

Course Syllabus: ENU 5626 Radiation Biology

1. Catalog Description (3) - Effects of radiation on biological molecules, cells, and man including cancer and mutagenesis; use of radiation in treatment of disease.
2. Instructor – David Hintenlang
 - a. 116 BME-MP and JG46 BMS
 - b. 352-273-0301
 - c. dhinten@ufl.edu
 - d. Sakai
 - e. As available
3. Course Objectives- To provide a fundamental knowledge of the mechanisms and biological responses of human beings to ionizing and non-ionizing radiations through the study of the effects of radiation on biological molecules, cells, and man including cancer and mutagenesis. The course will develop the ability to make objective decisions regarding the relative risks and benefits of radiation use in a variety of applications.
4. Teaching Assistant - None
5. Meeting Times – MWF Period 5 (11:45 am)
6. Class schedule – three 50 minute periods per week
7. CSE E122
8. Material and Supply Fees - \$3.00
9. Textbooks and Software Required
 - a. Radiobiology for the Radiologist
 - b. Hall and Giaccia
 - c. 2012 – 7th Edition
 - d. ISBN 9781608311934
10. Recommended Reading: BEIR VII Report by National Academy of Science, Handouts provided by instructor as appropriate/timely
11. Course Outline (provide topics covered by week or by class period)

Date		Course Topic	Chapter in Hall	Chapter in BEIR VII
January	7	Overview of Rad. Effects		Summary
	9	Physical & Chem. Mech.	1	1
	11	Physical & Chem. Mech	1, 7	1

	14	DNA Strand Breaks	2	1
	16	DNA Strand Breaks	2	2
	18	Chromosome Aberrations	2	2
	23	Theory and Modeling of DNA & CA damage	2	-
	25	Theory and Modeling of DNA & CA damage	2	2
	28	Cell Survival Curves	3, 7	1,2
	30	Mitotic Cycle & Radiosensitivity	4	-
February	1	Cell Genetics, Repair Mechanisms & Modeling	5	-
	4	Physiological Responses of Tissues & Organs	20	
	6	Physiological Responses of Tissues & Organs	20	-
	8	Physiological Responses of Tissues & Organs	20	-
	11	Examination	-	-
	13	Exam Review	-	-
	15	Acute Radiation Effects	8	3
	18	Models of Radiation Deteriment	17	3
	20	Effective Dose	17	5,6,7, 8, 9
	22	Effective Dose Applications	17	11, 12
	25	Internal Distribution of Radionuclides	-	12
	27	Metabolic Models & Compartment modeling	-	App. D
March	1	Metabolic Models & Compartment modeling	-	
	11	Mechanisms of Carcinogenesis	10	
	13	Models of Carcinogenesis	18	
	15	Radiation Carcinogenesis	10	7
	18	Epidemiology & Risk Models	10, 17	-
	20	BEIR VII - Risk Models	10, 17	
	22	Applications of Risk Models	10, 17	
	25	Applications of Risk Models	10,17	-
	27	Examination	-	
	29	Exam Review	-	
April	1	Evidence/Mechanisms of Radiation Hormesis	-	
	3	Radiation Hormesis	-	App. D
	5	Embryo/Fetal Exposures & Anatomical Development	12	7,9
	8	Radiation Sensitivity: Normal Tissue vs. Tumor Systems	19-21	
	10	Rad Therapy Treatment Protocols	23	
	12	Rad. Therapy Treatment Protocols	23,24	
	15	Rad. Therapy Treatment Protocols	23,24	
	17	Rad & Alternative Treatment Strategies	25, 27, 28	-
	19	Non-Ionizing Radiation - Ultrasound & RF	-	-
	22	Non-Ionizing Radiation – RF & Microwave	-	-
	24	Non-Ionizing Radiation - Optical	-	-
May	1	Final Examination (7:30-9:30 am)	-	-

12. Attendance : Expected

13. Grading –

Homework	10%
Exam #1	25%
Exam #2	30%
Final Exam	35%

14. Grading Scale :

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
≥ 92	90-91	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	< 60

Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation. Note: a “B-“ average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

<http://gradschool.ufl.edu/catalog/current-catalog/catalog-general-regulations.html#grades>

15. Make-up Exam Policy – Make up exams may be scheduled by prior arrangement or extenuating circumstances.
16. Honesty Policy – All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.
17. Accommodation for Students with Disabilities – Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
18. UF Counseling Services –Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
 - Career Resource Center, Reitz Union, 392-1601, career and job search services.
19. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.