Radiation Dosimetry II
MPHY 6130/8130 (CRN: 27964/27970)
Spring Semester 2022

Class time: Tuesdays 9:30AM-12:15PM
Credit hours: 3
Main Textbook: Frank H. Attix, Introduction to Radiological Physics and Radiation Dosimetry, WILEY- Interscience, 1986
Recommended: Jerome A. Meli, The Physics of Radiation Dosimetry [AIP Publishing (online), Melville, New York, 2020], available at: https://doi.org/10.1063/9780735421882
Lecture notes: http://www.utoledo.edu/med/depts/radther/RadiationDosimetryII.html
(Spring class schedule posted on the Medical Physics program website under Curriculum->Courses)
Instructor: Shvydka, Diana

Grading:

Mid-term exam 1	25%
Mid-term exam 2	25%
Final Exam	25%
HW * problems	10%
Paper/Project	15%

Homework assignments and exams:

Chapters/Topics	Date	Homework assignments
1-2. Description of radiation fields. Quantities for describing the interaction of radiation with matter	01/18	Ch.1: 3,5,6,7 Ch.2: 2,3,4,6*
3. Exponential attenuation	01/25	Ch.3: 1*,3,4,5
4. Charged-particle and radiation equilibria	02/01	Ch.4: 1,2,3,5,6
5-6. Absorbed dose in radioactive media. Radioactive decay	02/08	Ch.5: 1,2,3 Ch.6: 2,4,5,6,7
Midterm exam 1 (SLO 1-3)	02/15	Chapters 1-6 (HW* problems due)
7&9. Gamma and x-ray interactions in matter. X-ray production and quality	02/22	Ch.7: 4*,6,7,10,12 Ch.9: 3,4,6
8. Charged particle interactions in matter	03/01	Ch.8: 3,5,9,13,15
+++ Spring Break	03/08	*+++*
10. Cavity theory	03/15	Ch.10: 2,5,6,7 Project proposal due
11. Dosimetry fundamentals	03/22	Ch.11: 3*,4,5,6
Midterm exam 2 (SLO 4-6)	03/29	Chapters 7-11 (HW* problems due)
12. Ionization chambers	04/05	Ch.12: 3,5,6,8*
13. Dosimetry and calibration of photon and electron beams with cavity ion chambers	04/12	Ch.13: 5,6,7,9
14-15. Integrating dosimeters. Dosimetry by pulse-mode detectors	04/19	Ch.14: 3*,5,7 Ch.15: 2,4,5
16. Neutron interactions and dosimetry	04/26	Ch.16: 1,2,3
Final exam (SLO 7-10)	05/03	Chapters 12-16 (HW* problems due) Paper/Project due

*Solution requires use of MS Excel or similar (due by the corresponding exam date)