

*South Plains College -Reese Campus*  
**Course Syllabus**

**COURSE: RADR 2235.200 (2:2:0), Radiologic Technology Seminar (Capstone)**

**SEMESTER: Spring 2017**

**CLASS TIMES: T/TR, 09:30 – 10:20**

**INSTRUCTOR: Clinton Bishop**

**OFFICE: RC 512B**

**OFFICE HOURS: MTWR: 01:00 – 03:00; by appointment**

**OFFICE PHONE: 806-716-4629**

**E-MAIL: [cbishop@southplainscollege.edu](mailto:cbishop@southplainscollege.edu)**

**Facebook:** The radiologic technology program has a Facebook page at [www.facebook.com/spcradiologictechnologyprogram](http://www.facebook.com/spcradiologictechnologyprogram)

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 are 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 is a capstone course that focuses on the synthesis of professional knowledge, skills, and attitudes in preparation for professional employment and lifelong learning.

**STUDENT LEARNING OUTCOMES**

The student will:

1. Synthesize professional knowledge, skills and attitudes.
2. Make entry-level, professional decisions regarding radiographic procedures to ensure diagnostic images, taking into consideration any constraints and generating possible alternatives the routine.
3. Validate the necessity of lifelong learning to acquire new technology and maintain professional skills.

**COURSE OBJECTIVES**

The student will:

1. Evaluate the Program content areas to identify areas of strength and weakness. (C5)
2. Review all Program content areas, using study guides outlining the minimum amount of knowledge required in each area.
3. Receive individual review in those areas of major weakness, if necessary.
4. Answer detailed questions from the following subject areas (C5-7):

Ethics  
Medical Terminology  
Computed Radiography & Digital Radiography  
Radiographic Anatomy & Physiology  
Patient Care Pertinent to Radiology

Contrast Media  
Radiology Physics  
Radiographic Equipment & QA  
Radiation Biology & Protection  
Radiographic Special Procedures

Radiographic Positioning  
Medical & Surgical Diseases  
Pharmacology

Advanced Imaging Modalities  
Radiographic Quality

### **CAPSTONE EXPERIENCE - VERIFICATION OF COMPETENCIES**

RADR 2235 is identified as a Capstone Experience. The learning experience is a consolidation of the student's educational experience; and certifies mastery of entry-level radiography competencies.

### **EVALUATION METHOD**

The RADR 2235 Radiologic Technology Seminar students will be assessed using **five** discipline specific examinations. The exam schedule is located on Blackboard.

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 subject to 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 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 and to term papers.

**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.

## SPECIFIC COURSE INFORMATION

### TEXT AND MATERIALS

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

Frank, Eugene., **Merrill's Atlas of Radiographic Positioning and Procedures**. 13<sup>th</sup> Edition, 2012. St. Louis, Missouri. The C.V. Mosby Co.

Frank, Eugene., **Merrill's Pocket Guide to Radiography**. 13<sup>th</sup> Edition 2011. St. Louis, Missouri. The C.V. Mosby Co.

Adler, Arlene., Carlton, Richard., **Introduction to Radiologic Sciences and Patient Care**. 5<sup>th</sup> Edition, 2012. St. Louis, Missouri. Elsevier.

Callaway, William J. **Mosby's Comprehensive Review of Radiography**. 6<sup>th</sup> Edition. 2012. Mosby/Elsevier (Optional)

### 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 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 1 absence**.

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

## INSTRUCTIONAL METHODS

The student will receive review of information through a series of review questions, review challenges, review games, lab review challenges, and review of textbook material.

## CLASS PREPARATION POLICY

Preparation for this class is the responsibility of the student. Time will not permit extensive lectures over material that has already been covered in previous classes; therefore, the student is responsible for reviewing the material. The instructor will be available during class for questions and assistance in preparation for each test.

Information review and assessment is divided into 5 units:

1. Radiation Protection
2. Equipment Operation and Quality Control
3. Imaging Acquisition and Evaluation
4. Imaging Procedures
5. Patient Care and Educations

## GRADING POLICY

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

Assessment Tool	Assessment Criteria	Percentage Score	Grade
<b>MAJOR EXAMS</b> 50%	✓ 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> 50%	✓ 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

### Course Weights:

Major Exams (5) - 50%  
Final exam – 50%

**Course Grade:** 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.

### Major Exams – 50% (5 exams, each worth 10%)

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.

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 hour and 15 minutes**.
3. There will be **NO** make-up exams. **NO EXCEPTIONS**.
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 calculators, are allowed during exams.
7. According to SPC policy, **student's grade will not be given over the phone or by email to avoid the risk of a breach of confidentiality**.

### Final Exam – 50%

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

1. The final exam will be comprehensive.
2. The final exam must be completed within the allotted time.
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 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. After consulting the instructor, the student may be assigned a time to take the final exam and remove the incomplete. The final exam and course must be completed before the start of the following semester.
6. According to SPC policy, **the 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 system and Remind<sup>®</sup>. Instructor will not initiate communication using private email accounts. Students are encouraged to check SPC email on a regular 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 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 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 receive an absence for the class. The phone number to the front desk is (806)716-4622 for emergencies.

