations (Simulations & Experiments) | 5 points |
| -0.5 points for each unprepared lab, including forgetting OWN markers for every lab and forgetting dosimeter for exposure labs | |
| V. Image Evaluations/PIE's | 5 points |
| Students will be responsible for completing 2 preliminary image evaluations (PIE's) for Lower Extremity by October 21, 2011, and 2 examinations from Spine/Thorax by the end of the semester. The PIE average counts for 10% of the total Image/PIE grade. | |
| VI. Competency Evaluations | 5 points |
| A minimum of 16 successful competency tests is required for RADT 202. | |
| VII. Film Critique and Experiments | 5 points |
| Students are responsible for preparing and presenting a film critique report. | |
| VIII. MSRT Essay/Exhibit | 5 points |
| IX. Quizzes | 10 points |
| X. Tests (completed after each module) | 20 points |

XI. Final Comprehensive Exam

30 points
100 points

The 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		

Other Course Information

RADT 202 is the sixth course in the sequence of radiography courses that comprise the professional portion of the radiography curriculum. It consists of both a didactic portion and a clinical portion. Students continue to build upon their knowledge of radiographic and fluoroscopic examinations. During the clinical portion of RADT 202 students will continue to achieve additional clinical radiography skills by participating in the actual procedures performed in a radiology/medical imaging department. Students also begin to examine the advanced imaging fields.

Date Revised: 8/21/12