

RADR 2217 RADIOGRAPHIC PATHOLOGY



CREDIT: 2 semester credit hours

PREREQUISITE: RADR 1411 Basic Radiographic Procedures

COURSE DESCRIPTION: Disease processes and their appearance on radiographic images.

INSTRUCTOR: Sheryl Nance, BAAS, R.T.

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TEXTBOOK and MATERIALS:

- Eisenberg, Ronald: *Radiographic Pathology*, 5th edition, Mosby Inc., 2012. ISBN# 978-0-323-07847-4
- Medical Dictionary
- #882 Scan-trons and pencils

COURSE OBJECTIVES:

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

1. Classify types of diseases
2. Explain the pathogenesis of common diseases
3. Differentiate between normal and abnormal radiographic findings
4. Correlate normal and abnormal radiographic findings
5. Acquaint the student radiographer with basic medical terminology used to describe various conditions occurring in the human body
6. Introduce the student to some specialized imaging techniques
7. Use computer skills in preparing a case presentation

COURSE OUTLINE:

I. CHAPTER 1: Introduction to Pathology

- A. classify the more common diseases in their attenuation of x-rays
- B. determine the technical factor changes required for obtaining optimal quality radiographs in patients with various pathological conditions
 1. additive diseases
 2. destructive diseases
- C. define disease terminology
- D. classify diseases by their origin
 1. genetic and congenital
 2. acquired and inflammatory
 3. altered cell growth
- E. discuss the causes of disease
 1. endogenous
 2. exogenous
 3. idiopathic

4. iotrogenic
 5. nosocomial
- F. describe the various immune reactions of the body
- G. discuss the leading causes of death in the United States
- H. discuss the leading causes of death in Texas

II. CHAPTER 2: Specialized Imaging Techniques

- A. describe the theory of image production with special modalities and the body structures best demonstrated by each
1. ultrasound
 2. computed tomography
 3. magnetic resonance imaging
 4. positron emission tomography
 5. nuclear medicine

III. Neoplasia

- A. discuss the differences types of altered cell growth
1. atrophy
 2. hypoplasia
 3. hyperplasia
 4. hypertrophy
 5. neoplasia
- B. list the routes of metastasis
1. seeding
 2. lymphatic
 3. hematogenous
- C. describe the different types of cancer
1. carcinoma
 2. sarcoma
 3. lymphoma
 4. leukemia
- D. describe the method classifying a malignancy
1. grading
 2. staging
- E. list the risk factors of cancer using the American Cancer Society pre-screening recommendations
- F. discuss cancer statistics
- G. define some methods of cancer treatment
1. chemotherapy
 2. radiation therapy
 3. surgery
 4. immunotherapy
 5. hormone therapy

IV. CHAPTER 3: Respiratory System

- A. classify the more common diseases in their attenuation of x-rays and the technical factor changes required for obtaining optimal quality radiographs
1. additive disease
 2. destructive disease
- B. describe the physiology and functions of the respiratory system

- C. identify structures on both diagrams and radiographs of the respiratory system
- D. describe pathology of the respiratory system and their radiographic manifestations
 - 1. chronic
 - 2. acute
 - 3. congenital
 - 4. inflammatory
 - 5. neoplasia
 - a. benign
 - b. malignant

V. CHAPTER 4: Skeletal System

- A. classify the more common diseases in their attenuation of x-rays and the technical factor changes required for obtaining optimal quality radiographs
 - 1. additive disease
 - 2. destructive disease
- B. describe the physiology and functions of the skeletal system
- C. identify structures on both diagrams and radiographs of the skeletal system
- D. describe pathology of the skeletal system and their radiographic manifestations
 - 1. congenital
 - 2. inflammatory
 - 3. neoplasia
 - a. benign
 - b. malignant
 - 4. fractures
 - 5. vertebral disorders
- E. utilize creative thinking skills to alter position of the tube/film/patient during trauma and fracture radiography

VI. CHAPTER 5: Gastrointestinal System

- A. classify the more common diseases in their attenuation of x-rays and the technical factor changes required for obtaining optimal quality radiographs
 - 1. additive disease
 - 2. destructive disease
- B. describe the physiology and function of the gastrointestinal system
- C. identify structures on both diagrams and radiographs of the gastrointestinal system
- D. describe pathology of the gastrointestinal system and their radiographic manifestations
 - 1. esophagus
 - a. congenital
 - b. inflammatory
 - c. neoplasia
 - 1. benign
 - 2. malignant
 - 2. stomach
 - a. congenital
 - b. inflammatory
 - c. neoplasia
 - 1. benign
 - 2. malignant
 - 3. small bowel

