

## **Introduction to Radiography (RADR 1201)**

**Credit:** 2 semester credit hours (2 lecture hours)

**Pre-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.

### **Textbook And Materials:**

- Adler, Carlton, *Introduction to Radiographic Sciences and Patient Care*, 7<sup>th</sup> edition, Saunders, 2019, ISBN#978-0-323-56671-1
- 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 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.

### **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

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

#### *CHAPTER 2 – Professional Organizations*

- a) Accreditation & Certification
- b) Professional societies

#### *CHAPTER 6 – Radiology Administration*

- a) Organizational structure
- b) Regulatory agencies
- c) Employee characteristics

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#### *CHAPTER 24 – Professional Ethics*

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

#### *Radiation Physics*

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

#### *CHAPTER 7 Radiographic Imaging and CHAPTER 8 Radiographic and Fluoroscopic Equipment*

- a) X-ray tube parts
  - a. Cathode
  - b. anode
- b) Table
- c) Tube support systems
- d) Operator console
- e) Prime factors
  - a. MA
  - b. Time
  - c. KVP
  - d. Distance
- 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
  - c. Geometric Factors
- h) Image Accessories
  - a. Grids
  - b. Beam Restrictors
  - c. Filtration
- i) Digital Imaging

#### *CHAPTER 9 Radiation Protection and Radiobiology*

- a) Sources of radiation
- b) Radiation units
- c) Radiation Protection
  - a. Patient protection
  - b. Technologist protection
- d) Principles of radiation protection
- e) Types of radiation monitors

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### Grade 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 I – 30%

Test 2 – 30%

Final – 30%

Report – 10%

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

### 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.

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.

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9. Any student who fails to pass a Unit test will be required to attend mandatory tutorial. This may be done before or after class or at lunch break. The tutorial may be individual or in a group session.

### **Technical Requirements**

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:

[https://help.blackboard.com/Learn/Student/Getting\\_Started/Browser\\_Support/Browser\\_Checker](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support/Browser_Checker)

A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

### **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. You may also visit the online resource at <https://www.lit.edu/student-success/special-populations>

### **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) or obtained in print upon request at the Student Services Office. 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.

