# MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE
## COURSE OUTLINE

**DEPT. RADT** **COURSE NUMBER: 2240**

**NUMBER OF CREDITS:** 3 **Lecture: 2 Lab: 1 OJT: 0**

| **Course Title:** |
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| Principles of Radiobiology |

| **Catalog Description:** |
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| Principles of Radiobiology is designed to establish a basic knowledge of atomic structure and terminology, and provide an overview of the principles of radiation protection and interaction with living systems. Also presented are the nature and characteristics of radiation (i.e. its effects on molecules, cells, tissues, and the body as a whole), x-ray production, and the fundamentals of photon interactions with matter. Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies, healthcare organizations, and the responsibilities of the radiographer for patients, personnel and the public are also incorporated. Factors affecting biological response are presented including acute and chronic effects of radiation. |

| **Prerequisites or Necessary Entry Skills/Knowledge:** |
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| RADT 1130 and BIOL 2202 |

**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:

| **Topics to be Covered** |
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| Radiation Protection |
| Radiation Types |
| Radiation Qualities and Units |
| Radiation Monitoring |

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| Cell Biology |
| Radiation Effects |
| Dose Limits |

| **Student Learning Outcome** |
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| Identify and justify the need to minimize radiation exposure of humans. |
| Identify sources of radiation exposure. |
| Differentiate between somatic and genetic radiation effects as well as discuss specific diseases or syndromes associated with them. |
| Explain the objectives of a radiation protection program. |
| Identify dose limits for occupational and non-occupational radiation exposure. |
| Describe personnel monitoring devices, including applications, advantages and limitations for each. |
| Describe principles of cellular biology. |
| Demonstrate patient protection practices. |

**Is this course part of a transfer pathway: Yes ☐ No ☒**
***If yes, please list the competencies below**

Revised Date: 2/16/2024