- a. congenital
- b. inflammatory
- c. neoplasia
 - 1. benign
 - 2. malignant
- 4. large intestine
 - a. congenital
 - b. inflammatory
 - c. neoplasia
 - 1. benign
 - 2. malignant
- E. be familiar with the special procedures that are used when imaging particular pathologic conditions

VII. CHAPTER 6: Urinary System

- A. classify the more common diseases in their attenuation of x-rays
- B. describe the physiology and function of the urinary system
- C. identify structures on both diagrams and radiographs of the urinary system
- D. describe pathology of the urinary system and their radiographic manifestations
 - 1. congenital
 - 2. inflammatory
 - 3. neoplasia
 - a. benign
 - b. malignant
- E. be familiar with the special procedures that are used when imaging particular pathologic conditions

VIII. CHAPTER 7: Cardiovascular System

- A. describe the physiology and function of the cardiovascular system
- B. identify structures on both diagrams and radiographs of the cardiovascular system
- C. describe pathology of the cardiovascular system and their radiographic manifestations
 - 1. congenital
 - 2. acquired vascular
 - 3. valve disorders
- D. be familiar with the special procedures that are used when imaging particular pathologic conditions

IX. CHAPTER 8: Nervous System

- A. describe the physiology and function of the nervous system
- B. identify structures on both diagrams and radiographs of the nervous system
- C. describe pathology of the nervous system and their radiographic manifestations
 - 1. congenital
 - 2. infections
 - 3. neoplasia
 - a. benign
 - b. malignant
 - 4. trauma
 - 5. vascular
 - 6. degenerative

- D. be familiar with the special procedures that are used when imaging particular pathologic conditions

X. CHAPTER 9: Hematopoietic System

- A. describe the physiology and function of the hematopoietic system
- B. identify basic blood structures on diagrams
- C. describe pathology of the hematopoietic system and their radiographic manifestations
 - 1. RBC
 - 2. WBC
 - 3. Platelets

XI. CHAPTER 10: Endocrine System

- A. describe the physiology and function of the endocrine system
- B. identify structures on both diagrams and images of the endocrine system
- C. describe pathology of the endocrine system and their radiographic manifestations
 - 1. adrenal
 - 2. pituitary
 - 3. thyroid
 - 4. parathyroid
 - 5. pancreas
- D. be familiar with the special procedures that are used when imaging particular pathologic conditions

XII. CHAPTER 11: Reproductive System

- A. describe the physiology and function of the reproductive system
- B. identify structures on both diagrams and images of the reproductive system
- C. describe pathology of the reproductive system and their radiographic manifestations
 - 1. female
 - a. congenital
 - b. inflammatory
 - c. neoplasia
 - 1. benign
 - 2. malignant
 - 2. male
 - a. congenital
 - b. inflammatory
 - c. neoplasia
 - 1. benign
 - 2. malignant
- D. be familiar with the special procedures that are used when imaging particular pathologic conditions

XIII. CHAPTER 12: Miscellaneous Diseases

- A. describe nutritional disorders and their possible relationship to disorders of other organs
 - 1. vitamin deficiencies
 - 2. eating disorders
- B. describe miscellaneous disorders and their relationship to all organs
 - 1. Sarcoidosis
 - 2. Lupus
 - 3. Muscular Dystrophy

- 4. Melanoma
- C. describe hereditary abnormalities
- D. identify correct tube placement
 - 1. Endotracheal tube
 - 2. Central venous catheter
 - 3. Chest tube
 - 4. Pacemaker

GRADE SCALE: Numeric to letter grade conversion:

A=93=100

B=84=92

C=77=83

D=60=74

F=0-59

A MINIMUM OF 77% IS REQUIRED FOR SUCCESSFUL COMPLETION OF THIS COURSE!

COURSE EVALUATION:

- There will be four (4) major tests and a comprehensive final exam
- A pathology report and case study will be presented to the class
- Quizzes will be utilized in this course. If a student misses a quiz it **may not** be made up. Quiz 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.

