

CATALOG INFORMATION

Dept and Nbr: RADT 63A Title: RADIATION PHYSICS/QA
Full Title: Radiation Physics and Quality Assurance
Last Reviewed: 9/25/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.00	17.5	Lecture Scheduled	35.00
Minimum	3.00	Lab Scheduled	3.00	17	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	5.00		Contact Total	87.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 70.00

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:
Photographic aspects of radiography, principles of radiographic exposure and formulation of radiographic technique. Laboratory experiments in radiographic exposures and formulating technique charts, basic quality assurance and quality control procedures will be included. Principles of general physics, electrostatics, calculation of radiation doses, and quality assurance.

Prerequisites/Corequisites:
Admission to the Radiologic Technology program or possession of licensure as a radiologic technologist.

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Photographic aspects of radiography, principles of radiographic exposure & formulation of radiographic technique. Principles of general physics, electrostatics, mathematical calculations of patient radiation doses, and quality assurance. (Grade Only)
Prerequisites/Corequisites: Admission to the Radiologic Technology program or possession of

licensure as a radiologic technologist.

Recommended:

Limits on Enrollment:

Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

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:

Certificate Applicable Course

COURSE CONTENT

Outcomes and Objectives:

The students will:

1. State the fundamental units of the English and metric systems.
2. Define electrical charge and field, and describe their sources.
3. Describe the laws of electrostatics and their application.
4. Explain the chemistry of film development solutions.
5. Explain the basic mechanics of an automatic processor.
6. Demonstrate the ability to troubleshoot problems that occur in automatic film processing.
7. Demonstrate accurate use of radiographic technique
8. Demonstrate proper film handling in the campus darkroom.
9. Demonstrate quality assurance and quality control techniques in film processing and equipment operation.

Topics and Scope:

This course is designed to cover the basic principles of general physics and underlying radiographic technique. The student will be studying film chemistry, radiographic accessories, radiographic techniques and principles of:

1. Fundamental Units
 - A. Length
 - B. Mass
 - C. Time
2. Derived Units
 - A. Area
 - B. Volume

- C. Density
- D. Temperature
- 3. Systems of Measurement
 - A. English
 - B. Metric
- 4. Electrostatics
 - A. Charge
 - B. Field
 - C. Electrification
- 5. Radiographic Technique.
 - A. Kilovoltage.
 - B. Milliamperage.
 - C. Time.
 - D. Phototiming.
- 6. Radiographic Accessories.
 - A. Guide.
 - B. Cones.
 - D. Screens.
 - E. Shielding.
- 7. Radiographic Quality Control.
 - A. Contrast.
 - B. Density.
 - C. Definition of detail.
 - D. Processing
 - E. Equipments.
 - F. Darkroom.
- 8. Film Chemistry
 - A. Film Types
 - B. Sensitometry
 - C..Construction of film .
- 9. Processing
 - A. Chemistry of radiograph development
 - B. Processor maintenance
 - C. Processor troubleshooting
 - D. Processor quality assurance

Assignment:

1. Five to seven chapter reading assignments and 8 to 12 handout assignments;
2. Complete 8 to 10 laboratory exercises in the laboratory;
3. Complete multimedia assignments;
4. Weekly homework assignments.

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.

Written homework, Lab reports, WEEKLY
WORKSHEETS & REPORTS

Writing
10 - 20%

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

Homework problems, Lab reports, Quizzes, 10 TO 12
REPORTS

Problem solving
20 - 30%

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.

Multiple choice, True/false, Three 50-question quizzes

Exams
30 - 50%

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

Other in-classroom assignments

Other Category
10 - 30%

Representative Textbooks and Materials:

- RADIOLOGIC SCIENCE FOR TECHNOLOGISTS by Steward Bushong, Mosby, 1998.
- Principles of Imaging Science and Protection, Thompson, Saunders, 1998.