Course Syllabus: Radiographic Procedures III
College of Health Sciences & Human Services
RADS 3063
Spring 2026

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Course Description:

This is a course in advanced radiographic procedures and image evaluation involving fluoroscopy, surgery, mobile, and trauma.

Course Objectives:

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

- master the manipulation of the equipment
- master the positioning and alignment of anatomical structures and equipment
- evaluate images for proper demonstration of advanced anatomy and related pathology

*The textbook contains chapter-specific objectives that will be helpful in providing direction. Please review these objectives along with the chapters prior to the date scheduled and take notes for yourself, summarizing key points. All of the content within the textbook is testable material for the module of the course for which it is assigned.

Course Resources:

*Required Textbooks:

Lampignano, J., & Kendrick, L. (2025). *Textbook of Radiographic Positioning and Related Anatomy*. (11th ed.). St Louis, MO: Elsevier. [ISBN 978-0-323-93613-2]

Ehrlich, R., & Coakes, D. (2026). *Patient Care in Radiography*. (11th ed.). St. Louis, MO: Elsevier. [ISBN 978-0-443-12354-2]

Johnston, J. (2025). Essentials of Radiographic Physics and Imaging. (4th ed.). St. Louis, MO: Elsevier. [ISBN 978-0-323-93067-3]

Current prices for course resources can be found through the MSU Bookstore.

Additional Resources:

**It is recommended that students download Google Chrome (a free download through Google) or Mozilla Firefox and use one of those as the default browser for ALL D2L courses. This appears to eliminate 99% of technical issues often encountered with Internet Explorer, Apple Safari, etc.*

**Students MUST have reliable computer and internet access.*

Communication with the Instructor:

Communication will be through the student's Midwestern State University email account. An email account is created for every MSU student. If you have not accessed this account yet, please do so by logging into the Portal and clicking the student email account icon located in the Portal.

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.**

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

Class Meeting Date and Time:

Class meetings are Monday and Thursday each week from 9:30am – 10:50am in CE 340. However, the student should be vigilant in logging into D2L. Regular checks will ensure messages from the instructor are received in a timely manner.

See the Course Schedule at the end of this syllabus for specific information about activities and due dates.

Student Responsibilities:

As a student enrolled in this course, you will be responsible for adhering to and meeting posted deadlines and due dates. All activities for this course are listed at the end of this syllabus.

Activities such as quizzes have expiration dates. Please take note that expiration dates for quizzes may differ from deadlines for assignments and activities.
Quizzes and assignments/activities are spaced out in a manner that will allow you ample time to complete them. Assignments/activities will be accepted on or before the posted due date and deadline. ***Late assignments will be accepted on a case-by-case basis.*** If a student cannot complete a course activity by the indicated due date, the student must contact the course instructor immediately. If a student has emergency issues, then the student must contact the instructor as soon as possible (within a day or two). Any activity not completed and submitted by the due date will be addressed on an individual basis.

Students must use baccalaureate level writing skills including complete sentences, correct grammar, and proper punctuation. All assignments will be graded for accuracy, completeness, quality, spelling, grammar, and integrity.

*All assignments will be submitted in a dropbox within D2L. All assignments will be completed in Times New Roman or Arial, 12 point font.

All assignment submissions made by students in D2L are considered final submissions. It is the student's responsibility to ensure that the correct and complete file has been uploaded. *If a student submits an incorrect document, an incomplete draft, or any unintended version, the assignment will be graded as submitted. Students are strongly encouraged to double-check their upload before finalizing the submission.

Additionally, Apple file formats such as .pages or Keynote files will not be accepted. *All submissions must be uploaded in Microsoft Office formats—such as .doc, .docx, .ppt, or .xlsx—or as otherwise specified in the assignment instructions.

See the course calendar for the specific due date.

Course Behavior:

Attendance is mandatory. Excessive unexcused absences will result in a referral to the Dean of the College of Health Sciences and Human Services, and may result in your being dropped from the Program. Excessive unexcused absences are defined as: three (3) absences from lecture without prior approval from instructor or medical reasons (doctor's note will be required). ***Missed exams may only be made-up if prior**

arrangements are made; weekly quizzes cannot be made-up. If a student is more than 10 mins late to class they will be considered tardy. Three (3) tardies will count as an absence.

