



**Midwestern State University**

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

Department of Radiologic Sciences

Revised January 2021

Course Number: RADS 3033

3 credits

Spring 2021

Course Title: Image Acquisition & Processing

Faculty: **Jessyca Wagner, Ph.D., RT(R)**

Centennial Hall, 430D

Tel: 940-397-3256

Fax: 940-397-4845

Email: [jessyca.wagner@msutexas.edu](mailto:jessyca.wagner@msutexas.edu)

**Course Overview:**

This course will analyze radiographic image qualities and the effects of exposure variables upon these qualities. The course will also study radiographic imaging technique formulation, image quality assurance, and the synthesis of all variables in image production.

**Course Objectives:**

Upon completion of this course the students will:

- Define, recognize, and evaluate the qualities of the radiographic image
- Analyze the effects of exposure variables upon each image quality
- Formulate techniques to optimize image quality, minimize patient exposure, and preserve equipment
- Apply methods of image quality assurance
- Adapt technical variables to changing conditions

**Course Resources:**

Carter, C. E., & Vealé, B. L. (2019). *Digital radiography and PACS* (3<sup>rd</sup> ed.). Maryland Heights, MO: Elsevier Mosby.

Johnston, J. N., & Fauber, T. L. (2016). *Essentials of radiographic physics and imaging* (2<sup>nd</sup> ed.). St. Louis, MO: Elsevier.

Top Hat Subscription and Rad Tech Boot Camp Subscription – Information will be provided in the course by the instructor.

### **Introduction:**

Welcome to RADS 3033 – Principles of Radiographic Imaging. Over the next 15 weeks, you will be introduced to the basic principles of radiographic imaging and an in-depth look at the mechanics of digital radiography. This course will feature two, one-hour lecture periods per week, followed by hands-on laboratory experience for two hours once per week. This semester will be extremely fast-paced and knowledge-intensive. You should expect to study at least 20 hours per week if you wish to do well. If you have problems in this class, do not hesitate to seek help. Please do not wait until the last minute, as that will be too late.

### **Class Meeting Date and Time:**

The lecture for this class is online only. Labs meet Monday from 10:30 AM – 12:20 PM, Monday from 1:00 PM – 2:50 PM, OR Wednesday from 1:00 PM – 2:50 PM.

### **Attendance Policy:**

The student has a responsibility to attend all classes/labs at the designated time of that class or lab. If a student does not, they may be classified as tardy or absent. The following criteria of those classifications are solely those of the instructor of this class. Attendance counts as 10% of your overall course grade.

### **Tardiness**

Any student that arrives at class/lab after the starting time designated in the university catalog of classes will be considered tardy. If a student arrives tardy, two (2) points will be deducted from his or her attendance grade for each tardy. Three tardies constitute 1 unexcused absence, resulting in five (5) points being deducted from the student's attendance grade.

### **Absent from Class**

A student will be considered absent from class/lab if the student does not show up after fifteen (15) minutes have expired. If the student has an unexcused absence, five (5) points will be deducted from his or her attendance grade. Three (3) unexcused absences **will** result in failure of the course and possible dismissal from the program.

**There will be no exception to this policy.**

A student will be considered as having an excused absence from class/lab if the following criteria have been established:

1. **Death of an immediate family member.** An immediate family member is considered to be a grandparent, parent, sibling, spouse, in-law, aunt, uncle, or child.

2. **Summons to appear in court or jury duty.** A copy of the summons is required.
3. **Call to military service.** A copy of your orders to report is required.
4. **University-sponsored event.** Members of athletic teams, college bowl participants, etc. will be excused with proper notification.
5. **Debilitating illness or disability.** Will be addressed on an individual basis.

If a student is affected by an illness that is not debilitating, (i.e. COVID, flu, virus infection) which may result in the student missing one or more consecutive class/lab sessions, that student will be marked as unexcused for the number of days missed **unless a doctor's note is provided.** A doctor's note **must** have a statement to the effect that you were seen in the office, or you are cleared to return to classes. It **does not** have to state what you were seen for. **There will be no exception to this policy.**

### **Personal Appointments**

Students should refrain from making appointments that will take them out of class/lab. Routine doctor or dentist visits are an example of this. If you leave class/lab early because of an appointment, or for any other reason, the occurrence will be treated with the same regard as tardiness. Doctor visits will be approved only with an accompanying release note.

### **Classroom Behavior:**

You must respect the right of every student in the classroom to learn. Talking during class, leaving or entering the room repeatedly during class, or any other type of disruptive behavior will not be tolerated and may result in your being asked to leave the classroom. If this should occur, you will not be allowed to return to class that day and it will be treated as an unexcused absence with a 5-point deduction from your final grade. Repeat offenders will be sent directly to the program chair's office. **Cell phones are not to be used in class.** Disruptions due to these devices may result in your dismissal from class and/or the program.

