

INSTRUCTIONAL PACKAGE

RAD 201 Radiation Biology

Effective Term
Fall 2025/Spring 2026/Summer 2026

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Part I: Course Information

Effective Term: Fall 2025/Spring 2026/Summer 2026

COURSE PREFIX: RAD 201

COURSE TITLE: Radiation Biology

CONTACT HOURS: 3

CREDIT HOURS: 2

RATIONALE FOR THE COURSE:

Students need to study and understand the ionizing effects of radiation on the human body and the laws that have been implemented to uphold ALARA principles.

COURSE DESCRIPTION:

This course is the study of the principles of radiobiology and protection. It emphasizes procedures that keep radiation exposure to patients, personnel, and the population at large to a minimum

PREREQUISITES/CO-REQUISITES:

No academic pre-requisites. Must be a student in the Radiologic Technology associate degree Program

REQUIRED MATERIALS:

Please visit the [BOOKSTORE](#) online site for most current textbook information.

Enter the semester, course prefix, number and section when prompted and you will be linked to the correct textbook.

Radiologic Science for Technologists, 14th Ed, Stewart Bushong, Mosby publishers.

Radiologic Science for Technologists Workbook : Physics, Biology, and Protection 14th edition

ADDITIONAL REQUIREMENTS:

Standard calculator

TECHNICAL REQUIREMENTS:

Access to Desire2Learn (D2L), HGTC's learning management system (LMS) used for course materials.

Access to myHGTC portal for student self-services.

College email access – this is the college's primary official form of communication.

Audio and/or Video recording is prohibited unless authorized by the instructor. Students using cell phones without the professor's permission will be asked to leave the classroom and will result in a recorded absence for the class.

As a group we are with each other for a long time and sometimes with familiarity we can become too comfortable with one another, and we can display inappropriate behavior. Occasionally, we do not realize it is not appropriate for the classroom/online setting. Although we have a lot of policy and procedures already to follow, here is a review of proper classroom etiquette/Netiquette as adopted from Dr. Nardo of Ogelthorpe University. Demonstrating the following qualities shows respect for your professor and fellow students, and upholds the integrity of the classroom.

1. Arrive on time to class.
2. Bring the materials needed for class.
3. **Turn off cell phones and texting devices in class. *Video and/or audio recording is prohibited unless specifically authorized by the instructor.**
4. Use laptops/computers as it relates to classroom activities.
5. Create appropriate emails from your HGTC.edu account. (Note: emails to Dr. Gleasman should go to **douglas.gleasman@hgtc.edu**)
6. Be attentive in class.
7. Dress appropriately.
8. Stay the entire class.
9. **Do the work and avoid excuses/complaints.**
10. **Use professional language and avoid sarcastic and in appropriate comments.**
11. Take your own notes and do your own work.
12. **Avoid asking inappropriate or thoughtless questions.** ie; "can we get out early today"
13. Abide by the honor and conduct code of HGTC as outlined in the College Catalog.

CLASSROOM ETIQUETTE:

As a matter of courtesy to other students and your professor, **please turn off cell phones** and other communication/entertainment devices before class begins. If you are monitoring an emergency, please notify your professor prior to class and switch cell phone ringers to vibrate.

NETIQUETTE: is the term commonly used to refer to conventions adopted by Internet users on the web, mailing lists, public forums, and in live chat focused on online communications etiquette. For more information regarding Netiquette expectations for distance learning courses, please visit [Online Netiquette](#).

Part II: Student Learning Outcomes

Biological effects of radiation on the human body are intertwined throughout the semester while highlights of the historical, social, ethical, and medical impacts radiation have had on the last century. Initially the types of ionizing radiation and their effects at the atomic, molecular, and cellular levels is examined. Genetic and somatic effects as related to acute and chronic doses of radiation are also discussed. The course further concentrates on and explores medical diagnostic radiation – sources, exposure, dose limits, detection measurements, design of equipment and rooms for maximum protection, reduction of dose and quality control.

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

Objectives

1. Recognize the possible danger of radiation to living tissue from large acute doses of radiation to chronic low-level doses. Understand the risk vs. benefit of diagnostic radiography.
2. Increase awareness of consequences due to radiation application principles as it pertains to cellular exposure and human biology.
3. Understand the effects of X-Radiation on a cellular and molecular level, radiolysis, and free radical formation, cross-linking, DNA damage and repair.
4. Distinguish the difference b/w Deterministic and Stochastic Effects of radiation exposure
5. Students will be able to recognize conditions and select the proper use of exposure factors when performing routine radiographic procedures.
6. Students will understand hormesis, Ipilation, Acute Radiation Syndromes, Leukemia, cataracts and other consequences of over exposure to radiation.
7. Develop a knowledge of the Half-Value Layer, Tenth Value Layer and the concepts behind the design of the radiography suite.
8. Develop knowledge and skills to ensure radiation safety and dose reduction to themselves, patients, and staff.
9. Apply ALARA (As Low As Reasonably Achievable) radiation safety practices in all aspects of personal and patient care.

****Students – please refer to the Instructor’s Course Information sheet for specific***

information on assessments and due dates.

