



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	RTEC
Course Number:	123
Descriptive Title:	Radiographic Positioning 1A
Division:	Health Sciences and Athletics
Department:	Radiologic Technology
Course Disciplines:	Radiologic Technology
Catalog Description:	This course is designed to prepare the student with entry-level skills and knowledge to perform safely in a radiology department. Topics include patient care, professional standards, ethics and law as they relate to the radiologic technology profession. Patient positioning and radiologic exposure of the chest, abdomen upper, lower extremities and pelvis are introduced along with the use of various radiographic devices. Laboratory practice, radiographic image analysis and topographical anatomy are presented as they apply in the production of optimum radiographic examinations.
Prerequisite:	Radiologic Technology 106 AND Radiologic Technology 111
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	Enrollment Limitation: Admission to the Radiologic Technology Program
Hours Lecture (per week):	3
Hours Laboratory (per week):	3
Outside Study Hours:	6
Total Course Hours:	108
Course Units:	4
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	5/15/2006
Transfer UC:	No
Effective Date:	
General Education:	ECC
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	
Term:	

Other:	
Student Learning Outcomes:	<p>SLO #1 Radiation Safety & Shielding</p> <p>Students will apply radiation safety by using appropriate shielding with a lead apron during an on campus simulated lab evaluation. Students will be able to analyze radiographic images for diagnostic quality contrast, density and recorded detail. The student will be able to make appropriate adjustments of the x-ray equipment to correct any errors with the image.</p> <p>SLO #2 Radiographic Positioning</p> <p>Students demonstrate correct positioning of patients for quality radiographic exams of the Chest, Upper and Lower Extremities.</p> <p>SLO #3 Patient Communication</p> <p>Students will demonstrate effective communication skills with patients, self and others.</p>
Course Objectives:	<ol style="list-style-type: none"> 1. Assess the patient's status and condition before, during and following the radiographic procedure. 2. Describe methods to obtain a patient's history and correct identification while maintaining patient confidentiality standards prior to performing a radiographic examination. 3. Integrate the use of appropriate and effective forms of communication with patients, the public and members of the health care team in the clinical setting. 4. Demonstrate correct principles of body mechanics applicable to patient care and radiographer's safety. 5. Apply the appropriate use of medical asepsis, sterile technique and universal precautions when applicable. 6. Compare and contrast specific situations and conditions that give rise to legal and ethical dilemmas in health care. 7. Describe the practice standards for the radiographer as defined by the American Society of Radiologic Technologist (ASRT). 8. Identify standard radiographic positions and perform radiographic procedures and the proper use of radiographic equipment using the energized laboratory and phantoms. 9. Use topographical anatomy and demonstrate positioning skills in the performance of radiographic positions. 10. Evaluate and analyze radiographic images for anatomy identification, technical quality, correct positioning and basic pathology. 11. Demonstrate technical competence and prudent judgment and the proper use of protective devices while administering ionizing radiation to perform diagnostic imaging procedures of the Chest, Upper and Lower extremities, to meet acceptable patient care standards. 12. Adapt radiographic procedures to meet age-specific, disease-specific and cultural needs of patients.
Major Topics:	<p>I. Patient Assessment (9 hours, lecture)</p> <ol style="list-style-type: none"> A. Patient history B. Proper methods of identification C. Radiographic terminology and positioning D. Topography and landmarks <p>II. Patient Interactions (9 hours, lecture)</p> <ol style="list-style-type: none"> A. Body Mechanics <ol style="list-style-type: none"> 1. Patient transfers B. Medical asepsis

1. Sterile technique
2. Universal precautions

III. Patient Interactions (6 hours, lab)

- A. Body Mechanics
 1. Patient transfers
- B. Medical asepsis
 1. Sterile technique
 2. Universal precautions

IV. Effective Communication and Risk Management (3 hours, lecture)

- A. Patients
- B. Public
- C. Healthcare team

V. Legal and Professional Practice Standards (4 hours, lecture)

- A. Standard of care
 1. Patient personal information
 2. HIPAA defined
- B. Scope of practice
 1. Confidentiality of patient information
 2. Intentional misconduct
 3. Libel and slander
 4. Assault and battery
 5. False imprisonment
 6. Invasion of privacy
 7. Breach of confidentiality

