

Midwestern State University

Robert D. & Carol Gunn College of Health Sciences & Human
Services

Department of Radiologic Sciences

Course Number: RADS 3773 x 10 **3 credits** **Fall 2020**

Course Title: Radiobiology & Protection

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Course Overview

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.

Course Objectives

Upon completion of this course the student will be able to:

1. Explain the effects of radiation exposure on biological systems.
2. Describe the biophysical mechanisms of radiation damage and the somatic and genetic effects of radiation exposure on humans.
3. State typical dose ranges for routine radiographic procedures

4. Explain basic methods and instruments for radiation monitoring, detection and measurement
5. Identify methods for protecting personnel and patients from excessive radiation exposure
6. 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.

Required Textbook

Statkiewicz-Sherer, M.A., Visconti, P. J., Ritenour, E. R., & Haynes, K. W. (2014). *Radiation protection in medical radiography* (8th ed.). St. Louis, MO: Elsevier Mosby.

Additional Resources (Utilize as needed to supplement textbook)

American Psychological Association. (2020). *Publication manual of the American Psychological Association* (7th ed.). Washington, DC: American Psychological Association. [ISBN 978-1-4338-0561-5]

Bushong, S. C. (2008). *Radiologic science for technologists* (10th ed.). St. Louis, MO: Elsevier Mosby.

Seeram, E. (1997). *Radiation protection*. Philadelphia, PA: Lippincott.

Travis, E. L. (2000). *Primer of medical radiobiology* (2nd ed). St. Louis, MO: Elsevier Mosby.

A scientific calculator is highly recommended.

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).

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.

Teaching Strategies

Independent reading assignments, Desire to Learn (D2L) open book unit quizzes, discussion board activities, development of an annotated bibliography, and a proctored, comprehensive final examination within D2L.

Evaluation

Unit Quizzes	30%
Annotated Bibliography	20%
Discussion Participation	15%
Comprehensive Final Exam	35%

Grading Scale

A	90-100
B	80-89
C	70-79
D	60-69
F	59 or below

****Please note this course requires a grade of "C" (70) or better in order to be considered passing.** This instructor does NOT round up the final course grade average or give extra credit.**

The last opportunity to drop this course with a grade of "W" is 4:00 pm on December 4, 2020.

Refer to the Undergraduate Bulletin for details about receiving a grade of "Incomplete" in a course. In an emergency or extenuating circumstance, a student may request a grade of "Incomplete" in a course before grades are submitted. If the instructor grants the "Incomplete," the student has until thirty (30) days after the beginning of the next long semester to complete the course requirements. If the student does not complete the course requirements within the deadline, the grade of "Incomplete" will automatically convert into a grade of "F."

Class Activities and Assignments

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.

Independent Reading Assignment

Unit 1: Chapters 1, 2, and 3

Unit 2: Chapters 4 and 5

Unit 3: Chapters 6 and 7

Unit 4: Chapters 8 and 9

Unit 5: Chapters 10, 11, and 14

Unit 6: Chapters 12 and 13

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

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 **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.**

Annotated Bibliography (20%)

An annotated bibliography is a list of citations for books, articles, and documents. Each citation is followed by a brief (usually 150 words) descriptive and evaluative paragraph known as the annotation. The purpose of the annotation is to inform the reader of the

relevance, accuracy, and quality of the sources cited. Creating an annotated bibliography calls for the application of a variety of intellectual skills: concise exposition, succinct analysis, and informed library research.

First, locate and record citations for **three (3) peer-reviewed articles in scholarly academic journals** that contain information relevant to this course (ionizing radiation, biological effects, etc.). All three articles should have a common theme. **These three articles must be published within the last five years.** Cite the article using the proper APA format. **Note: An APA formatted title page must be included with this assignment.**

Write a concise annotation that summarizes the central theme and scope of the article. You must also discuss **one** of the following for each annotation:

Evaluate the authority or background of the author.

