Faculty is required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. RADT COURSE NUMBER: 2220

NUMBER OF CREDITS: 4

COURSE TITLE: Radiological Equipment

CATALOG DESCRIPTION: 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 xray tube, x-ray circuit, fluoroscopy and Computed Tomography. The content will also provide a basic knowledge of quality control.

AUDIENCE: Radiologic Technology Students

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable)
Area: by meeting the following competencies:
Area: by meeting the following competencies:
Area: by meeting the following competencies:

PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: RADT1130

LENGTH OF COURSE: five hours per week

THIS COURSE IS USUALLY OFFERED:
Every other year □ fall ☑ spring ☐ summer ☐ undetermined □

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: The academic objectives of this course are:
a. Identify components of all radiographic equipment
b. Describe the function and purpose of each component

2) THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:
a. Adapt knowledge of equipment components to quality image production
3) COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:
a. Select the appropriate method of communication to interact with peers regarding equipment operations.
b. Use the appropriate method of communication regarding equipment operation.

4) HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:
a. Explore cultural influences as it relates to interactions with various members of the healthcare team.

TOPICS TO BE COVERED:
See Below.

LIST OF EXPECTED COURSE OUTCOMES:

1. Define potential difference, current and resistance.
2. Describe the characteristics of direct and alternating currents.
3. Describe electrical protective devices.
4. Identify the general components and function of the primary, secondary and filament circuits.
5. Identify the function of rectification.
6. Compare single phase, three phase, high frequency and falling load generators in terms of radiation production and efficiency.
7. Discuss permanent installation of radiographic equipment in terms of purpose, components, types and applications.
8. Discuss mobile units in terms of purpose, components, types and applications.
9. Discuss the application of automatic exposure control (AEC) devices.
10. Explain image-intensified fluoroscopy.
11. Differentiate between quality improvement/management, quality assurance and quality control.
12. List the benefits of a quality management program to the patient and to the department.
13. Discuss the proper test equipment/procedures for evaluating the operation of the imaging equipment.
14. Discuss the instrumentation, operations and physics of computed tomography.
15. Identify factors that influence image quality in computed tomography.
16. Provide an understanding of imaging procedures in computed tomography.
17. Discuss patient care, safety and radiation dose reduction practices in computed tomography.

LEARNING/TEACHING TECHNIQUES used in the course are:
☑ Collaborative Learning  ☑ Problem Solving
☐ Student Presentations  ☐ Interactive Lectures
☐ Creative Projects  ☐ Individual Coaching
☑ Lecture  ☐ Films/Video/Slides
ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

- Reading
- Oral Presentations
- Textbook Problems
- Group Problems
- Other (describe below)

- Tests
- Worksheets
- Papers
- Term Paper
- Individual Projects
- Collaborative Projects
- Portfolio

EXPECTED STUDENT LEARNING OUTCOMES:
See above.

The information in this course outline is subject to revision.

To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or via your preferred Telecommunications Relay Service.

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02/17