Faculty members are 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: 2240**

**NUMBER OF CREDITS:** 3 credits  
**Lecture:** 2  
**Lab:** 1  
**OJT NA**

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<tr>
<th>Course Title:</th>
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<td>Principles of Radiobiology</td>
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**Catalog Description:**
This course 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:**
RADT1140 & BIOL2202

**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 (General)

| Radiation Protection, Radiation Types, Radiation Qualities and Units, Radiation Monitoring, Cell Biology, Radiation Effects, Dose Limits |

### Student Learning Outcomes

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

### Is this course part of a transfer pathway:

- Yes [ ]
- No [x]

Revised Date: 08/19/20