COURSE REQUIREMENTS:

- **(4) Major examinations & Quiz average 75% (15% each)**
- **Report & Case Presentations 15%**
- **Comprehensive Final 10%**

COURSE POLICIES:

- No food, drinks, or use of tobacco products in class.
- Beepers, telephones, headphones, and any other electronic devices must be turned off while in class.
- Do not bring children to class.
- Recording devices may be used except during test reviews and when otherwise stated by the instructor.
- 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 specifically related to note taking.
- **ATTENDANCE POLICY:**
Each student is responsible for attending every class session. When it becomes necessary to miss a session, it is the responsibility of the **STUDENT** to contact the instructor and to inquire about assignments.

When the student has missed sufficient hours to cause a drop in grade points by missing

class discussions, participation, quizzes, major test and or assignments, he/she will be notified in writing by the instructor concerning the possibility of failure in the course. The student should respond and meet the instructor for counseling.

If a major test is missed the student must request a make-up examination from the instructor. This test will be administered at the first day the student returns to class or at a time designated by the instructor. There will be an automatic **10 point reduction** on the make-up exam.

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.

PATHOLOGY REPORT/CASE STUDY:

Each student will be required to complete a Pathology Report/Case Study. The topic of the report will be chosen by the student and **approved by the instructor**. The report should be **computer generated** using some type of word processing program: Word, WordPerfect... The report should be at least three (3) pages long, double spaced, 12 font. It should **contain four sources** (two of which must be from the internet and one must be from a book). The report should be written in the student's own words and should contain a **title page, reference page, and in-text citations**. The report will be used to evaluate the students writing and computer skills.

The **report** should include the following:

- introduction**
- etiology**
- specifics or interesting information about disease**
- methods of diagnosis**
- manifestations**
- treatment**
- prognosis**
- conclusion**

The report section of the grade will be based on *educational value* (does it involve imaging) and *technical value* (grammar, punctuation).

The **case study** portion of the report may be obtained from internet, personal acquaintance, or clinic and should include the following:

- patient age and sex (no names)**
- patient history**
- explanation of procedures performed**
- did procedure aid diagnosis**
- images, radiographs**

The student will *orally present* their report and case study to the class to using **PowerPoint**. The Power Point should contain images and explanations of all areas covered in the report and case study. Students should utilize more than one case study (patient) or more than one radiographic procedure to demonstrate how the disease is diagnosed using different modalities. The oral presentation will allow evaluation of the student's communication skills and allow them the opportunity to teach fellow students new information and skills. The presentation should be **five (5) minutes** long.

RADR 2217 RADIOGRAPHIC PATHOLOGY

1:00pm – 1:50pm Tues/Thurs

Jan 14	Introduction to course & Ch 1 Introduction to Pathology
Jan 16	Ch 1 cont. & Ch 2 Specialized Imaging Techniques
Jan 21	Neoplasm
Jan 23	Neoplasm cont.
Jan 28	Ch 4 Skeletal System
Jan 30	Ch 4 Skeletal System & Review
Feb 4	TEST I
Feb 6	Go over test & Ch 3 Respiratory System
Feb 11	Ch 3 Respiratory System
Feb 13	Ch 3 Respiratory System
Feb 18	Ch 7 Cardiovascular System
Feb 20	Ch 7 Cardiovascular System
Feb 25	Ch 9 Hematopoietic System & review
Feb 27	TEST II
Mar 4	Go over test & Ch 5 Gastrointestinal System
Mar 6	Ch 5 Gastrointestinal System cont.
Mar 11 & 13	SPRING BREAK
Mar 18	Ch 5 Gastrointestinal System cont.
Mar 20	Ch 5 Hepatobiliary
Mar 25	Ch 6 Urinary System
Mar 27	Ch 6 Urinary System & Review
Apr 1	TEST III
Apr 3	go over test & Ch 8 Nervous System
Apr 8	Ch 8 Nervous System
Apr 10	NO CLASS
Apr 15	Ch 10 Endocrine System
Apr 17	Ch 11 Reproductive System
Apr 22	Ch 12 Miscellaneous Diseases & Review
Apr 24	TEST IV & (ALL REPORTS ARE DUE)
Apr 29	go over test & Presentations
May 1	Presentations
May 12 MONDAY	COMPREHENSIVE FINAL –Room 109, 9am-10:30am