

|| ENU 6636
Medical Radiation Protection and Shielding

Course Syllabus Spring 2021

Instructors: Stephanie Leon, PhD (leons@radiology.ufl.edu)
Manuel Arreola, PhD (arreom@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

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.

Student Presentations: **Presentation 1:** Feb 26 or March 1; **Presentation 2:** During finals week (TBA)

Date	Topic	Instructor
Monday, Jan 11	History of Radiation Protection	Leon
Wednesday, Jan 13	Background Radiation, the ALARA Principle, and Risk	Leon
Friday, Jan 15	Regulations and Dose Monitoring	Leon
Monday, Jan 18	UF Holiday - No Class	

Wednesday, Jan 20	Radiation Survey Meters	Leon
Friday, Jan 22	Survey Meters Lab (in class)	Leon
Monday, Jan 25	Radiation Interactions, Analytic Shielding with Simple Geometry	Leon
Wednesday, Jan 27	Analytic Shielding (<i>continued</i>)	Leon
Friday, Jan 29	Analytic Shielding (<i>continued</i>)	Leon
Monday, Feb 1	Complications to the Analytic Approach, Materials Used for Shielding	Leon
Wednesday, Feb 3	Radiation Protection in Diagnostic Radiology	Leon
Friday, Feb 5	Intro to Diagnostic Shielding	Leon
Monday, Feb 8	Intro to Diagnostic Shielding (<i>continued</i>)	Leon
Wednesday, Feb 10	Radiography Shielding	Leon
Friday, Feb 12	Shielding for Fluoroscopy and R&F Rooms	Leon
Monday, Feb 15	Shielding for Mobile Units, Mammography, and Dental units	Leon
Wednesday, Feb 17	CT Shielding	Leon
Friday, Feb 19	CT Shielding (<i>continued</i>)	Leon
Monday, Feb 22	Shielding Reports and Facility Design	Leon
Wednesday, Feb 24	Shielding Verification and Facility Surveys	Leon
Friday, Feb 26	Student Presentations – Diagnostic Shielding Project	Leon
Monday, Mar 1	Student Presentations – Diagnostic Shielding Project	Leon
Wednesday, Mar 3	The nuclear medicine environment	Leon
Friday, Mar 5	Radiation Protection in NM	Leon
Monday, Mar 8	TG-108 for PET	Leon
Wednesday, Mar 10	More Room Shielding in NM	Leon
Friday, Mar 12	MIRD dosimetry, Monitoring in NM	Leon
Monday, Mar 15	Radiation Safety in Radionuclide Therapy	Leon
Wednesday, Mar 17	Review of Radiation Therapy Modalities	Arreola
Friday, Mar 19	NCRP 151 Formalism - Overview	Arreola
Monday, Mar 22	NCRP 151 Formalism - Overview (<i>continued</i>)	Arreola
Wednesday, Mar 24	Design of Linac Facilities up to 10 MV	Arreola
Friday, Mar 26	Design of Linac Facilities up to 10 MV (<i>continued</i>)	Arreola
Monday, Mar 29	Door & Maze Design of Linac Facilities up to 10 MV	Arreola
Wednesday, Mar 31	Door & Maze Design of Linac Facilities up to 10 MV (<i>continued</i>)	Arreola
Friday, Apr 2	Design of Linac Facilities Above 10 MV	Arreola
Monday, Apr 5	Design of Linac Facilities Above 10 MV (<i>continued</i>)	Arreola
Wednesday, Apr 7	Door & Maze Design of Linac Facilities above 10 MV	Arreola
Friday, Apr 9	Door & Maze Design of Linac Facilities above 10 MV (<i>continued</i>)	Arreola
Monday, Apr 12	Design of Gamma Knife Facilities	Arreola
Wednesday, Apr 14	Design of Cyberknife Facilities	Arreola
Friday, Apr 16	Design of Tomotherapy Facilities	Arreola
Monday, Apr 19	Design of HDR Afterloader Facilities	Arreola
Wednesday, Apr 21	Design of Brachytherapy Facilities	Arreola

Policies:

Examinations: There are no examinations in this course.

Course Grade: Will be calculated as follows:

Graded homework assignments:	25%
Diagnostic shielding project:	25%
Nuclear medicine shielding project:	25%
Therapy shielding project:	25%

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 6CI-4.017. 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.

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.