Comment on the intended audience.

Compare or contrast this work with another you cited.

Explain how this work illuminates your bibliography topic.

More information, the rubric, resources, and the due date are available within D2L under "Course Resources" and "Annotated Bibliography." This assignment is due on the date listed in the course calendar. **All submissions are considered complete and will be graded as such. Late assignments will not be accepted and a grade of zero (0) will be recorded.**

Discussion Board Participation (15%)

There is a discussion topic for each unit. Students must post **one (1)** original post in response to **EACH** unit discussion question. **Please note the deadline for submitting your response is different from the date the forum closes. Check the schedule at the end of the syllabus for dates.** Each student will be responsible for replying to questions/comments made to his/her original post. Students must also respond to at least **two (2)** postings from other students for each unit. **Student must also monitor the two or more response to other posts. If someone asks or comments on something to which you posted on another student's discussion, you should be courteous enough to answer that person.** This is continued facilitation of a discussion and it is on the rubric. Spelling, grammar, and substance really do count. Try not to veer off subject, and be respectful and considerate of your fellow students' submissions. Students must post responses by the deadlines to receive credit.

What is a discussion-type question? A discussion-type question is one that does not necessarily have a right or wrong answer, unlike a factual question. It facilitates the exchange of knowledge and thought. On the other hand, if asked for the sum of $2 + 2$,

the answer is four. This is a fact and there is no room for discussion. There is a right answer and an unlimited number of wrong answers.

What is a meaningful response? A meaningful response is one that contributes to or, in some way, sheds new light on the discussion. “I agree with the others...” is an example of a meaningless response.

The forums are designed to encourage interaction between students. Have fun with this activity but take it seriously because it does contribute to your course grade. Remember that your original posting will account for a significant portion (50%) of the course discussion grade for each Unit Discussion and it must be posted before you can participate in the topic discussion. The remainder of the discussion grade will be based upon three (3) things: replying to any questions/comments from classmates regarding your post, responding to original posts of your classmates, and mechanics (grammar, spelling, punctuation, etc.). **All Unit Discussions MUST be submitted by the published due date (see the course calendar). No late submissions.**

Comprehensive Final Exam (35%)

The final examination is a proctored, comprehensive examination consisting of multiple-choice questions. The final exam is a timed, 120-minute test containing 100 questions that will be administered within D2L via ProctorU. **The final is a closed book examination. You will be allowed to use a calculator (scientific is preferred) and one blank sheet of paper.** Students must complete the final (and all course work) by the dates published in the course calendar within D2L. **Please note:** Any smart device including smart watches will not be allowed during the final exam.

ProctorU

This course utilizes ProctorU as the method for taking your final exam rather than using a proctor site. A document provided by the company has been included in the course content under “Course Documents.”

This entity allows you to take a proctored final at a location of your choice and convenience rather than scheduling with a testing center. **There is a fee that you are responsible for at the time you schedule your exam based on the length of the exam (usually about \$25.00), and it is YOUR responsibility to schedule your test with ProctorU.** The instructions are in the provided document, but if you have any questions or problems, feel free to contact me.

There is no deadline for when you have to schedule your exam by; however, it is recommended to schedule at least three (3) days in advance because the company does charge more if you wait until the last minute. Also, keep in mind the final is only open

for the dates provided in the syllabus; so, when scheduling your exam with ProctorU, you MUST schedule it for a time when the final is open.

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 insure messages from the instructor are received in a timely manner. See the course calendar in D2L for specific information about activities and due dates. The instructor is available to meet face-to-face with any interested students. Please email the instructor to schedule an appointment.

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, instructors, 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 on the basis of disability must register with the Office of Disability Services in the Counseling Center, Clark Student Center Room 168. Documentation of disability from a competent professional is required.

