

**RAD 342 – Radiation Biology
Course Syllabus Spring 2016**

Course Instructor: Sandi Watts MSHA, RT(R), ARRT
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leave name, message and phone number
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Class Time: T, TH 10-11:15 am, ASA Rm. 14

Office: ASA 131
Hours: M & W 1-3
T & H 1-3

COURSE DESCRIPTION

Designed to instruct the student radiographer in the principles and terminology of radiobiology. Emphasis will be placed on how these principles relate to radiation protection for both the patient and radiographer. Also included are introductions to nuclear medicine and radiation therapy technology.

REQUIRED TEXTBOOK

Statkiewicz-Sherer, M.A., Visconti, P.J., Riteour, E.R. & Haynes, K. (2013). Radiation Protection in Medical Radiography, 7th edition. St. Louis, MO: Elsevier Science/Mosby.

Recommended Textbook:

Statkiewicz-Sherer, M.A., Visconti, P.J., Riteour, E.R. & Haynes, K. (2013). Workbook for Radiation Protection in Medical Radiography, 7th edition. St. Louis, MO: Elsevier Science/Mosby.

Supplemental Textbook(s):

Carlton, R.R. & Adler, A.M. (2012). Principles of Radiographic Imaging: An Art and a Science, 5th edition. Cengage Learning.

Bushong, S. C. (2013). *Radiologic Science for Technologists*, 10th edition. St. Louis, MO: Elsevier/Mosby.

COURSE OBJECTIVES

Upon completion of this course the student will be able to:

1. List the major natural and man-made sources of radiation exposure.
2. Discuss the radiographer's radiation protection responsibility as it pertains to patient's medical personnel and the general public.
3. Differentiate between whole body and body-part radiation doses for radiographers.
4. Discuss the differences between occupational and general public radiation exposure.
5. Explain the various interactions between radiation and matter.
6. Discuss the types of devices used to detect radiation within a radiology department.

7. Describe acute and chronic exposure to radiation in terms of somatic and genetic effects.
8. Explain the terminology of radiation measurement, including the international standards.

COURSE OUTLINE:	PERCENTAGE:
1. Sources of radiation exposure	5%
2. Cell biology	5%
3. Basic biological interactions of radiation	10%
4. Cellular response to radiation	10%
5. Tissue radiation biology	10%
6. Modification of cell and tissue responses to radiation	10%
7. Radiation pathology	10%
8. Total body radiation exposure	10%
9. Late effects of radiation exposure	10%
10. Clinical radiobiology I: diagnostic radiograph & nuclear medicine	10%
11. Clinical radiobiology II: radiation therapy	10%

ACADEMIC HONESTY:

All students are expected to adhere to a strict code of academic honesty. Academic honesty is addressed according to the “Policies and Procedures Applicable to Academic Dishonesty” as stated in the “Important Information for Students, Faculty and Staff” booklet, available from the Office of Vice Chancellor for Student Affairs.

ACTS OF ACADEMIC DISHONESTY, from the “SIUC Student Conduct Code”, section II Violations, article A (www.siu.edu/~policies/conduct.html), but not limited to:

- A. Plagiarism, representing the work of another as one’s own work;
- B. Preparing work for another that is to be used as that person’s own work;
- C. Cheating by any method or measure;
- D. Knowingly furnishing false information to a University official relative to academic matters;
- E. Soliciting, aiding, abetting, concealing, or attempting conduct in violation of this code.

Penalties will be imposed for violations of this policy in accordance with the SIUC Student Conduct Code. These penalties may include one or more of the following disciplinary measures for a case of academic dishonesty:

- **A grade of zero (0) for the assignment, lab, quiz, or test.**
- **An “F” for the entire course.**
- **Recommendation of dismissal from the Program.**

METHODOLOGY:

Students are required to keep current on the weekly reading assignments and to completely answer the related chapter objectives.

Each test is based upon the following materials:

- Textbook readings
- Chapter objectives
- Class lectures, presentations, and discussions
- Any/all supplemental readings

Each test will require the student to identify, apply knowledge, and make judgments based upon the learned material.

STUDENT EVALUATION & GRADING:

Assignments, quizzes, presentations, tests: 75% of total grade

Final: 25% of total grade

----- Total:
100%

Grading Scale:

93 - 100 = A

85 - 92 = B

75 - 84 = C

0 - 74 = F

Tests are normally given as “multiple choice”. Partial credit is **NOT given for incorrect answers. Students are **NOT** permitted to use the restroom during a TEST. If you leave the classroom for any reason during a test, you will forfeit the test and receive a score from the questions you have answered ***only***, with that number divided by the TOTAL number of questions on the test.

All students must pass each of their Radiologic Sciences prefix courses (RAD) with a grade of “C” or better in order to satisfy Program requirements, to graduate, and to pass the National Board Exam in Radiography. This grade of “C” or better is based upon the Radiologic Sciences grading scale.

Any student that fails a Radiologic Sciences course will not continue in our Program. When course failure occurs, the student will meet with the appropriate faculty member and academic advisor to discuss the student’s future educational goals. This discussion may include referring the student to the University Career Services office (www.siu.edu/~ucs; Woody Hall B 204; Ph: 618-453-2391) for testing via the “Strong Interest Inventory” to identify the academic majors that best fit the student’s personality, values, interests, and skills.

During the summer between the junior and senior years, each radiography student will take the National Board Exam in Radiography, administered by the American Registry of Radiologic Technologists (ARRT). This 200 question test has a minimum passing score of 75%. Therefore, to better prepare our students to take and pass this National Board Exam, the Radiologic Sciences Program uses a grading scale that is more stringent than the rest of the University.