VI. Proper use of Radiographic Equipment (6 hours, lab)

- A. Computed Radiography
- B. Digital Radiography
- C. Radiographic Shielding

VII. Routine Chest and Abdominal Radiography (9 hours, lecture)

- A. Standard radiographic positions
 1. PA of the Upright Chest
 2. Lateral of the Upright Chest
 3. Supine (KUB) Abdomen
- B. Anatomical structures
 1. PA of the Upright Chest
 2. Lateral of the Upright Chest
 3. Abdomen - (without contrast)
- C. Positioning skills
 1. PA of the Upright Chest
 2. Lateral of the Upright Chest
 3. Abdomen Supine / KUB
- D. Pathology
- E. Radiographic image analysis and evaluation

VIII. Routine Chest and Abdomen Radiography (12 hours, lab)

- A. Standard radiographic positions
 1. PA of the Upright Chest
 2. Lateral of the Upright Chest
 3. Supine (KUB) Abdomen
- B. Anatomical structures
 1. PA of the Upright Chest
 2. Lateral of the Upright Chest
 3. Abdomen - (without contrast)
- C. Positioning skills

1. PA of the Upright Chest
2. Lateral of the Upright Chest
3. Abdomen Supine (diaphragm to symphysis)/KUB (kidney, ureters and bladder)

D. Pathology

E. Radiographic image analysis and evaluation

IX. Upper Extremities (10 hours, lecture)

A. Standard radiographic positions

1. Digits: Fingers and Thumb

2. Hand
3. Wrist
4. Forearm
5. Elbow
6. Humerus

B. Anatomical structures

1. Digits: Fingers and Thumb
2. Hand
3. Wrist
4. Forearm
5. Elbow
6. Humerus

C. Positioning skills

D. Pathology

X. Radiographic positioning of the Upper Extremity (15 hours, lab)

A. Standard radiographic positions

1. Digits: Fingers and Thumb

2. Hand
3. Wrist
4. Forearm
5. Elbow
6. Humerus

B. Anatomical structures

1. Digits: Fingers and Thumb
2. Hand
3. Wrist
4. Forearm
5. Elbow
6. Humerus

C. Positioning skills

D. Pathology

XI. Lower Extremities and Pelvis (10 hours, lecture)

A. Standard radiographic positions

1. Toes
2. Foot
3. Calcaneous/Oscalsis
4. Ankle
5. Lower leg
6. Knee/Patella
7. Femur

8. Pelvis

B. Anatomical structures

1. Toes
2. Foot
3. Calcaneous/Oscalsis

	<ul style="list-style-type: none"> 4. Ankle 5. Lower leg 6. Knee/Patella 7. Femur 8. Pelvis <p>C. Positioning skills D. Pathology</p> <p>XII. Positioning of the Lower extremities and Pelvis (15 hours, lab)</p> <p>A. Standard radiographic positions</p> <ul style="list-style-type: none"> 1. Toes 2. Foot 3. Calcaneous/Oscalsis 4. Ankle 5. Lower leg 6. Knee/Patella 7. Femur 8. Pelvis <p>B. Anatomical structures</p> <p>1. Toes</p> <ul style="list-style-type: none"> 2. Foot 3. Calcaneous/Oscalsis 4. Ankle 5. Lower leg 6. Knee/Patella 7. Femur 8. Pelvis <p>C. Positioning skills D. Pathology</p>
Total Lecture Hours:	54
Total Laboratory Hours:	54
Total Hours:	108
Primary Method of Evaluation:	3) Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Demonstrate proper patient positioning and use of radiographic equipment in the performance of a four projection exam of the elbow.
Critical Thinking Assignment 1:	Given six examples of radiographic images of the chest, compare and analyze the radiographs for correct positioning, technical quality, diagnostic value and differences or similarities of anatomy and pathology. Select one of the radiographic examples that demonstrates improper positioning and poor technical quality. Evaluate the image and write a one-page critique describing why the image is sub-standard. Explain what corrections in technique and positioning would be necessary to improve the radiograph.
Critical Thinking Assignment 2:	Given a role-play activity with your lab partner acting as a patient diagnosed rheumatoid arthritis and who is unable to assume the routine positions for a radiographic examination of the hands and wrists, demonstrate the alternative positioning methods that may be used to produce a diagnostic and safe examination.
Other Evaluation Methods:	Class Performance, Completion, Matching Items, Multiple Choice, Other Exams, Performance Exams, Reading Reports, Written Homework

