

**ODESSA COLLEGE
HEALTH & SCIENCES DIVISION
RADIOLOGIC TECHNOLOGY PROGRAM**

1/11

COURSE SYLLABUS

COURSE NUMBER: RADR 2431 (51.0907)

COURSE TITLE: ADVANCED RADIOGRAPHIC PROCEDURES

CREDIT HOURS: 4 **LECTURE HOURS:** 3 **LAB HOURS:** 3

PREREQUISITE: RADR 2301 or consent of the departmental chair

COREQUISITES: RADR 1313, RADR 1366 AND RADR 2305

CATALOG DESCRIPTION:

An advanced course including the proper manipulation of equipment, positioning and alignment of the anatomical structure and equipment, and evaluation of images for proper demonstration of advanced anatomy and related pathology. Presents cross-sectional anatomy, ultrasound, computed radiography and magnetic resonance imaging, and a review of the chest, bony thorax, abdomen, spine and routine contrast media procedures; and demonstrates a basic understanding of magnetic resonance imaging and ultrasound. Lab fee required. (SCANS 1, 5, 6, 7, 8, 9, 10, 11)

TEXTBOOKS: Merrill's Atlas of Radiographic Positions, Ballinger
Radiographic Anatomy and Positioning Workbook, Hayes
The Radiography Procedure and Competency Manual, Biedrzycki

SUPPLIES: A well-equipped, fully supervised laboratory, dry bones, radiographs and diagrams.

Anatomy & Physiology Bontrager Series:

Unit 10: Cranium, Sella, Turcica & Petrous Pyramids

Unit 11: Facial bones, Zygomatic Arches & Optic Foramina

Unit 12: Mandible, TMJ, Sinuses, Mastoids & Ear Structures

Computer Program: Basic Radiographic Positioning of the Skull, OC, 1988

Program Disc, Available in Program Director's Office.

LEARNING OUTCOMES:

The student will master the manipulation of equipment, position and alignment of anatomical structures of the cranium and male and female studies and equipment; evaluate images for proper demonstration of anatomy and pathology; be able to identify cross-sectional anatomy structures; demonstrate mastery of the anatomy and positioning of the thorax, abdomen, spine and routine contrast media procedures; and demonstrate a basic understanding of magnetic resonance imaging and ultrasound.

COURSE REQUIREMENTS:

- A. Regular and punctual attendance of all lectures and laboratory exercises.
- B. Participation in image critique
- C. Read and discuss textbook assignments, outside reading assignments, and worksheets as assigned.
- D. Meeting the standard performance requirements of accuracy and proficiency as set by the instructor.
- E. Demonstrate proficiency of the requirements set forth in this course by attainment of a grade of "C" or better.

METHOD OF EVALUATION:

Unit tests, worksheets, outside assignments, major examinations, and performance evaluations during practice sessions. **Students will be allowed to make up tests; however, 10 points will be deducted for each class day a student fails to take the examination.**

Grading Criteria:

- A - 93-100
- B - 84-92
- C - 75-83

Weight of Course Requirements:

- 40% - Chapter/Unit Tests
- 15% - Projects/Daily Grades
- 45% - Final Exam

ATTENDANCE POLICY:

Student attendance at every class, lab and clinical practicum is expected. Students shall be prompt to class and clinical practicums. Points will be deducted from a student's final course grade for absences. (1-2 abs = .5pt. ea., 3-5 abs = .75 pt. ea., 6-7 abs = 1 pt. ea.) A student is considered absent if more than 30 minutes late to lecture or lab or more than two (2) hours late for clinical practicums. Four (4) or more absences will constitute an administration drop.

ACADEMIC ETHICS:

You are expected to complete your own assignments and take tests without notes or other outside assistance. **ALL WORK IS EXPECTED TO BE YOUR OWN.** If unethical behavior is detected, **ALL** parties involved will be denied points for that project exam. The questioned material and a report of the ethics violation will be submitted to the department chair for further action as deemed necessary by the departmental chair.

