

**Virginia Western Community College**  
**ROC 243**  
**Dosimetry Planning**

**Course Information**

**Course Title:** ROC 243

**Semester:** Spring

**Location:** HP 238

**Instructor Information**

Instructor Name: Shana Sayers

Email Address: ssayers@viriniawestern.edu

Phone Number: 540-816-0855

Office Location: HP 239

**Office Hours**

I am happy to speak with students by appointment.

**Contact Methods and Response Time**

Instructor will respond to student emails within 24-48 hours.

**Credit Hours**

2

**Prerequisites**

ROC 110, MTH 161

**Course Description**

Introduces clinical dosimetry and treatment planning to include, various treatment techniques, calculations, equations, and beam arrangements.

**VWCC AND DISCIPLINE SPECIFIC OUTCOMES**

**At the completion of this course, the student should be able to:**

**Treatment Planning:**

- ◆ Define basic dosimetry and plan terminology.
- ◆ Discuss all components of 3D CRT planning and the different types of plans.
- ◆ Basic understanding of all steps involved in creating a 3D CRT plan.

**Dosimetry Planning:**

1. Define various terms referring to treatment technique.
2. Calculate Equivalent Squares.
3. Calculate Irregular Fields.
4. Calculate Extended Distance.
5. Calculate to Off Axis point.
6. Perform Inverse Square Calculation.

7. Using various treatment prescriptions, perform percent depth dose calculations for treatment time, given dose, and entrance and exit doses.
8. Discuss factors affecting percent depth dose, tissue air ratio, and tissue maximum ratio.
9. Define wedge and hinge angles and discuss the purpose of wedges.
10. Discuss the methods used to weight treatment fields.
11. Describe influencing factors for an isodose curve.
12. Locate correct isodose curves given specific treatment parameters.
13. Perform dose calculations for the gap technique.
14. Discuss influencing and modifying parameters of moving beam therapy on dose distribution.
15. Discuss the parameters influencing the summation curves for various multiple beam techniques.
16. Discuss inhomogeneity correction factors.
17. Perform Gap Calculation.

**Required Material:**

A TI-30XS or equivalent calculator is required for the course. Equivalent means the keypad has the same layout as the Pearson-Vue® on screen calculator.

**Required Text:**

Ping Xia, Andrew Godley, Chirag Shah, Gregory Videtic & John Suh, *Strategies for Radiation Therapy Treatment Planning*. Demos Medical an Imprint of Springer Publishing Company.

ISBN 978-0-8261-2244-5

Washington, Charles M., Dennis T. Leaver, and Megan Trad. *Principles and Practice of Radiation Therapy (5th edition)*. St. Louis, MO: Elsevier, 2020. ISBN 978-0-323-59695-4

McDermott, P. and Orton, C. *The Physics & Technology of Radiation Therapy*.

Medical Physics Publishing ISBN 13: 978-1-930524-32-3 (hard cover)

ISBN 13: 978-1-930524-44-7 (soft cover)

**Additional Resources:**

Levy, Leia (2026). *Mosby's Radiation Therapy Study Guide and Exam Review*.

Elsevier Inc., **2nd Edition**, ISBN: 978-0-443-12592-8

Nappi, Laura. (2022). *Comprehensive Review Guide For The Radiation Therapy Examination* (2<sup>nd</sup> Edition) ISBN-13: 978-8404118070

Olson, Sutton Arazie. Second Edition 2022. *Radiation Therapy Essentials (Radiation Therapy and Medical Dosimetry Board Exam Review)*. RadOnc Publications. ISBN: 978-8-218-02065-1.

**GRADING FORMAT**

A = 93 – 100

B = 85 – 92

C = 77 – 84

F = 76 and below

**METHOD OF EVALUATION**

|                                              |     |
|----------------------------------------------|-----|
| ○ Attendance/Participation                   | 5%  |
| ○ Reading assignments/Weekly quizzes         | 10% |
| ○ Case Studies                               | 10% |
| ○ Contouring Homework                        | 10% |
| ○ ARRT Dosimetry Hand Calculations/Iso Plans | 20% |
| ○ Midterm/Final Exams                        | 45% |

**ATTENDANCE POLICY**

When the number of unexcused absences reaches a sum equivalent to 30 percent of the total instructional time, the instructor will drop the student from the class (see the College Catalog for a full explanation of withdrawal procedures and deadlines).

**CLASS PARTICIPATION**

Participation and Contribution during class is strongly encouraged throughout the course.

**ACADEMIC HONESTY**

This course will follow the VWCC Student Conduct policy found in the online VWCC Student Handbook under the “VWCC Course Policies” tab. If a student is found cheating on any assignment, test, or quiz a grade of “F” will be awarded.

**CLASS EXPECTATIONS**

Students are expected to be prompt and will not be given credit for attending class if entering ten minutes after class has started. No makeup tests will be given unless a legitimate written excuse, i.e., illness or prior notification is provided. Grades will be modified for late or missed assignments.

**MAKE UP/LATE WORK POLICY**

Submit assignments ON TIME. As responsible learners, you need to manage your learning schedules and finish all assignments on time. Assignments submitted past the stated due date will be modified for late or missed submissions. A grade of “0” will be given for any assignment not turned in.

**INCLEMENT WEATHER**

In the event of a college closing due to inclement weather on a testing day, the deadline for taking the test will be extended 24 hours or an additional day when the college re-opens.

College inclement weather link: [VWCC Inclement Weather Policy](#)

Students should try to take tests/exams before the deadline. In the case of inclement weather which closes the student learning center, the instructor will extend the deadline the number of days that the learning center was closed. In the case of extreme weather, the instructor will work with the student to make suitable arrangements.

## **AI USAGE**

For the duration of this course, the use of Generative AI in assignments is strictly prohibited. Assignments are opportunities for personal growth, critical thinking, and applying your acquired knowledge. Your individual effort and creativity are essential in demonstrating your understanding of the course material. Dependence on AI undermines these objectives and compromises the integrity of the learning process. We appreciate your commitment to academic honesty and dedication to upholding this course's principles by refraining from using Generative AI in your assignments.

**Please refer to Part 2 in this syllabus module for information regarding Disability Services.**