

# MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE

## COURSE OUTLINE

DEPT. RADT

COURSE NUMBER: 2220

NUMBER OF CREDITS: 4

Lecture: 3 Lab: 1 OJT: 0

<b>Course Title:</b>
Radiological Equipment

<b>Catalog Description:</b>
Radiological Equipment provides the student with a basic understanding of radiation physics including the structure of matter, electromagnetic energy, electricity, magnetism, electromagnetism, x-ray emission and x-ray production. This course is designed to establish a strong understanding of radiographic equipment including the x-ray tube, x-ray circuit, fluoroscopy, and computed tomography. The content will also provide a basic knowledge of quality control.

<b>Prerequisites or Necessary Entry Skills/Knowledge:</b>
None

**FULFILLS MN TRANSFER CURRICULUM AREA(S) (*Leave blank if not applicable*)**

- ☐ Goal 1: Communication: By meeting the following competencies:
- ☐ Goal 2: Critical Thinking: By meeting the following competencies:
- ☐ Goal 3: Natural Sciences: By meeting the following competencies:
- ☐ Goal 4: Mathematics/Logical Reasoning: By meeting the following competencies:
- ☐ Goal 5: History and the Social and Behavioral Sciences: By meeting the following competencies:
- ☐ Goal 6: The Humanities and Fine Arts: By meeting the following competencies:
- ☐ Goal 7: Human Diversity: By meeting the following competencies:
- ☐ Goal 8: Global Perspective: By meeting the following competencies:
- ☐ Goal 9: Ethical and Civic Responsibility: By meeting the following competencies:
- ☐ Goal 10: People and the Environment: By meeting the following competencies:

<b>Topics to be Covered</b>
Electromagnetism
X-ray Circuit
X-ray Tube
AEC
Computed Tomography
Fluoroscopy

<b>Student Learning Outcome</b>
Define potential difference, current and resistance.
Describe the characteristics of direct and alternating currents.
Identify the general components and function of the primary, secondary and filament circuits.
Discuss the application of automatic exposure control (AEC) devices.
Explain image-intensified fluoroscopy.
Discuss the proper test equipment/procedures for evaluating the operation and maintenance of the imaging equipment.
Discuss the instrumentation, operations, and physics of computed tomography.
Identify factors that influence image quality in computed tomography.
Provide an understanding of imaging procedures in computed tomography.
Discuss patient care, safety, and radiation dose reduction practices in computed tomography.

**Is this course part of a transfer pathway: Yes ☐ No ☒**

**\*If yes, please list the competencies below**

Revised Date: 1/24/2022