Radiation Biology and Protection Syllabus

RADS 3773-X30 Radiation Biology and Protection
3 hours
Summer 2024

Professor

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After reading the syllabus

There is a syllabus agreement form that you must sign and return to me. Please read the instructions carefully and return the form to me as soon as possible.

Communicating with the Professor

I prefer email so there is a record of the communication and often I am away from my desk. Phone calls may be answered by email when appropriate. I will respond to or at least acknowledge all student communications within five (5) business days. If this time period will be longer because I am out of town or for another reason, a news item will be posted online in D2L for the class. Please always give me the time asked for to respond before repeating your request.

Course Description

This course offers an advanced study of radiobiology and radiation protection. Topics include interactions of radiation with matter, biological effects of ionizing radiation, quantities, and units of measurement, dose-response curves, and patient and personnel protection.

Course Objectives

Upon completion of this course, the student will:

- 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

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- 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.

Teaching Methodology

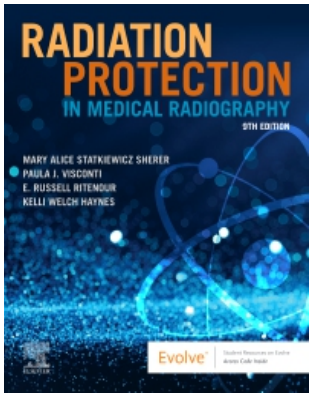
This course is taught using an online methodology. There will be reading assignments, tests, class discussion boards, an individual project, and a closed-book final examination.

Course Materials

Textbooks

Required

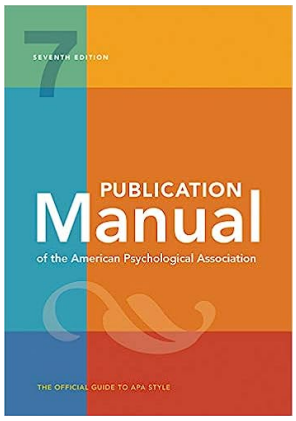
Sherer, M.A., Visconti, P.J., Ritenour, E.R., & Haynes, K.W. (2018). *Radiation protection in medical radiography* (9th Ed.). St. Louis, MO: Elsevier. [ISBN: 978-0-323-82503-0]



ISBN: 9780323825030
Copyright: 2022
Publication Date: 10-05-2021
Page Count: 432
Imprint: Mosby
List Price: $97.99

Recommended

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th Ed.). Washington, DC: Author. [ISBN 978-1-4338-3216-1]

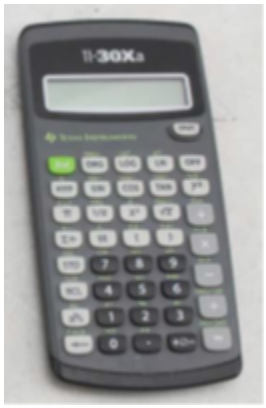


Amazon list price: $25.00-$27.99

Recommended

A multi-functional Scientific Calculator such as a:

TI-30XIIS Scientific Calculator **-or-** TI-30Xa Scientific Calculator



Instructions are provided in the course documents on how to use these calculators for some of the advanced math problems. **The instructor may not be able to help you with other types of calculators. These two calculators are approved for use on the comprehensive final examination.**

Computer Requirements
You need access to an up-to-date computer with an internet connection in this course. D2L does not work well with Internet Explorer. Use a different browser when working in D2L.

Communication with Instructor

Contact information for the instructor is listed at the beginning of this syllabus. Email is the instructor's preferred mode of communication. The instructor will respond or at least acknowledge email messages from students within a maximum of five (5) business days when MSU is in session. Beyond standard university holidays and breaks, the instructor will notify students of any extended periods of time when email contact is not practical (professional meetings, etc).

If I need to send any type of information to the class, I will do it via e-mail to your university e-mail through D2L. If you prefer to have messages sent to your primary e-mail, you will need to make the changes to have your messages forwarded to your primary e-mail.