Statement of Academic Dishonesty:

Ethics, Cheating and Plagiarism

"Using someone else's ideas or phrasing and representing those ideas or phrasing as our own, either on purpose or through carelessness, is a serious offense known as plagiarism. "Ideas or phrasing" includes written or spoken material, of course, from whole papers and paragraphs to sentences, and, indeed, phrases. but it also includes statistics, lab results, art work, etc. "Someone else" can mean a professional source, such as a published writer or critic in a book, magazine, encyclopedia, or journal; an electronic resource such as material we discover on the World Wide Web; another student at our school or anywhere else; a paperwriting "service" (online or otherwise), which offers to sell written papers for a fee." (statement taken from <http://webster.commnet.edu/mla/plagiarism.shtml>)

STUDENT ASSISTANCE:

The following resources are available to assist you in successful completion of this course:

A. **Smarthinking** (<http://Smarthinking.com>)

Smarthinking Provides live, online, on-demand tutoring and writing assistance to Odessa College students in **Mathematics (Basic Skills - Calculus II), Writing, General Chemistry, Organic Chemistry, Physics, Biology, Introduction to Human Anatomy and Physiology, Accounting, Economics, Introductory Finance, Spanish and Statistics.**

Keep in mind that the Success Center still has 7 outstanding tutors for in-house face-to-face tutoring sessions.

B. Instructor Assistance - Instructor office hours are posted on their office doors.

Instructors are available during the hours posted to assist students.

C. "SPECIAL NEEDS: Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973, and the Americans with Disabilities Act of 1990. If any student has any special needs or issues pertaining to their access to and participation in this or any other class at Odessa College, please feel free to contact your instructor to discuss your concerns. Students may also call the Office of Disability Services at 432-335-6861 to request assistance and accommodations."

IMPORTANT NOTES:

Students will be assigned projects by the instructor during the semester.

COURSE COMPETENCIES:

Students will be responsible for the Course Competencies found in the notebooks in the classroom.

**ODESSA COLLEGE
201 WEST UNIVERSITY
ODESSA, TEXAS 79764**

Instructor : Carrie Nanson
Office Phone : 335 - 6469 Office Number: CT 113
Office Hours :

COURSE NUMBER: RADR 2431 (51.0907)

COURSE TITLE: ADVANCED RADIOGRAPHIC PROCEDURES

COURSE REQUIREMENTS:

A. Tests - Students will be allowed to make up tests; however, 10 points will be deducted for each class day a students fails to take the examination.

METHOD OF EVALUATION:

See Method of Evaluation in the COURSE SYLLABUS

Course Requirement Deadlines:

ATTENDANCE POLICY:

See departmental policy in the COURSE SYLLABUS

ACADEMIC ETHICS:

See departmental policy in the COURSE SYLLABUS

IMPORTANT NOTES TO STUDENT:

Additionally, students must complete a project writing &/or editing and typing questions into a computer program. Instructor shall assign project areas.

COURSE COMPETENCIES

1XRA.17.00 UNDERSTAND ORDERS, REQUESTS, AND DIAGNOSTIC REPORTS

1XRA.17.01 Given radiographic orders, describe the procedures to be performed.

1XRA.17.02 Give diagnostic reports, translate into a language the patient can understand.

1XRA.17.03 Given a request for diagnostic imaging consult/services, describe procedures and processes necessary to respond to requested service(s).

1XRA.23.00 SAFELY TRANSFER AND POSITION PATIENTS

1XRA.23.01 Describe and demonstrate good principles of body mechanics applicable to patient care.

1XRA.23.02 Demonstrate techniques for various types of patient transfer.

1XRA.23.03 Describe and demonstrate the procedures for turning patients with various conditions.

1XRA.23.04 Describe and demonstrate restraint techniques for various types of procedures and patient conditions.

1XRA.23.05 Describe the aspects of patient comfort and discuss the importance of each to the care and safety of the patient.

1XRA.23.06 Given specific patient considerations and conditions, discuss various aspects of general patient care.

1XRA.23.07 Discuss procedures for assuring security of property of inpatients and outpatients.

1XRA.24.00 EVALUATE THE PATIENTS PHYSICAL NEEDS

1XRA.24.01 Describe methods for evaluation of patient status.

1XRA.24.02 Identify the information to be collected prior to patient examination.

1XRA.24.03 Describe vital signs used to assess patient condition.

1XRA.24.04 Convert a Fahrenheit measurement to a Celsius.

1XRA.24.05 State the normal temperature values for the oral and rectal methods of measurement for temperature.

1XRA.24.06 Describe the method of monitoring respirations and state the normal values expected.

1XRA.24.07 List the equipment necessary for acquisition of the blood pressure on a patient.

1XRA.24.08 Identify the normal values for blood pressure for males and females.

1XRA.24.09 Identify the seven major sites for monitoring the pulse and indicate the normal values.

1XRA.24.10 Demonstrate the assessment of vital signs.

1XRA.25.00 CONTROL INFECTIONS EMPLOYING UNIVERSAL (STANDARD) PRECAUTIONS

1XRA.25.01 Define infectious pathogens.

