



## **Introduction to Radiography (RADR 1201 – 3A1)**

### **INSTRUCTOR CONTACT INFORMATION**

|                  |                                  |
|------------------|----------------------------------|
| Instructor:      | Brenda A. Barrow, M.Ed., R.T.    |
| Email:           | babarrow@lit.edu                 |
| Office Phone:    | 409-241-9829                     |
| Office Location: | 232 Multipurpose Center          |
| Office Hours:    | office hours posted outside door |

### **CREDIT**

2 Semester Credit Hours (2 hours lecture, 0 hours lab)

### **MODE OF INSTRUCTION**

This course will be taught face – to - face in a multimedia format. Lectures, demonstrations, and discussion will be utilized to enhance the cognitive learning process. Students will have outside reading and out of class homework assignments periodically in the semester. The student will be required to utilize reading, writing and listening skills.

### **PREREQUISITE/CO-REQUISITE:**

Acceptance into the LIT Radiologic Technology Program

### **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.

### **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. Relate role of radiography to healthcare
5. Demonstrate a basic understanding of the production of x-rays for diagnostic purposes

### **REQUIRED TEXTBOOK AND MATERIALS**

- Adler, Carlton, *Introduction to Radiologic & Imaging Sciences & Patient Care*, 8<sup>th</sup> edition, Saunders, ISBN# 978-0-323-87220-1
- A computer with internet access. The computer must be able to run current programs and platforms such as Windows 10 and the internet must be reliable and robust. The

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course has an online component and will move to a fully online format if necessary. The computer must have a camera and microphone for online conferencing.

- Chrome seems best browser to play the videos.
- 882 scan-trons

### **COURSE POLICIES:**

1. No food, drinks, or use of tobacco products in class.
2. Phones, 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. It shall be considered a breach of academic integrity (cheating) to use or possess on your body any of the following devices during any examination unless it is required for that examination and approved by the instructor: Cell phone, smart watch/watch phone, laptop, tablet, electronic communication devices (including optical), and earphones connected to or used as electronic communication devices.
  - *This is a violation of the Radiologic Technology Student Handbook and will result in dismissal from the program.*

Students with special needs and/or medical emergencies or situations should communicate with their instructor regarding individual exceptions/provisions. It is the student’s responsibility to communicate such needs to the instructor.

6. Do not bring children to class.
7. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an ‘F’ in the course.
8. **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.

To encourage class attendance, students that miss two (2) or more class sessions in a unit will have a five (5) point reduction on that test. Students who are tardy four (4) times will equal one (1) absence.

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

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time designated by the instructor. There will be a **ten (10) point** reduction for make-up exams.

### DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the [Academic Calendar](#). If you stop coming to class and fail to drop the course, you will earn an “F” in the course.

### STUDENT EXPECTED TIME REQUIREMENT

For every hour in class (or unit of credit), students should expect to spend at least two to three hours per week studying and completing assignments. For a 3-credit-hour class, students should prepare to allocate approximately six to nine hours per week outside of class in a 16-week session OR approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

### RADR 1201 Introduction to Radiography COURSE CALENDAR Mon – Thurs 10:45 – 12:00 (all dates are tentative and subject to change)

| DATE           | TOPIC   | READINGS<br>(Due on this Date) | ASSIGNMENTS<br>(Due on this Date) |
|----------------|---|--------------------------------|-----------------------------------|
| JULY 10        | Introduction to course – Introduction to Imaging and Radiologic Sciences                    | CH 1                           |                                   |
| JULY 11        | Professional Organizations  | CH 2                           |                                   |
| JULY 15        | Radiology Administration  | CH 6                           |                                   |
| JULY 16        | Professional Ethics   | CH 24                          |                                   |
| JULY 17        | Ethics cont.  |                                | Turn in scan-trons                |
| <b>JULY 18</b> | <b>TEST I - (last day to drop/withdraw without academic penalty 7-19)</b>                   |                                | <b>TEST I</b>                     |
| JULY 22        | Go over test & Radiographic Physics   | CH 7 & 8                       |                                   |
| JULY 23        | Radiographic Equipment (tube parts)   | CH 7 & 8                       |                                   |
| JULY 24        | Radiographic Imaging (prime factors) Radiological Math                                      | CH 7 & 8                       |                                   |
| JULY 25        | Image Quality Factors   | CH 7 & 8                       |                                   |
| JULY 29        | Image Accessories   | CH 7 & 8                       |                                   |
| JULY 30        | Geometric Factors   | CH 7 & 8                       |                                   |
| JULY 31        | Review  |                                | Report Due                        |
| <b>AUG 1</b>   | <b>TEST II</b>  |                                | <b>TEST II</b>                    |
| AUG 5          | Go over test & Fluoroscopy & Mobile Imaging   | CH 8                           |                                   |
| AUG 6          | Radiation Biology & Protection  | CH 9                           |                                   |
| AUG 7          | Radiation Biology & Protection cont. <b>last day to drop/withdraw with academic penalty</b> | CH 9                           |                                   |

