

South Plains College-Reese Campus  
Course Syllabus

COURSE: **RADR 2333.200 (3:3:0), Advanced Medical Imaging**  
SEMESTER: **Fall 2016**  
CLASS TIMES: **TR: 11:00-12:15**  
INSTRUCTOR: **Erica Castillo**  
OFFICE: **RC 512H**  
OFFICE HOURS: **MW: 11:00-1:00 TR: 9:00-11:00; by appointment. F: by appointment only**  
OFFICE PHONE: **806-716-4628**  
E-MAIL: [ecastillo@southplainscollege.edu](mailto:ecastillo@southplainscollege.edu)  
Facebook: The radiologic technology program has a Facebook page at [www.facebook.com/spradiologictechnologyprogram](http://www.facebook.com/spradiologictechnologyprogram). In addition to the South Plains college websites, this Facebook page will be used to keep students up-to-date on program activities, weather delays, South Plains College announcements and will help with program recruitment. "Liking" the radiologic technology program's Facebook page is not mandatory, nor is a personal Facebook accounts in order to access this page.  
BlackBoard: Blackboard is an e-education platform designed to enable educational innovations everywhere by connecting people and technology. This education tool will be used in this course throughout the semester.

*"South Plains College improves each student's life."*

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**GENERAL COURSE INFORMATION**

**COURSE DESCRIPTION**

This course focuses on specialized imaging modalities. It includes concepts and theories of equipment operations and their integration for medical diagnosis.

**COURSE OBJECTIVE**

The student will be introduced to the basics of the available advanced imaging modalities used in the assessment of anatomy and diagnosis of disease processes. (F1,2,5,10,12;C5,6,7,8,15)

**STUDENT LEARNING OUTCOMES**

The student will be able to:

1. Differentiate the specialized imaging modalities. (F1,10; C5,8,15,18,19)
2. Identify the advantages of the different advanced imaging modalities. (C5,8)
3. Explain the integration of the different advanced imaging modalities used in patient assessment. (F1,10;C5,6,7,15)
4. Identify and compare anatomy as imaged by different advanced imaging modalities. (F1,10; C5,8,15,18,19)

## EVALUATION METHODS

The course grade will be determined by a combination of research paper, major exams and a comprehensive final exam. The following guidelines will be followed regarding exams:

- The student is expected to complete a major exam at the scheduled time. **Make-up exams will be at the instructor's discretion.**
- A student arriving late for a major exam will not be allowed to take the exam if any student has completed the exam and left the classroom.
- All major exams/projects must be completed within the designated class time.
- A comprehensive final exam will be given during the time designated by South Plains College.
- It is the responsibility of the student to bring an appropriate calculator to class. **NO CELL PHONES ALLOWED WHILE TESTING (even to use as calculators). Students will not be allowed to share calculators during an exam.**

## ACADEMIC INTEGRITY

It is the aim of the faculty of South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own any work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences, possibly suspension.

**Cheating** - Dishonesty of any kind on examinations or on written assignments, illegal possession of examinations, the use of unauthorized notes during an examination, obtaining information during an examination from the textbook or from the examination paper of another student, assisting others to cheat, alteration of grade records, illegal entry or unauthorized presence in the office are examples of cheating. Complete honesty is required of the student in the presentation of any and all phases of coursework. This applies to quizzes of whatever length, as well as final examinations, to daily reports, to term papers, clinical data entry, clinical attendance, and clinical performance.

**Plagiarism** - Offering the work of another as one's own, without proper acknowledgment, is plagiarism; therefore, any student who fails to give credit for quotations or essentially identical expression of material taken from books, encyclopedias, magazines and other reference works, or from themes, reports or other writings of a fellow student, is guilty of plagiarism.

**If found cheating or plagiarizing, the student's future in this program will be based on the decisions from the Allied Health Departmental Director's Committee.**

## SCANS and FOUNDATION SKILLS

Scans and foundation skills are identified for specific course objectives. A complete list explaining these skills is attached to the back of the syllabus for your information.

