



North Central State College

**MASTER SYLLABUS**

**2025-2026**

A. Academic Division: Health Science

B. Discipline: Radiological Sciences

C. Course Number and Title: RADS 1175 Radiation Protection

D. Assistant Dean: Heidi Kreglow, PT

E. Credit Hours: 1  
Lecture: 1

F. Pre-requisites: RADS 1170  
Co-requisites: RADS 1121m, RADS 1151m

G. Last Course/Curriculum Revision Date: Spring 2024      Origin date: Fall 2025

H. Textbook(s) Title:

*Radiation Protection in Medical Radiography*

**(Purchased in RADS1175)**

- Authors: Statkiewicz, Sherer, Visconti, Ritenour and Haynes
- Copyright Year: 2022
- Edition: 9th
- ISBN: 9780323825030

*RadTechBootCamp - electronic resource*

**(Purchased in RADS 1151)**

- Vendor: Clover Learning Inc.
- Copyright Year: n/a
- Edition: n/a
- ISBN: n/a

I. Workbook(s) and/or Lab Manual: None

J. Course Description: This course is designed to provide an overview of radiation protection methods used in the healthcare system. This course introduces ALARA (as low as reasonably achievable) philosophies related to radiation exposure to patients, the general public, occupational exposure and monitoring and associated dose limits.

K. College-Wide Learning Outcomes:

| College-Wide Learning Outcome          | Assessments - - How it is met & When it is met |
|----------------------------------------|------------------------------------------------|
| Communication – Written                |                                                |
| Communication – Speech                 |                                                |
| Intercultural Knowledge and Competence |                                                |
| Critical Thinking                      |                                                |
| Information Literacy                   |                                                |
| Quantitative Literacy                  |                                                |

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

| Outcomes                                                                                                                                                   | Assessments – How it is met & When it is met                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Demonstrate knowledge of ALARA philosophy (as low as reasonably achievable), radiation sources and radiation quantities and units associated with dose. | Discussion, completed assignments, worksheets, and practice quizzes, graded quiz/test week 2-3, comprehensive final Week 8                 |
| 2. Identify the requirements and purpose of equipment design for radiation protection and management of patient exposure                                   | Discussion, completed assignments and worksheets, graded quiz/test week 4-5, comprehensive final Week 8                                    |
| 3. Discuss prime exposure factors and x-ray photon interactions with matter                                                                                | Discussion, completed assignments, worksheets, and educational software assignments, graded quiz/test Week 5-6, comprehensive final Week 8 |
| 4. Explain and utilize concepts of radiation protection measures to reduce exposure to self, patients and general public.                                  | Discussion, worksheets, graded quiz/test Week 6-7, comprehensive final Week 8                                                              |
| 5. Use effective oral, written and nonverbal communications skills throughout the course                                                                   | Various discussions, testing and assignments Weeks 1-8                                                                                     |

M. Recommended Grading Scale:

| NUMERIC | GRADE | POINTS | DEFINITION    |
|---------|-------|--------|---------------|
| 93–100  | A     | 4.00   | Superior      |
| 90–92   | A-    | 3.67   | Superior      |
| 87–89   | B+    | 3.33   | Above Average |
| 83–86   | B     | 3.00   | Above Average |
| 80–82   | B-    | 2.67   | Above Average |
| 77–79   | C+    | 2.33   | Average       |
| 73–76   | C     | 2.00   | Average       |
| 70–72   | C-    | 1.67   | Below Average |
| 67–69   | D+    | 1.33   | Below Average |
| 63–66   | D     | 1.00   | Below Average |
| 60–62   | D-    | 0.67   | Poor          |
| 00–59   | F     | 0.00   | Failure       |

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.\* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences.

Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

\* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

**Important information regarding College Procedures and Policies can be found on the syllabus supplement located at**

**<https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf>**



**North Central State College**  
**SYLLABUS ADDENDUM**

|                            |                              |                          |                                   |
|----------------------------|------------------------------|--------------------------|-----------------------------------|
| <b>Academic Division:</b>  | <u>Health Sciences</u>       | <b>Discipline:</b>       | <u>Radiological Sciences</u>      |
| <b>Course Coordinator:</b> | <u>Heidi Chambers</u>        |                          |                                   |
| <b>Course Number:</b>      | <u>RADS-1175</u>             | <b>Course Title:</b>     | <u>Radiation Protection</u>       |
| <b>Semester / Session:</b> | <u>Fall 2025 / Session B</u> | <b>Start / End Date:</b> | <u>10/13/2025 thru 12/12/2025</u> |

**Instructor Information**

|                         |                            |                        |                                            |
|-------------------------|----------------------------|------------------------|--------------------------------------------|
| <b>Name:</b>            | <u>Heidi Chambers</u>      | <b>Credentials:</b>    | <u>BRST, R.T. (R)</u>                      |
| <b>Phone Number:</b>    | <u>419/755-4809</u>        | <b>E-Mail Address:</b> | <u>hchambers@ncstatecollege.edu</u>        |
|                         |                            |                        | By appointment; in person or via Zoom      |
| <b>Office Location:</b> | <u>Health Sciences 152</u> | <b>Office Hours:</b>   | <u>Tues 2p-4p; Wed 11a-1p; Thurs 1p-2p</u> |

**I. Topical Timeline / Course Calendar (Subject to Change):**

| <b>Weeks</b> | <b>Topics</b>                                                            | <b>Assignment</b>                                                                                                                                         | <b>Due Date</b>                                |
|--------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 1            | Introduction to Radiation Protection; Radiation Types, Sources and Doses | CN 1B Note Packet<br>Live Zoom Class                                                                                                                      | Oct 14<br>Oct 15                               |
| 2            | Radiation Quantities and Units                                           | CN 2B Note Packet<br>RTBC Assignment<br>Live Zoom Class<br><b>Test 1 (CN 1B)</b><br>Radiation Quantities and Units Worksheet                              | Oct 21<br>Oct 21<br>Oct 22<br>Oct 22<br>Oct 24 |
| 3            | Dose Limits<br>Equipment Design for Radiation Protection                 | CN 3B Dose Limit Note Packet<br>CN 4B Equipment Design<br>Live Zoom Class / Class Worksheets<br><b>Test 2 (CN 2B)</b>                                     | Oct 28<br>Oct 28<br>Oct 29<br>Oct 29           |
| 4            | Management of Patient Radiation Dose<br>Intro to Prime Factors           | CN 5B Management of Patient Dose<br>CN 6B & RTBC → Prime Factors<br>Live Zoom Class / Class Worksheets<br>Prime Factors Worksheet                         | Nov 4<br>Nov 4<br>Nov 5<br>Nov 5               |
| 5            | Interactions with Matter                                                 | CN 7B Note Packet<br>RTBC Assignment<br>Live Zoom Class<br><b>Test 3 (CN 3B and 4B)</b>                                                                   | Nov 11<br>Nov 11<br>Nov 12<br>Nov 12           |
| 6            | Management of Imaging Personnel<br>Radiation Monitoring                  | CN 8B Mgmt. of Personnel Note Packet<br>CN 9B Radiation Monitoring Note Packet<br>Live Zoom Class<br><b>Test 4 (CN 5B, 6B, and 7B)</b><br>RTBC Assignment | Nov 18<br>Nov 18<br>Nov 19<br>Nov 19<br>Nov 25 |
| 7            | No Class – Thanksgiving Break                                            | NO CLASS – HOLIDAY                                                                                                                                        | Nov 26                                         |
| 8            | Comprehensive Review                                                     | Live Zoom Class<br><b>Test 5 (CN 8B and CN 9B)</b>                                                                                                        | Dec 3<br>Dec 3                                 |
| 9            | Comprehensive Final                                                      | On Campus – In person 7:45am-10:00am                                                                                                                      | Dec 10                                         |

