

**BERGEN COMMUNITY COLLEGE
DIVISION OF SCIENCE AND HEALTH
COURSE SYLLABUS/STUDENT COURSE OUTLINE
FALL SEMESTER**



COURSE TITLE AND NUMBER: Principles of Diagnostic Radiation Physics; RTT 150

PRE-REQUISITES: Physics 185 with a grade of "C" or better.

COURSE CREDITS/HOURS: 3

COURSE DESCRIPTION: Principles of Diagnostic Radiation Physics is a continuation of the exploration of radiation physics. Emphasis will be on basic principles of physics, atomic structure, electro-magnetic and particulate radiation, x-ray circuits, radiographic tubes and radiation production.

STUDENT LEARNING OBJECTIVES: It is expected that the student will:

1. Identify and describe in his or her own words the concepts and meaning behind the physical principles and laws encountered in the course.
2. Use correct terminology to describe the principles of radiation physics described in the course.
3. Create sketches, diagrams, and graphs to describe physical processes and problem solving.
4. Apply appropriate mathematical relationships in the description of physical processes and problem solving.

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: Principles of Diagnostic Radiation Physics 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



RTT-150 Fall 2014 COURSE 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%

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.

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 Mathematics Review	1
2	Review of Basic Physics	2.1-2.5
3	Atomic Structure and Nuclei	2.6-3.6
4	Radioactivity	3.7-3.15
5	X-Ray Production – Technology, Basic Phys & Props	4-5
6	Interaction of Photons with Matter – (a) Photons	6.1
7	<i>Review</i>	
8	Midterm Exam	1-6.1
--	NO CLASS – Professional Development Day	----
9	Interaction of Particulate Radiation – (b) Particles	6.2-6.3
10	Presentations: Imaging in Radiation Therapy	
11	Radiation Measurement Quantities	7.1-7.8
12	Radiation Detection and Measurement	8
13	External Beam Radiation Therapy Units	9
14	<i>Review</i>	
15	Final Exam	1-9