1XRA.25.02 Define communicable diseases.

1XRA.25.03 Define nosocomial infections.

1XRA.25.04 Define Centers for Disease Control and Prevention (CDC).

1XRA.25.05 Define Human Immunodeficiency Virus (HIV).

1XRA.25.06 Define Hepatitis B Virus (HBV).

1XRA.25.07 Describe the utilization of Universal (Standard) Precautions and Isolation Procedures.

1XRA.25.08 Describe source and modes of transmission of infections and diseases.

1XRA.25.09 Describe institutional/departmental procedures for infection control through Universal (Standard) Precautions.

1XRA.25.10 Discuss psychological considerations for the management of patients utilizing Universal (Standard) Precautions.

1XRA.27.00 DEAL WITH ACUTE PATIENT CARE SITUATIONS

1XRA.27.01 List the special considerations necessary when performing radiographic procedures on an infant or a child.

1XRA.27.02 List the special considerations necessary when performing radiographic procedures on a geriatric patient.

1XRA.27.03 List the symptoms of a patient with a head injury.

1XRA.27.04 List the precautions to be taken when working with a patient with a head injury.

1XRA.27.05 List the symptoms of a patient with a spinal injury.

1XRA.27.06 List the precautions to be taken when working with a patient with a spinal injury.

1XRA.27.07 List the symptoms of a patient with an upper and/or lower extremity fracture.

1XRA.27.08 List the precautions to be taken when working with a patient with an upper and/or lower extremity fracture.

1XRA.27.09 List the symptoms of a patient with massive wounds.

1XRA.27.10 List the precautions to be taken when working with a patient with massive wounds.

1XRA.27.11 List the symptoms of a patient with burns.

1XRA.27.12 List the precautions to be taken when working with a patient with burns.

1XRA.27.13 List the signs and symptoms of a patient having a reaction to contrast media.

1XRA.27.14 Describe the medical intervention for a patient having a reaction to contrast media.

1XRA.31.00 CARE FOR PATIENTS DURING BEDSIDE RADIOGRAPHY

1XRA.31.01 Demonstrate the appropriate procedure for gathering information prior to performing a bedside radiographic examination.

1XRA.31.02 List three situations in which bedside radiography may be preferable to examination in the radiology department.

1XRA.31.03 List four important factors to be noted during initial survey prior to radiography in the intensive care unit.

1XRA.31.04 Describe the initial steps in performing a bedside radiograph.

1XRA.31.05 Describe the special precautions to be used when performing a radiograph on a premature infant.

1XRA.31.06 Explain the procedures for placing a cassette under a patient in an orthopedic bed frame.

1XRA.31.07 Describe the special problems faced in performing radiographs on patient with tracheostomy.

1XRA.31.08 Describe the special problems faced in performing radiographs on patient with nasogastric tubes.

1XRA.31.09 Describe the special problems faced in performing radiographs on patient with chest drainage tubes.

1XRA.31.10 Describe the special problems faced in performing radiographs on patient with Swanz-Ganz catheters.

1XRA.31.11 Describe the procedure for taking radiographs in the surgical suite.

1XRA.31.12 Discuss the appropriate radiation protection required when doing bedside/surgical radiography.

1XRA.32.00 EDUCATE PATIENTS

1XRA.32.01 Define communication

1XRA.32.02 Identify methods of communication and discuss how each can be utilized in patient education.

1XRA.32.03 Identify methods of communication problems and discuss how each can be overcome to provide patient education.

1XRA.32.04 Given clinical simulations, demonstrate explanations of radiographic examinations.

1XRA.32.05 Given clinical simulations, demonstrate explanations for patients with various communication problems.

1XRA.32.06 Discuss radiation safety and protection questions patients might ask in connection with radiologic examinations and the radiographer's response to each.

1XRA.32.07 Given specific patient conditions and profiles, analyze the moods, expectations, and perceptions of the technologist-patient relationship.

1XRA.40.00 KNOW/DISCUSS/DEMONSTRATE THE STRUCTURE AND FUNCTION OF THE SKELETAL SYSTEM

1XRA.40.01 Given radiographs, diagrams and skeletal parts, identify and locate the bones of the axial skeleton.

1XRA.40.02 Describe processes and depressions found on the bones of the axial skeleton.

1XRA.40.03 Describe articulations of the axial skeleton.

1XRA.40.04 Describe articulations of the appendicular skeleton.

1XRA.40.05 Given radiographs, diagrams and skeleton, locate and identify structures of the skull.

1XRA.40.12 Given diagrams, locate and label the different types of articulations.

