

Common Course Outline
RTTT 113
Principles of Radiation Therapy II
3 Credits
The Community College of Baltimore County

Description

Principles of Radiation Therapy II provides students with additional knowledge of radiation protection, radiobiology, quality management and other fundamental knowledge for a clinical practitioner.

3 credits; 3 lecture hours; 0 laboratory hours

Prerequisite: RTTT 112

Overall Course Objectives

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

1. define the concept of ALARA;
2. describe the legal and ethical radiation protection responsibilities of radiation workers;
3. select the correct units of radiation for exposure, absorbed dose, dose equivalence and radioactivity;
4. discuss the interrelationship between relative biological effectiveness and quality factors;
5. state the authority, boundaries and regulations of the state and national regulatory agencies;
6. compare the various methods used for personnel monitoring;
7. state the exposure limits for occupational and non-occupational individuals;
8. explain techniques used to reduce unnecessary dose to the patient;
9. develop an emergency action plan for equipment failure;
10. identify radiosensitive components of the cell;
11. differentiate between direct and indirect effects of ionizing radiation;
12. compare somatic and genetic effects of radiation;
13. describe factors influencing radiation response of cells and tissues;
14. discuss the Laws of Bergonie and Tribondeau;
15. interpret cell survival curves to determine radiosensitivity under numerous conditions;
16. differentiate between linear, nonlinear, and threshold and non-threshold dose response curves;
17. describe the 4 Rs of radiobiology;
18. describe the clinical significance of $TD_{5/5}$ and $TD_{50/5}$;
19. compare the relationship of time, dose, fractionation, volume and site to radiation effects;
20. describe the influence of chemotherapy and hyperthermia alone and in combination with radiation therapy; and
21. discuss quality control procedures and recommended tolerances for the safe handling of brachytherapy sources and remote afterloading equipment.

Major Topics

- I. Radiation Protection
- II. Radiation Regulations
- III. Radiobiology
- IV. Radiation Safety
- V. Quality Assurance

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