



**RADT 1065/Radiologic  
Science  
COURSE SYLLABUS  
Spring Semester 2017**

Semester: Spring 2017  
Course Title: Radiologic Science  
Course Number: RADT 1065  
Credit Hours/ Minutes: 2 / 1500  
Class Location: Room # 833  
Class Meets: T 10:30A – 12:10P  
CRN: 40306

Instructor: Tara Powell  
Office Hours: W 10:30A – 12:00P  
Office Location: Room 714, Gillis Building  
Email Address: tpowell@southeasterntech.edu  
Phone: 912-538-3152  
Fax Number: 912-538-3106  
Tutoring Hours: by appointment only

**REQUIRED TEXT:**

Fosbinder, R. & Orth, D. (2012). *Essentials of Radiologic Science*. Wolters Kluwer/Lippincott Williams & Wilkins: Baltimore, MD. ISBN: 978-0-7817-7554-0

**REQUIRED SUPPLIES & SOFTWARE:** pen, paper, calculator

**COURSE DESCRIPTION:** Content of this course is designed to establish a basic knowledge of atomic structure and terminology. Other topics include the nature and characteristics of x-radiation; ionizing and non-ionizing radiation; x-ray production; the properties of x-rays and the fundamentals of x-ray photon interaction with matter.

**MAJOR COURSE COMPETENCIES:**

1. X-Ray Characteristics
2. X-Ray Production
3. X-Ray Interaction with Matter

**PREREQUISITE(S):** Program admission, Program Instructor Approval

**COURSE OUTLINE:**

**X-Ray Characteristics**

<b>Order</b>	<b>Description</b>	<b>Learning Domain</b>	<b>Level of Learning</b>
1.	Describe fundamental atomic structure and characteristics of protons, neutrons, and electrons.	Cognitive	Knowledge
2.	Explain the processes of ionization and excitation.	Cognitive	Comprehension
3.	Compare covalent and ionic bonding.	Cognitive	Analysis
4.	Describe the relationship of energy, wavelength, and frequency on the electromagnetic spectrum.	Cognitive	Knowledge
5.	Describe wavelength and frequency, and the relationship to velocity.	Cognitive	Comprehension
6.	Explain the wave-particle duality phenomena.	Cognitive	Comprehension
7.	Describe charged and uncharged forms of particulate radiation.	Cognitive	Comprehension
8.	Differentiate between ionizing and non-ionizing radiation.	Cognitive	Analysis
9.	Describe radioactivity and radioactive decay in terms of alpha, beta and gamma emission. X-Ray Production.	Cognitive	Comprehension

### X-Ray Production

<b>Order</b>	<b>Description</b>	<b>Learning Domain</b>	<b>Level of Learning</b>
1.	Describe target interactions and the production of bremsstrahlung and characteristic radiation.	Cognitive	Comprehension
2.	Describe the conditions necessary to produce x-rays.	Cognitive	Comprehension
3.	Describe the x-ray beam spectrum.	Cognitive	Comprehension
4.	Describe the factors that affect emission spectra, such as kVp, mA, time, atomic number of target, distance, filtration, and voltage waveform.	Cognitive	Comprehension
5.	Describe the fundamental properties of x-rays (e.g. travel in straight lines, ionize matter)	Cognitive	Comprehension
6.	Describe x-ray beam characteristics (quality, quantity, primary vs. remnant/exit).	Cognitive	Comprehension

### X-Ray Interaction with Matter

<b>Order</b>	<b>Description</b>	<b>Learning Domain</b>	<b>Level of Learning</b>
1.	Discuss the various photon interactions with matter, to include the Compton effect, photoelectric absorption, coherent (classical scatter) and attenuation by various tissues.	Cognitive	Comprehension
2.	Describe the interaction with matter and its relation to atomic number, photon energy and part density, and their applications in diagnostic radiology.	Cognitive	Comprehension

**GENERAL EDUCATION CORE COMPETENCIES:** STC has identified the following general education core competencies that graduates will attain:

- The ability to utilize standard written English.
- The ability to solve practical mathematical problems.
- The ability to read, analyze, and interpret information.

### STUDENT REQUIREMENTS:

**Prior to the discussion of each chapter in class, the student is expected to complete the following:**

- Read the assigned chapter.
- Know the answers to the review questions at the end of each chapter.
- Know the definitions of the key terms listed at the beginning of each chapter.
- Complete all activities for assigned chapter.

Completed worksheets will be due on the day of each test for that chapter. Worksheets are to assist in reviewing course materials and students are expected to perform any additional preparation for tests on their own. No study guides will be given and no grades will be dropped in this course. Cellphones should not be used during the class for any reason and students found utilizing their cellphone during the class period will automatically receive a zero on the following test.

