

Introduction to Radiology and Patient Care (RADR 1309)



Credit: 3 semester credit hours (2 lecture and 3 lab hours)

Pre-requisite: Acceptance into the LIT Medical Radiologic Technology Program

INSTRUCTOR: *Brenda A. Barrow, M.Ed., R.T.*, Office 232 MPC, Phone 880-8848, brenda.barrow@lit.edu

Course description:

An overview of the historical development of radiography, basic radiation protection, an introduction to medical terminology, ethical and legal issues for health care professionals, and an orientation to the program and to the health care system. Patient assessment, infection control procedures, emergency and safety procedures, communication and patient interaction skills, and basic pharmacology are also included.

Purpose:

To introduce the student to the field of radiology. Included in this course will be history, organization, production of x-rays, radiation protection, darkroom techniques, digital imaging, terminology, and examinations performed within the radiology department.

Textbook And Materials:

- Adler, Carlton, *Introduction to Radiographic Sciences and Patient Care*, 6th edition, Saunders, 2016, ISBN#978-0-323-31579-1
- #882 Scan Trons, pencil, and basic calculator

Course Objectives

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

1. Define basic medical terms
2. Identify ethical and legal standards
3. Explain basic radiation protection practices
4. Assess patient conditions.
5. Recognize emergency situations and identify appropriate response. Identify relevant pharmaceuticals and their applications.

Course Outline Lecture:

- I. *History of Radiology*
 - a. Important people and their discoveries
 - b. American Society Radiologic Technologists
 - c. Imaging equipment
- II. *Role of Each Member in the Radiology Team*
 - a. Diagnostic department
 - b. Special modalities
 - c. Employment opportunities
 - d. Hospital Organizational Chart

RADR 1309
Course Syllabi

- e. Professional, accrediting, and credentialing agencies
- III. *Radiology Ethics & Law*
 - a. Professional ethics
 - b. Professional etiquette
 - c. Patient Care Partnership
 - d. Professional Standards of Conduct
 - e. Legal terms
- IV. *Health Record*
 - a. HIPPA
 - b. Hospital Information Systems
- V. *Radiation Physics*
 - a. Atomic Structure
 - b. Electromagnetic Radiation
 - c. Production of Radiation
 - d. Image Production Equipment
- VI. *Fundamentals of Radiographic Exposure*
 - a. MA
 - b. Time
 - c. Distance (Inverse Square Law)
 - d. Density (Square Law)
 - e. KVP (15% rule)
 - f. Contrast
 - g. Geometric Factors
- VII. *Image Formation and Quality Control*
 - a. Film
 - b. Screens
 - c. Grids
 - d. Beam Restrictors
 - e. Filtration
 - f. Darkroom Equipment
 - g. Digital Imaging
- VIII. *Radiation Biology*
 - a. Sources of radiation
 - b. Cell radiosensitivity
 - c. Radiation effects
 - d. Radiation units
- IX. *Radiation Protection*
 - a. Principles of radiation protection
 - b. Types of radiation monitors

Course Outline Lab:

- I. *Introduction and description of the Lab*
- II. *Moving and Transferring Patients*
 - a. Body Mechanics
 - c. Positioning the Patient for Examinations
 - d. Transfer of Patients

RADR 1309
Course Syllabi

- e. Immobilization Devices
- III. *Vital Signs*
 - a. Temperature
 - b. Pulse
 - c. Respiration
 - d. Blood Pressure
 - e. O² administration
 - f. EKG demonstration
- IV. *Medical Asepsis and Infection Control*
 - a. Handwashing
 - b. Sterile Technique
 - c. Protection of Self and Others
 - d. Cleaning
 - e. Isolation
- V. *Medical Emergencies*
 - a. Respiratory Failure
 - b. Cardiac Failure
 - c. Airway Obstruction
 - d. Diabetic Patient
 - f. Shock
 - g. Stroke
- VI. *Care of Special Patients*
 - a. Pediatrics
 - b. Geriatrics
 - c. Contrast Media Exams
- VII. *Contrast Media*
 - a. Types of contrast media
 - b. Selection criteria
- VIII. *Contrast and Drug Preparation, Injections and Venipuncture*
 - a. Draw contrast media
 - b. Venipuncture
 - c. Pharmacology
- IX. *Radiology Equipment, Film Exposure and Processing*
 - a. Expose and process images
- X. *Radiographic Identification*
 - a. Chest
 - b. Abdomen
 - c. Extremities
 - d. Spines
- XI. *Contrast Exams*

Grade Scale:

RADR 1309
Course Syllabi

The Radiology courses have elevated grade scales to prepare the students for the national exam they will take at the end of the program. The final grade will be determined by taking an average of all tests (2) and the comprehensive final examination.

100 - 93 = A
84 - 92 = B
77 - 83 = C
66 - 76 = D *
65 & BELOW = F*

*** STUDENTS SCORING BELOW A 77 WILL NOT BE ALLOWED TO PROGRESS WITHIN THE RADIOLOGY PROGRAM.**

Course Evaluation:

Grades will be determined from an average of *two major tests* and a *comprehensive final*. Lab material will be tested during the lecture component. There will be six task (check-offs) that will have to be completed and signed off on by an instructor for the student to pass the course. These will be graded on a Pass\Fail basis. **All check-offs must be completed by August 6.**

Students not completing the assignments for lecture and lab will be given an incomplete in the course and will not progress within the radiology program!