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## SPECIFIC COURSE INFORMATION

### TEXT AND MATERIALS

Frank, Eugene., Merrill's Atlas of Radiographic Positioning and Procedures. 12<sup>th</sup> Edition, 2012. St. Louis, Missouri. The C.V. Mosby Co.

Bushong, Stewart C. Radiologic Science for Technologists. 10<sup>th</sup> Edition. 2008. Elsevier/Mosby.

## ATTENDANCE POLICY

**SPC** - Students are expected to attend all classes in order to be successful in a course. The student may be administratively withdrawn from the course when absences become excessive as defined in the course syllabus.

When an unavoidable reason for class absence arises, such as illness, an official trip authorized by the college or an official activity, the instructor may permit the student to make up work missed. It is the student's responsibility to complete work missed within a reasonable period of time as determined by the instructor. Students are officially enrolled in all courses for which they pay tuition and fees at the time of registration. Should a student, for any reason, delay in reporting to a class after official enrollment, absences will be attributed to the student from the first class meeting.

Students who enroll in a course but have "Never Attended" by the official census date, as reported by the faculty member, will be administratively dropped by the Office of Admissions and Records. A student who does not meet the attendance requirements of a class as stated in the course syllabus and does not officially withdraw from that course by the official census date of the semester, may be administratively withdrawn from that course and receive a grade of "X" or "F" as determined by the instructor. Instructors are responsible for clearly stating their administrative drop policy in the course syllabus, and it is the student's responsibility to be aware of that policy.

It is the student's responsibility to verify administrative drops for excessive absences through MySPC using his or her student online account. If it is determined that a student is awarded financial aid for a class or classes in which the student never attended or participated, the financial aid award will be adjusted in accordance with the classes in which the student did attend/participate and the student will owe any balance resulting from the adjustment.

**SPC Radiologic Technology** - Class attendance is mandatory. Students with 3 absences will be counseled. Students are allowed 5 absences during fall semester. After the 5<sup>th</sup> absence, the student will be dropped from the program regardless of the student's grade. Policies regarding absences coincide with those established for South Plains College as outlined in the SPC General Catalog.

It is extremely important that students arrive for class **ON TIME**. **Tardiness** disrupts the instructor and the other students. Students who chronically arrive late will be counseled. The student should be prepared for class at the scheduled class start time. **3 tardies will equal one absence.**

**Students with perfect attendance and 2 or less tardies will be awarded 2 points to their final grade at the end of the semester.**

**A daily attendance sheet will be signed by each student promptly before class starts. If a student is tardy, it is their responsibility to sign the sheet after class. Attendance and tardies of the day will be recorded from the signed sheet.**

## CLASS PREPARATION POLICY

The student is responsible for being prepared for class, which means reading the assigned chapters and/or pages from the textbook prior to class. The textbook is a mandatory requirement. **The student must bring the textbook/e-book to every class.** *ANY information covered in class and/or from any reading assignments not covered during class may be included on an exam.*

## GRADING POLICY

Grades in this course will be determined using the following criteria:

Assessment Tool	Assessment Criteria	Percentage Score	Grade
<b>Modality Research Paper</b> <b>20%</b>	✓ Exceptional unit content knowledge & understanding	90 – 100	A
	✓ Good unit content knowledge & understanding	80 – 89	B
	✓ Average unit content knowledge & understanding	75 – 79	C
	✓ Unacceptable unit content knowledge & understanding	0 – 74	F
<b>MAJOR EXAMS</b> <b>50%</b>	✓ Exceptional unit content knowledge & understanding	90 – 100	A
	✓ Good unit content knowledge & understanding	80 – 89	B
	✓ Average unit content knowledge & understanding	75 – 79	C
	✓ Unacceptable unit content knowledge & understanding	0 – 74	F
<b>FINAL EXAM</b> <b>30%</b>	✓ Exceptional course content knowledge & understanding	90 – 100	A
	✓ Good course content knowledge & understanding	80 – 89	B
	✓ Average course content knowledge & understanding	75 – 79	C
	✓ Unacceptable unit content knowledge & understanding	0 – 74	F

<b>Course Grade:</b> A	90 – 100
B	80 – 89
C	75 – 79
F	0 – 74

**A grade average of C (75) must be maintained in all RADR classes.** Failure to do so will result in the student being dropped from the Program.

