

HGTC

Horry-Georgetown
Technical College

COURSE INSTRUCTIONAL PACKAGE

RAD 201
Radiation Biology

202630
Summer 2027

Part I: Course Information

Effective Term: Summer 2027

COURSE PREFIX: RAD 201

COURSE TITLE: Radiation Biology

CONTACT HOURS: 2-3-3

CREDIT HOURS: 3

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:

Must be a student in the Radiologic Technology Degree program.

REQUIRED MATERIALS:

Please visit the BOOKSTORE online site for most current textbook information.

1. Radiologic Science for Technologists

By Stewart C. Bushong

Edition: 12th

ISBN: 9780323790307

2. Radiologic Science for Technologists Workbook

By Stewart C. Bushong

Edition: 12th

ISBN: 9780323709750

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.

ATTENDANCE VERIFICATION:

The Add/Drop Period is the first 7 days of the semester for **full term** classes. Add/Drop periods are shorter for accelerated format classes. 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

IDENTIFICATION VERIFICATION:

Students enrolled in online courses will be required to complete identity verification. Please refer to your Instructor's Course Information Sheet for information regarding this requirement.

STUDENT COURSE EVALUATIONS:

Each semester, students are provided with an opportunity to participate in course evaluation surveys. These evaluations offer crucial feedback to instructors and the College, leading to enhancement of educational quality. By completing these surveys, you play a key role in the ongoing improvement of teaching methods and course content, ensuring future students enjoy a better learning experience. Students are encouraged to complete these surveys as your active participation in this process reflects your dedication to your education and drives positive change.

CLASSROOM ETIQUETTE AND STUDENT RIGHTS AND RESPONSIBILITIES:

The Radiologic Technology Program is committed to maintaining a professional, respectful, and productive learning environment that reflects the expectations of the healthcare profession. Students are expected to demonstrate behaviors consistent with professional practice, personal accountability, and academic integrity always.

Students are expected to comply with the requirements of **Student Policy 14: Use of Electronic Devices in the Didactic Setting**. The policy was revised for 2026 to establish stricter expectations regarding electronic device use during instructional activities.

Key Requirements:

- All personal electronic devices, including cell phones, smart watches, tablets, earbuds, and similar devices, must be turned off or silenced and stored out of sight during class.
- Electronic devices may only be used when specifically authorized by the instructor for academic purposes.
- Texting, messaging, social media, internet browsing, email, and any other non-academic use of electronic devices during class are prohibited.
- Students expecting an emergency communication must notify the instructor before class begins.
- Audio recording, video recording, photography, screenshots, or reproduction of lectures, laboratory activities, examinations, classroom discussions, or instructional materials is prohibited unless expressly authorized by the instructor.

Disciplinary Consequences:

- **First violation:** Removal from class, assignment of an absence, and issuance of a written warning.
- **Second violation:** Dismissal from the Radiologic Technology Program.

Students are responsible for reviewing and complying with the complete Electronic Device Policy contained in the current Radiologic Technology Student Handbook.

Professional Classroom Conduct:

Students are expected to always demonstrate the following professional behaviors:

1. Arrive on time and prepared for each class session.
2. Bring all required textbooks, assignments, supplies, and learning materials.
3. Use laptops and computers only for instructor-approved educational activities.

4. Communicate professionally using your HGTC email account. Program-related communication should occur through your official college email account. Questions or concerns may be directed to **douglas.gleasman@hgtc.edu**.
5. Remain attentive and actively engaged during class activities and discussions.
6. Demonstrate respect toward classmates, faculty, clinical instructors, guest speakers, and college staff.
7. Dress appropriately and maintain a professional appearance consistent with healthcare expectations.
8. Remain in class for the entire scheduled session unless excused by the instructor.
9. Complete assigned work and take responsibility for your own academic success.
10. Always use professional and respectful language. Disruptive, sarcastic, disrespectful, or inappropriate comments are unacceptable.
11. Maintain academic integrity by completing your own work and taking your own notes unless collaboration has been specifically authorized.
12. Contribute positively to the learning environment through thoughtful participation and professional interactions.

Students must comply with all provisions of the **HGTC Student Code of Conduct**, **Honor Code**, and all policies contained within the Radiologic Technology Student and Clinical Handbooks.

Class Preparation and Student Responsibility:

This Instructional Package is subject to revision; however, every effort will be made to follow the schedule as outlined.

Radiologic Technology courses are rigorous and require preparation outside the classroom. Students are expected to read assigned materials before class, review course content regularly, and actively participate in learning activities.

Faculty are committed to supporting student success; however, each student is ultimately responsible for their own learning, preparation, attendance, and academic performance.

Success in this program requires professionalism, preparation, accountability, and a commitment to continuous learning.

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 room for maximum protection, reduction of dose and quality control.

COURSE LEARNING OUTCOMES and ASSESSMENTS*:

1. Recognize the possible danger of radiation to living tissue from large acute doses of radiation to chronic low-level doses.
2. Understand the risk vs. benefit of diagnostic radiography.
3. Increase awareness of consequences due to radiation application principles as it pertains to cellular exposure and human biology.
4. Understand the effects of X-Radiation on a cellular and molecular level, radiolysis, and free radical formation, cross-linking, DNA damage and repair.
5. Distinguish the difference between Deterministic and Stochastic Effects of radiation exposure.
6. Students will be able to recognize conditions and select the proper use of exposure factors when performing routine radiographic procedures.
7. Students will understand hormesis, epilation, Acute Radiation Syndrome, Leukemia, cataracts and other consequences of over exposure to radiation.
8. Develop a knowledge of the Half-Value Layer, Tenth Value Layer and the concepts behind the design of the radiography suite.