All students will treat others with respect in this course.

Mental Health
We all experience stressful and difficult events as a normal part of life. As your instructor, I believe your mental health is an important part of your academic success. Success in this course depends heavily on your personal health and well-being. You should recognize that stress is an expected part of the college experience, and if often can be compounded by unexpected setbacks or life changes outside the classroom. I strongly encourage you to reframe challenges as unavoidable pathways to success. Reflect on your role in taking care of yourself throughout the term before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may affect your performance in this course as soon as it occurs and before it becomes unmanageable. In addition to your academic advisor and me, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

- Counseling Center – call 940-397-4618 to schedule an appointment
- TAO – a multilevel online therapy tool
- Self-help apps – MSU has a list available
- Mental Health Resources
- More online resources

Methodology/Teaching Strategies:

Independent reading assignments, quizzes, classroom discussions, group presentations, and individual writing assignment are used in this course.

Activities and Assignments:

Participation – 10%

Participation includes Attendance, Rad Tech Boot Camp Assignments, and Sherpath Lessons. Each unexcused absence (see attendance) will be a 10-point deduction in the Attendance area.

RTBC and Sherpath assignments can be found in D2L. Due dates can be found on the tentative course schedule at the end of the syllabus.

Weekly Quizzes – 15%

Each Thursday (unless otherwise instructed) there will be a quiz over the material presented since the previous Module Exam. Students will not be allowed to make-up missed quizzes. Each quiz will consist of 5 fill-in-the-blank/short answer type questions.

Module Exams – 35%

- Module 1: Fluoroscopy & Contrast
- Module 2: Biliary System, Upper GI, & Lower GI
- Module 3: Urinary System, Pediatric Radiography, & Special Radiographic Procedures
- Module 4: Trauma, Mobile, & Surgical Radiography
- Module 5: Angiography & Interventional Radiography

Scantrons will be required for all exams.

Group Presentation – 10%

The purpose of this activity is to reinforce the role of advanced medical imaging procedures. Students should demonstrate that they understand the procedures they are assigned, but perhaps more importantly, this presentation provides an opportunity for students to see how the procedures done every day in medical imaging departments are a vital component for successful diagnosis and treatment of patients. The intended audience for the student-created presentation is the patient.

Each student in the group will work on a different set of questions. A short (10 minutes or less) presentation will be recorded and posted online with each of the students presenting their set of questions relating to the equipment and procedure.

Complete instructions can be found on D2L.

Comprehensive Closed Book Final Exam – 30%

The final examination is a “closed book”, comprehensive examination of a 100-question multiple-choice, short answer, and fill-in-the-blank format. All final examinations will be administered during the designated date(s) and time(s) listed in the calendar and/or syllabus. There will be NO alteration of any type to this schedule.

Evaluation Method:

Percentage Distribution	Value
Participation	10%
Weekly Quizzes	15%
Module Exams	35%
Group Presentation	10%
Final Exam	30%

Grading Scale:

Grade	Range
A	89.45-100
B	79.45-89.44
C	74.45-79.44
D	69.45-74.44
F	69.44 or below

***The last opportunity to drop this course with a grade of "W" is 4:00pm April 29, 2026.** Please 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."

Disability Support Services:

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 Support Services (DSS) provides information and assistance, arranges accommodations, and serves as a liaison for students, instructors, and staff. The DSS has assistance 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 Support Services in the Clark Student Center Room 168 or call 940-397-4140 for more information. 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 ADA Coordinator may be contacted at (940) 397.4140, or 3410 Taft Blvd., Clark Student Center Room 168.

Conduct/Honesty/Honor System:

This course 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/her work will be completed in full observance of the MSU Code of Student Conduct. A student should consult the Student Handbook for answers to any questions about the code.

Students are encouraged to take full advantage of many resources available including Internet sites, handouts, other textbooks & journals, faculty, and peers. This interactive collegial learning environment is conducive to life-long learning.

Specific components of this course are designed to represent the efforts of each student individually and are NOT to be shared. These components include the written assignment submitted for a grade. Submitting someone else's work as your own or improperly cited work constitutes plagiarism. Please see the Midwestern State University Catalog for further discussion of plagiarism. Plagiarism will constitute in an F for the course and the student will be referred to administration for further action. When students submit their efforts for grading, they are attesting they abided by this rule. ***Quizzes and exams are not to be copied in any form or shared in any form. Students caught engaging in such activity will receive an F for the course and be referred to University administration for dismissal.***

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.