**II. Grading and Testing Guidelines:**

**Final Grade Calculation**

| <b>Activity</b>                        | <b>Qty</b> | <b>Points</b> | <b>Percentage</b> |
|----------------------------------------|------------|---------------|-------------------|
| Assignments, Worksheets and Attendance |            |               | 10 %              |
| Exams                                  |            |               | 65 %              |
| Final Exam                             |            |               | 25 %              |

Course Number: \_\_\_\_\_  
Semester / Session: \_\_\_\_\_

Course Title: \_\_\_\_\_  
Start / End Date: \_\_\_\_\_

**Note: Minimum Course Grade**

The Radiological Department believes that a grade below C+ indicates a lack of mastery of essential skills. Therefore, any student who receives less than C+ in any Radiological Science sequence course cannot continue in the Radiology Program.

**II. Class Attendance and Homework Make-Up Policy:**

1. **Class Attendance Requirements:** Students are expected to attend ALL scheduled live online Zoom lectures, which are necessary to acquire the knowledge required to be successful in the course. Classes will meet once a week with a link to the class provided in the Canvas course.
2. **Attendance Grading:** Attendance is recorded and factored into the final course grade.
  - **Present:** Joining the session at or before the scheduled start time and remaining until the scheduled end time (10 points).
  - **Late:** Joining the session one minute after the scheduled start time OR leaving the session before the scheduled end time (5 points).
  - **Absent:** Joining the session 15 minutes or more after the scheduled start time OR leaving 15 minutes or more before the scheduled end time OR not returning after scheduled breaks/exams. (0 points).
3. **Notification Requirements:** In any circumstance where a student will miss an online class, the student must send a message to the instructor through Canvas **prior** to the start of the class.
4. **Excused Absences:** The reasons for which a student may be excused from class without a deduction are as follows:
  - a. Hospitalization (with documented verification)
  - b. Death in the immediate family (with documented verification)
  - c. Personal illness or illness in immediate family - (doctor's excuse required).
5. **Technical Difficulties:** Technical issues should be communicated to the instructor as soon as possible, preferably before class via Canvas message or email. However, technical issues will not be accepted as an excused reason for tardiness or absence. Students experiencing persistent issues should contact the IT help desk immediately at [helpdesk@ncstatecollege.edu](mailto:helpdesk@ncstatecollege.edu) or 419-755-4737.
6. **Attendance Make-Up Policy:** students marked absent or late are not eligible for full participation points for that session. Recoded sessions (when available) do not substitute for attendance and participation.
7. **Homework and Other Assignments:**
  - Completed, on time submissions receive full credit only when submitted by the due date and time.
  - Late assignments receive a 50% deduction.
  - Submissions one minute past the due date and time are considered late.
  - Assignments are accepted up to 7 days after the original due date for partial credit
  - Assignment submission after 7 days will receive a score of zero (0).
  - Missing assignments will receive a score of zero (0).
  - Technology issues are not an excuse for late submission and are subject to the late assignment deduction.
  - It is the student's responsibility to follow submission due dates and times.
8. **Academic Integrity:** All homework assignments, presentations, written assignments and projects must reflect the student's own work. Copying other students work or using AI tools (i.e., Chat GPT or other generative AI software) to complete an assignment is prohibited. AI tools may only be used when explicitly stated by the instructor for specific assignments. Work found to be completed by copying or with unauthorized AI assistance will be considered a violation of academic integrity and may be subjected to disciplinary actions and/or the college's misconduct process.