Individuals with grievances related to discrimination or lack of accommodation on the basis of a disability are encouraged to resolve the problem directly with the area involved. If the matter remains unresolved, advice and/or assistance will be provided by the Office of Disability Services for resolution. The grievance procedure may be found in the Student Handbook and Activities Calendar.

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Disability Support Services in Room 168 of the Clark Student Center, (940) 397-4140.

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.

Many components of RADS 3773 are designed to be highly interactive with students helping each other learn. Students are encouraged to take full advantage of many resources available including online D2L course resources, Internet sites, other textbooks and journals, faculty, and peers when answering objectives. This interactive collegial learning environment is conducive to life-long learning.

Specific components of RADS 3773 are designed to represent the efforts of each student individually and are not to be shared or copied (plagiarized) from other sources. These components include the unit exams, discussion board activities, annotated bibliography, and the comprehensive final exam. When students submit their efforts for grading, they are attesting they abided by this rule.

Cheating includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests, or examinations; (2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or completing other assignments; or (3) 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 on 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. Students are encouraged to review the tutorials and suggested websites for more information about plagiarism. Papers and other assignments may be submitted to an external agency for verification of originality and authenticity.

Academic dishonesty (cheating, plagiarism, etc.) will not be tolerated in this class. Whenever a student is unsure of whether a particular situation will be interpreted as academic dishonesty, the student should ask the instructor for clarification. If students are guilty of academic dishonesty, a grade of zero (0) may be given for the quiz, assignment, etc. Cases may also be referred to the Dean of Students for possible dismissal from the university.

Note: By enrolling in this course, the student expressly grants MSU a "limited right" in all intellectual property created by the student for the purpose of this course. The "limited right" shall include, but not limited to: the right to reproduce the student's work product in order to verify originality and authenticity as well as for educational purposes. Specifically, faculty may submit student papers and assignments to an external agency to verify originality and authenticity to detect for plagiarism.

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: Beth Veale (940) 397.4611
2. College Dean: Dr. Jeff Killion (940) 397.4594
3. Dean of Students: Matthew Parks (940) 397.7500

Course Calendar and Important Dates

Date	Activity/Assignment/Exam
Saturday, August 22	First day of class Review course syllabus
Monday, August 24	Unit 1 – 6 Quizzes open at 7 AM
Friday, August 28	Unit 1 original posts due at 11:59 pm
Friday, Sept. 13	Unit 1 Discussion Board extra postings and responses due at 11:59 PM
Friday, Sept. 11	Unit 2 original posts due at 11:59 pm
Friday, Sept. 25	Unit 2 Discussion Board extra posts and responses due at 11:59 PM
Friday, Sept. 25	Unit 3 original posts due at 11:59 pm
Friday, Oct. 9	Unit 3 Discussion Board extra posts and responses due at 11:59 PM
Friday, Oct. 9	Unit 4 original posts due at 11:59 pm
Friday, Oct. 23	Unit 4 Discussion Board extra posts and responses due at 11:59 PM
Friday, Oct. 23	Unit 5 original posts due at 11:59 pm
Friday, Nov. 6	Unit 5 Discussion Board extra posts and responses due at 11:59 PM

Friday, Nov. 6	Unit 6 original posts due at 11:59 pm
Friday, Nov. 20	Unit 6 Discussion Board extra posts and responses due at 11:59 PM
Friday Nov. 20	Annotated Bibliography assignment due by 11:59 PM
Monday Nov. 22	All quizzes must be completed by 11:59 PM
Wednesday, Dec. 2	Final Exam Opens at 7:00 AM Don't forget to schedule with Proctor U beforehand. NOTE: I do not recommend scheduling on a weekend. If you do, and there are technical issues, there will be no technical support of any kind to assist you.
Tuesday, Dec. 8.	Final Exam Closes at 3:00 PM** Note the time. See note below.

*All times are CST (Central Standard Time) on the date indicated.

**** Note:** The final closes at 5 pm however you need to make your appointment for **3 pm** on that day