



**LAMAR INSTITUTE
OF TECHNOLOGY**

Intermediate Radiographic Procedures (RADR 2401 – 3A1)

CREDIT

4 Semester Credit Hours (3 hours lecture, 2 hours lab)

MODE OF INSTRUCTION

This course will be taught face-to-face in a multimedia format. Lectures, demonstrations, lab experiments 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 both reading and listening skills.

PREREQUISITE/CO-REQUISITE

RADR 1411 Basic Radiographic Procedures

COURSE DESCRIPTION

This course is a continuation of the study of the proper manipulation of radiographic equipment, positioning and alignment of the anatomical structure and equipment, and evaluation of images for proper demonstration of anatomy.

COURSE OBJECTIVES

By the end of the semester of instruction the student will be able to:

1. Manipulate equipment
2. Perform intermediate level procedures in positioning lab
3. Align anatomical structures and equipment
4. Evaluate images
5. Correctly define and demonstrate common positioning and terminology
6. Discuss the different types of contrast media and their use
7. Discuss Radiation Therapy basics
8. Discuss the steps for pediatric radiography
9. Discuss characteristics of trauma radiography
10. Understand the basics of pharmacology and how it relates to patients in radiology
11. Identify basic anatomy of CT head.

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 and in Starfish

REQUIRED TEXTBOOK AND MATERIALS

- 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.
- Bontrager, Kenneth: *Radiographic Positioning and Related Anatomy* 11th edition, C.V. Mosby, 2020, ISBN# 9780323936132
- Bontrager, Kenneth: *Workbook for Radiographic Positioning and Related Anatomy* 11th edition, C.V. Mosby, 2020, ISBN# 9780323937429
- #882 Scan-trons and pencils
- Clover Learning Student Plan – purchased previously in RADR 1313

ATTENDANCE

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. The student is responsible for getting 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. **Ten points** deduction for make-up exams unless previously approved by the instructor for extenuating circumstance.

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.

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.

RADR 2401 Positioning II - COURSE CALENDAR Tues/Thurs 12:30 – 1:45 All dates are tentative

DATE	TOPIC	READING (Due on this Date)	ASSIGNMENTS (Due on this Date)
Jan 20	Introduction to course & Pharmacology		
Jan 22	Contrast Media		
Jan 27	Anatomy of Upper Gastrointestinal System	CH 12	
Jan 29	Positioning of the Upper GI System	CH 13	
Feb 3	Anatomy of the Lower Gastrointestinal System		
Feb 5	Positioning of the Lower GI System & Review	CH 12	
Feb 10	Anatomy & Positioning of the Gallbladder and Biliary System		

Feb 12	Anatomy of the Urinary System	CH 14	Unit I Workbook due
Feb 17	Positioning of Urinary System		
Feb 19	Review & Prep Bowl		
Feb 24	TEST I		TEST I Clover Pre-Test Review
Feb 26	Go over test		
Mar 3	Anatomy of the Cranium	CH 11	
Mar 5	Positioning of the Cranium		Unit II HOMEWORK #1
<i>Mar 10&12</i>	SPRING BREAK		
Mar 17	Anatomy & Positioning of the Sinuses		Clover Remediation due
Mar 19	Anatomy & Positioning of the Facial Bones & Orbits		Unit II HOMEWORK #2
Mar 24	CT Basic Principles & Head anatomy		Image Critique of headwork and CT
Mar 26	Review & Prep Bowl		Unit II Workbook due
Mar 31	TEST II		TEST II Clover Pre-Test Review
Apr 2	Go over test & Review		
Apr 7	Trauma (tested unit 3)		Clover Remediation due
Apr 9	Study		
Apr 14	prep bowl review all classes		
Apr 16	Comprehensive Unit I & II		Comp Exam
Apr 21	Imaging Transgender Patient – LGBTQ		Video & PP in Blackboard
Apr 23	STERILE TECHNIQUES - Fruscione		
Apr 28	Go over test & Sialography & Sensory organs		
Apr 30	Pediatrics & Reproductive Procedures		Unit III HOMEWORK
May 5	Pathology presentations		
May 7	TEST III		TEST III Clover Pre-Test Review
May 12	Go over test (optional)		