Instructional Methods:	Demonstration, Discussion, Group Activities, Lab, Lecture, Multimedia presentations, Role play/simulation
If other:	Radiographic image critique
Work Outside of Class:	Answer questions, Observation of or participation in an activity related to course content (such as theatre event, museum, concert, debate, meeting), Problem solving activity, Required reading, Skill practice, Study, Written work (such as essay/composition/report/analysis/research)
If Other:	
Up-To-Date Representative Texts:	Rollins, J, et al. <u>MERRILL'S ATLAS OF RADIOGRAPHIC POSITIONS AND RADIOGRAPHIC PROCEDURES; VOLUMES I and II.</u> 15 th ed. C.V. Mosby/Elsevier Publishers, 2023. Rollins, J, et al., et al. <u>Workbook for Merrill's Atlas of Radiographic Positions and Radiographic Procedures.</u> 15 ^h ed. Elsevier Mosby Publishers, 2023. Adler and Carlton. <u>Introduction to Radiography and Patient Care.</u> 8 th ed. Mosby Elsevier, 2023.
Alternative Texts:	
Required Supplementary Readings:	Kenneth Bontrager. RADIOGRAPHIC ANATOMY AND POSITIONING WORKBOOK, VOL. I AND II, Elsevier Mosby Publishers , 2020. McQuillen and Martensen. RADIOGRAPHIC CRITIQUE,3rd ed, Elsevier Mosby Publications, 2019
Other Required Materials:	
Requisite:	Prerequisite- RTEC A and Corequisite RTEC 106 & 111
Category:	sequential
Requisite course(s): List both prerequisites and corequisites in this box.	Pre-Requisites Added: RTEC A - Introduction to Radiologic Technology Acceptance by application and admission into the Radiologic Technology Program. Co-Requisite (corrected) Radiologic Technology-106 AND Radiologic Technology-111 during their first semester in the program - which starts in the spring term.
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Knowledge of radiation safety and protection for the patient and operator. RTEC 106 - Demonstrate the proper use of radiographic equipment and accessory items to produce high quality radiographs such as; darkroom processing, computerized processing, image display, and radiation protection techniques. Compare and contrast how proper use of these devices and processing can influence the outcome image and patient dose. RTEC 111 - Demonstrate the proper use of radiographic equipment and accessory items to produce high quality radiographs such as; darkroom processing, computerized processing, image display, and radiation protection techniques. Compare and contrast how proper use of these devices and processing can influence the outcome image and patient dose. Knowledge of radiographic techniques and controlling factors. RTEC 111 - Describe the physical concepts of energy and the basic structure of matter, the principles of x-ray production, the relationship of x-ray photon interaction with matter and the effects of radiation exposure produced in humans. Formulate appropriate radiographic exposure factors and select correct factors on an x-ray machine control panel to produce radiographic images using radiographic phantoms. RTEC 111 - Describe the physical concepts of energy and the basic structure of matter, the principles of x-ray production, the relationship of x-ray photon interaction with matter and the effects of radiation exposure produced in humans. Formulate appropriate

	<p>radiographic exposure factors and select correct factors on an x-ray machine control panel to produce radiographic images using radiographic phantoms. RTEC 106 - Set control panel with appropriate technical factors under direct supervision. Student should have a basic knowledge of medical terminology, human anatomy and physiology. RTEC 106 - List body planes and topographic anatomy used in positioning routine radiographic procedures.</p>
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	Enrollment Limitation: Admission to the Radiologic Technology Program
Enrollment Limitations Impact:	
Course Created by:	Dawn Charman
Date:	Dawn Charman
Original Board Approval Date:	05/15/2006
Last Reviewed and/or Revised by:	Dawn Charman
Date:	02/14/2024
Last Board Approval Date:	05/20/2024
Effective Term:	FALL 2025