

**RAD 202 – Radiologic Physics  
Fall 2016**

**Course Instructors:** Sandi Watts, MSHA, RT (R), ARRT  
(618) 453-7229, if no answer, please leave  
name, message & phone number.  
E-mail: sjwatts@siu.edu

**Office:** ASA 131  
**Hours:** MW 9-11am  
TTH 1-2pm

**COURSE SCHEDULE: 9:30-10:45, Tuesday and Thursday**

**COURSE DESCRIPTION:** This course will concentrate on general theories of physics as they relate to matter, mechanics and electricity. It also involves the study of the nature and production of radiation and understanding of the complexity of radiographic equipment and circuitry. Restricted to RADS majors.

**COURSE OBJECTIVES:**

1. Demonstrate an understanding of the basic principles of atomic structure.
2. Demonstrate an understanding of the basic physical principles of mechanics.
3. Demonstrate an understanding of the basic physical principles of electricity and magnetism.
4. Demonstrate an understanding of x-ray circuitry and its component parts.
5. Describe the physical aspects of radiation production and radiation protection.

**COURSE OUTLINE:**

**Topics**

1. Radiographic Image Production
2. Radiographic Equipment
3. Radiographic Interactions with Matter

**Co-requisite: RAD 102 and RAD 112**

**TEXTBOOKS:**

**Required:**

Carlton, R.R. & Adler, A.M. (2013). Principles of Radiographic Imaging: An Art and a Science, 5<sup>th</sup> edition. Cengage Learning.

**Optional Textbooks:**

Carlton, R.R. & Adler, A.M. (2013). Workbook for Carlton/Adler's Principles of Radiographic Imaging: An Art and a Science, 5<sup>th</sup> edition. Cengage Learning.

Bushong, S.C. (2013). Radiologic Science for Technologists: Physics, Biology, and Protection (10<sup>th</sup> ed.). St. Louis, MO: Elsevier Science/Mosby, Inc.

## 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 “2012-2013 Guide to Important Information for Students, Faculty and Staff” pdf [www.studentlife.siu.edu/Documents/Info%20Booklet%20FINAL%20for%202012-2013.pdf](http://www.studentlife.siu.edu/Documents/Info%20Booklet%20FINAL%20for%202012-2013.pdf) .

**ACTS OF ACADEMIC DISHONESTY**, from the “SIUC Student Conduct Code”, section II Violations, article A

([www.policies.siu.edu/documents/StudentConductCodeFINALMAY32012.pdf](http://www.policies.siu.edu/documents/StudentConductCodeFINALMAY32012.pdf)):

- 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 means;
- 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 quiz or test.
- An “F” for the entire course.
- Recommendation of dismissal from the Program.

## STUDENT EVALUATION & GRADING:

Each test score will be converted into an appropriate percentage. I reserve the right to add a quiz at any time. This quiz may be known or may be a “pop” quiz. For the final course grade, an average percentage will be calculated, and weighted according to the following criteria:

Written Tests (and any quizzes given), Assignments	75%
<u>Tests (Mid-term and Final)</u>	<u>25%</u>
Total	100%

\*\*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.

## ASSIGNMENTS:

### Chapter Objectives:

Students will completely answer the specified objectives for each chapter being studied. The answers will be referenced with the paragraph and page number in the textbook. The objectives are to be used for studying purposes for exams. Keep them for future use! There will be a “Drop Box” for the assignments in the class on D2L. (1% of 75% of the grade)

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 220 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.

**Grading Scale:**

93 - 100 - A -- exceptionally high achievement

85 - 92 - B -- high achievement

75 - 84 - C -- satisfactory achievement

0 - 74 - F -- unsatisfactory achievement

Each Radiography student is expected to achieve at least 80% accuracy on tests and quizzes.

All Radiography 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 Radiography 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 plans/goals. This discussion may include referring the student to the University Career Services office ([www.siu.edu/~ucs](http://www.siu.edu/~ucs); Woody Hall B204; 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.

**PASSING THE ARRT BOARDS:**

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

**EXPECTATIONS:**

It is expected all students will attend class prepared to discuss the chapter and materials assigned for that period.

