



## Midwestern State University

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

The Shimadzu School of Radiologic Sciences

**RADS 5152- Introduction to Advanced  
Radiologic Practice**

**Course Number: RADS 5152 2 credits Spring 2022**

**Course Title: Introduction to Advanced Radiologic  
Practice**

### **Professor**

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### **Course Overview**

**Prerequisite/s: Radiologist Assistant Majors Only**

This course introduces students to the role of the radiologist assistant in clinical practice. This course prepares the radiologist assistant to understand and apply appropriate medical imaging clinical pathways, advanced modalities, and performance improvement. This course focuses on advanced radiologic procedures, sterile technique, fluoroscopic operation and radiation safety, radiopharmaceutical safety, and ultrasound operation.

### **Course Objectives**

Upon completion of this course, the student should be able to:

- Describe basic ultrasound operation and modes.
- Describe and identify basic MRI sequences, MR safety and post-processing techniques.
- Describe and identify basic CT protocols and post-processing techniques.
- Demonstrate fluoroscopic operation and radiation safety techniques.
- Describe proper radiopharmaceutical handling, administration, and disposal.
- Demonstrate proper sterile technique, including, gowning, gloving, sterile tray preparation and equipment manipulation.
- Describe different types of anesthesia and anesthetics used in radiologic procedures.
- Describe and demonstrate different suturing equipment, equipment

manipulation, and suturing techniques.

- Explain and identify proper nasogastric tube, Huber needle, Foley catheter, and IV catheter placement.
- Describe common indications, contraindications, and performance of common radiologic procedures.
- Discuss considerations for ACR appropriateness criteria and considerations for different clinical pathways in patient care.

### **Teaching Strategies**

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Independent reading assignments, Desire2Learn (D2L) modules, Open book module quizzes, written assignments, case study presentations, video assignments, and class discussions are used in this course.

### **Course Materials**

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#### **Textbooks**

**Required:**

Dehn, R.W. & Asprey, D.P. (2021). *Essential clinical procedures* (4th ed.) Elsevier Saunders. [ISBN 978-0323624671]

#### **Supplies**

**Required:**

**Suture Tutor Plus Hands-on Kit, Light or Dark, Limbs and Things SKU:STP-Pro-Com**  
Available at <https://limbsandthings.com/us/products/stpprocom/stp-pro-com-suture-tutor-complete-single-user?cat=procedures&subcat=suturing>

#### **Internet connectivity**

Students need an up-to-date computer with an internet connection in this course.

#### **Computer Requirements:**

- PC Users: A well-working computer running Windows XP or higher with 1024 MB of RAM or higher.
- Mac Users: A well-working computer running Mac OS X or higher.
- Headphones or working speakers connected to the computer.
- Webcam and microphone.
- A reliable high-speed internet connection (minimum 768 Kbps/384 Kbps Download/Upload).
- A web browser with Adobe Flash Player installed.

### **Course Requirements**

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The student must:

- Complete reading and/or module assignments.

- Successfully complete the required online quizzes
- Successfully complete discussion posts
- Meet all submission deadlines.

### **Communication with Instructor**

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Contact information for the instructor is listed at the beginning of this syllabus. Email is the preferred mode of communication. **Students must use their standardized MSU Student email for correspondence about this course.** When emailing the instructor, you must use the following subject header:

**5152\_your last name\_topic of message**  
**Example: 5152\_Smith\_Quiz 4**

When there is a need to contact a student, the instructor will use the student's students.mwsu.edu email account. The instructor is not responsible for sending emails to any other email account (set up your email to forward messages to an email you check often to avoid potentially missing any correspondence).

Faculty members will not be responsible for keeping up with other email addresses for students. If you have not established this account or you need help forwarding messages, do so as soon as possible by going to: <https://msutexas.edu/it/email/index.php>

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.).

I will be available to meet either in person or by telephone with any interested students by appointment.

### **Evaluation**

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#### **Grade distribution**

- 35% Module discussions
- 35% Module quizzes
- 15% Post-processing case study
- 15% Suturing video

#### **Grade Scale**

A = 100 - 90  
B = 89 - 80  
C = 79 - 70  
D = 69 - 60

F = 59 and below

### Late Work

**Due Dates.** Assignments and/or quizzes must be submitted by 23:59 (11:59 pm) Central time, on scheduled due dates in the course schedule. **Quizzes not completed by the due dates, will receive a zero (0).** **Modules with partially completed entries will be scored “as is” after the due date.** Under no circumstances will an extension be made to complete quizzes not completed by the close date. Students should contact the instructor in extenuating circumstances before the close date of the quizzes or assignments; such cases will be dealt with on an individual basis. **All assignments are considered complete as submitted and will be graded as such.** See the course schedule for the due dates for the quizzes.

