

**RADT 60 Course Outline as of Fall 2018****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    | 8            | 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: 00 - Two Repeats if Grade was D, F, NC, or NP

Also Listed As:

Formerly:

**Catalog Description:**

Introduction to the field of radiologic technology, equipment, digital technologies, radiologic and health care practices, and regulatory requirements.

**Prerequisites/Corequisites:**

Course Completion of RADT 100 and 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: Introduction to the field of radiologic technology, equipment, digital technologies, radiologic and health care practices, and regulatory requirements. (Grade Only)

Prerequisites/Corequisites: Course Completion of RADT 100 and 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: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

|                      |                      |                      |           |
|----------------------|----------------------|----------------------|-----------|
| <b>AS Degree:</b>    | <b>Area</b>          | Effective:           | Inactive: |
| <b>CSU GE:</b>       | <b>Transfer Area</b> | Effective:           | Inactive: |
| <b>IGETC:</b>        | <b>Transfer Area</b> | Effective:           | Inactive: |
| <b>CSU Transfer:</b> | Transferable         | Effective: Fall 1981 | Inactive: |
| <b>UC Transfer:</b>  |                      | 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. Ability to list the main functions of the x-ray tube on a diagram.
2. Apply the principles of radiation protection in radiology environments.
3. Summarize the personal traits and characteristics necessary of the radiologic technologist in the multicultural health care setting.

### **Objectives:**

At completion of this course, the student will 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 the understanding of 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. DICOM (Digital Imaging and Communications in Medicine)
  - D. PACS (Picture Archiving and Communication System)
  - 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 code of ethics
  - B. Patient Bills of Rights
  - C. HIPAA (Health Insurance Portability and Accountability Act)
  - 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. FDA guidelines (Food and Drug Administration)
- XI. Credentialing
  - A. State certifications
  - B. National certifications

## XII. Radiation Safety and Protective Measures

- A. Self
- B. Patient
- C. Other personnel
- D. ALARA (As Low As Reasonably Achievable)
- 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 chapter per week
2. Reading reports of one chapter per week
3. Research and present a 15-minute presentation on a major issue related to Radiology or patient/staff relations
4. Complete chapters' worksheets (10-12)
5. Quizzes (5 - 8)
6. A midterm examination
7. A 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, and final

Exams  
50 - 75%

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

Oral presentation - attendance and participation

Other Category  
15 - 30%

**Representative Textbooks and Materials:**

Introduction To Radiologic and Imaging Sciences and Patient Care. 6th ed. Adler, Arlene and Carlton, Richard. Elsevier. 2015

Radiologic Science for Technologists: Physics, Biology, and Protection. 11th ed. Bushong, Stewart. Elsevier. 2016

Instructor prepared materials