**TESTING POLICY:** Prior to beginning any exam, all students are required to place all textbooks and personal property underneath the whiteboard in the front of the classroom. No talking is allowed once the exam begins. Once a student completes his/her exam, he/she will turn the exam paper over and remain at his/her desk quietly until everyone has finished with the exam. This will prevent other students from being distracted as students exit. The instructor will take up all exam papers once all students are finished taking the exam. Students found with their cell phone or any other personal communication device during the exam will be considered cheating and given a zero for the exam.

**CELLPHONE POLICY:** Cell phones are not to be utilized in the classroom or laboratory unless being used as an academic tool during classroom activities that are approved by the instructor. Students utilizing their cellphone for non-academic purposes during class or laboratory (texting, talking on or, emailing, etc.), will receive a zero on their next chapter test grade. In the event of an emergency, such as a sick family member or sick child, calls should be directed to the front desk at 912-538-3117 where a message can be left.

**ATTENDANCE GUIDELINES:** Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and also interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of F and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Students will not be withdrawn by an instructor for attendance; however, all instructors will keep records of graded assignments and student participation in course activities. The completion dates of these activities will be used to determine a student's last date of attendance in the event a student withdraws, stops attending, or receives an F in a course.

## **ADDITIONAL ATTENDANCE PROVISIONS**

### ***Health Sciences***

Requirements for instructional hours within Health Science programs reflect the rules of respective licensure boards and/or accrediting agencies. Therefore, these programs have stringent attendance policies. Each program's attendance policy is published in the program's handbook and/or syllabus which specify the number of allowable absences. All provisions for required make-up work in the classroom or clinical experiences are at the discretion of the instructor.

Attendance is counted from the first scheduled class meeting of each semester. To receive credit for a course a student must attend at least 90% of the scheduled instructional time. Time and/or work missed due to tardiness or absences must be made up at the convenience of the instructor. Any student attending less than the required scheduled instructional time (90%) may be dropped from the course as stated below in the Withdrawal Procedure.

Tardy means arriving after the scheduled time for instruction to begin. Early departure means leaving before the end of the scheduled time. Three (3) tardies or early departures equal one (1) absence for the course. A tardy will be issued if a student has missed less than 20% of instructional class time. An automatic absence will be issued if the student misses greater than 20% of instructional class time. This averages out to 10 minutes per hour. For example, a class that meets from 9:00-11:30 will be considered absent if he/she is not in class by 9:30.

The didactic portion of the class will meet for 30 hours. A student is allowed to miss a maximum of 3 hours. Students missing more than 3 hours (1.5 class meetings) will be dropped for exceeding the attendance policy.

**SPECIAL NEEDS:** Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact Helen Thomas, Room 108 Vidalia Campus, 912-538-3126, to coordinate reasonable accommodations.

**SPECIFIC ABSENCES:** Provisions for Instructional Time missed because of documented absences due to jury duty, military duty, court duty, or required job training will be made at the discretion of the instructor.

**PREGNANCY:** Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please advise me and make appropriate arrangements with the Special Needs Office. Vidalia Campus: Helen Thomas, Room 108, (912) 538-3126.

**WITHDRAWAL PROCEDURE:** Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% portion of the semester (date will be posted on the school calendar) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" is assigned when the student completes the withdrawal form from the course.

Students who are dropped from courses due to attendance (see your course syllabus for attendance policy) after drop/add until the 65% point of the semester will receive a "W" for the course. Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

After the 65% portion of the semester, the student will receive a grade for the course. (Please note: A zero will be given for all missed assignments.)

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. All grades, including grades of 'W', will count in attempted hour calculations for the purpose of Financial Aid.

**Remember** - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

**MAKEUP GUIDELINES (Tests, quizzes, homework, projects, laboratory, etc...):** A grade of zero will be assigned for any missed assignment regardless of the reason.

**ACADEMIC DISHONESTY POLICY:** The STC Academic Dishonesty Policy states *All forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline.* The policy can also be found in the *STC Catalog and Student Handbook.*

#### **Procedure for Academic Misconduct**

The procedure for dealing with academic misconduct and dishonesty is as follows:

##### **--First Offense--**

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

##### **--Second Offense--**

Student is given a grade of "WF" for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

##### **--Third Offense--**

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Vice President for Student Affairs, or designee,

will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

**STATEMENT OF NON-DISCRIMINATION:** Southeastern Technical College does not discriminate on the basis of race, color, creed, national or ethnic origin, gender, religion, disability, age, disabled veteran, veteran of Vietnam Era or citizenship status, (except in those special circumstances permitted or mandated by law). This school is in compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin; with the provisions of Title IX of the Educational Amendments of 1972, which prohibits discrimination on the basis of gender; with the provisions of Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap; and with the American with Disabilities Act (ADA).