### CLASS ASSIGNMENTS

#### Modality Research Paper – 20%

A research paper will be worked on throughout the semester outside of and during class if time permits.

The following guidelines will be followed regarding **Modality Research Paper**:

1. The student will have a research paper rubric to follow.
2. The student will work on the research paper outside of class and if time permits, during scheduled class time.
3. The student must work on the research paper independent from other students however, help from the instructor is permitted.
4. The research paper is due by the assigned due date and time. Late work will **NOT** be accepted.

### Major Exams – 50% - Each individual major exam is worth 10%

Five major exams will be given throughout the semester following each module presented. Exams will be multiple choice and will be done electronically in the computer lab.

The following guidelines will be followed regarding **Major Exams**:

1. The student will complete the exam at the scheduled time.
2. The student must complete the exam within the allotted class time of **1 hours and 15 min.**
3. There will be **NO** make-up exams.
4. If a test must be missed, the weight of the final exam will be increased.
5. A student arriving late for an exam will not be allowed to take the exam if **any** student has completed the exam and left the room. This will also count as a tardy.
6. **NO** cell phones or other electronic assistance, other than simple calculators, are allowed during exams.
7. According to SPC policy, **a student's grade will not be given over the phone or by email to avoid the risk of a breach of confidentiality.**

### Final Exam – 30%

A comprehensive final exam will be given at the end of the semester. Two hours will be allotted for an exam of approximately 100 multiple choice questions and will be done electronically in the computer lab.

The following guidelines will be followed regarding the **Final Exam**:

1. The final exam will be comprehensive.
2. The final exam must be completed within the allotted time, **2 hours.**
3. A student arriving late for an exam will not be allowed to take the final exam if **any** student has completed the exam and left the room.
4. **NO** cell phones or other electronic assistance, other than simple calculators, are allowed during exams.
5. If a student is unable to take the final exam at the assigned time for any reason, the student may be given an incomplete for the course.
6. According to SPC policy, **a student's grade will not be given over the phone or by email to avoid the risk of a breach of confidentiality.**

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## COMMUNICATION POLICY

Electronic communication between instructor and students in this course will utilize the South Plains College "My SPC" email systems and Remind<sup>®</sup>. The instructor will not initiate communication using private email accounts. Students are encouraged to check SPC email on a **daily basis**.

## STUDENT CONDUCT

Students in this class are expected to abide by the standards of student conduct as defined in the SPC Student Guide and the Radiologic Technology Program Student Handbook.

## CELL PHONES

Cell phones are to be turned **OFF** during scheduled class/lab periods, unless prior approval has been given from the instructor. **THIS INCLUDES TEXT MESSAGING.** Cell phones are to be used outside of the classroom only.

Students will be dismissed from class/lab and sent home if a phone continuously rings/vibrates or if the student is discovered texting. The student will then receive an **absence** for the class. The phone number to the front desk is (806)716-4622 for emergencies.

## CONFERENCES

If at any time a student is not satisfied with their overall performance, he/she is encouraged to schedule an appointment with the instructor. If necessary, a plan can be developed to help the student improve in their areas of weakness.

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## ACCOMMODATIONS

### Disabilities Statement

Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

### Diversity Statement

In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

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## COURSE OUTLINE

### MAMMOGRAPHY

The student will:

1. Explain the fundamentals of mammography (F10;C5,6,15)
2. Differentiate between mammography and conventional radiography. (F10;C5,6,15)
3. Identify the physical principles of mammography. (F10;C5,6,15)
4. Identify the significance of the mammography.
5. Identify the components of the mammography system. (F10;C5,6,15)
6. Discuss the safety of mammography.
7. Identify the imaging parameters of a mammography protocol. (F10;C5,6,15)
8. Discuss the positioning of the mammography patient.
9. Discuss the issues of patient monitoring during a mammography procedure.
10. Discuss the use of interventional procedures in mammography.
11. Identify the clinical applications of mammography.