1XRA.40.13 Discuss each type of articulation, including a definition of the type of comparison with other types, locations and movement(s) permitted.

1XRA.43.00 KNOW/DISCUSS/DEMONSTRATE THE STRUCTURE AND FUNCTION OF THE SENSORY SYSTEM

1XRA.43.01 Describe the structure of the eye.

1XRA.43.02 Describe the structure of the components of the ear.

1XRA.43.03 Given diagrams, identify and locate components of the external ear.

1XRA.43.04 Given diagrams, identify and locate components of the middle ear.

1XRA.43.05 Given diagrams, identify and locate components of the inner ear.

1XRA.43.06 Given diagrams, identify and locate components of the eustachian tubes.

1XRA.43.07 Describe the components of body parts involved in the sense of smell.

1XRA.43.08 Describe the components and structure of body parts involved in the sense of taste.

1XRA.43.09 List the somatic senses.

1XRA.45.00 KNOW/DISCUSS/DEMONSTRATE THE STRUCTURE AND FUNCTION OF THE DIGESTIVE SYSTEM

1XRA.45.01 Describe the hard and soft palates.

1XRA.45.02 Discuss deciduous and permanent teeth in terms of age for eruption and number.

1XRA.45.03 Discuss types of teeth in terms of number, location within the jaws, and function.

1XRA.45.04 Given cross-sectional diagrams of teeth, label the component parts.

1XRA.51.00 IDENTIFY/EMPLOY TOPOGRAPHY WHEN PERFORMING RADIOGRAPHIC EXAMINATIONS

1XRA.51.01 Given a phantom, identify topographical landmarks for the cranium.

1XRA.53.00 EMPLOY STANDARD TERMINOLOGY, POSITIONING AIDS AND ACCESSORY EQUIPMENT TO PRODUCE RADIOGRAPHS

1XRA.53.01 Describe standard positioning terms.

1XRA.53.02 Describe positioning aids used in radiology.

1XRA.53.03 Describe accessory equipment and discuss each in terms of appropriate usage.

1XRA.54.00 DEMONSTRATE/DISCUSS GENERAL RADIOGRAPHIC PROCEDURAL CONSIDERATIONS

1XRA.54.01 Discuss general procedural considerations for radiographic examinations.

1XRA.54.02 Given simulated clinical situations, explain the specific considerations that would be involved.

1XRA.54.03 Through role-playing, demonstrate the ability to use the appropriate general considerations in various radiographic procedures with various patient types.

1XRA.55.00 DISCUSS POSITIONING CONSIDERATIONS FOR ROUTINE RADIOGRAPHIC PROCEDURES

1XRA.55.27 Describe the process for routine and special views for the skull.

1XRA.55.28 Describe the process for routine and special views of the sella turcica.

1XRA.55.29 Describe the process for routine and special views of the paranasal sinuses.

1XRA.55.30 Describe the process for routine and special views of the facial bones.

1XRA.55.31 Describe the process for routine and special views of the nasal bones.

1XRA.55.32 Describe the process for routine and special views of the orbits.

1XRA.55.33 Describe the process for routine and special views of the optic foramina.

1XRA.55.34 Describe the process for routine and special views of the zygomatic arches.

1XRA.55.35 Describe the process for routine and special views of the mandible.

1XRA.55.36 Describe the process for routine and special views of the temporomandibular articulations.

1XRA.55.37 Describe the process for routine and special views of the mastoids.

1XRA.55.38 Describe the process for routine and special views of the internal auditory canal.

1XRA.55.55 Given the names of various procedures, explain what structures and/or functions are demonstrated.

1XRA.55.56 In a laboratory setting, simulate the radiographic procedure on a person or full body phantom.

1XRA.55.63 Given radiographs of the skull/facial bones, evaluate in terms of: positioning, centering, and overall image quality.

1XRA.55.67 Given radiographs, identify relevant anatomy.

1XRA.56.00 PRODUCE RADIOGRAPHS

1XRA.56.27 Produce radiographs of the skull (with appropriate supervision).

1XRA.56.28 Produce radiographs of the sella turcica (with appropriate supervision).

1XRA.56.29 Produce radiographs of the paranasal sinuses (with appropriate supervision).

1XRA.56.30 Produce radiographs of the facial bones (with appropriate supervision).

1XRA.56.31 Produce radiographs of the nasal bones (with appropriate supervision).

1XRA.56.32 Produce radiographs of the orbits (with appropriate supervision).

1XRA.56.33 Produce radiographs of the optic foramina (with the appropriate supervision).