**Artificial Intelligence (AI) Usage Policy*

In this course, the use of Generative AI tools (such as ChatGPT, Claude, Gemini, etc.) is permitted with specific limitations to ensure academic integrity and the development of critical research skills.

Research & Sourcing: You may use AI tools for preliminary research and topic exploration. However, to ensure the validity and scholarly weight of your work, at least 50% of the sources cited in any assignment must be retrieved directly from the MSU Moffett Library online databases.

Writing & Content: The use of AI in the writing process is strictly limited to spelling and grammar correction. AI tools are not permitted to generate text, arguments, analysis, or the bulk content of any assignment, including research papers, posters, and discussion board posts.

Verification: To maintain the integrity of your research, you must be prepared to provide PDF copies of all sources used upon request.

Consequences: Failure to adhere to these guidelines will be treated as a violation of academic integrity. A violation will result in a grade of zero for the assignment. Egregious cases of academic dishonesty involving AI may result in a failing grade (F) for the course.

*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 shall not be limited to the right to reproduce the students work product in order to verify originality and authenticity, and for educational purposes.

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 as 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.

Participation in Radiologic Sciences laboratory classes often require students to wear scrubs which may make concealed carry of a firearm difficult if not impossible. In addition, students are often required to palpate other students while simulating medical examinations or procedures. This required physical contact may also make concealment of a firearm difficult. While concealed carry is not prohibited in any Radiologic Sciences laboratory, students are reminded that intentional display of a

firearm may result in criminal and/or civil penalties and unintentional display of a firearm is a violation of university policies and may result in disciplinary actions up to and including expulsion from the program and university. Students should factor the above in their decision as to whether or not to conceal carry in Radiologic Sciences laboratories.

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 Safety/Emergency Procedures. Students are encouraged to watch the video entitled "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

Tentative Spring Course Schedule

Activities and dates are subject to change

Date	Activity
Jan 22	Course Intro; Module 1
Jan 26	Module 1 cont'd;
Jan 29	Module 1 cont'd; Weekly Quiz 1
Feb 2	Module 1 cont'd
Feb 5	Module 1 cont'd**;** Weekly Quiz 2
Feb 9	**Module 1 Exam**
Feb 12	Module 2
Feb 16	Module 2 cont'd
Feb 19	Module 2 cont'd; Weekly Quiz 3
Feb 23	Module 2 cont'd
Feb 26	Module 2 cont'd; Weekly Quiz 4
Mar 2	Module 2 cont'd
Mar 5	**Module 2 Exam**
Mar 9-15	**SPRING BREAK**
Mar 16	Module 3
Mar 19	Module 3 cont'd; Weekly Quiz 5
Mar 23	Module 3 cont'd
Mar 26	Module 3 cont'd; Weekly Quiz 6
Mar 30	Module 3 cont'd
April 2	**HOLIDAY BREAK**
April 6	**Module 3 Exam**
April 9	Module 4
April 13	Module 4 cont'd; Weekly Quiz 7
April 16	Module 4 cont'd
April 20	Module 4 cont'd; Weekly Quiz 8
April 23	Module 4 cont'd
April 27	**Module 4 Exam**
April 30	Module 5; CV & IR Group Project Due 11:59pm
May 4	Module 5 cont'd
May 7	**Module 5 Exam**; Peer Eval Form Due 11:59pm
May 14	**Final Exam 8:00 – 10:00am**

Reading Assignments for RADS 3063

Authors	Chp	Content	Pages
Module I		**Fluoroscopy & Contrast Media**	
Johnston & Fauber	15	Fluoroscopic Imaging	192-212
Ehrlich & Coakes	19	Contrast Media	357 - 367
Lampignano & Kendrick	14	Urinary System & Venipuncture	545-554 (stop at Excretory Urography)

Objectives:

1. Differentiate between fluoroscopic and radiographic imaging
2. Recognize the unique features of an image-intensified fluoroscopic unit & explain how the image is created and viewed
3. Explain the purpose of automatic brightness control (ABC)
4. Explain the operation of an image intensifier in magnification mode and its effect on image quality and patient exposure
5. Describe the fluoroscopic viewing and recording systems and the advantages and disadvantages of each
6. Compare and contrast features of image-intensified units from digital fluoroscopic units
7. Identify the unique features of flat panel detector fluoroscopy and their effect on image quality and patient exposure
8. Differentiate between continuous and pulsed fluoroscopy
9. Recognize the fluoroscopic features that impact patient radiation exposure
10. Identify the major areas of quality control pertaining to fluoroscopy
11. Differentiate between those quality control processes that are the responsibility of the radiographer and those of the medical physicist
12. State the purpose of contrast media
13. Compare negative and positive contrast agents
14. Name the general types of contrast media used for specific radiographic procedures
15. Explain the importance of osmosis as it relates to various effects of iodinated ionic contrast media
16. Discuss the advantages of nonionic iodinated contrast media
17. Differentiate among the major adverse effects of various contrast agents
18. Recognize clinical symptoms of adverse reactions to iodinated contrast media to the level of treatment required
19. Relate the patient history to the possibility of adverse reactions
20. Explain the patient education and assessment required prior to IV contrast administration

Authors	Chp	Content	Pages
Module II		**Digestive System**	
Ehrlich & Coakes	18	Preparation & examination of the GI tract	326 - 349
Lampignano & Kendrick	12	Biliary Tract & Upper GI System	457 - 498
Lampignano & Kendrick	13	Lower GI System	499 - 536

Objectives:

1. Identify and describe the radiographic exams and common pathologies for the following exams:
    a. Esophagogram (single, double, water soluble)
    b. Swallowing Function Study (modified barium swallow)
    c. Upper GI (single, double, water soluble)
2. Identify the necessary projections/positions employed by the technologist to demonstrate the following anatomy:
    a. Esophagus
    b. Stomach
    c. Duodenum
3. Discuss equipment and supplies necessary for each exam
4. Describe the patient education necessary for each exam including consent, preparation, & pre- and post-examination instructions
5. Describe the general procedure for each exam
6. List and describe the routine and special views for each study
7. List the common contrast media used, usual dosage and route of administration
8. Discuss appropriateness of contrast media to exams
9. For each procedure, list and identify the structures and/or function
10. Given radiographs, identify and evaluate related anatomy, centering, positioning and overall image quality
11. Identify the radiologic apparatus available to the technologist as well as the radiologist and how to prepare the x-ray room for the patient
12. Identify and describe the radiographic exams and common pathologies for the following exams:
    a. Small Bowel follow through (including enteroclysis)
    b. Barium Enema (single, double, water soluble)
13. Identify the necessary projections/positions employed by the technologist to demonstrate the following anatomy:
    a. Duodenum
    b. Jejunum
    c. Ileum
    d. Large Intestine
14. Discuss equipment and supplies necessary for each exam
15. Describe the patient education necessary for each exam including consent, preparation, & pre- and post-examination instructions
16. Describe the general procedure for each exam
17. List and describe the routine and special views for each study
18. List the common contrast media used, usual dosage and route of administration
19. Discuss appropriateness of contrast media to exams
20. For each procedure, list and identify the structures and/or function
21. Given radiographs, identify and evaluate related anatomy, centering, positioning and overall image quality
22. Identify the radiologic apparatus available to the technologist as well as the radiologist and how to prepare the x-ray room for the patient
23. Discuss the proper sequencing of exams

Authors	Chp	Content	Pages
Module III		**The Urinary System, Special Radiographic Procedures, & Pediatric Radiography**	
Bontrager	14	Urinary System	537–544; 554-573
Bontrager	16	Pediatric Radiography	627-660
Bontrager	19	Special Radiographic Procedures	727 - 743
Ehrlich & Coakes	19	Special Radiographic Techniques	362 - 371

Objectives:

1. Identify and describe the radiographic exams, clinical indications, and common pathologies for the following exams:
    a. Intravenous urography
    b. Nephrogram
    c. Retrograde urography
    d. Cystography
    e. Cystourethrography
2. Identify the necessary projections/positions employed by the technologist to demonstrate the parts of the urinary system
3. State the functions of the urinary system
4. Describe the patient education necessary for each exam including consent, preparation, & pre- and post-examination instructions
5. List and describe the routine and special views for each study
6. List the common contrast media used, usual dosage, and route of administration
7. Discuss appropriateness of contrast media to exams
8. For each procedure, list and identify the structures and/or function
9. Given radiographs, identify and evaluate related anatomy, centering, positioning, and overall image quality
10. Identify and describe the radiographic exams and common pathologies for the following exams:
    a. Contrast arthrography (hip, knee, shoulder, wrist, TMJ)
    b. Hysterosalpingography
    c. Myelography
    d. Endoscopic Retrograde Cholangio-Pancreatography (ERCP)
    e. Long Bone Measurement
    f. Digital Tomosynthesis (DTS)
11. Identify the necessary projections/positions employed by the technologist to demonstrate the anatomy of the female reproductive system
12. Describe patient preparation necessary for each exam
13. Describe general procedure for each exam
14. Describe the process for routine and special views for each exam
15. Discuss appropriateness of contrast media to exams
16. Given radiographs, evaluate positioning, centering, overall image quality, relevant anatomy, structures and/or functions
17. Discuss alternate procedures for exams (if any)
18. Analyze image by applying evaluation criteria provided in textbook for each position/projection
19. Discuss the radiographer's role in suspected cases of child abuse
20. Demonstrate proper immobilization techniques for pediatric procedures
21. Discuss common pediatric trauma pathologies
22. Identify and describe the radiographic exams and common pathologies for the following exams:
    a. Bone age
    b. Bone survey (metastatic & non-accidental trauma)
23. Discuss adaptations that may be necessary for exams on pediatric exams

Authors	Chp	Content	Pages
Module IV		**Trauma, Mobile & Surgical Radiography**	
Bontrager	15	Trauma, Mobile, & Surgical Radiography	575 - 625
Ehrlich & Coakes	20	Bedside Radiography	374 - 391
Ehrlich & Coakes	21	Radiography in Surgery	391 - 399

Objectives:

1. Explain the principles of mobile radiography
2. Describe the basics of mobile x-ray machines
3. Cite advantages and disadvantages of both types of mobile units
4. Explain and demonstrate proper patient positioning for mobile projections presented
5. Explain and demonstrate the proper central ray and image receptor relations for the mobile projections presented
6. Analyze radiographs of essential projections by applying evaluation criteria provided in the textbook for each position/projection
7. Discuss exposure patterns and radiation protection surrounding the c-arm
8. Discuss maneuverability of the c-arm
9. Discuss skeletal trauma and fracture terminology for projections given
10. Discuss adaptations to common exams in trauma situations
11. Define the members of the surgical team and their roles
12. Explain proper surgical attire
13. Discuss methods used to maintain the sterile field during surgical radiographic examinations
14. Describe the orientation of the c-arm in relation to the patient for the most common fluoroscopic procedures in the operating room (OR)
15. Discuss common surgical radiographic procedures
16. Cite structures shown in each c-arm procedure
17. Describe the proper central ray and image receptor relationships for the most common mobile procedures in the OR
18. Analyze image by applying evaluation criteria provided in textbook for each position/projection

Authors	Chp	Content	Pages
Module V		**Angiography & Interventional Radiography**	
Ehrlich & Coakes	22	Special Imaging Modalities	402 - 410
Bontrager	17	Angiography & Interventional Procedures	653 - 687

Objectives:

1. List and describe the duties of the:
    a. Physician
    b. Nurse
    c. Interventional radiologic technologist
2. Recognize the anatomy of the heart and vascular system on diagrams and images
3. Discuss alternative modalities and/or procedures
4. Discuss and describe the following examinations:
    a. Cerebral angiography
    b. Thoracic angiography
    c. Angiocardiography
    d. Abdominal angiography
    e. Peripheral angiography
    f. Interventional imaging procedures
        i. Vascular interventional angiography
        ii. Non-vascular interventional procedures
5. Delineate indications and contraindications for various angiographic procedures
6. Explain patient care techniques unique to angiographic and interventional procedures
7. Describe cardiac catheterization procedures including indications, contraindications, and patient monitoring
8. Describe the Seldinger technique and state its purpose
9. Identify various image post-processing functions
10. Describe structure and function of c-arm assembly
11. Describe structure and function of angiographic table
12. Describe structure and operation of contrast medium injection devices