## **DIAGNOSTIC ULTRASOUND**

The student will:

1. Explain the principles of diagnostic ultrasound. (F10;C5,6,15)
2. Identify the properties of sound waves: acoustic impedance and velocity of sound.
3. Explain the process of transducer selection in diagnostic ultrasound. (F10;C5,6,15)
4. Differentiate between volume scanning and three-dimensional and four-dimensional ultrasound imaging.
5. Identify the characteristics of the sonographic image.
6. Identify the clinical applications of diagnostic ultrasonography.

## **INTERVENTIONAL RADIOLOGY**

The student will:

1. Explain the fundamentals of interventional radiology. (F10;C5,6,15)
2. Differentiate between interventional radiology and conventional radiography. (F10;C5,6,15)
3. Identify the physical principles of interventional radiology. (F10;C5,6,15)
4. Identify the significance of the interventional radiology.
5. Identify the components of the interventional radiology system. (F10;C5,6,15)
6. Discuss the safety of interventional radiology.
7. Identify the imaging parameters of an interventional radiology protocol. (F10;C5,6,15)
8. Identify and explain the factors affecting radiation dose received from an interventional radiology procedure.
9. Discuss the issues of patient monitoring during an interventional radiology procedure.
10. Discuss the use of contrast media in interventional radiology.
11. Identify the clinical applications of interventional radiology.

## **SECTIONAL ANATOMY OVERVIEW**

The student will:

1. Identify the imaging modalities that produce cross-sectional images. (C15)
2. Identify the advantages of cross-sectional images. (C15)
3. Identify and differentiate between the major imaging planes used in producing cross-sectional images. (C15)
4. Identify the characteristics of computerized tomography cross-sectional images. (C15)
5. Identify the characteristics of magnetic resonance cross-sectional images. (F1,10;C5)
6. Identify major anatomical structures in examples of CT and MRI cross-sectional images. (F1,10;C5)

## **COMPUTED TOMOGRAPHY (CT)**

The student will:

1. Explain the fundamentals of computed tomography (CT). (F10;C5,6,15)
2. Differentiate between computed tomography and conventional radiography. (F10;C5,6,15)
3. Identify and differentiate between the different generations of computed tomography scanners. (F10;C5,6,15)
4. Identify the technical aspects of the CT image. (F10;C5,6,15)
5. Identify the components of the CT system. (F10;C5,6,15)
6. Identify and differentiate between the diagnostic applications of CT.
7. Explain the use of contrast material used in CT.
8. Identify and explain the factors affecting the CT image quality. (F10;C5,6,15)
9. Identify and differentiate between the special features of various CT systems. (F10;C5,6,15)
10. Identify and explain the factors affecting radiation dose received from a CT procedure.

## MAGNETIC RESONANCE IMAGING (MRI)

The student will:

1. Explain the fundamentals of magnetic resonance imaging (MRI). (F10;C5,6,15)
2. Differentiate between magnetic resonance imaging and conventional radiography. (F10;C5,6,15)
3. Identify the physical principles of MRI signal production. (F10;C5,6,15)
4. Identify the significance of the MRI signal.
5. Identify the components of the MRI system. (F10;C5,6,15)
6. Discuss the safety of MRI.
7. Identify the imaging parameters of a MRI protocol. (F10;C5,6,15)
8. Discuss the positioning of the MRI patient.
9. Discuss the issues of patient monitoring during an MRI procedure.
10. Discuss the use of contrast media in MRI.
11. Identify the clinical applications of MRI.
12. Describe functional MRI. (F10;C5,6,15)

## DIGITAL FLUOROSCOPY

The student will:

1. Explain the fundamentals of digital fluoroscopy (F10;C5,6,15)
2. Differentiate between digital fluoroscopy conventional radiography. (F10;C5,6,15)
3. Identify the physical principles of digital fluoroscopy. (F10;C5,6,15)
4. Identify the significance of the digital fluoroscopy.
5. Identify the components of the digital fluoroscopy system. (F10;C5,6,15)
6. Discuss the safety of digital fluoroscopy.
7. Identify the imaging parameters of a digital fluoroscopy protocol. (F10;C5,6,15)
8. Discuss the positioning of the digital fluoroscopy patient.
9. Discuss the issues of patient monitoring during an digital fluoroscopy procedure.
10. Discuss the use of contrast media in digital fluoroscopy.
11. Identify the clinical applications of digital fluoroscopy.