1XRA.56.34 Produce radiographs of the zygomatic arches (with the appropriate supervision).

1XRA.56.35 Produce radiographs of the mandible (with the appropriate supervision).

1XRA.56.36 Produce radiographs of the temporomandibular articulations (with appropriate supervision).

1XRA.56.37 Produce radiographs of the mastoids (with appropriate supervision).

1XRA.56.38 Produce radiographs of the internal auditory canal (with appropriate supervision).

1XRA.57.00 DISCUSS/DEMONSTRATE POSITIONING CONSIDERATIONS FOR ROUTINE CONTRAST STUDIES

1XRA.57.49 Given the names of various contrast studies, indicate the contrast media typically used, the usual dosage and route of administration.

1XRA.57.50 In a laboratory setting, simulate the radiographic procedure on a person or full body phantom.

1XRA.57.75 Given radiographs, identify relevant anatomy.

1XRA.59.00 DISCUSS/PRACTICE ACCEPTABLE IMAGING STANDARDS

1XRA.59.01 Discuss practical considerations in setting imaging standards.

1XRA.59.02 Discuss acceptance limits.

1XRA.60.00 COMPETENTLY DISCUSS/MANIPULATE RADIOGRAPHIC DENSITY

1XRA.60.01 Define radiographic density.

1XRA.60.02 Identify the acceptable range of radiographic density.

1XRA.60.03 Analyze relationships of factors affecting radiographic density.

1XRA.61.00 COMPETENTLY DISCUSS/MANIPULATE RADIOGRAPHIC CONTRAST

1XRA.61.01 Define radiographic contrast.

1XRA.61.02 Differentiate between subject contrast and film contrast.

1XRA.61.03 Analyze relationships of factors affecting radiographic contrast.

1XRA.62.00 COMPETENTLY DISCUSS/MANIPULATE RECORD DETAIL

1XRA.62.01 Define recorded detail.

1XRA.62.02 Differentiate between umbra and penumbra.

1XRA.62.03 Analyze relationships of factors affecting recorded detail.

1XRA.63.00 CONTROL DISTORTION

1XRA.63.01 Define distortion.

1XRA.63.02 Differentiate between shape distortion and size distortion.

1XRA.63.03 Analyze relationships of factors affecting distortion.

1XRA.64.00 EXPLAIN/MANIPULATE EXPOSURE LATITUDE

1XRA.64.01 Define exposure latitude.

1XRA.64.02 Analyze relationships of factors affecting exposure latitude.

1XRA.65.00 DISCUSS/USE BEAM LIMITING DEVICES

1XRA.65.01 List the types of beam limiting devices and describe the operation and applications for each.

1XRA.65.02 Explain purposes of beam limiting devices in terms of patient dosage, scattered radiation production, radiographic density, and contrast.

1XRA.66.00 DISCUSS/EMPLOY BEAM FILTRATION

1XRA.66.01 Define beam filtration.

1XRA.66.02 Explain purposes of beam filtration in terms of patient dosage, scattered radiation production, radiographic density, and contrast.

1XRA.67.00 DISCUSS/CONTROL SCATTERED AND SECONDARY RADIATION

1XRA.67.01 Define scattered and secondary radiation.

1XRA.67.02 Describe interactions of x-rays with matter which produce scattered and secondary radiation.

1XRA.67.03 Analyze relationships of factors affecting scattered and secondary radiation.

1XRA.67.04 Discuss effects of scattered and secondary radiation in terms of patient dosage, image quality, and occupational exposure.

1XRA.68.00 DISCUSS/CONTROL EXIT RADIATION

1XRA.68.01 Explain the relationship between kVp and scattered and secondary radiation.

1XRA.68.02 Describe a grid in terms of its purpose, components, and construction.

1XRA.68.03 Differentiate among types of grids.

1XRA.68.04 Analyze grid efficiency in terms of grid ratio and frequency.

1XRA.68.05 Given technical information, select an appropriate grid.

1XRA.68.06 Define grid cut off.

1XRA.68.07 Describe factors influencing grid cut off.

1XRA.68.08 Describe various grid artifacts.

1XRA.68.09 Explain the relationship between beam limitation and scattered/secondary radiation.

1XRA.69.00 EXPLAIN/DEMONSTRATE/USE EXPOSURE SYSTEMS

1XRA.69.01 Explain the purpose of an exposure system in terms of standardization of exposure and image consistency.

1XRA.69.02 Discuss considerations involved in exposure selection.

1XRA.69.04 Given clinical simulations, demonstrate patient measurement and exposure selection.

