



**Course Syllabus: Radiobiology & Protection**  
**College of Health Sciences & Human Services**  
**RADS 3773x11 Fall 2025**

**Contact Information**

Instructor: Shanna Tole, MSRS, RT(R)  
Office: Centennial Hall 430H  
Office phone: (940) 397-4338  
E-mail: [shanna.tole@msutexas.edu](mailto:shanna.tole@msutexas.edu)

**Course Description**

A study of the theories and principles of the interactions of ionizing radiation with biological systems, acute and long-term effects of ionizing radiation exposure, typical medical exposure levels, methods for measuring and monitoring radiation, and methods for protecting personnel and patients from excessive exposure in both the diagnostic and therapeutic settings.

**Student Learning Outcomes**

By the conclusion of the course, the successful student should be expected to:

- Explain the effects of radiation exposure on biological systems
- Describe the biophysical mechanisms of radiation damage and the somatic and genetic effects of radiation exposure on humans
- State typical dose ranges for routine radiographic procedures
- Explain basic methods and instruments for radiation monitoring, detection and measurement
- Identify methods for protecting personnel and patients from excessive radiation exposure
- Apply appropriate radiation protection practices.

Unit objectives are located at the beginning of each chapter of the text.

Please utilize these to assist you in your study of the unit materials.

### **Textbook & Instructional Materials**

You will have access to your textbook automatically via Kortext in D2L unless you decide to opt out. If you opted out the textbook, information can be found below.

Statkiewicz-Sherer, M.A., Visconti, P. J., Ritenour, E. R., & Haynes, K. W. (2022). Radiation protection in medical radiography (9th ed.). St. Louis, MO: Elsevier Mosby.

American Psychological Association. (2010). Publication manual of the American Psychological Association (7th ed.). Washington, DC: American Psychological Association. [ISBN 978-1-4338-3216-1]

A scientific calculator is highly recommended.

### **Course Evaluation Methods**

<b># of Graded Course Elements</b>	<b>Graded Course Elements</b>	<b>Percentage</b>
6	Module Quizzes	30%
1	Radiologic Incident PowerPoint Course Project	20%
6	Discussion Participation	20%
1	Comprehensive Final Exam	30%

<b>Letter Grade</b>	<b>Percentage Score</b>
A	89.5-100
B	79.5-89.4
C	69.5-79.4
D	64.5-69.4
F	<64.5

## **Final Course Grade**

Last Day for "W", 4:00 p.m.- November 24, 2025. Drops after this date will receive grades of "F".

A final course score of 70% is required to pass this course. Letter grades of "D" or "F" cannot be used for graduation and will require the course be repeated according to the current radiology program policies.

## **Course Requirements**

Students can proceed through the course content at their own pace within the boundaries set by the Course Schedule and the MSU Academic Calendar. See the course calendar in the syllabus and within D2L for specific information about activities and due dates. This course is designed to give adequate time to complete all assignments and quizzes in a timely manner. It is NOT recommended that you wait until the last minute to submit an assignment, quiz or discussion board post. Technical problems can occur. If you wait until the last minute and you run into a problem, DO NOT send anything to the instructor as an e-mail attachment. It will not be accepted and a grade of zero will be recorded for that activity.

## **Course Modules**

Module 1: Introduction & Interaction of X-Radiation with Matter

Module 2: Radiation Quantities & Units and Radiation Monitoring

Module 3: Overview of Cell Biology and Molecular & Cellular Radiation Biology

Module 4: Early & Late Radiation Effects on Organ Systems

Module 5: Dose Limits for Exposure to Ionizing Radiation, Equipment Design for Radiation Protection and Radioisotopes & Radiation Protection

Module 6: Management of Patient & Imaging Personnel Radiation Dose during Diagnostic X-Ray Procedures

Supplemental files and activities are available within D2L to reinforce major topics in the reading assignments

## **Module Quizzes**

When a student has reviewed a unit and is ready for the quiz, you will log into D2L and receive a customized quiz consisting of random multiple-choice questions. See the course calendar in the syllabus and within D2L for due dates. Since the quizzes are timed, it is important to know the unit content

before attempting the quizzes. Students will have 30 minutes to complete the 25 question quizzes. Quiz scores will be available immediately after a student submits his/her quiz for grading. No late submissions will be accepted.