Part III: Grading and Assessment

EVALUATION OF REQUIRED COURSE MEASURES/ARTIFACTS*:

Students' performance will be assessed, and the weight associated with the various measures/artifacts are listed below.

EVALUATION*

Tests	55%
Assignments	5%
Quizzes	20%
Final Exam	20%
	100%

Grading scale:	92 - 100	A
	83 - 91	B
	74 - 82	C
	65 - 73	D

****Students, for the specific number and type of evaluations, please refer to the Instructor's Course Information Sheet.***

GRADING SYSTEM:

State the College's or departmental grading system as delineated in the Catalog. Please note the College adheres to a 10-point grading scale A = 100 – 90, B = 89- 80, C = 79 – 70, D = 69 – 60, F = 59 and below. You must have your Dean's approval if changes in the scale are made.

Grades earned in courses impact academic progression and financial aid status. Before withdrawing from a course, be sure to talk with your instructor and financial aid counselor about the implications of that course of action. Ds, Fs, Ws, WFs and Is also negatively impact academic progression and financial aid status.

The Add/Drop Period is the first 5 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format courses. Please refer to the [academic calendar](#) for deadlines for add/drop. You must attend at least one meeting of all your classes during that period. If you do not, you will be dropped from the course(s) and your Financial Aid will be reduced accordingly.

Types of Questions: Questions will be based on knowledge, comprehension, application, analysis and evaluation skills. Most questions will be in a multiple-choice format, although short answer, true and false, matching and diagramming may be incorporated. **Questions are designed to promote critical thinking** and in most cases will require more than memorization to obtain the correct answer. Unit Exams, Final Exam, Quizzes and Homework assignments comprise your assigned final grade. **If a student receives a grade below 75% on any Unit Test or 70% on a Quiz, it will be MANDATORY for the student contact the SSTC to schedule an appointment with the radiology tutor to review the material on the test or quiz.** If the radiology tutor is unavailable, the student will be required to make an appointment with the course instructor. Every attempt will be made to post examination and quiz grades on D2L a minimum of 24-48 hrs. after everyone in the class has completed the exam or turned in the assignment. The time frame may vary depending on the type of assignment or examination.

Part IV: Attendance

Horry-Georgetown Technical College maintains a general attendance policy requiring students to be present for a minimum of 80 percent (80%) of their classes in order to receive credit for any course. Due to the varied nature of courses taught at the college, some faculty may require up to 90 percent (90%) attendance. Pursuant to 34 Code of Federal Regulations 228.22 - Return to Title IV Funds, once a student has missed over 20% of the course or has missed two (2) consecutive weeks, the faculty is obligated to withdraw the student, and a student may not be permitted to reenroll. **Instructors define absentee limits for their class at the beginning of each term; please refer to the Instructor Course Information Sheet.**

Attendance is a must. In this course a student **may not exceed more than 2 absences** (10%) as the Radiography Program requires a 90% attendance. A written warning results after your first absence. A second absence results in a final written warning. Any further absences are grounds for dismissal. If a student is absent on the day of a test or quiz, the student must notify the instructor within 24 hours and schedule a makeup exam/quiz date with the testing center. If a student is absent from a class prior to a class scheduled with a test that day, the student will not be eligible to take the test on that day and it will be up to the student to reschedule a make-up test with the professor.

Tardies- 3 tardies = 1 absence and a written warning, 4th a final written warning, 5th dismissal from the program.

Part V: Student Resources



THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):

The SSTC offers to all students the following **free** resources:

1. Academic tutors for most subject areas, Writing Center support, and Academic Coaching for college success skills.
2. Online tutoring and academic support resources.
3. Professional and interpersonal communication coaching in the EPIC Labs.

Visit the [Student Success & Tutoring Center](#) website for more information. To schedule tutoring or coaching, contact the SSTC at sstc@hgtc.edu or self-schedule in the Penji iOS/Android app or at www.penjiapp.com. Email sstc@hgtc.edu or call SSTC Conway, 349-7872; SSTC Grand Strand, 477-2113; and SSTC Georgetown, 520-1455, or go to the SSTC [Online Resource Center](#) to access on-demand resources.



STUDENT INFORMATION CENTER: TECH Central

TECH Central offers to all students the following **free** resources:

1. Getting around HGTC: General information and guidance for enrollment, financial aid, registration, and payment plan support!
2. In-person and remote assistance are available for Desire2Learn, Student Portal, Degree Works, and Office 365.
3. Chat with our staff on TECH Talk, our live chat service. TECH Talk can be accessed on the student portal and on TECH Central's website, or by texting questions to (843) 375-8552. Visit the Tech Central website for more information. Live Chat and Center locations are posted on the website. Or please call (843) 349 – TECH (8324), Option # 1.



HGTC LIBRARY:

Each campus location has a library where HGTC students, faculty, and staff may check out materials with their HGTC ID. All three HGTC campus libraries have librarians and staff who can aid with research, computers to support academic research and related school-work, and individual/group study rooms. Printing is available as well at each location. Visit the [Library](#)

website for more information or call (843) 349-5268.