### Technical Difficulties

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On occasion, you may experience problems accessing D2L or class files located within D2L, Internet service connection problems, and/or other computer related problems. Make the instructor 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. **Dropbox assignments that can be attached in an email should be emailed to the professor as soon as a problem is encountered. Failure to do so may result in points being lost.**

#### For help:

- Use the D2L help link in D2L or use <https://msutexas.edu/distance/oprs.php>
- Contact your instructor
- And for other computer access issues, contact information systems at <https://msutexas.edu/it/help/index.php>

### Attendance

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This is a hybrid distance education course. Because of the unique distance learning format for this program, students must be present and on-time for the on-campus seminar to receive a passing grade. There are no exceptions to this policy. Students who are tardy for class risk a grade reduction or dismissal from the class.

Because students and instructors in this program do not regularly interact in a traditional classroom setting, electronic communication is essential. Students must be vigilant in checking email and logging onto Desire2Learn (D2L) to ensure that messages from the instructor are received in a timely manner.

### **Requesting an Incomplete**

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The last opportunity to drop this course with a grade of “W” is 4:00pm on **March 21, 2022**. 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 ninety (90) 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”.

### **Special Needs**

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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 (940)397-4140, <https://mwsu.edu/student-life/disability/>. 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, 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.

### **Administrative Process**

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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 Veale’ (940-397-4611)
2. College Dean - Dr. Jeff Killion (940-397-4679)
3. Dean of Students – Matthew Park (940-397-7500)

### **Honor System**

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RADS 5152 adheres to the [MSU Code of Conduct](#).

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 5152 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.

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 instructor 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.

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

**PLEASE 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 shall not be limited to, the right to reproduce the student's work/ project in order to verify originality and authenticity, and for educational purposes. Specifically, faculty may submit student papers and assignments to an external agency to verify originality and authenticity, and to detect for plagiarism.***

### **Campus Carry Statement:**

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Senate Bill 11 Handgun Policy -Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from licensed concealed carry are appropriately marked, in accordance with state law (Penal Code 30.06 signage). Please note, open carry of handguns, whether licensed or not, and the carrying of all other firearms (rifles, shotguns, etc.), whether open or concealed, are prohibited on campus. For more information regarding campus carry, please refer to the University's webpage at: [Campus Carry](#).

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## **CLASS ACTIVITIES AND ASSIGNMENTS**

### **Module Quizzes- 35%**

When a student has reviewed a module and is ready for the quiz, he or she will log on to D2L and receive a customized timed module quiz consisting of randomized multiple-choice questions. It is important to know the module content before attempting the module quizzes because they are **timed**.

Quiz questions will be from information learned in the modules. Be sure to read the content, practice applying and using the information learned, and watch associated video presentations.

**Technical problems.** If technical issues occur (cannot see an image, cannot see your grade, etc.) sometimes the easiest solution is to see if the issue can be corrected by simply changing browsers. Fewer occurrences have been noted by using Firefox as a browser for D2L.

If students have technical difficulties during a quiz, they should use the Help link at the top toolbar in D2L, contact the MSU Information Systems Support Staff (<http://www.msutexas.edu/it/>), and send an email to the course instructor explaining what happened. Screen shots and/or taking a picture of your screen may help in diagnosing the problem.

**Scores.** Quiz scores will be available immediately after a student submits his or her quiz for grading.

If a student finds a faulty quiz test item or believes that a quiz question has been scored incorrectly, he or she should send an email to the course instructor that includes the following:

- Module Quiz Number (1-3)
- Answer the student thinks should be correct
- Rationale supporting why the student's answer is correct
- Page numbers must be included when referencing the textbook in a rationale

After reviewing the case, if the course instructor thinks a revision is justified, the student's quiz score will be revised to reflect the additional points and the test bank will be updated.

## **Module Discussions- 35%**

Students will discuss items related to the learning modules on the discussion board. The instructions are found in the modules and in the discussion board area of the course. The student will make an initial post and respond to 2 other student's posts by the date in the syllabus. Students cannot see other posts until they post their initial discussion. The initial post is 50% and the 2 response posts are 25% of the discussion grade.

## **Suturing Video- 15%**

Using the Suture tutor kit make a video. Make sure for the first part of the video the instructor can see your face.

- Explain the materials needed to perform sutures and which equipment you would choose to suture a port-a-cath pocket and to secure a central line.
- Explain how you would prep the area with povidone-iodine (Betadine) and with a chlorhexidine scrub.

Move the camera to show the Suture tutor and your hands. Please wear gloves when performing the suturing and be safe.