Access to the classroom may be restricted, disallowing late entry.

It is expected that all students will conduct themselves in a professional manner appropriate to the healthcare industry.

Students failing to meet these minimum expectations may be arbitrarily removed from the class room or disallowed entry into successive class meetings.

**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 the 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 at 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.**

## **ATTENDANCE:**

### **Please note:**

**\*\* Please turn off all cell phones, MP3 players, PDAs, iPods, headsets, pagers, beepers, all other personal communication devices, and remove all types of earphones/earbuds!!** If it's necessary to be in constant communication with your children, their schools, business associates, spouse, friends, etc., then, now is not the right time for you to be pursuing our Radiologic Sciences Program.

**Attendance is mandatory for this course.** Any student that misses class is responsible for the material covered. He or she should get notes from other students. No assumption should be made that the instructor maintains responsibility for making sure the absent student is given material (or understanding of that material). Whenever possible, advance notice of absence is appreciated. An email message or phone call is generally adequate. If you are unable to contact the instructor prior to class, please do as soon as possible. Excessive absences (5 or more class periods) may result in a failing grade for the semester (at the discretion of the instructor), regardless of earned credit/points/progress.

If absences occur on days when exams or quizzes are scheduled, the ability to make up the examination will lie solely with the instructor. **No guarantee is made, nor given, about the possibility of making up missed exams or quizzes.** All absences resulting in missed exams will be examined on a case-by-case basis with extenuating circumstances (illness, death of family member) being given their due concentration.

## **MAKE-UP TESTS:**

Please refer to "*Attendance is mandatory for this course*". Any quizzes missed will NOT be made up.

## **General Notes:**

Quizzes and tests may be inclusive of any material covered to date. Quizzes and tests may be either fill-in-the-blank, short answer, multiple choice, true/false or any combination.

Students are expected to have a functioning email address as required by the SIU board of trustees. This email address should be from the SIU server (xxxxx@siu.edu). I am not responsible for servers or email addresses from any other providers besides the university. Frequent checks of your email will be expected since some course material may be distributed electronically.

It is nearly impossible to make a syllabus exclusive; I have tried to cover every possibility. In the event that some matter has been omitted, I will bring it to the attention of the class as soon as possible and it will be equally binding as this paper. Any changes, which have been duly announced in class, will make previous information null and void.

### **Building Emergency Response Protocols**

#### ***University's Emergency Procedure Clause:***

Southern Illinois University Carbondale is committed to providing a safe and health 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](http://www.bert.siu.edu), the Department of Public Safety's website, [www.dps.siu.edu](http://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 and X-ray labs in the event of an emergency affecting your location. ***It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.*** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

#### ***Disabled Students:***

Instructors and students in the class will work together as a team to assist disabled students out of the building safely. Disabled students will stay with the instructor and communicate with the instructor what is the safest way to assist them.

#### ***Earthquake:***

In the event of an earthquake you are advised to take cover quickly under heavy furniture or near an interior wall, a corner, to avoid falling debris. Outside the building are trees and power lines and debris from the building itself that you will need to stay away from. In the building, large open areas like auditoriums are the most dangerous. Do not try to escape on a stairway or elevator. Do not hide under a stairway. We do not recommend that you stand in a doorway because the door could shut from the vibrations and crush your fingers trapping you there.

#### ***Fire:***

##### **During the fall semester we have a Fire Drill.**

Pick up your belongings and your instructor will lead you to either the North or South parking lot depending on what part of the building your class is in. You must stay with your instructor so he/she can take roll calls. As soon as the building is all clear, you will be allowed to return to class.

**These drills are to train instructors and the Building Emergency Response Team to get everyone to a safe place during an emergency.**

#### ***Tornado:***

##### **During the spring semester we have a Storm Drill.**

Pick up your belongings and your instructor will lead you to a safe area of the basement. No one will be allowed to stay upstairs. Stay away from windows. The drill should not last more than 10 minutes. You must stay with your instructor so he/she can take roll calls. **Students need to be quiet in the basement** as the BERT members are listening to emergency instructions on handheld radios and cannot hear well in the basement.

