



## **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:**

- Bontrager, Kenneth: *Radiographic Positioning and Related Anatomy* 9<sup>th</sup> edition, C.V. Mosby, 2018, ISBN# 979-0-323-39966-1
- Bontrager, Kenneth: *Workbook for Radiographic Positioning and Related Anatomy* 9<sup>th</sup> edition, C.V. Mosby, 2010, ISBN#978-0-323-481878
- #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

### **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

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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

**II. 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

**III. 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

#### ***IV. 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

#### ***V. 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

#### ***VI. 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

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

**VII. 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

**VIII. 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. Mammography (Bontrager and Bushong)**

A. Demonstrate knowledge of the history of mammography

B. Identify anatomical structure and function of the breast

C. Demonstrate basic knowledge associated with mammographic positioning

1. CC

2. MLO
  3. XCCL
  4. ID
- D. Discuss the important characteristics of a mammographic imaging system
1. long SID
  2. compression
  3. low ratio grid
  4. low kVp
- E. Describe the types of image receptors used for mammography
1. low dose screen/film
  2. digital
- F. Explain the differences between diagnostic and screening mammography
- X. *Cross-sectional anatomy***
- A. Discuss imaging modalities that utilize cross-sectional anatomy
  - B. Identify cross-sectional anatomy of the brain
  - C. Identify cross-sectional anatomy of the neck
  - D. Identify cross-sectional anatomy of the chest
  - E. Identify cross-sectional anatomy of the abdomen
  - F. Identify cross-sectional anatomy of the pelvis

### **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:**

Written Exams (3) & Quiz Average	60%
Laboratory Performance	15%
Comprehensive Final	25%

### **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

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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. **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.

### Technical Requirements (for courses using Blackboard)

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

[https://help.blackboard.com/enus/Learn/9.1\\_2014\\_04/Student/015\\_Browser\\_Support/015\\_Browser\\_Support\\_Policy](https://help.blackboard.com/enus/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy) 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 <http://www.lit.edu/depts/stuserv/special/defaults.aspx>

### 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.