COURSE EVALUATION

- There will be four (4) major tests
- The numerical grade for the lab will be determined by averaging the three (3) lab practical exams and daily assignments.
- Blackboard will be utilized for some quiz/homework assignments. If a student misses an assignment it **may not** be made up. Quiz/homework grades will be averaged for one (1) test grade. Students will be allowed to drop their **lowest** quiz grade at the end of the semester. If more than one quiz is missed a zero (0) will be given. This is already configured in Blackboard gradebook.
- Assignments will be made from the Workbook and will count as homework grades. These will be administered through Blackboard.

- There will be a **ten (10) point** reduction for make-up exams unless previously approved by the instructor for extenuating circumstance.

Final grades will be calculated according to the following criteria:

TEST I, II, & III (20% each)	60%
Quiz Average	10%
Final Exam	15%
Laboratory Performance	15%

GRADING SCALE

A = 93 - 100

B = 84 - 92

C = 77 - 83

D = 60 - 76

F = 0 - 59

*** A minimum of 77% is required for successful completion of this course!** LIT does not use +/- grading scales

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. 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. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses

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.

ADDITIONAL COURSE POLICIES/INFORMATION

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. Late work for daily assignments is not accepted. The lowest assignment will be dropped.

8. 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. There will be remediation assignments in Clover Learning Student Plan. *These must be successfully completed or the student will not be allowed to take the next unit exam.*

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>.

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.

COURSE OUTLINE:

I. CONTRAST MEDIA

- A. Classify different contrast medias
 1. radiolucent
 2. radiopaque
 - a. ionic
 - b. non-ionic
 3. radionuclide
- B. List the characteristics and composition of contrast medias
 1. viscosity
 2. toxicity
 3. iodine content
 4. osmolality
 5. miscibility
 6. persistence
- C. List the routes of drug administration
 1. enteral
 2. parenteral
 3. pulmonary
- D. Discuss the selection of contrast medias
- E. Describe the different classifications of reactions and the treatment for each classification of reaction
 1. mild
 2. moderate

3. severe
- F. Identify the reactions and complications resulting from the use of contrast agents.
 1. Overdose
 2. Anaphylactic
 3. Cardiovascular
 4. Psychogenic

II. Pharmacology

- A. Define common terms used in pharmacology.
- B. Identify the general guidelines for drug administration.
- C. Identify the principles of intravenous (IV) therapy
- D. Define local anesthesia.
- E. Define conscious sedation.
- F. Identify the various types of pharmacologic agents used in conjunction with the advanced radiographic and interventional procedures.
- G. List the medications used in cases of cardiac or respiratory emergencies.
- H. List the principles of medication dose calculation.
- I. Define the medication reconciliation form and its purpose.

III. Upper Gastrointestinal System

- A. Identify anatomical landmarks of the UGI system
- B. Identify anatomical structure and function of the UGI system
 1. pharynx
 2. esophagus
 3. stomach
- C. Discuss the different contrast medias used to visualize the UGI system
 1. barium sulfate
 2. gaseous media
 3. water soluble iodine
- D. Demonstrate the specific knowledge and skills associated with positioning of the UGI system
 1. UGI
 2. esophagus
 3. soft tissue neck
- E. Describe Sialography
 1. Identify the anatomy of the salivary glands.
 - a. List the indications and contraindications for the procedure.
 - b. Identify the type of contrast media used for the procedure.
 - c. Describe the patient preparation for the procedure.
 - d. List the specialized equipment necessary for the procedure.
 - e. Describe the patient positioning for the procedure.