### **Radiologic Incident PowerPoint Course Project**

For this project, you will be selecting one of the radiologic incidents from a database on D2L and preparing a narrated PowerPoint presentation. Please read the course content for complete instructions. In the online instructions, you will find what should be included in your PowerPoint and how to record your narration.

### **Discussion Board Participation**

You will participate in three discussion boards where you will post a 3 – 4 paragraph post based upon a specific article you will read. For the fourth discussion board you will professionally critique another student's post from one of the first three discussion boards. Please read the course content for complete instructions. In the online instructions you will find what should be included in your posts and the outside research expectations for each post. All discussions MUST be submitted by the published due date (see the course calendar). Because discussion boards depend upon timely student submissions, no late submissions will be accepted.

### **Comprehensive Closed book Final Exam**

All quizzes and projects must be completed before the Final Exam is taken.

The final examination must be completed by December 10, 2025, 11:59 pm. Incomplete final exams will be scored a zero and the student will fail the course. If you know you will miss a due date because of extenuating circumstances, you should contact me immediately. Acceptance of an extenuating circumstance is at my discretion. The final examination uses the Respondus Lockdown Browser with Webcam. There is a practice test which must be completed before you may take the final examination.

### **EXAM FORMAT**

- The proctored comprehensive final examination is closed book and consists of 100 random multiple-choice questions.
- The exam is a timed, 2-hour (120 min) test.

- To prepare for this exam: The final has been derived from the entire content of this course. Review all of your quizzes and your textbook chapters. Reinforcing study materials include the PowerPoint presentations.

#### WHAT TO BRING

- You may bring one sheet of blank scratch paper.
- A non-programmable scientific calculator (TI-30XIIS Scientific Calculator or TI-30Xa Scientific Calculator recommended).
- No smart watches or any other electronic devices will be allowed.
- You are not allowed to print the final exam.
- No textbooks or notes may be used.

#### **Important Dates**

Last Day to drop with a grade of "W:" November 24, 2025 by 4:00 PM Academic Calendar.

Refer to: Drops, Withdrawals & Void

#### **Attendance**

Since this is an online course, there are no mandatory face-to-face sessions. However, the student should be vigilant in logging onto D2L. Regular checks will ensure messages from the instructor are received in a timely manner. See the course calendar below and in D2L for specific information about activities and due dates. The instructor is available to meet face to face by ZOOM with any interested students. Please email the instructor to schedule an appointment.

#### **Technical Difficulties**

On occasion, you may experience problems with accessing D2L, accessing class files located within D2L, connecting with your internet service, or may encounter other computer-related problems. Make the professor aware of a technical problem as soon as possible. If a problem occurs on our end, such as D2L failure, then a due date extension will typically be granted. However, keep in mind it is your responsibility to have (or have access to) a working computer in this class. Assignments and Quizzes are due by the due date, and personal computer technical difficulties will not be considered a reason for the instructor to allow students extra time to submit assignments, quizzes, or discussion postings.

Dropbox assignments that can be attached in an email should be emailed to me as soon as a problem is encountered. Failure to do so may result in points being lost, regardless of connection issues.

For help options:

- For D2L issues go online go to the Distance Education Helpdesk • By phone call the Distance Education office at 940-397-4868 between 8am and 5pm.
- Use the D2L help link in D2L.
- Contact me.
- For other computer access issues, go online to the MSU Information Technology Website.

### **Instructor Course Policies**

Conduct/Honesty/Honor System: RADS 3773 adheres to the MSU Code of Conduct.

In particular, academic dishonesty, however small, creates a breach in academic integrity. A student's participation in this course comes with the expectation that his or her work will be completed in full observance of the MSU Code of Student Conduct. A student should consult the current Student Handbook for answers to any questions about the code.

All components of RADS 3773 are designed to represent the efforts of each student individually and are NOT to be shared, copied, or plagiarized from other sources. When students submit their efforts for grading, they are attesting they abided by this rule.