9. Develop knowledge and skills to ensure radiation safety and dose reduction to themselves, patients, and staff.
10. 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.

Methods of Assessment

Student learning will be evaluated through a variety of assessment methods designed to measure knowledge acquisition, comprehension, application, analysis, and critical thinking skills. Assessment formats may include multiple-choice examinations, short-answer questions, true/false questions, matching exercises, diagram identification, laboratory activities, homework assignments, quizzes, and comprehensive examinations. While some assessments evaluate factual knowledge, many require students to apply concepts, analyze information, solve problems, and make informed decisions consistent with professional radiologic practice.

Final course grades are determined through performance on unit examinations, quizzes, laboratory assignments, homework assignments, and the final examination.

Academic Support and Required Remediation

Students earning a score below **75% on any unit examination** or below **70% on any quiz** are required to participate in academic remediation. The student must contact the **Student Success and Tutoring Center (SSTC)** to schedule an appointment with the designated radiology tutor to review the assessment material and identify strategies for improvement. If a radiology tutor is

unavailable, the student will be required to schedule a remediation session with the course instructor.

Grade Posting

Grades for examinations, quizzes, and assignments will typically be posted in Desire2Learn (D2L) within **24–48 hours** after all students have completed the assessment or assignment submission period has closed. Grading timelines may vary depending on the type, length, and complexity of the assessment.

Laboratory Assignments

Students are responsible for submitting all laboratory assignments through the designated course submission method or D2L drop box, as directed by the instructor. Laboratory activities are considered in-class assignments and are expected to be completed during scheduled laboratory sessions. Additional laboratory time may be available with instructor approval.

Assignments not submitted by the established deadline will receive a grade of **zero (0)** unless otherwise permitted by the instructor in accordance with course and program policies.

EVALUATION*

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

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

GRADING SYSTEM:

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.

The Radiologic Technology Program utilizes a grading scale that differs from the standard college grading scale due to the rigor and professional requirements of

the curriculum. In accordance with **Student Policy 7: Didactic Course Grading**, the grading scale for all RAD didactic courses is as follows:

Grade Percentage

A	92–100
B	83–91
C	74–82
D	65–73
F	0–64

A minimum final course grade of **74% (C)** is required to successfully complete a RAD course and progress within the Radiologic Technology Program. Students earning a final course grade below 74% will not be permitted to continue in the program sequence.

Final course grades are calculated using weighted course components as outlined by the instructor. Scores on individual assignments, examinations, quizzes, and other graded activities are calculated to the hundredth decimal place (two decimal places). Final course grades are also calculated to the hundredth decimal place and **will not be rounded under any circumstances**.

Example: A final course average of **73.99%** will remain **73.99%** and will be recorded as a failing grade. It will not be rounded to **74%**.

Students are responsible for monitoring their academic progress throughout the semester and seeking assistance from faculty as needed to maintain satisfactory academic standing.

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, and Is also negatively impact academic progression and financial aid status.

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 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.**

Part V: Student Resources



THE STUDENT SUCCESS AND TUTORING CENTER (SSTC):

The SSTC offers 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.

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 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. You may also call (843) 349-5199.



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 HGTC courses may occur during regularly scheduled class time or online, with or without proctoring. Tests may be delivered in the following formats:

- Digitally through D2L
- In writing on paper
- Through a publisher platform (note: some publisher platforms carry an associated fee)

Tests may include time limits and may require proctoring depending on the course.

When proctoring is required and is not provided by the course instructor in the classroom, students may complete their test face-to-face at an [HGTC Testing Center](#) or another approved testing site, or online using HGTC's online proctoring provider. For more information about available proctoring options, visit the [Online Testing](#) section of the HGTC Testing Center webpage.

Students testing at an HGTC Testing Center should note the following:

- **Appointments must be scheduled at least 24 hours in advance.**
- **A physical, government-issued photo ID is required to test.**

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 age, race, color, sex, religion, national origin, disability, and genetic information or any other protected classes deemed unlawful under State or Federal law 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.

All inquiries regarding the federal laws as they relate to discrimination on the basis of sex may be directed to Jen Riddei, Title IX Coordinator, Horry-Georgetown Technical College, Building 1100C, Room 107B, 2050 HWY 501 E, PO Box 261966, 843-349-5218, Jenifer.Riddei@hgtc.edu.

Student and prospective student inquiries concerning the federal laws and their application to the College or any student decision may be directed to Dr. Melissa Batten, Vice President, Student Affairs, and Section 504 & Title II Coordinator, Horry-Georgetown Technical College, Building 1100C, Room 107A, 2050 HWY 501 E, PO Box 261966-6066, 843-349-5228, Melissa.Batten@hgtc.edu.

Employee and applicant inquiries concerning the federal laws and their application to the College may be directed to Jacquelyne Synder, Vice President, Human Resources and Employee Relations and the College's Affirmative Action/Equal Opportunity Officer, Horry-Georgetown Technical College, Building 200C, Room 205B, 2050 HWY 501 E, 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 sexual harassment, 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](#).