IV. Lower Gastrointestinal System

- A. Identify anatomical landmarks of the Lower GI system
- B. Identify anatomical structure and function of the Lower GI system
 1. small bowel
 2. large intestine
- C. Discuss the different contrast medias used to visualize the Lower GI system

1. barium sulfate
2. air
3. water soluble iodine

D. Demonstrate the specific knowledge and skills associated with positioning of the Lower GI system

1. SBS
2. BE
 - a. single column
 - b. colon with air

V. Gallbladder and Biliary Ducts

A. Identify anatomical landmarks of the Biliary system

B. Identify anatomical structure and function of the Biliary system

1. liver
2. pancreas
3. gallbladder
4. biliary tree

C. Discuss radiographic examinations of the biliary system

1. cholangiogram
2. ERCP
3. Sonography

VI. Urinary System

A. Identify anatomical landmarks of the Urinary system

B. Identify anatomical structure and function of the Urinary system

1. kidneys
2. ureters
3. bladder
4. urethra

C. Discuss the different contrast media used to visualize the Urinary system and the route of administration

1. IV
2. retrograde

D. Demonstrate the specific knowledge and skills associated with positioning of the Urinary system

1. IVU/IVP
2. retrograde IVU/IVP
3. cystogram
4. VCUG

VII. Reproductive Procedures

A. Identify the anatomy of the female reproductive system.

B. List the indications and contraindications for the hysterosalpingograms.

C. Identify the type of contrast media used for hysterosalpingograms.

D. Describe the patient preparation for hysterosalpingograms.

E. List the specialized equipment necessary for hysterosalpingograms.

F. Describe the patient positioning for hysterosalpingograms.

G. Explain the special considerations for imaging pregnant females.

VIII. Skull and Cranial Bones

A. Identify Anatomy of the cranium

1. frontal
2. right and left parietal
3. occipital
4. right and left temporal
5. sphenoid
6. ethmoid

B. Demonstrate the specific knowledge and skills associated with positioning the cranium

1. landmarks
2. morphology
3. planes

C. Visualize how the radiographs of the skull should look, including structures shown and proper patient positioning

1. PA/AP
2. AP Axial (Townes)
3. Parieto-acanthial (Waters)
4. Lateral
5. SMV

IX. Facial Bones

A. Identify Anatomy of the facial bones

1. maxillae
2. nasal
3. lacrimal
4. zygoma
5. inferior nasal conchae
6. palatine
7. mandible
8. vomer

B. Demonstrate the specific knowledge and skills associated with positioning the facial bones

1. parieto –orbital (Rhese)
2. oblique infer-superior
3. axiolateral oblique
4. SMV

C. Visualize how the radiographs of the facial bones should look, including structures shown and proper patient positioning

X. Paranasal Sinuses

A. Identify Anatomy of the sinuses

1. frontal
2. maxillary
3. sphenoid
4. ethmoid

B. Demonstrate the specific knowledge and skills associated with positioning the sinuses

1. PA Axial (Caldwell)
2. Parieto-acanthial (Waters)
3. transoral
4. Lateral
5. SMV

C. Visualize how the radiographs of the sinuses including structures shown and proper patient positioning.

XI. Identify basic anatomy of the skull and brain on CT images

A. identify lobes of brain

1. cerebrum
2. cerebellum
3. pons
4. medulla oblongata

B. identify sinuses

1. frontal
2. ethmoid
3. sphenoid
4. maxillary

C. identify ventricles

1. lateral
2. third
3. fourth

D. identify other anatomy

1. bony nasal septum
2. petrous ridges
3. mastoid air cells
4. sylvian fissure
5. circle of Willis
6. optic nerve

XII. Discuss basic procedures for a CT brain

A. Gantry & couch parts

B. Contrast media & consent

XIII. Pediatrics

A. Discuss the differences between adult and pediatric imaging

B. Discuss the importance of identifying and reporting child abuse

XIV. Trauma

A. List the types of trauma centers

B. Describe special equipment used for trauma patients

C. Discuss manipulation of equipment and positions for trauma patients

XIV. Radiation Therapy

A. Discuss the history of radiation therapy

B. Identify different types of cancer treatment

1. Curative
2. Palliative

C. Discuss the types of radiation therapy

1. External beam therapy
2. Brachytherapy
3. Chemotherapy