College of Medicine
Department of Radiology
Medical Physics Graduate Program

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ENU 6636
Medical Radiation Protection and Shielding

Course Syllabus Spring 2022

Instructors: Stephanie Leon, PhD (leons@radiology.ufl.edu)
Perry Johnson, PhD (perryjohnson@ufl.edu)

TA: Megan Glassell, MS (mgla0001@radiology.ufl.edu)

Textbooks:

Required

1. National Council on Radiation Protection, Report Number 151, Structural Shielding Design and Evaluation for X- and Gamma-Ray Radiotherapy Facilities, 2005 ISBN 0-929600-87-8
2. National Council on Radiation Protection, Report Number 147, Structural Shielding Design for Medical X-Ray Imaging Facilities, 2004 ISBN 0-929600-83-5

(free PDF versions are available for AAPM members at https://www.aapm.org/pubs/NCRP/, or you can purchase hardcopies at https://ncrponline.org/)

Optional

1. Faw and Shultis, Radiological Assessment: Sources and Doses, American Nuclear Society, 1999. ISBN 0-89448-455-9

Lectures: 9:30^{AM} to 10:20^{AM} Monday, Wednesday & Friday
Room C2-33 (Leon) and Zoom (Johnson)

Student Presentations: **Presentation 1:** Feb 23 in room CG-41

Date	Topic	Instructor
Wednesday, Jan 5	History of Radiation Protection	Leon
Friday, Jan 7	Background Radiation, the ALARA Principle, and Risk	Leon
Monday, Jan 10	Regulations and Dose Monitoring	Leon
Wednesday, Jan 12	Radiation Survey Meters	Leon
Friday, Jan 14	Survey Meters Lab (in class)	Leon
Monday, Jan 17	UF Holiday – No class	
Wednesday, Jan 19	Analytic Shielding with Simple Geometry	Leon
Friday, Jan 21	Analytic Shielding (*continued*)	Leon

Monday, Jan 24	Analytic Shielding (*continued*)	Leon
Wednesday, Jan 26	Materials Used for Shielding (with in-class demo)	Leon
Friday, Jan 28	Radiation Protection in Diagnostic Radiology	Leon
Monday, Jan 31	Intro to Diagnostic Shielding	Leon
Wednesday, Feb 2	Intro to Diagnostic Shielding *(continued)*	Leon
Friday, Feb 4	Radiography Shielding	Leon
Monday, Feb 7	Shielding for Fluoroscopy and R&F Rooms	Leon
Wednesday, Feb 9	Shielding for Mobile Units, Mammography, and Dental units	Leon
Friday, Feb 11	CT Shielding	Leon
Monday, Feb 14	CT Shielding *(continued)*	Leon
Wednesday, Feb 16	Shielding Reports and Facility Design	Leon
Friday, Feb 18	Shielding Verification and Facility Surveys	Leon
Monday, Feb 21	The nuclear medicine environment	Leon
Wednesday, Feb 23	Student Presentations – Diagnostic Shielding Project **(9:30-11:30)**	Leon
Friday, Feb 25	Radiation Protection in NM	Leon
Monday, Feb 28	TG-108 for PET	Leon
Wednesday, Mar 2	More Room Shielding in NM	Leon
Friday, Mar 4	Dosimetry and Monitoring in NM	Leon
Monday, Mar 7	UF Spring Break – No class	
Wednesday, Mar 9	UF Spring Break – No class	
Friday, Mar 11	UF Spring Break – No class	
Monday, Mar 14	More Regulations in Nuclear Medicine	Leon
Wednesday, Mar 16	Review of Radiation Therapy Modalities	Johnson
Friday, Mar 18	Radiation Safety in Radionuclide Therapy	Shankar
Monday, Mar 21	NCRP 151 Formalism - Overview	Johnson
Wednesday, Mar 23	NCRP 151 Formalism - Overview *(continued)*	Johnson
Friday, Mar 25	Design of Linac Facilities up to 10 MV	Johnson
Monday, Mar 28	Design of Linac Facilities up to 10 MV *(continued)*	Johnson
Wednesday, Mar 30	Door & Maze Design of Linac Facilities up to 10 MV	Johnson
Friday, Apr 1	Door & Maze Design of Linac Facilities up to 10 MV *(continued)*	Johnson
Monday, Apr 4	Design of Linac Facilities Above 10 MV	Johnson
Wednesday, Apr 6	Design of Linac Facilities Above 10 MV *(continued)*	Johnson
Friday, Apr 8	**Exam (covers content March 16 – April 1)**	Johnson
Monday, Apr 11	Door & Maze Design of Linac Facilities above 10 MV	Johnson
Wednesday, Apr 13	Door & Maze Design of Linac Facilities above 10 MV *(continued)*	Johnson
Friday, Apr 15	Shielding Considerations for Various Other Modalities	Johnson
Monday, Apr 18	Design of HDR After-loader Facilities	Johnson
Wednesday, Apr 20	Radiation Therapy Shielding Review	Johnson
Wednesday, Apr 27	**Exam (covers content April 4 – April 20)**	Johnson

Policies:

Examinations: The radiation therapy component will include two exams: Apr 8 and April 27

Course Grade: Will be calculated as follows:

Graded homework assignments:	20%
Diagnostic shielding project:	25%
Nuclear medicine shielding project:	25%
Therapy shielding exams (2):	30%

Grading Scale: 93-100 A; 90-92 A-; 86-89 B+; 83-85 B; 80-82 B-; 76-79 C+; 73-75 C; 70-72 C-
Grades will be curved

Office Hours: By appointment

Academic Honesty: All students are required to abide by the University's honesty policy as published in UF Rule 6Cl-4.0l7. Students should be familiar with the entire rule which can be reviewed at: http://www.aa.ufl.edu/aa/Rules/4017.htm and specifically addresses cheating;

Cheating*: The improper taking or tendering of any information or material which shall be used to determine academic credit. Taking of information includes, but is not limited to, copying graded homework assignments from another student; working together with another individual(s) on a take-home test or homework when not specifically permitted by the teacher; looking or attempting to look at another student's paper during an examination; looking or attempting to look at text or notes during an examination when not permitted. Tendering of information includes, but is not limited to, giving your work to another student to be used or copied; giving someone answers to exam questions either when the exam is being given or after having taken an exam; giving or selling a term paper or other written materials to another student; sharing information on a graded assignment.*

Class Attendance: Students are expected to attend each class period. Periods which may be missed should be brought to the attention of the Instructor as far in advance of the class period as possible. In the event of an unexcused absence, it is the student's responsibility to obtain and review the material that was covered during that class period. Students must participate in each laboratory exercise.

Online Lectures: Lectures are broadcast live online and also recorded. Students who are feeling unwell, who are under quarantine, or who are "withheld from campus" are required to stay home and may attend the live online lectures if they are feeling up to it, *with prior notification to the instructor*. Access to the recorded lectures is by instructor permission only. Documentation supporting the reason why access is needed may be requested.

Make-up Labs & Assignments: Make-up laboratory exercises and assignments will only be considered for exceptional circumstances and will be implemented by the instructor on a case-by-case basis.

Class Demeanor: Class distractions such as cell phones and pagers are unacceptable. Students will ensure that any such devices that are brought into the classroom will be turned off, or operated in a silent mode, during the class period.

Students w/ Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.