PASSING THE ARRT BOARDS:

**** Students have to take and pass the ARRT Board exam by July 1st before they begin their fall semester of specialization classes** (CT/MRI and Radiation Therapy). **

ADA Accommodations:

Under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act, educators and students have both rights and responsibilities. It should be the mutual goal of the student and university to maximize the likelihood that students with disabilities succeed. Accommodation sometimes is necessary.

If you think you have a learning disability, or know you have a disability but have not been tested, then please contact SIUC Disability Support Services (618-453-5738) for an appointment for the evaluation of your learning disability.

Once you have been diagnosed as having a learning disability, we, the faculty of the Radiologic Sciences Program, strongly encourage you to tell us what type of learning disability and what type of accommodation is needed to help you succeed in our Program. If you do not notify us (prior to the end of the first week of the semester) that you have a disability, **and** you do not request accommodation during this course, then you accept full responsibility for your own success or failure in this course. **Ultimately, YOU are responsible for your own success or failure, and the resulting consequences.**

ATTENDANCE:

Please note:

- 1. Due to the frequently graphic content presented in this course, bringing infants and/or children to class is strongly discouraged!**
- 2. No Lap Top computers are allowed in class.**
- 3. Blogging, Tweeting, texting, sexting and all other electronic communications during class time is prohibited.**
- 4. Please turn off all cell phones/smart phones, MP3 players, PDAs, iPads, Kindle-like devices, headsets, pagers, beepers, all other personal communication devices, and remove all types of earbuds/earphones.**
- 4. If it's necessary to be in constant communication with your children, their school, business associates, spouse, friends, etc., then now is not the right time for you to be in our RADS Program!**

A record of daily attendance will be kept. Attendance is mandatory for this course. Habitual tardiness to class will result in points being deducted from the final grade. Each late arrival or absence will result in 0.5 point, daily deduction from the student's semester grade.

Any student that misses class is responsible for the material covered.

Whenever it is possible, *advance notice of absence is appreciated.* An email message is generally adequate. If you are unable to contact me prior to class, please do so as soon as possible.

Missed Quizzes/Exams: If absences occur on days when exams are scheduled the ability to make up the exam will lie solely with the instructor. No guarantee is made, nor given, about the possibility of making up missed examinations. I must be notified in advance of your absence for a make-up exam to be considered. Quizzes may not be made up and may not be announced.

EMERGENCY PROCEDURES:

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on Campus, available on the BERT website (www.bert.siu.edu), the Department of Public Safety's website (www.dps.siu.edu; disaster drop down) and in the Emergency Response Guidelines pamphlet, "Know how to respond to each type of emergency".

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is imperative that you follow these instructions and stay with your instructor during an evacuation of sheltering emergency. The Building Emergency Response Team (BERT) will provide assistance to your instructor in evacuating the building or sheltering within the facility.

EXPECTATIONS

Students are expected to be present, punctual, and prepared to discuss the assigned readings.

Tests will cover text, handouts, lectures, assignments, discussions and PowerPoint's. Students should be prepared to answer questions not only from current chapters, but from previous chapters as well. Any item covered in class is fair game for quiz and test questions. There may be a number of **unannounced quizzes**; be prepared at any time for the administration of a quiz without prior notice.

SIU Online (D2L): Students are expected to have a functioning @siu.edu email address. I am not responsible for servers, or email addresses, from any provider other than the university. Assignments, notes, course material, and grades may be posted electronically through D2L; therefore frequent checks of your D2L and SIU email will be expected.

ASSIGNMENTS:

Readings:

Students are required to keep current on the weekly reading assignments as outlined in the course schedule. Changes in the course schedule will be announced in class.

Chapter Objectives:

Students will completely answer the specified objectives at the beginning of each chapter for each chapter. These are to be typed using a 12 point font and submitted via an assignment drop box in D2L in RAD 342, no later than 10:00am (class time) on the date due. These assignments can be submitted early. No **late** assignments accepted. All assignments must be submitted to receive a grade for the course. Failure to submit all assignments will result in an incomplete for the course and the student will not be allowed to advance in the program.

Power Point Presentations:

Students will be responsible for two (2) Multiple Choice questions covering material from each chapter. Place the questions in a power point presentation WITH the correct answer attached. This assignment will be submitted via an assignment drop box in D2L in RAD 342. See drop box for the deadline date. No late assignments accepted. All assignments must be submitted to receive a grade for the course. Failure to submit all assignments will result in an incomplete for the course and the student will not be allowed to advance in the program.

RAD 342 Tentative Schedule Spring 2016

WEEK	DATE	TOPIC/ASSIGNMENT
1	Jan. 19	Introduction to course Chapter 1
	Jan. 21	Chapter 1
2	Jan.26	Chapter 2
	Jan.28	"
3	Feb. 2	Chapter 3
	Feb. 4	"
4	**Feb. 9**	TEST #1 Ch.1-3; Chapter 4
	Feb. 11	"
5	Feb. 16	Chapter 5
	Feb. 18	"
6	Feb. 23	Chapter 6
	Feb. 25	"
7	**March 1**	TEST #2 Ch. 4-6; Chapter 7
	March 3	"
8	March 8	Chapter 8
	March 10	"
9	March 15	Spring Break
	March 17	"
10	March 22	Chapter 9
	March 24	"
11	**March 29**	TEST #3 Ch. 7-9; Chapter 10
	March 31	"
12	April 5	Chapter 11
	April 7	"
13	April 12	Chapter 12
	April 14	"
14	April 19	Chapter 13
	April 21	"
15	April 26	Chapter 14
	April 28	"
16	**May 3**	TEST #4 Ch. 10-14
	May 5	Review for FINAL
17	May 10	COMPRHENSIVE FINAL EXAM 10:15-12:15