

RADIOLOGIC TECHNOLOGY

Course Title: RADIOGRAPHIC IMAGING III
Course Prefix: RAD 210
Credit Hours: 3.0
Lecture Hours: 3.0
Lab Hours: 0.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION

This course provides a detailed study of advanced methods and concepts of imaging.

COURSE COMPETENCIES

Upon successful completion of this course, the student should be able to demonstrate basic knowledge of the following:

Module I - Cardiovascular and Interventional Imaging

- Identify vascular structures of the human body.
- Demonstrate a basic knowledge of the cardiac conduction system.
- Identify basic EKG patterns.
- Identify cardiovascular and interventional imaging equipment and procedures.

Module II - Tomography

- Discuss tomographic equipment.
- Differentiate different tomographic principles.
- Discuss historic development of tomography.
- Determine tomographic imaging protocols for given pathological condition scenarios.

Module III - QM/QA/QC

- Discuss and differentiate Total Quality Management and Quality Assurance in the radiology department.
- Identify the levels of Quality Control testing in radiology.
- Identify the radiographers' role in the Quality Assurance process.
- Identify use of specific tests and their allowable variance.
- Identify required frequency for specific QC testing.
- Distinguish potential issues for variations in results using troubleshooting methods.

Module IV - Image Intensified Fluoroscopy and Recording Devices

- Explain image intensification process.
- Discuss construction and function of image intensifier equipment.
- Distinguish between various image recording devices and viewing systems.
- Discuss principle of ABC/ABS and its impact on patient dose.
- Define terminology associated with Image Intensification.
- Discuss the historical perspective of II development.
- Differentiate between scotopic and photopic vision and the cells that control both.
- Identify exposure limits, distance requirements and generator operation in Image Intensified Fluoroscopy.
- Discuss quality factors of fluoroscopy.

Module V - Introduction to Computers

- Discuss uses for computers in imaging technology.
- Differentiate between basic components of a computer system.

- Define terms associated with computer processing.
- Distinguish between types of various computers and their associated use.
- Differentiate between the terms "Analog" and "Digital."

Module VI - Digital Imaging CR & DR

- Identify the components of a digital imaging system, both CR and DR.
- Demonstrate a thorough knowledge of the principles of digital imaging (CR & DR).
- Define terms associated with digital imaging.
- Distinguish differences between cassette-based and cassette-less systems.
- Communicate the function of TFT/Flat panel detector systems.
- Discuss the image acquisition and image processing process for both types of systems.
- Discuss image processing software application.
- Identify and determine causes of digital imaging artifacts and image processing errors.
- Correlate and compare functions of film/screen imaging and digital imaging.
- Identify factors affecting contrast and spatial resolution in digital imaging.
- Understand significance and indication of exposure indicators as related to patient exposure and image quality.
- Understand basis for exposure indicators between various manufacturers by examining variations in over and underexposures.
- Identify current issues with patient exposure and digital imaging technology.

METHODS OF INSTRUCTION

This course is offered in a "hybrid" format. This means that the course has lectures delivered on CD Rom as well as "On-Campus" activities that are required. A CD Rom will accompany the course syllabus and required text(s) that students purchase at the York Tech bookstore. Quizzes, course schedules, email, and discussion board messages are accessed via the internet in D2L.

Principles will be introduced by PowerPoint presentations and by the instructor through some lecture, viewing video tapes and computer-based lessons, laboratory activities, special projects, and demonstration.

COURSE REQUIREMENTS

All students are responsible for attaining competencies through the completion of the following course requirements:

- Participating in class and laboratory activities as scheduled in the calendar
- Completing CAI assignments
- Completing projects (Cardiovascular/Interventional Imaging, Digital Imaging experiments)
- Reading all assigned materials as listed in syllabus
- Completing all tests and final exam as scheduled as listed in the syllabus addendum and scheduled in the calendar
- Completing all videotape viewing assignments that may be required
- Participating in all electronic discussion board assignments as required.

ACADEMIC INTEGRITY

The policies stated in the *YTC Student Catalog & Handbook* and the *Radiologic Technology Student Manual* will be enforced. Any student violating the policies for academic integrity will be subject to academic discipline as stated in the manual up to and including dismissal from the program.

ATTENDANCE POLICY

The attendance policy as stated in the *Radiologic Technology Student Manual* will be enforced. Absences in excess of 10% of the number of class meetings in a semester will result in a grade of F and removal from the program.

GRADING PROCEDURES

Approximately six unit tests will be given. These tests will be administered in D2L in the Assessment Center in B Building. One major project, Cardiovascular/Interventional Imaging, and one minor project, Digital Imaging experiments, will also be required; and each will count as a unit test. CAI grades will also be averaged together at the end of the semester for 5% of the test average. All students are required to take the final exam as part of the course requirements; however, any student that makes a failing grade (below 80) on any unit test and does not have an A average at the end of the semester is not exempt from the final and will be required to use its score in their final average at the end of the semester. A student is considered exempt from averaging in their final exam only if they have not failed (below 80%) any single unit test during the semester OR only one failed (below 80%) test during the semester while still maintaining an A average for the course. All students are required to complete the final exam, but the exemption policy determines its use in the student's final grade. The final exam will count 1/3 of the final grade. If a student is exempt, final exam grade will only be used if higher than current average as outlined in the Radiography Student Manual. Quizzes will be given at any time during the semester and may be announced or unannounced.

6 unit tests, 2 projects, quizzes, and CAI = 66% of the final grade (Presentations/Projects count as unit tests). Final exam = 33% of the final grade (as required).

The following grading scale applies:

GRADE	SCORE
A	93-100
B	86-92
C	80-85
D	70-79
F	Below 70

MAKE-UP TESTS

All tests will be administered in the Assessment Center in B Building. Test deadlines will be listed in the online course calendar. Students should report 10 minutes before the scheduled test time. A picture ID is required at the time of the test - NO EXCEPTIONS. Quizzes and the final exam cannot be made up and will result in a grade of 0 for the student regardless of their exemption status for the final.

PERFORMANCE OBJECTIVES/MINIMAL STANDARDS

Performance objectives for each topic (unit) are included in the syllabus addendum. A minimum grade of 80% is required to pass the course (See Grading Procedures in the Radiography Student Manual).

ENTRY LEVEL SKILLS

A student entering this course must be enrolled in the Radiologic Technology Program as a second-year student.

PREREQUISITES

RAD 102, RAD 101, RAD 152, RAD 110, RAD 130, RAD 105, RAD 130, RAD 165, RAD 115, RAD 121, RAD 136, RAD 175, RAD 230, RAD 256, BIO 210, BIO 211,

CO-REQUISITES

RAD 201, RAD 268

Disabilities Statement: Any student who feels s/he may need an accommodation based on the impact of a disability should contact the Special Resources Offices (SR) at 803-327-8007 in the 300 area of Student Services. The SRO coordinates reasonable accommodations for students with documented disabilities.