1XRA.70.00 CALCULATE EXPOSURES

1XRA.70.01 Analyze relationships of exposure factors and their effects on exposure calculations.

1XRA.70.02 Given exposure factors, calculate the photographic effect.

1XRA.70.03 Given exposure problems, calculate penumbra, magnification factor, and percent magnification.

1XRA.70.04 Apply mAs reciprocity in clinical simulations.

1XRA.72.00 HANDLE AND STORE FILM CORRECTLY

1XRA.72.01 Analyze the effects of processing considerations on film quality.

1XRA.72.02 Analyze the effects of storage considerations on film quality.

1XRA.74.00 DISCUSS/EMPLOY FILM HOLDERS AND INTENSIFYING SCREENS

1XRA.74.01 Discuss various film holders in terms of purpose, construction, application, patient dosage, loading/unloading and maintenance.

1XRA.74.02 Explain the construction and purpose of intensifying screens.

1XRA.74.03 Describe the principles and function of intensifying screens.

1XRA.74.04 Explain classifications of intensifying screens and the application of each.

1XRA.74.05 Discuss the maintenance of intensifying screens in terms of handling, cleaning, testing and evaluation.

1XRA.75.00 EXPLAIN/EMPLOY AN AUTOMATIC PROCESSOR

1XRA.75.01 Discuss the purpose of the automatic processor.

1XRA.75.02 Given cross-sectional diagrams of automatic processors, label the components and explain the function of each.

1XRA.75.03 Describe systems of the automatic processor and functions of each.

1XRA.75.04 Given various types and sizes of film, demonstrate how each is fed into the processor.

1XRA.75.05 Explain the components of the processing cycle providing the specific action and duration of time for each component.

1XRA.75.06 Discuss daily and periodic aspects of processor maintenance and cleaning.

1XRA.75.07 Describe the types of artifacts including the cause and effect on a radiograph and methods of preventing each.

1XRA.75.08 Given radiographs containing artifacts, identify the type, cause and methods of prevention for each.

1XRA.76.00 DESCRIBE/IDENTIFY ARTIFACTS

1XRA.76.01 Define the term artifact.

1XRA.76.02 Describe types of artifacts including the cause and effect on a radiograph and methods of prevention for each.

1XRA.76.03 Given radiographs containing artifacts, identify the type, cause and methods of prevention for each.

2XRA.05.00 DISCUSS/IMPLEMENT IMAGING STANDARDS

2XRA.05.01 Discuss the elements of a diagnostic image as related to film critique.

2XRA.05.02 Identify the steps in the decision making process.

2XRA.05.03 Describe an effective film critique method.

2XRA.05.04 Describe the role of the radiographer in film critiquing.

2XRA.06.00 EXPLAIN/DEMONSTRATE MANIPULATION OF TECHNICAL FACTORS

2XRA.06.01 Explain the process for evaluating radiographs for adequate density, contrast and scale of contrast.

2XRA.06.02 Explain how the radiographer determines if adequate penetration is present along with subject contrast.

2XRA.06.03 List the parameters for evaluating visibility of detail on radiographs.

2XRA.06.04 Describe how the degree of image distortion may be evaluated.

2XRA.06.05 Explain possible cause for proper distortion.

2XRA.07.00 DISCUSS PROCEDURAL FACTORS

2XRA.07.01 Describe the importance of proper positioning.

2XRA.07.02 Describe how properly preparing a patient affects the quality of the image.

2XRA.07.03 Describe/demonstrate the method for assessing beam restriction.

2XRA.26.00 DISCUSS THE NEED FOR/PROMOTE PATIENT PROTECTION

2XRA.26.03 Explain the purpose and importance of patient shielding.

2XRA.26.04 Given a list of patient shielding devices and radiographic procedures, correlate the method of shielding to the radiographic procedure.

2XRA.26.05 Explain the ten day rule and its application to female patients of childbearing age.

2XRA.26.06 Explain the relationship of exposure factors to patient dosage.

2XRA.26.07 Given various radiographic procedures, state the desired film/screen combination that will result in an optimum diagnostic image with the minimum radiation exposure.

2XRA.26.08 Discuss methods to avoid repeat radiographs.

2XRA.26.09 Discuss the importance of clear, concise instructions (effective communication skills) as a method of radiation protection.

2XRA.26.10 Discuss the effect(s) of immobilization techniques to eliminate voluntary motion.

2XRA.27.00 DESCRIBE/EMPLOY PRACTICAL RADIATION PROTECTION MEASURES

2XRA.27.11 Demonstrate how time, distance and shielding can be manipulated to keep radiation exposures to a minimum.