- Demonstrate how to properly hold a scalpel and make a 2-3 inch incision.
- Demonstrate how to properly grasp the suture needle with the needle holders.
- Demonstrate how to properly hold the needle holders.
- Demonstrate an interrupted stitch with at least 4 stitches.
- Demonstrate a subcuticular stitch for the length of the incision.
- Demonstrate either a vertical mattress stitch OR a horizontal mattress stitch.
- Discuss how you would dress the sutured area.
- Explain and demonstrate proper suture removal.
- Discuss the directions you would give the patient after suture insertion for both absorbable and non-absorbable sutures.
- Discuss the directions you would give the patient after suture removal.



Please discard all sharps properly.

Upload your video in the assignments area by the due date in the course syllabus.

## Post-Processing Case Study– 15%

Students will formulate one case study during the semester. Topics must be approved by the instructor and students may not have the same topic. Topics will be posted in the Course Discussion Board for approval by the due date in the course syllabus. Students will create PowerPoint case studies on patients he or she encountered in clinical. **The case study must be on a pathology seen on an MRI or CT Post-Processing examination.** All patient information must be removed as per HIPAA policy.

The student must cover all the items in the case study checklist. The case studies will be in the form of a *PowerPoint presentation*. Submit the case study PowerPoints to the appropriate course dropbox by the due date. Students will give the presentation in class during the second seminar weekend.

- 1) Patient presents with these symptoms
- 2) History and physical examination (H and P results) (short only pertinent information needed)
- 3) How is the diagnosis made?
  - a) Imaging studies (What should be done 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, etc...) – Include post-processing images and any other images demonstrating the pathology.
  - b) Image observation (Report)
  - c) Lab work (What was done, what should be done?)
- 4) Identify Pathology
  - a) Description of pathology
  - b) Characteristics of pathology
    - i) How does this pathology affect normal physiology?
    - ii) Causes of pathology
    - iii) Is pathology known by any other names?
  - c) Statistics/incident rate of pathology
    - i) Is any particular group of people more susceptible to this pathology? (male/female, ethnic origins, age ranges, geographic locations, genetic factors)
  - d) How is this pathology treated? (Medication, interventional procedures, surgeries, etc.)
  - e) The prognosis with and without treatment
- 5) Post-processing Information
  - a) What equipment was used? (EX. GE Lightspeed, Toshiba Acquilion, etc.)(1.5 Tesla, 64 slice, etc.)
  - b) Contrast used (type, rate, etc.)
  - c) What was the imaging protocol used? (ex. CTA ABD/Pelvis, MRA Abdomen, etc.)
  - d) Scan settings (pitch, rotation time, thickness. kV, mAs, SFOV, etc.) (Sequences,

- plane, weighting, slice, Fat Sat, FOV, coil, etc.)
- e) Describe or define the post-processing procedure.
  - f) How is the post-processing procedure used? Are there certain pathologies or clinical indications to use the post-processing procedure?
  - g) Are there any limitations of the post-processing application?

All course requirements must be completed before a grade is awarded. Students must complete the final and all course work by the dates published in the course schedule.

See the Course Schedule at the end of this syllabus for all deadlines.

| <b>RADS 5152 Introduction to Advanced Radiologic Practice</b><br><b>Spring 2022 Course Schedule</b> |  |
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| Date<br><i>*Note: These are Central Times*</i>  | Activity   |
| January 10  | Classes Begin  |
| Monday, January 24 by 23:59   | Module 1 Quiz  |
| January 29-30   | On campus weekend  |
| Monday, February 7 by 23:59   | Module 2 Quiz  |
| Monday, February 14 by 23:59  | Module 2 Suture Video                                    |
| Monday, February 21 by 23:59  | Module 3 In-Module Quizzes                               |
| Monday February 21 by 23:59   | Post-Processing Case Study Topic due to Discussion Board |
| Monday, March 7 by 23:59  | Module 4 Discussion Initial Post                         |
| Thursday, March 10 by 23:59   | Module 4 Response Posts                                  |
| March 12-March 20   | Spring Break   |
| Monday, March 21 by 16:00   | Last day to withdraw with a "W" in the class             |
| Monday, March 28 by 23:59   | Module 5 Discussion Initial Post                         |

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| Thursday, March 31 by 23:59  | Module 5 Response Posts                                |
| April 1- April 3             | Easter Break   |
| Monday, April 11 by 23:59    | Module 6 Discussion Initial Post                       |
| Thursday April 14 by 23:59   | Module 6 Response Posts                                |
| Monday April 25 by 23:59     | Module 7 Discussion Post                               |
| Wednesday, April 27 by 23:59 | Post Processing Case study presentation due to dropbox |
| April 30-May 1               | On campus weekend –                                    |