

SOUTHEAST COMMUNITY COLLEGE
HEALTH SCIENCES DIVISION
RADIOLOGIC TECHNOLOGY
Revision Date: 11/2023

I. CATALOG DESCRIPTION

Course Number: RADT 1134
Course Title: Radiation Biology
Prerequisite(s): RADT 1127

Catalog Description: Nature of x-rays. Interaction with matter. Effects of radiation exposure. Review of patient and personnel radiation protection. Limiting standards, units of measurement and regulatory agencies.

Credit Hours: 2
Class Hours: 32
Lab Hours: 0
Total Contact Hours: 32

II. COURSE OBJECTIVES: *Course will:*

1. Discuss the concept of electromagnetic radiation, sources and kinds of ionizing radiation, properties and production of x-rays, x-ray beam specifications, the interaction of radiation with matter, and units of exposure and dose.
2. Describe and demonstrate radiation detection instruments.
3. Discuss the duties and purpose of regulatory agencies
4. Itemize possible biologic effects of radiation principles of protection for the radiographer and the patient with regulations and limits.

Note: Unit objectives are located in the learning management system within each unit of study.

III. STUDENT LEARNING OUTCOMES AND GENERAL EDUCATION LEARNING OUTCOMES:

A. STUDENT LEARNING OUTCOMES: *Student will be able to:*

1. Discover the principles of radiation interactions with matter
2. Apply the concepts of radiation interaction to principles of the harmful effects of radiation.
3. Discover the regulations involved in the use of ionizing radiation.
4. Apply safe practices to protect the patient and the practitioner from radiation.

B. GENERAL EDUCATION LEARNING OUTCOMES

GELO 2: Written Communication

Outcome: Develop a focused thesis statement and write with a clear purpose, using relevant examples, claims, and evidence

IV. CONTENT/TOPICAL OUTLINE (*course outline may provide more detailed information*)

A. ELECTROMAGNETIC RADIATION AND PHOTON INTERACTIONS

1. Units of Measure
2. X-Ray Beam
3. Photon Interaction
4. Controlling the Beam

B. CELLULAR STRUCTURE AND FUNCTION

1. Cellular Components
2. Cellular Function
3. Cell Reproduction

4. Radiation Effect at Cellular Level

C. RADIOBIOLOGY

1. Biology Review
2. Radiation and the Human Body
3. Understanding the Risks

D. RADIATION DETECTION AND MEASUREMENT

1. Measuring Radiation
2. Radiation Measuring Devices

E. RADIATION REGULATIONS

1. Radiation Protection Agencies
2. Regulations and Dose
3. Dose Limits
4. Factors Affecting Dose
5. Enforcing Regulations

F. RADIATION PROTECTION

1. Protecting the Patient
2. Protecting the Pediatric Patient
3. Protecting the Worker

V. INSTRUCTIONAL MATERIALS

A. Required Text(s):

Bushong, Stewart C. *Radiologic Science for Technologists*. Mosby, Inc., latest edition.

B. Other Resources:

Carlton, Richard R., Adler, Arlene M. *Principals of Radiographic Imaging, an Art and a Science*.

Delmar, Inc., latest edition.

Course Study Guide

VI. METHODS OF PRESENTATION/INSTRUCTION

A. A combination of the following items may be used in the course:

1. Lecture
2. Demonstration
3. Learning Activities/Games
4. Handout Materials
5. Class Participation/Presentations
6. Case Studies and Group Work
7. Guest Presenters
8. Websites
9. Power Point slides & videos
10. Pretests and worksheets

VII. METHODS OF EVALUATION

A. Please see course CID for methods of evaluation.

SCC STANDARD GRADING SCALE POLICY:

A+	95-100	C	70-74
A	90-94	D+	65-69
B+	85-89	D	60-64
B	80-84	F	Below 60
C+	75-79		

VIII. SPECIFIC COURSE REQUIREMENTS

- A. ATTENDANCE:** Attendance is crucial to the success of this course. Any class missed could mean valuable missed information which is difficult to obtain. Please notify the instructor of any pending absences or if you will be late. Excessive absences may result in failing the course.
- B. PROGRAM COURSES:** Must pass all program courses with a 75% to progress to the next term.

See Course Information Document for course policies related to grading, expectations, assignments, assessments, and participation.