III. **Examination Policy:**

1. **Test Attendance Requirements:** Students must attend class when tests, oral presentations, and written assignments are scheduled. If the student does not attend class on these days the following deductions will be applied:
  - 1<sup>st</sup> missed test → 10% deduction from the earned score
  - 2<sup>nd</sup> missed test → 15% deduction from the earned score
  - 3<sup>rd</sup> missed test → 20% deduction from the earned score
  - Additional missed tests → result in a zero score
2. **Late Arrival:** A student who arrives late to class for a test for any reason may not be permitted to take the test at that time. The test will be treated as a make-up exam with appropriate deduction from the earned score:
  - Late arrival for any exam → 10% deduction from the earned score
3. **Excused Absences:** The reasons for which a student may be excused from taking an examination, oral presentations, and assignments and not receive a deduction in score are as follows:
  - Hospitalization (with documented verification)
  - Death in the immediate family (with documented verification)
  - Personal illness or illness in immediate family - (doctor's excuse required).
4. **Make Up Exam Procedure:** Any student who misses an examination (for any reason) is responsible for contacting the instructor prior to the start of class or examination through Canvas to let the instructor know the reason of absence and schedule the make-up test. Make-up exams are scheduled as close as possible to the missed test date and should occur no later than one week from the missed exam. In cases of **extreme** illness or hospitalization contact should be made no later than 24 hours from the date of absence. If the student does not contact the instructor within the allotted time, the student may be subjected to a zero on the examination. The instructor will not “chase down” the student to reschedule.
5. No makeup opportunity will be given for absences of unscheduled quizzes (pop quizzes).
6. **Exam Administration:** Exams are administered via the Canvas course and are proctored over Zoom. The student must use two devices (phone and computer) while faculty proctor the examination. Each exam creates a real-time log of the student's activities while in the exam. Navigation away from the exam tab during the examination is not permitted for any reason. Exam logs are randomly checked by faculty after each test. Any student who navigates one time from the exam will receive a zero and a written warning. If a student navigates from the exam more than once, the student will receive a zero on the test and subjected to the college's academic misconduct process.
7. **Academic Support:** Any student who scores below a 77% on any examination is **required** to schedule a one on one meeting with the instructor to identify knowledge gaps of the material where tutoring may be mandated. Students who fail to schedule this required meeting will receive a 10% deduction from their final score until the meeting has been scheduled and attended. The meeting should be scheduled as close as possible post examination. The student should not view this as punishment but as a benefit to be as successful as they can be in the program.

V. **Classroom Expectations:**

1. **Hybrid Course Delivery Guidelines:** Since this is a hybrid course, part of the course content is delivered outside of the classroom and in your home. It is expected that you have a designated learning space in your home or other outside classroom accommodations. **This space should be free of distractions (i.e., pets, children, siblings, parents, significant others, music, and television). You will not be permitted to attend to these distractors during class or during at test.** In this space, you will have adequate lighting, an area to sit upright, all electronic devices needed, textbooks, and note assignments.
2. **Zoom Lectures:**

**Course Number:** \_\_\_\_\_  
**Semester / Session:** \_\_\_\_\_

**Course Title:** \_\_\_\_\_  
**Start / End Date:** \_\_\_\_\_

During online class lectures, the student will:

- Be appropriately dressed, sitting upright (preferably at a table or desk), with the camera on unless otherwise instructed
  - Take care of personal needs (restroom) prior to the beginning of the class
  - Remove all distractors from the Zoom area
  - Mute your mic, unless answering or asking questions
  - Use the raise hand feature to ask questions or get the instructors attention
  - Complete the required weekly content prior to class (i.e., reading assignments, homework assignments)
  - Be prepared to participate in class (ask and answer questions)
  - Have the required material on hand at the time of class (i.e., note packets, textbooks, etc.)
  - Review the day's material or complete other assignments as the student waits for others to finish a test or in class assignment
  - Stay on task when given in class activities and group assignments
3. Demonstrate professional oral and written communication (emails, class discussion, group activities)
  4. Unless otherwise instructed, cell phone use is not permitted in hybrid courses or in person labs. If a student has their cellphone out distracting others or the instructor, the student will pay a donation of \$1.00 to the Robert L. Garber scholarship fund. Examples (but not a complete list) of cell phone distractors are as follows:
    - Texting
    - Cell phone ringing or vibrating loudly
    - Answering and conversing over the phone
    - Watching videos
  5. Treat classmates and instructors with respect at all times
  6. Use course resources wisely. Examples include:
    - Assigned reading material
    - Recorded lectures, notes, and power points
    - Practice quizzes
    - Rad Tech Boot Camp (RTBC)
    - Worksheets
    - Group activities
    - Class discussion
    - Tutoring
    - Review of prior exams
    - Instructor office hours