***Bomb Threat:***

If someone calls in a bomb threat, class is suspended and students will be asked to pick up their belongings, evacuate the building and leave the premises. Do not leave anything that is yours behind. We will not allow anyone back into the building until the police and bomb squad give us an all clear. ***DO NOT USE YOUR CELL PHONES.*** Some bombs are triggered by a cell phone signal.

***Shooter in the Building:***

When it is safe to leave, move to a safe area far from the building where the shooter is located. If you have any information about the shooter, please contact the police after you return home. If you cannot leave, go into a room, lock the door, turn out the lights, and if possible, cover the glass on the door. Silence all cell phones after one person in the room you are in calls the police and informs them of your location and how many are in the room. Be quiet and wait for the police to arrive. The police are looking for one or more shooters, and they have no way of knowing if the shooter is in the room with you. For that reason, when the police enter the room, no one should have anything in his/her hands and each person **MUST** raise his/her hands above his/her head.

***Women's Self-Defense Class:***

For interested female students and female faculty and staff, the SIU Public Safety Department sets up free self-defense classes. The SIU Public Safety Department will be teaching this class. They teach a free class in the fall and spring at the Rec Center. In the fall you would register at the Rec Center for the Women's Self-Defense Class or RAD (Rape Aggression Defense) as it is sometimes called. If you have questions about registering for the class, you can send an email to [lavong@siu.edu](mailto:lavong@siu.edu). LaVon is the contact in the Dean's Office in the Communications building that will assist you to try to find the class you need.

**Radiographic Physics - RAD 202**  
**Fall 2016 Tentative Daily Schedule**

WEEK	DATE	TOPIC/ASSIGNMENT
1	<b>Aug. 23</b>	<b>Orientation</b>
	<b>Aug. 25</b>	Chapter 1
2	<b>Aug. 30</b>	<b>Chapter 1 TEST</b> (Chapter 2)
	<b>Sept. 1</b>	Chapter 2
3	<b>Sept. 6</b>	Chapter 2
	<b>Sept. 8</b>	Chapter 8
4	<b>Sept. 13</b>	Chapter 8
	<b>Sept. 15</b>	<b>Chapter 2 &amp; 8 TEST</b>
5	<b>Sept. 20</b>	Chapter 3
	<b>Sept. 22</b>	Chapter 3
6	<b>Sept. 27</b>	Chapter 3
	<b>Sept. 29</b>	Chapter 5
7	<b>Oct. 4</b>	Chapter 5
	<b>Oct. 6</b>	Chapter 5
8	<b>Oct. 11</b>	<b>NO SCHOOL – FALL BREAK</b>
	<b>Oct. 13</b>	Review for Mid-Term Exam
9	<b>Oct. 18</b>	<b>MID-TERM EXAMINATION Chapters 2, 3, 5 &amp; 8</b>
	<b>Oct. 20</b>	Chapters 6, 7 & 10
10	<b>Oct. 25</b>	Chapters 6, 7 & 10
	<b>Oct. 27</b>	Chapters 6, 7 & 10
11	<b>Nov. 1</b>	Chapters 6, 7 & 10
	<b>Nov. 3</b>	Chapters 6, 7 & 10
12	<b>Nov. 8</b>	<b>Chapters 6, 7 &amp; 10 TEST</b>
	<b>Nov. 10</b>	Chapter 11
13	<b>Nov. 15</b>	Chapter 11
	<b>Nov. 17</b>	Chapter 11 & 12
14	<b>Nov. 22</b>	Field Trip to Morgue
	<b>Nov. 24</b>	<b>NO SCHOOL –THANKSGIVING BREAK</b>
15	<b>Nov. 29</b>	Chapter 12
	<b>Dec. 1</b>	Chapter 12
16	<b>Dec. 6</b>	REVIEW FOR FINAL
	<b>Dec. 8</b>	<b>Chapters 11 &amp; 12 TEST</b>
17	<b>Dec. 15</b>	<b>FINAL 8:00 – 10:00 (Thursday)</b>