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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

### RADIATION PROTECTION

With at least **75%** accuracy, the student will:

1. Define all terms and units of measure related to radiation biology & protection, including but not limited to:

Air kerma	Inverse square law
Gray	Half-value layer
Seivert	Alpha particle
Becquerel	Beta particle
Dose equivalent	Positron particle
Dose equivalent formula	X-radiation
Ionization	Gamma radiation

2. Identify the possible long-term effects of radiation exposure.
3. Identify the possible somatic effects of radiation exposure.
4. Identify the possible genetic effects of radiation exposure.
5. Identify relative tissue, organ and cell radiosensitivities.
6. Identify relative dose-effect relationships.
7. Complete the mathematical calculations related to radiation protection. (F3)
8. Identify and explain the required and recommended methods of radiation protection, including time, distance and shielding.
9. Identify the recommended dose equivalent limits established for diagnostic radiography.
10. Identify the characteristics of the basic devices used for detecting and/or measuring radiation exposure.
11. Identify the characteristics of the basic devices used for personnel dosimetry in radiography.

## **EQUIPMENT OPERATION AND QUALITY CONTROL**

With at least **75%** accuracy, the student will:

1. Explain electrostatics, electrodynamics, magnetism and electromagnetism.
2. Identify series and parallel circuits. (F10)
3. Calculate voltage, resistance and/or current for a given circuit. (F3,10,12)
4. Identify the components of a basic single-phase x-ray circuit and describe their function. (F10)
5. Differentiate between single-phase; three-phase, six-pulse; three-phase, twelve-pulse and high frequency x-ray circuits.
6. Identify the components of a conventional and a digital/computed radiographic unit and describe their function. (F10)
7. Identify the components of a conventional and a digital fluorographic unit and describe their function. (F10)
8. Identify the Quality Assurance procedures and acceptable parameters for radiographic and fluorographic systems.

## **IMAGE ACQUISITION AND EVALUATION**

With at least **75%** accuracy, the student will:

1. Explain x-ray production. (F10)
2. Identify the factors that affect x-ray production.
3. Identify and describe the five x-ray/matter interactions. (F10)
4. Explain the importance of Compton and photoelectric interactions to image production. (F12)
5. Identify the factors affecting the probability of Compton and photoelectric interactions.
6. Identify the primary technical factors of radiographic exposure and discuss their function. (F12)
7. Identify the secondary technical factors of radiographic exposure and discuss their function. (F12)
8. Describe the conditions influencing exposure factor selection. (F12)
9. Identify and describe how to use filters, beam restricting devices, and grids in radiographic imaging. (F12)
10. Identify and describe the indirect method of acquiring a computed radiographic image. (F12)
11. Identify and describe the direct and indirect methods of acquiring a digital radiographic image. (F12)
12. Identify the preprocessing functions of digital imaging. (F8)
13. Identify the post-processing options of digital imaging. (F8)
14. Identify the characteristics of a diagnostic quality radiographic digital image.
15. Identify common radiographic artifacts and their cause.

## **IMAGING PROCEDURES**

With at least **75%** accuracy, the student will:

1. List all of the body systems.
2. Identify the pertinent organs and explain their function of each body system.
3. Identify and explain the function of human cellular components.

With at least 75% accuracy, the student will:

1. List and describe the routine and special projections of the following anatomical structures:

Shoulder girdle and upper extremity	Digestive system
Pelvic girdle and lower extremity	Urinary system
Bony thorax	Skull and facial bones
Vertebral column	Sinuses and mastoids
Respiratory system	

2. Assess the routine and special projections of the following anatomical structures using established evaluation criteria:

Shoulder girdle and upper extremity	Digestive system
Pelvic girdle and lower extremity	Urinary system
Bony thorax	Skull and facial bones
Vertebral column	Sinuses and mastoids
Respiratory system	

3. Identify the structures demonstrated in the routine and special projections of the following anatomical structures:

Shoulder girdle and upper extremity	Digestive system
Pelvic girdle and lower extremity	Urinary system
Bony thorax	Skull and facial bones
Vertebral column	Sinuses and mastoids
Respiratory system	

With at least 75% accuracy, the student will:

1. Identify and describe features of the equipment pertinent to special procedures. (C15)
2. Describe the basic guidelines for contrast media usage.
3. Identify the basic contrast media used in:

Arteriography	GI radiography
Venography	Urinary radiography
Pneumography	Reproductive system radiography
Myelography	Arthrography

4. Explain the specialized radiographic procedures for:

Body section radiography	Ultrasound
Image intensification	Computed tomography

Foreign body localization  
Cineradiography

Magnetic resonance imaging  
Nuclear medicine

### PATIENT CARE AND EDUCATION

With at least **75%** accuracy, the student will:

1. Define the terms associated with radiologic technology and other medical imaging modalities.
2. Define the most common prefixes used in the medical field.
3. Define the most common root words used in the medical field.
4. Define the most common suffixes used in the medical field.

With at least 75% accuracy, the student will:

1. Explain the importance of ethical behavior in the allied health professions. (F8,13,17)
2. Identify acceptable ethical behavior in the allied health professions. (F8,13,17)
3. Identify the ethical and medical legal issues associated with the allied health professions. (F8,13,17)
4. Evaluate the patient's condition upon entering the radiology department. (F8-10)
5. Identify the symptoms of common emergencies encountered in a radiology department.
6. Identify the drugs and their applications that are common to radiographic procedures and emergencies commonly encountered in a radiology department.
7. Identify the biological factors that affect drug actions. (F12)
8. Identify the methods of drug administration.
9. Describe the venipuncture procedure.
10. Identify the symptoms of an adverse contrast media reaction.
11. Explain safe methods of transporting and moving patients.
12. Explain medical and surgical asepsis.

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### ARRT BOARD EXAM

The program coordinator will assist the students in registering for the ARRT board exam during the semester.

The type 21 testing fee of \$200.00 added to the student's tuition and fees will cover the cost of the ARRT board exam.

Students are **strongly encouraged** to take the ARRT Board Exam as soon as possible after the completion of this course.

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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 2235 course syllabus. I have read and understand the contents of this syllabus.

  
  

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Signature

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Date