



Intermediate Radiographic Procedures (RADR 2401)

Credit: 4 semester credit hours (3 hours lecture, 2 hours lab)

Prerequisite: 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.

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* 10th edition, C.V. Mosby, 2020, ISBN# [978-0323399661](#)
- Bontrager, Kenneth: *Workbook for Radiographic Positioning and Related Anatomy* 10th edition, C.V. Mosby, 2020, ISBN#978-0323694230
- #882 Scan-trons and pencils

Reference Books:

- *Introduction to Sectional Anatomy 2nd* , Michael E. Madden, Lippincott, ISBN# 0-7817-6342-8

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
3. Align anatomical structures and equipment
4. Evaluate images
5. Correctly define and demonstrate common positioning and terminology
6. Demonstrate a basic understanding of mammography
7. Discuss the different types of contrast media and their use
8. Discuss Radiation Therapy basics

Course Outline:

I. CONTRAST MEDIA

- A. Classify different contrast medias
 1. radiolucent
 2. radiopaque

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- 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
 - a. operative
 - b. laparoscopic
 - c. T-tube
2. ERCP
3. Sonography

VI. Urinary System

A. Identify anatomical landmarks of the Urinary system

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- 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. panorex
5. 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.

IX. Pediatrics

A. Discuss the differences between adult and pediatric imaging

B. Discuss the importance of identifying and reporting child abuse

XII. 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

XIII. Radiation Therapy

A. Discuss the history of radiation therapy

B. Identify different types of cancer treatment

1. Curative
2. Palliative

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- C. Discuss the types of radiation therapy
1. External beam therapy
 2. Brachytherapy
 3. Chemotherapy

Grade 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!**

Course Evaluation:

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

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.

9. BlackBoard will be utilized for all 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 Black Board gradebook.

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 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 Disability Act of 1990 and Section 504, 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 American with Disability 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)839-2018. You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](http://SpecialPopulations-LamarInstituteofTechnology.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 or obtained in print upon request at the Student Services Office.

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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.

<https://lit.edu/student-success/starfish>