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|---------------|-------------------|--|--------------|
| AUG 8         | Handbook Policies |  |              |
| AUG 12        | Digital Imaging   |  |              |
| <b>AUG 13</b> | <b>FINAL EXAM</b> |  | <b>FINAL</b> |
| AUG 14        |                   |  |              |

### COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Grades will be determined from an average of **two major tests, a comprehensive final, and a report.**

- **REPORT** -- Each student will be required to submit a report on: *Career Choice in Imaging Science*. Include why you chose this modality, educational requirements, job duties, expected salary, and where you see yourself in 10 years. The report must be at least one page & computer generated. **Reports are due July 31 at 5:00 pm.**
- **DISCUSSION BOARD** -- Students will be expected to participate in Blackboard discussion boards.
- **TEST** – Tests will be administered on scan-tron. Each student must turn in 3 blank #882 scan trons paperclipped together, with your name on a post-it note on top by **July 17** (you can turn in all 6 together for both classes).
- **GroupMe App** – the program utilizes GroupMe app to communicate. Please download the app. Mrs. Barrow will add you to the group. This is very important!!

### GRADING SCALE

*The Radiology courses have elevated grade scales to prepare the students for the national exam they will take at the end of the program.*

100 - 93 = A

84 - 92 = B

77 - 83 = C

66 - 76 = D \*

65 & BELOW = F\*

Test 1 – 30%

Test 2 – 30%

Final – 30%

Report – 10%

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

### ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Student Catalog & Handbook at <http://catalog.lit.edu/content.php?catoid=3&navoid=80#academic-dishonesty>.

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### **TECHNICAL REQUIREMENTS**

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

### **DISABILITIES STATEMENT**

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email [specialpopulations@lit.edu](mailto:specialpopulations@lit.edu). You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

### **STUDENT CODE OF CONDUCT STATEMENT**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu). Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

### **STARFISH**

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

### **Course Outline:**

#### *CHAPTER 1 - Introduction to Imaging and Radiologic Sciences*

- a) History of Medicine and Radiologic Technology
- b) Modalities in Radiologic Technology
  - a. Diagnostic technologist

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- b. Nuclear medicine
- c. Radiation therapy
- d. Bone densitometry
- e. Computed technology
- f. Magnetic resonance imaging

#### *CHAPTER 2 – Professional Organizations*

- a) Accreditation & Certification
  - i) JRCERT
  - ii) TJC
  - iii) ARRT
  - iv) TMB
- b) Professional societies
  - i) international
  - ii) national
  - iii) Texas

#### *CHAPTER 6 – Radiology Administration*

- a) Organizational structure
  - i) LIT
  - ii) radiology program
  - iii) hospitals
- b) Regulatory agencies
- c) Employee characteristics

#### *CHAPTER 24 – Professional Ethics*

- a) Professional ethics
- b) Professional etiquette
- c) ARRT Code of Ethics
- d) ARRT Rules of Ethics
- e) Patient Care Partnership
- f) Professional Standards of Conduct
- g) Legal terms

#### *Radiation Physics*

- a) Atomic Structure
- b) Electromagnetic Radiation
- c) Production of Radiation
- d) Image Production Equipment

#### *CHAPTER 7 Radiographic Imaging and CHAPTER8 Radiographic and Fluoroscopic Equipment*

- a) X-ray tube parts
  - a. cathode
  - b. anode
- b) Table
- c) Tube support systems

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- d) Operator console
- e) Prime factors
  - a. MA
  - b. Time
  - c. KVP
  - d. SID
- f) Radiological math
  - a. Inverse Square Law
  - b. Square Law (Exposure Maintenance Law)
  - c. 15% rule
- g) Image Quality factors
  - a. Image Receptor exposure
  - b. Contrast Resolution
  - c. Geometric Factors
    - i. magnification
    - ii. distortion
    - iii. spatial resolution
- h) Image Accessories
  - a. Grids
  - b. Beam Restrictors
  - c. Filtration
- i) Digital Imaging

### *CHAPTER 9 Radiation Protection and Radiobiology*

- a) Sources of radiation
  - a. natural/background
  - b. man made
- b) Radiation units
- c) Radiation Protection
  - a. patient protection
  - b. technologist protection
- d) Principles of radiation protection
- e) Types of radiation monitors