

University of Arkansas – Fort Smith
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General Syllabus

RADT 1232 Radiation Physics

Credit Hours: 2

Lecture Hours: 2

Laboratory Hours:

Prerequisites: MATH 1403 College Algebra and CHEM 1303 Chemical Principles

Prerequisite or corequisite: BIOL 2213/2211 Human Physiology/Laboratory

Corequisites: RADT 1104 Introduction to Radiography, RADT 1112 Radiographic Procedures I, and RADT 1124 Clinical Education I

Effective Catalog: 2019-2020

I. Course Information

A. Catalog Description

Basic concepts in radiation physics will be presented. Fundamentals of x-ray generating equipment as well as x-ray production, beam characteristics, and units of measurement are explored.

B. Additional Information – None

II. Student Learning Outcomes

A. Subject Matter

Upon successful completion of this course, the student will be able to:

1. State the fundamental units of the English, metric, and SI systems and solve problems converting units from one system to the other.
2. Define and describe the general principles that relate to inertia, work, energy and momentum.
3. Define mixture, substance, element, compound, molecule, and atom.
4. Define Bohr's theory of atomic structure.
5. Define terms relating to atomic nomenclature.
6. Discuss covalent and ionic bonding
7. Explain the process of ionization.
8. Describe the electromagnetic spectrum.
9. Define and describe wavelength and frequency and how they are related to velocity.
10. Explain methods of electrification.
11. Explain the laws of electrostatics and their application.

12. Identify Ohm's law and solve parallel and series circuit problems.
13. Define magnetism discuss the laws of magnetism.
14. Discuss electromagnetic induction.
15. Describe types and functions of generators, motors, transformers, and rectification systems.

B. University Learning Outcomes

This course enhances student abilities in the following areas:

Analytical Skills

Critical Thinking Skills: Students will use analytical/critical thinking skills to draw conclusions and/or solve problems associated with radiation physics.

Quantitative Reasoning: Students will apply appropriate mathematical formulas in order to solve problems associated with radiation physics.

III. Major Course Topics

- A. Units of Measure
- B. General Physic Principles
- C. Structure of Matter
- D. Structure of the Atom
- E. Nature of Radiation
- F. Electrostatics
- G. Electrodynamics
- H. Magnetism
- I. Electromagnetism
- J. X-Ray Circuits