**GRIEVANCE PROCEDURES:** Grievance procedures can be found in the Catalog and Handbook located on STC's website.

**ACCESS TO TECHNOLOGY:** Students can now access Blackboard, Remote Lab Access, Student Email, Library Databases (Galileo), and BannerWeb via the mySTC portal or by clicking the Current Students link on the STC website at [www.southeasterntech.edu](http://www.southeasterntech.edu).

**TCSG GUARANTEE/WARRANTY STATEMENT:** *The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.*

**COURSE GRADING POLICY**

<b>Chapter Tests</b>	<b>150 total points</b>
<b>Worksheets</b>	<b>50 total points</b>
<b><u>Final Exam</u></b>	<b><u>100 total points</u></b>
	<b>300 total possible points</b>

**GRADING SCALE**

A: 90-100  
B: 80-89  
C: 70-79  
D: 60-69  
F: 0-59

**RADT 1065 – Radiologic Science  
Spring SEMESTER 2017 - LESSON PLAN**

<b>Date</b>	<b>Chapter / Lesson</b>	<b>Content</b>	<b>Assignments &amp; Tests Due</b>	<b>Comp Area</b>
<b>WEEK 1</b> Jan 10	House Keeping	Review Syllabus Policies & Procedures (STC Send & Sign)	Read Chapter 1	
<b>WEEK 2</b> Jan 17	Chapter 1	Radiation Units, Atoms, and Atomic Structure	Study for Chapter Test	1 / a, b, c
<b>WEEK 3</b> Jan 24		<b>Test Chapter 1</b> - Radiation Units, Atoms, and Atomic Structure	Read Chapter 2	1 / a, b, c
<b>WEEK 4</b> Jan 31	Chapter 2	Electromagnetic Radiation, Magnetism, and Electrostatics	Complete Worksheet Study for Chapter Test	2 / a, b, c
<b>WEEK 5</b> Feb 7		<b>Test Chapter 2</b> - Electromagnetic Radiation, Magnetism, and Electrostatics	Read Chapter 3	2 / a, b, c
<b>WEEK 6</b> Feb 14	Chapter 3	Electric Currents and Electricity	Complete Worksheets Chapter 3 Study for Chapter Test	2 / a, b, c
<b>WEEK 7</b> Feb 21		<b>Test Chapter 3</b> - Electric Currents and Electricity	Read Chapter 4	2 / a, b, c
<b>WEEK 8</b> Feb 28	Chapter 4	Transformers, Circuits, and Automatic Exposure Control	Complete Worksheet Chapter 4 Study for Chapter Test	2 / a, b, c
<b>WEEK 9</b> March 7		<b>Test Chapter 4</b> - Transformers, Circuits, and Automatic Exposure Control	Read Chapter 5	2 / a, b, c
<b>WEEK 10</b> March 14	Chapter 5	X-Ray Tubes	Study for Chapter Test	2 / a, b, c
<b>WEEK 11</b> March 21		<b>Test Chapter 5</b> - X-Ray Tubes	Read Chapter 6	2 / a, b, c
<b>WEEK 12</b> March 28	Chapter 6	X-Ray Production	Complete Worksheet Study for Chapter Test	2,3 / a, b, c
<b>WEEK 13</b> April 4		<b>Test Chapter 6</b> - X-Ray Production	Read Chapter 7	2,3 / a, b, c
<b>WEEK 14</b> April 11	Chapter 7	X-Ray Interactions	Complete Worksheet Study for Chapter Test	3 / a, b, c
<b>WEEK 15</b> April 18		<b>Test Chapter 7</b> - X-Ray Interactions	Review all Chapters for Final Exam	3 / a, b, c
<b>Final</b> April 26	Chapters 1 - 7	<b>Final Exam - Comprehensive 10:30A</b>		1, 2, 3 / a, b, c

*‡Revised 02/18/2016*

**\* Competency Areas: (will vary for each course/taken from state standards)**

1. X-Ray Characteristics
2. X-Ray Production
3. X-Ray Interaction with Matter

**\*\*General Core Educational Competencies**

- a) The ability to utilize standard written English.
- b) The ability to solve practical mathematical problems.
- c) The ability to read, analyze, and interpret information.



**Southeastern Technical College  
Radiologic Technology Degree Program**

I \_\_\_\_\_ have read and understand the syllabus for RADT 1065. I have also been given the opportunity to ask questions to clarify any requirements listed on the syllabi. By signing this agreement I am acknowledging that I fully understand my requirements and grading criteria that I am responsible for. I agree to follow the guidelines and rules listed on the syllabi.

\_\_\_\_\_

Print Name

\_\_\_\_\_

Student Signature

\_\_\_\_\_

Date