

CATALOG INFORMATION

Dept and Nbr: RADT 60

Title: INTRO TO RADIOLOGIC TECH

Full Title: Introduction to Radiologic Technology

Last Reviewed: 4/24/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	17.5	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable

Grading: Grade Only

Repeatability: 43 - No Repeats

Also Listed As:

Formerly:

Catalog Description:

In this course, students will be introduced to the field of radiologic technology, equipment, digital technologies, radiologic and health care practices, and regulatory requirements.

Prerequisites/Corequisites:

Concurrent Enrollment in RADT 61A, RADT 71A (or formerly RADT 61.1AL), RADT 64 and RADT 64L

Recommended Preparation:

Limits on Enrollment:

Acceptance in program

Schedule of Classes Information:

Description: In this course, students will be introduced to the field of radiologic technology, equipment, digital technologies, radiologic and health care practices, and regulatory requirements. (Grade Only)

Prerequisites/Corequisites: Concurrent Enrollment in RADT 61A, RADT 71A (or formerly RADT 61.1AL), RADT 64 and RADT 64L

Recommended:

Limits on Enrollment: Acceptance in program
Transfer Credit: CSU;
Repeatability: No Repeats

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area	Effective:	Inactive:
CSU GE:	Transfer Area	Effective:	Inactive:
IGETC:	Transfer Area	Effective:	Inactive:
CSU Transfer:	Transferable	Effective: Fall 1981	Inactive:
UC Transfer:		Effective:	Inactive:

CID:

Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:

At the conclusion of this course, the student should be able to:

1. List the main functions of the x-ray tube on a diagram.
2. Summarize the personal traits and characteristics necessary of the radiologic technologist in the multicultural health care setting.

Objectives:

At conclusion of this course, the student should be able to:

1. Interpret the general use of ionizing radiation for medical purposes.
2. List the major equipment and accessories used in a radiology department and image processing.
3. List and demonstrate understanding of the operation of the major equipment and components of a digital radiography system.
4. Explain and demonstrate the understanding of the process of x-ray production.
5. Describe and demonstrate basic rules of practicing conscientious radiation protection.
6. Identify and describe the function of the radiographic tube and its components.
7. Compare and contrast basic interactions of radiation on matter.
8. List the personal traits and characteristics necessary of the radiologic technologist in the multicultural health care setting.
9. Define and discuss professionalism and ethics as applied to radiologic technologists when dealing with patients and staff of diverse backgrounds.
10. Examine and integrate the values, technological themes, scientific and research methods used in radiology.
11. Identify and determine realistic career objectives as related to radiology.
12. Conduct research specific to credentialing requirements in radiology.

Topics and Scope:

- I. History of Radiology and Its Scientists

- A. Discovery of vacuum tubes and X-ray radiation
- B. Major developments in the field of radiology
- II. Principles of X-ray Production and Its Medical Use
 - A. Electricity and generator
 - B. X-Ray tube construction
 - C. X-Ray use in medicine
 - D. Digital radiology
- III. Equipment used in Radiology and Image Processing
 - A. Description of equipment
 - B. Image formation
- IV. Radiographic Accessories
 - A. Grids
 - B. Collimators
 - C. Filters
- V. Introduction to Radiation Physics
 - A. Atomic structure
 - B. Identify properties necessary for X-ray production
 - C. Interactions with matter
- VI. Image Analysis
 - A. Brightness
 - B. Grayscale
 - C. Spatial resolution
 - D. Distortion
- VII. Digital Technology
 - A. Direct digital radiography
 - B. Computed radiography
 - C. Digital Imaging and Communications in Medicine (DICOM)
 - D. Picture Archiving and Communication System (PACS)
 - E. Electronic Medical Record (EMR) / Electronic Health Record (EHR)
- VIII. Hospital, Department, National, State, and Professional Organizations.
 - A. Organizational charts
 - B. Relationship of hierarchy and a radiologic technologist
 - C. Professional associations
- IX. Professionalism and Medico-Legal Ethics
 - A. American Registry of Radiologic Technologists (ARRT) Code of Ethics
 - B. Patient Bills of Rights
 - C. Health Insurance Portability and Accountability Act (HIPAA)
 - D. Medical ethics
- X. National and State Regulatory Agencies
 - A. California Department of Health Care Services. California Code of Regulations Title 17 (Title 17. Public Health Division 1. State Department of Health Services-Radiologic Health Branch. Chapter 5. Sanitation (Environmental) Subchapter 4.5 Radiologic Technology. Sections 30100 - 30500)
 - B. National Council on Radiation Protection (NCRP)
 - C. California Department of Health Care Services. California Code of Regulations Title 22 (Title 22. Social Security Division 5. Licensing and Certification of Health Facilities, Home Health Agencies, Clinics, and Referral Agencies, Chapter 1. General Acute Care Hospitals. Article 3. Basic Services, Sections 70251 - 70259. Radiological Service)
 - D. Food and Drug Administration (FDA) guidelines
- XI. Credentialing
 - A. State certifications
 - B. National certifications

XII. Radiation Safety and Protective Measures

- A. Self
- B. Patient
- C. Other personnel
- D. As Low As Reasonably Achievable (ALARA)
- E. Shielding
- F. Precautions for pregnant patients and personnel

XIII. Patient Diversity in Radiology

- A. Age
- B. Race
- C. Ethnicity
- D. Gender

Assignment:

1. Reading of one (1) chapter per week
2. Reading reports of one (1) chapter per week
3. Research and present a 15-minute oral presentation on a major issue related to radiology or patient/staff relations
4. Complete chapter worksheets (10-12)
5. Quizzes (5-8)
6. Midterm examination
7. Final examination

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

Reading reports; chapter worksheets

Writing
10 - 35%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

None

Problem solving
0 - 0%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations
0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Quizzes; midterm; final

Exams
50 - 75%

Other: Includes any assessment tools that do not logically fit into the above categories.

Representative Textbooks and Materials:

Introduction To Radiologic and Imaging Sciences and Patient Care. 7th ed. Adler, Arlene and Carlton, Richard. Elsevier. 2019.

Radiologic Science for Technologists: Physics, Biology, and Protection. 12th ed. Bushong, Stewart. Elsevier. 2019.

Radiographic Imaging and Exposure. 6th ed. Fauber, Terri L. Elsevier 2021.

Patient Care in Radiography with an Introduction to Medical Imaging. 10th ed. Ehrlich, Ruth Ann and Coakes, Dawn M. Elsevier 2021.

Instructor prepared materials