

RADIOLOGIC TECHNOLOGY

Course Title: RADIATION BIOLOGY
Course Prefix: RAD 201
Credit Hours: 2.0
Lecture Hours: 1.0
Lab Hours: 3.0

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

COURSE DESCRIPTION

This course is a study of the principles of radiobiology and protection. It emphasizes procedures that keep radiation exposure to patients, personnel, and the population at large to a minimum.

COURSE COMPETENCIES

Upon successful completion of the course, the student should be competent in the following tasks:

- Describe how x-rays interact with matter.
- State the general effect of radiation on the body.
- Identify x-ray examinations that produce relatively high patient exposure.
- Discuss the association of diagnostic x-rays with mortality of incidence of disease.
- List examinations that deliver a relatively high exposure to the gonads.
- Understand the proper use of protective devices.
- State federal regulations regarding radiation producing equipment specifications and shielding requirements.
- Identify the different types of radiation monitoring devices and their applications.
- List methods and devices that minimize radiation exposure to the operator and the patient.
- Discuss the various methods/units of measuring radiation and its effects.
- Distinguish between somatic and genetic effects as well as specific syndromes.
- Recognize the clinical significance of LD 50/30 and LD 30.
- Describe principles of cellular biology.
- Explain the factors influencing radiosensitivity.
- Discuss stochastic and non-stochastic effects.
- Determine threshold, non-threshold, linear and non-linear responses.
- Define units of measurement for radiation and radioactivity.
- Discuss the relationship between HVL and shielding design.
- Explain primary and secondary barrier requirements and locations.
- Describe the minimum source-to-tabletop distances for fixed and mobile fluoroscopy units.

ENTRY-LEVEL SKILLS

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

PREREQUISITES

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

COREQUISITES

RAD 210, RAD 268

METHODS OF INSTRUCTION

This course is offered in a "hybrid" format. This means that the course is delivered partially through distance methods, but there will be some "On Campus" activities that are required. A CD Rom will accompany the course syllabus and required text(s) that you purchase at the York Tech Bookstore. Quizzes, course calendar, email and bulletin board messages are accessed via the internet in WebCT.

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

COURSE REQUIREMENTS

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

- Participating in class/lab activities as scheduled in the calendar
- Reading all assigned materials as listed in syllabus
- Completion of all tests as scheduled and listed in the syllabus addendum
- Completion of all CAI assignments
- Completion of all videotape assignments
- Participation in all electronic bulletin board discussions/assignments as required.
- Completion of one genetic disorder research project/presentation
- Completion of final exam

ACADEMIC INTEGRITY

The policies stated in the *YTC Catalog and Handbook* and *Radiologic Technology Student Manual* will be enforced. Any student violating the policy may be subject to academic discipline as stated.

ATTENDANCE

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 may result in a grade of F.

GRADING PROCEDURES

Approximately six unit tests will be given as outlined in the syllabus. These tests will be administered on WebCT in the Assessment Center in B Building. CAI grades will also be averaged together at the end of the semester to be given the weight of one unit test. A student that makes a failing grade (below 80) on any unit test will be required to take the comprehensive final exam at the end of the semester unless an "A" average is maintained at the time that the final exam is scheduled. The final exam will count 1/3 of the final grade. If student is exempt, final grade will only be used if higher than current average as outlined in the Radiography Student Manual.

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.

PERFORMANCE OBJECTIVES/MINIMAL STANDARDS

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