- Click on your e-mail icon
- Click e-mail
- Once you are in Click settings (little blue symbol on the top right of the screen)
- Scroll to forwarding options
- When completed, click save

When emailing the instructor, please include your full name, course, and section number, and a thorough explanation in your message. This will help expedite your request or needs.

The student should also periodically check the News section within D2L for course updates and other important information.

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

Radiobiology and Radiation Protection Assignment Details

Unit Quizzes (30%):

When a student has reviewed a unit and is ready for the quiz, he/she 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 **45 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 (20%):

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.

Radiologic Incident Discussion Board Participation (20%):

You will participate in three discussion boards where you will post a 1 paragraph (250 word) summary post based on 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 Final Examination (30%):

All quizzes and projects must be completed before the Final Exam is taken. Quizzes will close on August 2, 2024, at 5 pm. The final will be available, on August 5 and 6 at 5 pm. The final will open at 7 am on Monday, the 6th, and must be completed by May 7, 2024, by 5 pm Incomplete final exams will be scored a zero and the student will fail the course. Students who know they will miss a due date because of extenuating circumstances should contact the professor so their situations can be dealt with on an individual basis. Acceptance of an extenuating circumstance is at the discretion of the professor. Since the final examination is open for one month, only the most extraordinary of circumstances will be considered. All students are required to have a webcam and microphone for the Final Exam. **Do not schedule vacation time during the final's time period. Due to the immediate posting of grades to the registrar, I cannot alter the test times. I will not give the exam earlier than the posted times.**

Exam Format

The comprehensive final examination is closed book and consists of 100 random multiple-choice questions.

- The exam is a timed, 2-hour (120 min) test.
- The final exam will be administered using Desire2Learn (D2L) and Respondus Lockdown Browser with Webcam.
- To prepare for this exam: The final has been derived from the entire content of this course. Review all of your quizzes and textbook chapters. Reinforcing study materials include the PowerPoint presentations.

What to Bring

- The student may bring one blank scratch paper.

- A non-programmable scientific calculator (see above for recommended calculators).
- No smart watches or any other electronic devices will be allowed.
- Students are not allowed to print the final exam.
- No textbooks or notes may be used.

All course requirements must be completed before a grade is awarded. Students must complete the final and all coursework by the dates published in the course schedule (below).
Note: All assignments received are considered complete and will be graded as such. Any decision of the professor is final and there will be no further changes made.

Evaluation

Grade Distribution

30% Unit Quizzes
- 20% Radiologic Incident Powerpoint Course Project
- 20% Radiologic Incident Discussion Participation
- 30% Comprehensive Final Exam

Grade Scale
A=100-90
B=89-80
C=79-70
D=69-60
F=59 and below

Please note: Grades are **NOT** rounded up. You final grade average is based on the first two numbers that precede the decimal point. For example, if your final grade average is 79.9, that number will not be rounded up so you can get a B instead of a C grade. Discussion boards, assignments and quizzes that fail to meet the deadline or incorrect file submission will result in a grade of 0.

Late Work
There is a tentative course calendar at the end of this syllabus. Due dates and other important dates will be listed there.

Due Dates
Assignments are due on Mondays (see Important Course Dates in the tentative course calendar). Assignments must be submitted on scheduled due dates in the course schedule. If a student fails to meet a deadline the student will receive no credit for the assignment and/or quizzes not submitted on time. All coursework must be completed in the semester the course is taken. The professor does not give incomplete grades. **All assignments submitted to dropbox are considered complete and will be graded as such. Please make sure you have followed all directions completely and proofread your work.**

Emergency Extension
If you have a major event such as a death in the family, illness, hospitalization, or other extenuating circumstances, email the professor at robert.comello@msutexas.edu as soon as possible and on or before the scheduled due date. Extensions are granted on an individual basis. If an extension is granted, typically the following guidelines will be followed.
1. The assignment's extension will be determined by the instructor and still qualify for full credit provided that the new deadline is met. After the extension has passed, and an assignment has not been submitted, there will be no grade assigned. **Do not send an assignment through e-mail attachments: it will not be**

there will be no grade assigned. Do not send an assignment through email attachments, it will not be **graded.**

2. When the assignment is completed, you must send a follow-up email to let the professor know it is ready to grade. Failure to notify the professor could lead to a grade of zero.