2XRA.27.12 Perform calculations of exposure with varying time, distance and shielding.

2XRA.27.14 Identify emergency procedures to be followed during failures of x-ray mechanisms.

2XRA.34.00 DISCUSS/DESCRIBE SYSTEMIC CLASSIFICATION OF DISEASE AND DISCUSS RADIOGRAPHIC EXPOSURE COMPENSATIONS REQUIRED

2XRA.34.01 List the systemic classifications of disease and define each.

2XRA.34.02 For each of the systemic classifications of disease, describe etiology, examples and sites, complication and prognosis.

2XRA.34.03 Describe radiographic procedures and techniques appropriate for different examples of disease in each of the systemic classifications.

2XRA.46.00 IDENTIFY/DISCUSS DIAGNOSTIC CONTRAST AGENTS

2XRA.46.01 Define the categories of contrast agents and give specific examples for each category.

2XRA.46.02 Discuss the pharmacology of barium and iodine compounds.

2XRA.46.03 Describe methods and techniques for the administration of various types of contrast agents.

1XRA.52.00 IDENTIFY SECTIONAL ANATOMY ON DIAGRAMS AND RADIOGRAPHS

1XRA.52.01 Given diagrams and computed tomography/magnetic resonance images of the cranium, label the structures.

1XRA.52.02 Given diagrams and computed tomography/magnetic resonance images of the thorax, label the structures.

1XRA.52.03 Given diagrams and computed tomography/magnetic resonance images of the abdomen/pelvis, label the structures.

1XRA.52.04 Given diagrams and computed tomography/magnetic resonance images of the vertebral column, label the structures.

1XRA.52.05 Given diagrams and computed tomography/magnetic resonance images of the extremities, label the structures.

**RADR 2431 – ADVANCED RADIOGRAPHIC PROCEDURES
SEMESTER LAB ASSIGNMENTS – SPRING 2011**

JANUARY 20, 2011

Students will be given wig heads to label with the following information. (The labeling must be precise and neat, and all terms should be spelled correctly. Terms spelled incorrectly will be counted wrong. This project will be a large percentage of the student's project grade for the semester.)

1. MIDSAGITTAL (MEDIAL SAGITTAL) PLANE
2. CORONAL PLANE
3. VERTEX
4. INION
5. MENTAL POINT
6. GONION
7. ACANTHION
8. NASION
9. GLABELLA
10. GLABELLOMEATAL LINE
11. ORBITOMEATAL LINE
12. INFRAORBITOMEATAL LINE
13. ACANTHIOMEATAL LINE
14. MENTOMEATAL LINE
15. INTERPUPILLARY LINE

The completed wig head will be due on **FEBRUARY 17, 2011**, at the beginning of class.

HOMEWORK: Students should read Merrill's Vol. 3, Chapter 30 – Surgical Radiography, pp. 264-301. Students should read the anatomy portion of Merrill's Vol. 2, Chapter 20, pp. 277-302, pp. 334-335 & pp. 338-340. Students should also read the anatomy portion only of Chapter 22 – Paranasal Sinuses, pp. 387-393. Medical Terminology, Chapter 11 will be due on **FEBRUARY 24, 2011**.

JANUARY 27, 2011

Students will view Merrill's Chapter 20 (anatomy portion only). Students may use labeled skull and facial bones, as well as supplemental books supplied by the instructor for study in lab.

TEST – Surgical Radiography, anatomy of the skull and facial bones is scheduled for **FEBRUARY 10**. Skull topography and morphology will be included in material covered on this test.

FEBRUARY 3, 2011

Students may use labeled skull and facial bones, as well as supplemental books supplied by the instructor for study in lab.

TEST -- Surgical Radiography, anatomy of the skull and facial bones is scheduled for the next class, **FEBRUARY 10**. Skull topography and morphology will be included in material covered on this test.

FEBRUARY 10, 2011

TEST – SURGICAL RADIOGRAPHY, ANATOMY OF THE SKULL AND FACIAL BONES

HOMEWORK: Students should read Merrill's Vol. 3, Chapter 26 – Sectional Anatomy for Radiographers, pp. 120-163. Students should review handouts and diagrams provided by the instructor. Read the skull positioning portion of Merrill's, Chapter 20, pp. 305-325 in preparation for the next class, February 17. Students should be prepared to discuss positioning during lab.

FEBRUARY 17, 2011

WIG HEADS DUE AT THE BEGINNING OF CLASS.

