

RAD 540
The Physics of Medical Dosimetry II
Spring Semester Syllabus

COURSE DEFINITION:

RAD 540-3 The Physics of Medical Dosimetry II – This course covers the following topics: imaging for radiation oncology, IMRT, stereotactic radiosurgery, special procedures, particle therapy, hyperthermia, and radiation safety. This course is twenty weeks in length. Prerequisite: A grade of “C” or better in RAD 520.

COURSE OBJECTIVES:

1. Demonstrate an understanding of imaging in radiation oncology.
2. Demonstrate an understanding of IMRT.
3. Demonstrate an understanding of stereotactic radiosurgery and gamma knife.
4. Demonstrate an understanding of particle therapy.
5. Demonstrate an understanding of hyperthermia.
6. Demonstrate an understanding of radiation safety.

COURSE OUTLINE:

Topics

1. Oncology imaging
2. IMRT techniques
3. Stereotactic radiosurgery and gamma knife
4. Particle therapy
5. Hyperthermia
6. Radiation safety

COURSE REQUIREMENTS:

Purchase all texts, attend all lectures, and complete required examinations, quizzes, and homeworks. Purchase a T130XA scientific calculator.

PREREQUISITES: A grade of “C” or better in RAD 520.

TEXTBOOKS:

Required:

- Khan, F. M. (2020). *The physics of radiation therapy* (6th ed.). Philadelphia: Wolters Kluwer
- Khan, F.M. (2016). *Treatment planning in radiation oncology* (4th ed.). Philadelphia: Wolters Kluwer
- Washington, C. M., & Leaver, D. T. (2019). *Principles and practices of radiation therapy* (5th Ed). St. Louis: Mosby.

Optional: (Students typically use clinical sites’ copy)

- Bentel, G. C. (1992). *Radiation therapy planning* (2nd ed.). New York: McGraw-Hill.
- Vann, A. M., et. al. (2013). *Portal design in radiation therapy* (3rd ed.). Augusta, Georgia: DMV Enterprises.

GRADING SCALE:

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|--------|---------|
| 90-100 | A |
| 80-89 | B |
| 70-79 | C |
| <70 | Failing |

Grades will be determined by:

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|------------------|-----|
| Test Performance | 65% |
| Quizzes/Homework | 35% |

Late work will not be accepted. No credit will be awarded for work submitted after the deadline.

Note: An overall GPA of 3.0 or greater in all graduate coursework is required to successfully complete the Medical Dosimetry Program. This is a SIUC Graduate School Policy.