

Prof. Romualdo de Souza
Office C230
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Lecture (attendance required): TR 1:00 – 2:15 pm in C033

Discussion section (attendance required):

Section 27437 3:35 pm – 4:25 pm Tues. BH 135

Section 27438 3:35 pm – 4:24 pm Thurs. BH 139

Associate Instructors: Zachary Gosser zgosser@indiana.edu
Michael Rudolph mjrudolp@indiana.edu

Textbook : 1) Nuclear and Radiochemistry, (**OPTIONAL**)
 Friedlander, Kennedy, Miller, and Macias (FKMM)
 (on reserve in chemistry library)
 2) FREE e-textbook being developed by V.E. Viola and R.T. deSouza

Supplementary material : LECTURE NOTES (on course Website)
 Answers to problem sets (on course Website)
 Radiochemistry and Nuclear Methods of Analysis
 By Ehmann and Vance, (EV) on reserve in chemistry library
 Nuclei and Particles by Emilio Segre (ES, more advanced)

Website: <http://courses.chem.indiana.edu/c460/>

Office Hours (RdS) : Tuesdays 10:30 am – noon
 Thurs. 2:15 pm – 3:15 pm
 Or by appointment

AI Office hrs. : TBA

Grading : Grades will be determined based on a point system

Unannounced in-class quizzes (4-6)	50 points	(lowest score dropped)
Homework problem sets (~ weekly)	250 points	
In class Exam #1	150 points	
In class Exam #2	150 points	
Final exam (cumulative)	250 points	
Participation in Discussion Sect.	50 points	

The in-class exams will be held at the end of September/early October and mid-November. **The final exam is Dec. 15th from 10:00 AM – noon.** No excuses for missing either the in-class or final exams will be tolerated. Contact Prof. deSouza well in advance if an academic conflict exists.

PATH TO SUCCESS IN C460

- Print lecture notes before class, read associated material
- Attend all lectures, take notes; ask questions; answers questions; **BE ENGAGED**
- Work hard to make sure you understand how to successfully complete homework/CALM and practice exams.
- **MAKE USE OF OFFICE HRS !!!**
- Make sure you understand what you did wrong on quizzes and exams

Planned Schedule of Lectures

Date	Topic	Material to read
Sept. 1	Radioactivity and the nature of atoms	Ch. 1 (FKMM)
Sept. 3	Rutherford scattering, Nuclear binding and energetics	Ch. 2 (FKMM)
Sept. 8	Nuclear Decay modes, Nuclear Sizes, shapes, and the Liquid drop model	Ch. 2 (EV); Ch. 3 (FKMM)
Sept. 10	Beta stability and the LD Mass Formula	Ch. 14.3 (EV); Ch. 4 (ES); Ch. 15 (FKMM)
Sept. 15	Accelerators	Ch. 6 (FKMM); Ch. 2 (ES)
Sept. 17	Interaction of Radiation with matter	Ch. 7 (FKMM); Ch. 3 (ES)
Sept. 22	Interaction of Radiation with matter (cont'd)	
Sept. 24	Detectors	Ch. 9 (FKMM)
Sept. 29	Forces, Potentials, and the Shell Model	Ch. 9 (FKMM)
Oct. 1	Parity and the Shell Model	Ch. 8 (FKMM)
Oct. 6	Nuclear Potentials and Radioactive Decay (alpha)	Ch. 8 (FKMM)
Oct. 8	Radioactive Decay (beta)	Ch. 8 (FKMM)
Oct. 13	Radioactive Decay modes : Gamma, Fission, Cluster, Delayed n/p, Double Beta decay	
Oct. 15	Radioactive Decay Kinetics	Ch. 3 (FKMM)
Oct. 20	Nuclear Decay kinetics : Transient and Secular Equilibrium	NOTES
Oct. 22	Nuclear Decay kinetics	NOTES
Oct. 27	Nuclear reactions I	NOTES
Oct. 29	Nuclear Reactions II	NOTES
Nov. 3	Nuclear Reactions III	NOTES
Nov. 5	Origin of the elements	NOTES
Nov. 10	Biological effects of radiation	NOTES
Nov. 12	Nuclear Power	NOTES
Nov. 17	Nuclear Power	NOTES
Nov. 19	Nuclear Power	NOTES
Nov. 24	Geo and cosmochronology	NOTES
Nov. 27	THANKSGIVING RECESS	
Dec. 1	Geo and cosmochronology	NOTES
Dec. 3	Homeland security	NOTES
Dec. 8	Homeland security	NOTES
Dec. 10	Review for final exam	
Dec. 15	FINAL EXAM 10:00 - noon AM	