Students should come to class prepared to discuss Cross-Sectional Anatomy

Basic skull positioning will be discussed. Students will begin practicing positioning of basic skull radiography projections in the lab. Students should come to class, Thursday, February 18 prepared to produce good radiographs of the skull using the skull phantom. Students should know which plane and lines are to be used and how they are to be used for the projections listed in their handout – “Routine Projections of the Skull”. Each projection performed in the lab should be completed within 15 minutes maximum.

HOMEWORK: Students should read pp. 328-333 and pp. 336-343, which covers the petromastoid portion. Students should come to class on February 24 prepared to discuss positioning for these structures.

FEBRUARY 24, 2011

Students will produce skull radiographs of the phantom (to be assigned by the instructor) in the energized lab. Each projection performed in the lab should be completed within 15 minutes maximum. Medical Terminology, Chapter 11 due.

HOMEWORK: Students should come to class Thursday, March 3, prepared to radiograph the petromastoid portion.

Students should also read Trauma Radiography of the Skull in Merrill's, Vol. 2, Chapter 13, pp. 46-50. This chapter contains valuable information on trauma radiography. Medical Terminology, Chapter 15 will be due on **MARCH 24, 2011**.

MARCH 3, 2011

Students will discuss and produce radiographs of the petromastoid portion (as assigned by the instructor). Each projection performed in the lab should be completed within 15 minutes maximum. Students will also participate in a discussion of trauma radiography of the skull.

HOMEWORK: Prepare for **TEST – RADIOGRAPHY OF THE SKULL – BASIC PROJECTIONS AND CROSS-SECTIONAL ANATOMY** – scheduled for class on **MARCH 10**.

MARCH 10, 2011

TEST – RADIOGRAPHY OF THE SKULL – BASIC PROJECTIONS AND CROSS-SECTIONAL ANATOMY

HOMEWORK: Read Merrill's Chapter 21 – Facial Bones, pp. 349-383. Be prepared to discuss projections and begin positioning for the facial bones during lab on March 24.

REMEMBER SPRING BREAK IS NEXT WEEK; I HOPE YOU ENJOY YOUR TIME OFF! If you choose to come to class on March 17, you will be here alone.

MARCH 17, 2011

NO CLASS – SPRING BREAK

MARCH 24, 2011

Students will produce radiographs (to be assigned by the instructor) of the facial bones using the skull phantom in the energized lab. Each projection performed in the lab should be completed within 15 minutes maximum. Medical Terminology, Chapter 15 due.

HOMEWORK: Continue studying facial bones, mandible, and TMJ's. Medical Terminology, Chapter 13 will be due on **APRIL 21, 2011**.

MARCH 31, 2011

Students will produce radiographs (to be assigned by the instructor) of the facial bones using the skull phantom in the energized lab. Each projection performed in the lab should be completed within 15 minutes maximum.

HOMEWORK: Continue studying facial bones, mandible, and TMJ's.

APRIL 7, 2011

Students will produce radiographs (to be assigned by the instructor) of the facial bones using the skull phantom in the energized lab. Each projection performed in the lab should be completed within 15 minutes maximum.

HOMEWORK: Prepare for **TEST – RADIOGRAPHY OF THE FACIAL BONES** scheduled for **APRIL 14, 2011**.

APRIL 14, 2011

TEST – RADIOGRAPHY OF THE FACIAL BONES

HOMEWORK: Students should read Merrill's Chapter 22 – Paranasal Sinuses, pp. 394-403. Students should be prepared to discuss and practice positioning for the paranasal sinuses using either the skull phantom or a fellow classmate.

APRIL 21, 2011

Students will produce radiographs (to be assigned by the instructor) of the paranasal sinuses using the skull phantom in the energized lab. Each projection performed in the lab should be completed within 15 minutes maximum. Medical Terminology, Chapter 13 due.

HOMEWORK: Prepare for **TEST – RADIOGRAPHY OF THE PARANASAL SINUSES** scheduled for class on **APRIL 28**. Medical Terminology, Chapter 7 due **MAY 5**.

APRIL 28, 2011

TEST – RADIOGRAPHY OF THE PARANASAL SINUSES.

HOMEWORK: Review for **FINAL EXAM – ANATOMY AND POSITIONING OF THE ENTIRE SKULL, CROSS-SECTIONAL ANATOMY, AND SURGICAL RADIOGRAPHY** scheduled for class on **MAY 5, 2011**.

HOMEWORK: Study for **FINAL EXAM, MAY 5, 2011**.

MAY 5, 2011

RADR 2431 – FINAL EXAM Medical Terminology Chapter 7 due.