

COURSE SYLLABUS

Department: Radiologic Technology
Course Title: Principles of Radiographic Imaging II
Section Name: RADR 2305
Start Date: 01/17/2012
End Date: 05/11/2012
Modality: FACE-TO-FACE
Credits: 3

Instructor Information

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Course Description

Radiographic imaging technique formulation. Includes equipment quality control, image quality assurance, and the synthesis of all variables in image production. Lab fee required.

Prerequisites/Corequisites

Prerequisite: RADR 2309. Corequisites: RADR 1313, RADR 1366 and RADR 2431.

SCANS

1, 2, 3, 6, 7, 8, 9

End-of-Course Outcomes/Objectives

Analyze image quality; utilize procedures for minimizing patient exposure; explain quality control procedures to optimize equipment performance; adapt technical variables to changing conditions; and describe the concepts and theories of digital imaging.

COURSE COMPETENCIES

1XRA.05.00 UNDERSTANDING/DESCRIBE ACCREDITATION AND CREDENTIALING OF RADIOGRAPHY PROGRAMS

1XRA.05.01 Define accreditation, credentialing, certification, licensure and regulations.

1XRA.05.02 Describe how the JRCERT Essentials and Guidelines of an Accredited Educational Program for the Radiographer relate to the educational program.

1XRA.05.03 Explain the difference between the accreditation and credentialing processes, and identify agencies involved in each process.

1XRA.07.00 IDENTIFY THE NEED FOR CONTINUING PROFESSIONAL DEVELOPMENT

1XRA.07.01 Discuss the general employment outlook and economic return for the graduate radiographer.

1XRA.07.02 Discuss career advancement and opportunities for the radiographer.

1XRA.07.03 Identify the benefits of continuing education as related to improved patient care and professional enhancement.

1XRA.19.00 EMPLOY OPERATIONAL/MANAGEMENT TERMS

1XRA.19.01 Give operational and management terms and abbreviations, define the term or abbreviation.

1XRA.19.02 Given example scenarios utilizing operational and management terms and abbreviations, describe the implications for effective provision of radiologic services.

1XRA.19.03 Relate operational and management terminology to customers/client/patient satisfaction.

2XRA.01.00 DISCUSS/OPERATE RADIOGRAPHIC EQUIPMENT

2XRA.01.05 Identify general radiation protection rules related to installation of new radiographic equipment.

2XRA.08.00 DESCRIBE/DIFFERENTIATE COMMON EQUIPMENT MALFUNCTIONS AND THE CORRECTIVE ACTIONS REQUIRED

2XRA.08.01 Describe common equipment malfunctions which affect image quality.

2XRA.08.02 Describe the corrective actions necessary for common equipment malfunctions.

2XRA.08.03 Explain the differences between technical factor problems, procedural factor problems and equipment malfunctions.

2XRA.27.00 DESCRIBE/EMPLOY PRACTICAL RADIATION PROTECTION MEASURES

2XRA.27.10 Identify who should evaluate ancillary/x-ray equipment; frequency evaluations should be made; how is this related to the Quality Assurance Program for radiation safety.

2XRA.36.00 DISCUSS QUALITY IMPROVEMENT CONCEPTS AND PARTICIPATE IN TQM ACTIVITIES

2XRA.36.01 Define quality improvement, quality assurance and quality control.

2XRA.36.02 Discuss the benefits of a quality improvement program to the patient and to the department.

2XRA.36.03 List elements of a quality improvement program and discuss how each is related to the quality improvement program.

2XRA.36.04 Discuss the importance of continuing education in regard to the rapid advancement of technology.

2XRA.36.05 Identify and describe each of the steps used in the JCAHO 10-step model as applied to quality improvement.

2XRA.37.00 IDENTIFY/DISCUSS STATE, FEDERAL AND PROFESSIONAL STANDARDS AND REGULATIONS

2XRA.37.01 Identify state agencies involved with quality improvement aspects of radiographic systems.

2XRA.37.02 Discuss state agency regulations, inspections and enforcement as they relate to quality improvement.

2XRA.37.03 Identify federal agencies involved with quality improvement aspects of radiographic systems.

2XRA.37.04 Discuss federal regulations and enforcement/consultation service as they relate to quality improvement.

2XRA.37.05 Discuss professional standards involved with quality improvement aspects of radiographic systems.

2XRA.38.00 DISCUSS/PARTICIPATE IN EQUIPMENT QUALITY CONTROL PROCEDURES

2XRA.38.01 List categories of departmental personnel involved in a quality improvement program and discuss the responsibilities of each to the effective operation of the program.

2XRA.38.02 List components of the radiographic system.

