

**BERGEN COMMUNITY COLLEGE
DIVISION OF HEALTH PROFESSIONS
COURSE SYLLABUS/STUDENT COURSE OUTLINE
SPRING SEMESTER**



COURSE TITLE AND NUMBER: Dosimetry and Treatment Practices; RTT 210

PRE-REQUISITES: PHY-185, RTT-150

COURSE CREDITS/HOURS: 3

COURSE DESCRIPTION: To provide the students with knowledge of the Physics of photon & electron dosimetry, treatment planning, dose calculations, brachytherapy, and radiation protection, and the rationale for quality assurance in the delivery of radiation for therapeutic purposes. Implementation of methods for quality control will be discussed.

STUDENT LEARNING OBJECTIVES: It is expected that the student will be able to:

1. Define and discuss dosimetric parameters such as PDD, TAR, TMR, TPR, etc.
2. Discuss, analyze and perform various dose and MU calculations.
3. Discuss the various aspects of the physics of photon dosimetry
4. Discuss the various aspects of the physics of electron dosimetry.
5. Discuss the principles and process of simulation and treatment planning.
6. Discuss the advances in treatment planning techniques.
7. Discuss the rationale of brachytherapy to include: radioactive materials, applicators, types of implants, dosimetry and safety considerations.
8. Discuss the principles of special treatment procedures to include: IMRT, SRS, Proton, and TBI.

These objectives are intimately interwoven throughout the course and serve as a repeated reinforcement of the knowledge and skills necessary for the student to become successful in the field of Therapeutic Radiation Therapy. This course serves as foundations for further study in this health profession.

CHEATING/PLAGIARISM: Dosimetry and Treatment Practices follows a Zero Tolerance Policy towards Cheating/Plagiarism. The definition and consequences of Cheating/Plagiarism are described in the Bergen Community College Catalog under ACADEMIC REGULATIONS.

REQUIRED TEXT: The Physics & Technology of Radiation Therapy by Patrick N. McDermott, Copyright 2010. ISBN-10: 1930524447

RECOMMENDED TEXTS:

Khan's Lectures: Handbook of the Physics of Radiation Therapy, Faiz M Khan PhD, Copyright 2011. ISBN-10: 1605476811

Mosby's Radiation Therapy Study Guide and Exam Review, Leia Levy, Copyright 2010. ISBN-10: 0323069347

MATERIALS AND SUPPLIES: In addition to the required text these supplies may be required: A pocket-sized scientific calculator. The functions must include direct and inverse trigonometric functions, natural logarithm, and exponents.

GRADES/EVALUATION METHODS:

The grade for the course is weighted according to the following percentages:

1. Participation/Attendance– 10%
2. Quizzes/Homework – 25%
3. Presentation - 10%
4. Mid-term – 20%
5. Final Exam – 35%

A passing grade is considered to be C+ or higher

Letter Grade	Numerical Range
A	90% to 100%
B+	85% to 89.9%
B	80% to 84.9%
C+	75% to 79.9%
C	70% to 74.9%

COURSE CONTENTS (by week):

You will be expected to read the associated chapters before attending class each week.

Week	Topic	Textbook Chapter(s)
1	Course Overview and Linear Interpolation	10.8
2	Central Axis Dose Distribution	10.1-10.7
3	Calibration of MV Photon Beams	11
4	Calculation of Monitor Units (SSD) - Open Fields	Handouts
5	Calculation of Monitor Units (SAD) - Open Fields and Shaped fields (SAD and SSD)	Handouts
6	Calculation of Monitor Units – Electrons	Handouts & 15
7	<i>Review</i>	10,11, 15 & Handouts
8	Midterm Exam	
--	NO CLASS – Spring Break	----
9	Dose Distributions in 2 and 3 Dimensions	14
10	Presentations: Special Modalities in Radiation Therapy	20
--	NO CLASS – BCC In-service Day	----
11	Treatment Planning & Special Modalities	
12	Brachytherapy	16
13	<i>Review</i>	10, 11, 14-16, 20 & Handouts
14	Final Exam	