STUDENT TESTING:

Testing in an **online/hybrid** course and in **make-up exam** situations may be accomplished in a variety of ways:

- Test administered within D2L.
- Test administered in writing on paper.
- Test administered through Publisher Platforms (which may have a fee associated with the usage)

Furthermore, tests may have time limits and/or require a proctor.

Testing candidates must make their appointments 24 hours in advance.

Students must bring a physical ID in order to take a test.

Proctoring can be accomplished either face-to-face at an approved site or online through our online proctoring service. To find out more about proctoring services, please visit the [Online Testing](#) section of the HGTC's Testing Center webpage.

The **Instructor Information Sheet** will have more details on test requirements for your course.

DISABILITY SERVICES:

HGTC is committed to providing an accessible environment for students with disabilities.

Students seeking accommodations are encouraged to visit HGTC's [Accessibility and Disability Service webpage](#) for detailed information.

It is the student's responsibility to self-identify as needing accommodations and to provide appropriate documentation. Once documentation is submitted, the student will participate in an interactive process with Accessibility and Disability Services staff to determine reasonable accommodations. Students may begin the accommodations process at any time; however, accommodations are **not retroactive** and will only be applied from the point at which they are approved. Students must contact the office **each semester** to renew their accommodations.

For assistance, please contact the Accessibility and Disability Services team at disabilityservices@hgtc.edu or 843-796-8818 (call or text).

COUNSELING SERVICES:

HGTC Counseling Services strives to optimize student success through managing personal and academic concerns that may interfere with achieving educational goals. Staff are available to every student for assistance and guidance on personal matters, academic concerns and other areas of concern. HGTC offers free in-person and telehealth counseling services to students. For more information about counseling services, please reach out to counseling@hgtc.edu or visit

the website the [Counseling Services webpage](#).

STATEMENT OF EQUAL OPPORTUNITY/NON-DISCRIMINATION STATEMENT:

Our sincere commitment to both effective business management and equitable treatment of our employees requires that we present this Policy Statement as an embodiment of that commitment to the fullest.

Discrimination is conduct that includes unjust or prejudicial treatment based upon an individual's sex, race/color, religion, national origin, age, disability, service in the uniformed services (as defined in state and federal law), veteran status, political ideas, marital or family status, pregnancy, childbirth, or related medical conditions, including, but not limited to, lactation, genetic information, genetic identity, gender expression, or sexual orientation that excludes an individual from participation in, denies the individual the benefits of, treats the individual differently, or otherwise adversely affects a term or condition of a person's working or learning environment. This includes failing to provide reasonable accommodation, consistent with state and federal law, to persons with disabilities.

INQUIRIES REGARDING THE NON-DISCRIMINATION/TITLE IX POLICIES:

Student and prospective student inquiries concerning Section 504, Title II, Title VII, and Title IX and their application to the College or any student decision may be directed to the Vice President for Student Affairs.

Dr. Melissa Batten, VP Student Affairs

Title IX, Section 504, and Title II Coordinator

Building 1100, Room 107A, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5228

Melissa.Batten@hgtc.edu

Employee and applicant inquiries concerning Section 504, Title II, and Title IX and their application to the College may be directed to the Vice President for Human Resources.

Jacquelyne Snyder, VP Human Resources

Affirmative Action/Equal Opportunity Officer and Title IX Coordinator

Building 200, Room 205B, Conway Campus

PO Box 261966, Conway, SC 29528-6066

843-349-5212

Jacquelyne.Snyder@hgtc.edu

TITLE IX REQUIREMENTS:

Title IX of the Education Amendments of 1972 protects students, employees, applicants for admission and employment, and other persons from all forms of sex discrimination.

HGTC prohibits the offenses of domestic violence, dating violence, sexual assault, and stalking and will provide students, faculty, and staff with necessary information regarding prevention, policies, procedures, and resources.

Any student, or other member of the college community, who believes that they have been a victim of sexual harassment, domestic violence, dating violence, sexual assault, or stalking may file a report with the college's Title IX Coordinator or campus law enforcement*.

*Faculty and Staff are required to report these incidents to the Title IX Coordinator when involving students. The only HGTC employees exempt from mandatory reporting are licensed mental health professionals (only as part of their job description such as counseling services).

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PREGNANCY ACCOMMODATIONS

Under Title IX, colleges must not exclude a pregnant student from participating in any part of an educational program. Horry-Georgetown Technical College is committed to ensuring that pregnant students receive reasonable accommodations to ensure access to our educational programs.

Students should advise the Title IX Coordinator of a potential need for accommodations as soon as they know they are pregnant. It is extremely important that communication between student, instructors, and the Title IX Coordinator begin as soon as possible. Each situation is unique and will be addressed individually.

Title IX accommodations DO NOT apply to Financial Aid. Financial Aid regulations do not give the College any discretion in terms of Financial Aid eligibility.

Certain educational programs may have strict certification requirements or requirements mandated by outside regulatory agencies. Therefore, in some programs, the application of Title IX accommodations may be limited.

To request pregnancy accommodations, please complete the *Pregnancy Intake Form* that can be found [here](#).