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## FOUNDATION SKILLS

### **BASIC SKILLS—Reads, Writes, Performs Arithmetic and Mathematical Operations, Listens and Speaks**

F-1 Reading—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules.

F-2 Writing—communicates thoughts, ideas, information and messages in writing and creates documents such as letters, directions, manuals, reports, graphs, and flow charts.

F-3 Arithmetic—performs basic computations; uses basic numerical concepts such as whole numbers, etc.

F-4 Mathematics—approaches practical problems by choosing appropriately from a variety of mathematical techniques.

F-5 Listening—receives, attends to, interprets, and responds to verbal messages and other cues.

F-6 Speaking—organizes ideas and communicates orally.

### **THINKING SKILLS—Thinks Creatively, Makes Decisions, Solves Problems, Visualizes and Knows How to Learn and Reason**



F-7 Creative Thinking—generates new ideas.

F-8 Decision-Making—specifies goals and constraints, generates alternatives, considers risks, evaluates and chooses best alternative.

F-9 Problem Solving—recognizes problems, devises and implements plan of action.

F-10 Seeing Things in the Mind’s Eye—organizes and processes symbols, pictures, graphs, objects, and other information.

F-11 Knowing How to Learn—uses efficient learning techniques to acquire and apply new knowledge and skills.

F-12 Reasoning—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.

**PERSONAL QUALITIES—Displays Responsibility, Self-Esteem, Sociability, Self-Management, Integrity and Honesty**

F-13 Responsibility—exerts a high level of effort and perseveres towards goal attainment.

F-14 Self-Esteem—believes in own self-worth and maintains a positive view of self.

F-15 Sociability—demonstrates understanding, friendliness, adaptability, empathy and politeness in group settings.

F-16 Self-Management—assesses self accurately, sets personal goals, monitors progress and exhibits self-control.

F-17 Integrity/Honesty—chooses ethical courses of action.

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**SCANS COMPETENCIES**

C-1 **TIME** - Selects goal - relevant activities, ranks them, allocates time, prepares and follows schedules.

C-2 **MONEY** - Uses or prepares budgets, makes forecasts, keeps records and makes adjustments to meet objectives.

C-3 **MATERIALS AND FACILITIES** - Acquires, stores, allocates, and uses materials or space efficiently.

C-4 **HUMAN RESOURCES** - Assesses skills and distributes work accordingly, evaluates performances and provides feedback.

**INFORMATION - Acquires and Uses Information**

C-5 Acquires and evaluates information.

C-6 Organizes and maintains information.

C-7 Interprets and communicates information.

C-8 Uses computers to process information.

**INTERPERSONAL—Works With Others**

C-9 Participates as a member of a team and contributes to group effort.

C-10 Teaches others new skills.

C-11 Serves Clients/Customers—works to satisfy customer’s expectations.

C-12 Exercises Leadership—communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies.

C-13 Negotiates—works toward agreements involving exchanges of resources; resolves divergent interests.

C-14 Works With Diversity—works well with men and women from diverse backgrounds.

**SYSTEMS—Understands Complex Interrelationships**

C-15 Understands Systems—knows how social, organizational, and technological systems work and operates effectively with them.

C-16 Monitors and Corrects Performance—distinguishes trends, predicts impacts on system operations, diagnoses systems performance and corrects malfunctions.

C-17 Improves or Designs Systems—suggests modifications to existing systems and develops new or alternative systems to improve performance.

**TECHNOLOGY—Works with a Variety of Technologies**

C-18 Selects Technology—chooses procedures, tools, or equipment, including computers and related technologies.

C-19 Applies Technology to Task—understands overall intent and proper procedures for setup and operation of equipment.

C-20 Maintains and Troubleshoots Equipment—prevents, identifies, or solves problems with equipment, including computers and other technologies.

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I \_\_\_\_\_ have received a copy of the RADR 2333 course syllabus. I have read and understand the contents of this syllabus.

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Signature

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Date