2XRA.38.03 Describe test material/equipment, test procedures and evaluation/interpretation relating to quality improvement for components of the radiographic system.

2XRA.38.04 Discuss aspects of preventive and corrective maintenance for components of the radiographic system.

2XRA.38.05 Define reject analysis and describe objectives of a reject analysis program.

2XRA.38.06 Explain the procedure, evaluation and follow-up for a retake analysis program.

2XRA.38.07 Identify the necessary equipment to perform quality control tests.

Required Readings/Materials

You must purchase the following required readings/materials:

Radiologic Science for Technologists, Bushong, 9th Ed.

Radiologic Science for Technologists Student Workbook, Bushong, 9th Ed.

Course Requirements (Lectures, Assignments and Assessments)

Course Requirements

- A. Regular and punctual attendance at all class lectures.
- B. Read and discuss textbook assignments and outside readings when they are assigned.
- C. Complete all course assignments to include worksheets, laboratory exercises, written papers, examinations, etc.
- D. Demonstrate proficiency of the requirements set forth in this course by attainment of a grade "C" or better.

METHOD OF EVALUATION

Grading Criteria:

A - 93-100

B - 84-92

C - 75-83

Weight of Course Requirements

30% Unit Exams

10% QC Assignment

5% Technique Chart

15% ODIA

40% Final Examination

COMPUTER PROGRAMS AVAILABLE IN CT 216 (COMPUTER LAB)

Quality Management Control (Corectec) CD

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 = 0.5 pt. ea.; 3-5 abs = 0.75 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 2 hours late for clinical practicums. Four (4) or more absences will constitute an administrative 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 or 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 department chair. Unethical behavior including dishonesty (cheating) on any work can be reason for dismissal from the class and ultimately the Program.

Statement of Academic Dishonesty

Ethics, Cheating and Plagiarism

"Using someone else's ideas or phrasing and representing those ideas of 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 students 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.comnet.edu/mla/plagiarism.shtml>)

STUDENT ASSISTANCE

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

- A. In the LRC - Audiovisual materials from LRC presented during course.
- B. **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.
- C. Instructor Assistance - Instructor office hours are posted on their office doors. Instructors are available during these hours to assist students. Some office hours are at the college while others are at clinical affiliates.

IMPORTANT NOTES

The final examination is a comprehensive examination based on the ARRT format.

MISSED EXAMINATIONS

Students will be allowed to make up tests; however, 10 points will be deducted for each class day a student fails to schedule and complete the examination. It is the student's responsibility to schedule the retake with regards to the instructor's schedule.

SPECIAL NEEDS STATEMENT

Special Needs: Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. If you have any special needs or issues pertaining to your access to and participation in this or any other class at Odessa College, please contact Becky Rivera-Weiss in the Office of Disability Services at 432-335-6861 to request assistance and accommodations.

SUMMARY OF ASSIGNMENTS & ACTIVITIES

Item (Name)	Type	Description
Chapter 11: Radiographic Film; Chapter 12: Processing the Latent Image, Chapter 13: Radiographic Intensifying Screens and Chapter 14: Control of Scatter Radiation Covers main causes of tube failure and various rating charts used with diagnostic x-ray machines. Also includes requirements for tube housing. Rating charts will be used in the energized lab. Storage and handling of radiographic film will be discussed and demonstrated. All students will set up and discontinue processor use in the energized lab. Types and frequency of testing of intensifying screens will be discussed. Students will perform tests in the energized lab. Students will learn how to create a fixed aperture diaphragm, and will create one with cardboard for a project grade.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapters 11, 12, 13, and 14		Quiz
Chapter 16: Image Quality Covers creation and charting of H&D Curve for radiographic film. Identifies allowable parameters for various information charted. An H&D curve image will be created, charted and evaluated in the energized lab.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapter 16		Quiz
Chapter 17: Image Artifacts Identification and prevention of radiographic image artifacts is covered, and recording of artifacts, their cause and possible trends to lessen the appearance of artifacts. Differentiation between processing, exposure and handling and storage artifacts is demonstrated. Various artifacts will be created and identified in the energized lab.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapter 17		Quiz
Chapter 18: Quality Control All aspects of quality assurance and quality control for a diagnostic radiology department are discussed. The characteristics and elements of a quality control program for radiographic systems is presented. Tools required to measure equipment performance, actual testing, the frequency of testing and the tolerance limits for each test are covered in detail.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapter 18		Quiz
Chapter 20: Processor quality control is included in this chapter. Elements of a processor quality control program are identified with minimum frequency of tasks and time allotment for each step is discussed. Processor quality control tests are completed in the energized lab.	Lecture/Discussion of Key Points	Complete Worksheets & Review Questions
Chapter 20		Quiz

Final Examination

Comprehensive