

Common Course Outline
RTTT 125
Radiation Therapy Physics I
3 Credits
The Community College of Baltimore County

Description

Radiation Therapy Physics I is designed to provide fundamental physical units, measurements, principles, atomic structure and types of radiation are emphasized. Also presented are the fundamentals of x-ray generating equipment, x-ray production and its interaction with matter.

Overall Course Objectives

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

1. define the fundamental units of the English, metric and Système International d'Unites (SI) systems;
2. compare the characteristics and functions of a proton, neutron and electron;
3. describe the process of ionization;
4. classify the characteristics of an element using the periodic table;
5. compare the characteristics of a molecule and compound;
6. explain the relationship between wavelength, frequency and velocity;
7. distinguish between electrical charge and electrical field;
8. apply Ohm's Law to resolve direct current problems;
9. discuss the interaction between electric and magnetic fields;
10. compare types and functions of generators, motors, transformers and rectification systems;
11. compare single phase, three phase, high frequency and falling load generators in;
12. compare solid state and vacuum tube rectification;
13. identify the parts of an x-ray tube;
14. calculate the maximum allowable exposure factors for various radiographic procedures using a tube rating chart;
15. determine heat units and cooling characteristics of x-ray tube housings;
16. identify the parts of a complete x-ray circuit;
17. state the principles of x-ray production;
18. compare the production of bremsstrahlung with the production of characteristic radiations;
19. compare various photon interactions in terms of description of interaction, relation to atomic number and applications;
20. discuss relationships of wavelength and frequency to beam characteristics; and
21. define units of radiation measurement and provide an example of its application.

Major Topics

1. Units of Measurement
2. Structure of the Atom
3. Structure of matter
4. Nature of radiation
5. Electromagnetism
6. Diagnostic x-ray tubes
7. X-ray circuits

Course Requirements

Grading/Exams: Grading procedures will be determined by the individual faculty member, but will include the following:

1. Class participation
2. A minimum of at least one exam