Course Requirements:

1. **REPORTS** -- Each student will be required to report on **three** current events/news releases. These may be obtained from newspapers, internet, or medical journals. The current event or newsrelease must be related to the field of radiology (diagnostic, radiation therapy, CT, sports medicine, radiation danger...). The current event or newsrelease *must have been written in the past year*. Write a summary report of the current event. Include a paragraph about your feelings on the information: is it a good idea, bad idea, how can you implement into your career... Provide a copy of the article and bibliographical information of the source (author, title, date of publication, name of journal, newspaper, magazine, or URL for web information). **Reports are due August 6.** *If the report is not turned in or is incomplete **two (2) points** will be taken off the final exam for each class the reports are late.*
2. **CPR** - must be completed prior to completion of RADR-1309. If you take CPR outside of LIT, it must be **Health Care Provider CPR**. CPR will be offered here at LIT. The cost will be \$35. This must be paid in advance. Please call LIT Workforce Training Department at 880-8114 or go by TC 110 to schedule. **CPR must be completed by August 6.**
3. **PHYSICAL** – the provided physical form must be completed and returned by August 6. A copy of your shot record and proof of Hepatitis B vaccine and TB vaccine and all other required shots must be turned in with the physical.
4. **MALPRACTICE INSURANCE** – Money Order \$13.00 Bill Beatty Insurance (may leave recipient blank if you are an alternate) must be turned in by August 6.

RADR 1309
Course Syllabi

5. **MARKERS** – Right and Left lead markers for radiographic identification will be ordered. These will contain your 3 initials to identify you as the radiographer who took the image. We will order you 2 sets. Pay \$16 by **August 6**.

Course Policies:

1. No food, drinks, or use of tobacco products in class.
2. Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
3. Recording devices may be used except during test reviews and when otherwise stated by the instructor.
4. Lap top computers, I-pad... may be used to take notes during class but may not be used to “surf” the internet, look-up answers, nor anything not directly related to note taking.
5. Do not bring children to class.
6. **Attendance Policy:** Class attendance is important to ensure that a student receives the knowledge and skills necessary to be successful in the Radiologic Technology program. Students are expected to be in class on time. If a student is tardy they may enter only if they do so quietly.

When it becomes necessary to miss a session, it is the responsibility of the *student* to contact the instructor and to inquire about assignments. I will *not* distribute the PowerPoints missed. The student must get the notes from a classmate. If a major test is missed, the test will be administered at the first day the student returns to class or at a time designated by the instructor. There will be a **ten (10) point** reduction for make-up exams.

Disabilities Statement:

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Course Schedule: SUMMER SESSION II 2015
LECTURE CONTENT (8:00 -9:20)
All date are tentative.

JULY 9	Study skills p. 29 – 32 & Introduction & History of X-Ray, <i>CH1</i>
JULY 13	Members of Radiology & Health Professions Team <i>CH. 2 & 6</i>
JULY 14	Introduction to Blackboard and Physicals (NANCE)
JULY 15	Medical Ethics & Law, <i>CH. 24 & 26 (case studies)</i>
JULY 16	Radiographic Physics
JULY 20	Radiographic Tube & X-ray Production, <i>CH 8</i>
JULY 21	review
JULY 22	TEST I
JULY 23	Go over test & Prime Factors
JULY 27	Inverse Square Law, <i>CH. 7 & 8</i>
JULY 28	kVp, Contrast, & Density, <i>CH. 7 & 8</i>
JULY 29	Radiographic Image Formation & Fluoroscopy (PROCESSING & FILM), <i>CH. 7 & 8</i>
JULY 30	Digital Imaging (class will be held in lab)
AUG 3	Geometric Factors & Image Accessories (SCREENS, GRIDS, & EQUIPMENT), <i>CH. 7 & 8</i> & review
AUG 4	TEST II
AUG 5	Go over test
AUG 6	Radiation Biology & Protection, <i>CH 9 (REPORTS, MONEY ORDER, PHYSICALS, CPR ARE DUE!!!)</i>
AUG 10	Handbook Review (bring handbook)
AUG 11	FINAL 8:00
AUG 12	Receive clinical assignments

LAB CONTENT 2015 (9:25 – 11:20)

All date are tentative.

JULY 9	Body Mechanics, Patient Transfer, & Immobilization) <i>CH. 13 & 14</i> (CHECK-OFF)
JULY 13	Vital Signs (LECTURE & DEMO), <i>CH15 & 16</i>
JULY 14	Blood Pressure (CHECK-OFF)
JULY 15	Health Record & Medical Law <i>CH 25</i>
JULY 16	Positioning Terms & Radiographs Chest and Upper Limb Radiographs (PowerPoint in Blackboard)
JULY 20	Infection Control & Medical Asepsis <i>CH. 17, 18 & 19</i> (ROBINSON)
JULY 21	Practice Radiograph Test
JULY 22	Medical Emergencies, <i>CH. 20</i> (BLAND)
JULY 23	Pharmacology and Drug Administration, <i>CH. 21 & 22</i>
JULY 27	IV Insertion (CHECK-OFF)
JULY 28	Respiratory Demonstration & Abdomen & Lower Limb Radiographs, (PowerPoint in Blackboard)
JULY 29	Practice Radiograph Test
JULY 30	Digital Imaging, <i>CH 7 & 8</i> (make digital exposures)
AUG 3	Contrast Media & Radiographs (material tested on final), Ch 23
AUG 4	Franks Medical Mart -- uniforms
AUG 5	Radiographs of Spines, (PowerPoint in Blackboard)
AUG 6	Practice Radiograph Test (ALL CHECK OFFS MUST BE COMPLETE) (MEET & GREET PARTY WITH 2nd YEARS 11:00)
AUG 10	Demonstrations & Photos
AUG 11	<i>Final combined with lecture</i>
AUG 12	<i>No lab</i>