This course also requires working in groups. Teamwork is an essential element in the healthcare industry. When in the labs, you must work within the group and **NOT** as an individual.

### **Course Requirements:**

#### **Lecture:**

#### **Weekly Quizzes / Module Exams / Final Exam**

All lecture content will be online in D2L and Top Hat. There will be no formal lecture meetings. Every lab period you will have a quiz over the reading/videos you should have completed for lecture. It will be short answer and have five questions. The quizzes will be given the first 10 minutes of class and then lab activities will follow. The grades

on these quizzes will constitute 15% of your overall course grade. For some modules you will also be required to complete videos and quizzes in Rad Tech Boot Camp. Your scores from those assessments will be averaged into your course grade and will constitute 5% of your total grade. There will be five module exams throughout the semester. These module exams will have 50 multiple-choice, short answer, and fill in the blank questions and will count for 30% of your overall course grade. Your final exam will be comprehensive from the entire semester and will have 100 multiple-choice, short answer, and fill in the blank questions. The final will count for 20% of your overall course grade.

### **Research Poster**

You will form groups within the class to create a research poster for the Undergraduate Research Colloquium on campus in late April. Everyone is required to produce a poster and it is for a grade. Posters chosen for submission to the colloquium will receive extra credit on the final course grade. Details about the poster are provided in D2L and will be elaborated in class. The poster will count for 10% of your overall course grade.

### **Laboratory:**

The laboratory portion of this course is designed to offer you the opportunity to test and practice the theories and facts discussed in lecture. There will not always be pre-designed experiments or procedures. Instead, the design of this lab is one of discovery. While you must follow all personal and equipment safety procedures, you will use information from lectures along with provided equipment to “discover” if a particular set of rules, guidelines, or theories prove true. You will also be doing scenarios and film critique sessions. The laboratory portion of this course will count for 10% of your overall course grade and will be comprised of the technique chart and mystery box final.

At the beginning of the semester, you will be put into groups within your lab period. You will work together to create a technique chart for your assigned room throughout the semester. You will be permitted time during lab to work on this but will have no time outside of class to work, so you must use your time wisely. It would be wise to incorporate what you’re doing in Jackie’s class with this project to double your class time. Examples and more detailed instructions will be provided in class. **This project will be due the last week of class on your scheduled lab day.**

There is a lab “final” in this course this semester. It is the Mystery Box assignment and will require the student to take images and explain them to the instructor in a set amount of time. More information about the final will be given closer to time. The lab final will be held the last week of classes (the week before lecture finals).

**Grading:**

Attendance	10%
RTBC	5%
Weekly Quizzes	15%
Unit Exams	30%
Final	20%
Poster	10%
Lab (Technique Chart & Final)	10%

**Scale:**

100 - 90	= A
89 - 80	= B
79 - 75	= C
74 - 69	= D
68 - below	= F

**NOTE: You must make a C average or above to have this course count toward continuation in the Radiologic Technology Program. Please be aware, Dr. Wagner does NOT round grades.**

**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 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:**

RADS 3033 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 RADS 3033 are designed to represent the efforts of each student individually and are NOT to be shared. 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.

***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.***

**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. Beth Vealé (940) 397.4611
2. College Dean: Dr. Jeff Killion (940) 397.4594
3. Dean of Students: Matthew Park (940) 397.7500

**Tentative Course Schedule**

<b>Week of:</b>	<b>Lecture Material</b>
<b>January 11</b>	Chapter 11 & 13 – Johnston
<b>January 18</b>	Chapter 3 – Carter
<b>January 25</b>	<b>Module 1 Exam</b>
<b>February 1</b>	Chapter 8 & 9 – Johnston
<b>February 8</b>	Chapter 2 – Carter
<b>February 15</b>	<b>Module 2 Exam</b>
<b>February 22</b>	Chapter 4 & 5 – Carter
<b>March 1</b>	Chapter 6 – Carter / Chapter 10 - Johnston
<b>March 8</b>	<b>Module 3 Exam</b>
<b>March 15</b>	Chapter 7 & 8 – Carter
<b>March 22</b>	<b>Module 4 Exam / Poster Due</b>
<b>March 29</b>	Chapters 9, 10, & 11 – Carter / <b>Easter Break</b>
<b>April 5</b>	<b>Module 5 Exam</b>
<b>April 12</b>	Chapter 12 - Carter
<b>April 19</b>	Chapter 13 – Carter / <b>Lab Finals Week / Technique Chart Due</b>
<b>April 26</b>	<b>Final Wednesday, April 28 at 10 AM</b>