An online plagiarism service may be used in this course. Student assignments may be uploaded to the service for identification of similarities to other student papers and published works.

If you have any questions about what constitutes plagiarism, please consult:

- The University Academic Dishonesty Policy

## **Academic Misconduct Policy & Procedures**

Academic Dishonesty: Cheating, collusion, and plagiarism (the act of using source material of other persons, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individuals to whom credit is given). Additional guidelines on procedures in these matters may be found in the Office of Student Conduct. [Office of Student Conduct](#)

## **Services for Students with Disabilities**

In accordance with Section 504 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, Midwestern State University endeavors to make reasonable accommodations to ensure equal opportunity for qualified persons with disabilities to participate in all educational, social, and recreational programs and activities. After notification of acceptance, students requiring accommodations should complete an application for such assistance through Disability Support Services, located in the Clark Student Center, Room 168, (940) 397-4140. Current documentation of a disability will be required in order to provide appropriate services, and each request will be individually reviewed. For more details, please go to [Disability Support Services](#).

## **College Policies**

### *Campus Carry Rules/Policies*

Refer to: [Campus Carry Rules and Policies](#)

### *Smoking/Tobacco Policy*

College policy strictly prohibits the use of tobacco products in any building owned or operated by WATC. Adult students may smoke only in the outside designated smoking areas at each location

### *Alcohol and Drug Policy*

To comply with the Drug Free Schools and Communities Act of 1989 and subsequent amendments, students and employees of Midwestern State are informed that strictly enforced policies are in place which prohibits the unlawful possession, use or distribution of any illicit drugs, including alcohol, on university property or as part of any university-sponsored activity. Students and employees are also subject to all applicable legal

sanctions under local, state, and federal law for any offenses involving illicit drugs on University property or at University sponsored activities.

### *Campus Carry*

Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes has prohibited. The new Constitutional Carry law does not change this process. Concealed carry still requires a License to Carry permit, and openly carrying handguns is not allowed on college campuses. For more information, visit [Campus Carry](#).

### *Active Shooter*

The safety and security of our campus is the responsibility of everyone in our community. Each of us has an obligation to be prepared to appropriately respond to threats to our campus, such as an active aggressor. Please review the information provided by MSU Police Department regarding the options and strategies we can all use to stay safe during difficult situations. For more information, visit [MSUReady – Active Shooter](#). Students are encouraged to watch the video entitled “*Run. Hide. Fight.*” which may be electronically accessed via the University police department’s webpage: [“Run. Hide. Fight.”](#)

## **Administrative Process**

Unresolved issues related to this course should be first addressed between the student and the course instructor. If there is no resolution, students must follow this sequence:

1. Department Chair: Dr. Lynette Watts (940) 397.4833
2. College Dean: Dr. Jeff Killion (940) 397.4594
3. Dean of Students: Matthew Park (940) 397.7500

## **Grade Appeal Process**

Students who wish to appeal a grade should consult the Midwestern State University [MSU Catalog](#)

**\*Notice:** Changes in the course syllabus, procedure, assignments, and schedule may be made at the discretion of the instructor.



### **Tentative Course Schedule**

***\*All assignments are due by 11:59pm CST on the indicated due date\****

<b>Date</b>	<b>Activities/Assignments/Exams</b>
August 25	Class begins-Review Course Syllabus
September 8	Module 1 Quiz due by 11:59 pm Discussion Board 1 closes at 11:59 pm
September 22	Module 2 Quiz due by 11:59 pm
October 6	Module 3 Quiz due by 11:59 pm Discussion Board 2 closes at 11:59 pm
October 20	Module 4 Quiz due by 11:59 pm
November 3	Module 5 Quiz due by 11:59 pm Discussion Board 3 closes at 11:59 pm
November 17	Module 6 Quiz due by 11:59 pm Discussion Board 4 closes at 11:59 pm
November 24	Last day to withdraw with a "W" by 4:00 pm campus time
December 1	Radiologic Incident PowerPoint Course Project due by 11:59 pm
December 6-10	Final Exam is due by 11:59 pm