3. **Avoid End of Course Late Work:** Please note there are University deadlines for submitting grades at the end of the semester. All work must be turned in at least a week before grades must be posted.

Final Course Grade

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 to be repeated according to the current radiology program policies.

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 tests 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, tests, or discussion postings.***

Make sure you have a strong wi-fi or internet connection. Technical difficulties should be made known to the professor 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 to the Distance Education Helpdesk
- By phone call the Distance Education office at 940-397-4868 between 8 am and 5 pm.
- Use the D2L help link in D2L.
- Contact your professor.
- For other computer access issues, go online to the MSU Information Technology Website.

Attendance

This is an online course and there are no mandatory sessions. However, the student should be vigilant in logging in to D2L. The student should expect to log in at least 3 times per week. Regular checks will ensure that messages from the professor are received in a timely manner**.** This course is on a schedule that will be strictly adhered to. See the Tentative Course Calendar section at the end of the syllabus for specific due dates.

Requesting a Withdrawal

The last opportunity to drop this course with a grade of "W" is 4:00 pm on July 31, 2024. All withdrawals **must be initiated by the student**. After this date dropping the course results in a grade of "F".

Special Needs

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 adjustments in its policies, practices, services, and facilities to ensure equal opportunity for qualified persons with disabilities to participate in all educational programs and activities.

The Office of Disability Services (ODS) provides information and assistance, arranges accommodations, and serves as a liaison for students, professors, and staff. The ODS has assistive devices such as books on tape, recorders, and adaptive software which can be loaned to qualified individuals. A student/employee who seeks accommodations based on disability must register with the Office of Disability Services in the

Counseling Center; Clark Student Center Room 108. Documentation of disability from a competent professional is required.
Individuals with grievances related to discrimination or lack of accommodation based on a disability are encouraged to resolve the problem directly with the area involved. If the matter remains unresolved, the Office of Disability Services for resolution will provide advice and/or assistance. The grievance procedure may be found in the Student Handbook and Activities Calendar.
The Director of the Counseling Center serves as the ADA Coordinator and may be contacted at (940)397-4618, TDD (940)397-4515, or 3410 Taft Blvd., Clark Student Center Room 108.

Administrative Process

Unresolved issues related to this course should be first addressed between the student and the course professor. If there is no resolution, students must follow this sequence:
1. Department Chair – Dr. Beth Vealé (940-397-4611)
2. College Dean - Dr. Jeff Killion (940-397-4679)
3. Dean of Students – Matthew Park (940-397-7500)

Honor System

Use of Artificial Writing Generators

The use of any artificial writing generator (ex: Chat GPT) is strictly prohibited. The use of artificial writing generators can and will be deemed a violation of the university's honor system. Any or all parts of a written assignment identified as having elements of writing attributed to an artificial writing source will automatically receive a zero (0) for a grade. ***Students will not be allowed to make up those assignments.*** This program uses software that detects AI generators. For more policy information regarding cheating and plagiarism, see the Honor System section in this syllabus.

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.

Cheating includes, but is not limited to

- Use of any unauthorized assistance in taking quizzes, tests, or examinations;
- Dependence upon the aid of sources beyond those authorized by the professor in writing papers, preparing reports, solving problems, or completing other assignments; or the acquisition of tests or other academic materials belonging to the university faculty or staff without permission.

Plagiarism includes, but is not limited to

- The use of, by paraphrase or direct quotation without correct citation in the text and in the reference list,
- The published or unpublished works of another person. Students may NOT submit papers and assignments that they have previously submitted for this or other courses.
- The use of materials generated by agencies engaged in "selling" term papers is also plagiarism.

Print L Reflect in ePortfolio Download

Activity Details | Learning Objectives | Completion Summary

Visible

Required: Automatic

View this topic to complete the activity

Options

Reflecting in ePortfolio is enabled

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