

# RADT-1400: RADIOGRAPHIC POSITIONING

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## Cuyahoga Community College

### Viewing: RADT-1400 : Radiographic Positioning

**Board of Trustees:**

May 2023

**Academic Term:**

Fall 2023

**Subject Code**

RADT - Radiography

**Course Number:**

1400

**Title:**

Radiographic Positioning

**Catalog Description:**

Introduction to and application of radiographic positioning for upper and lower extremities, chest, pelvis, abdomen, gastrointestinal and urinary systems including use of contrast media. Techniques and positioning variations for pediatrics age specific patients. Basic concepts of patient care and the role of the radiographer as a member of the health care team. Specific radiological patient care skills used in radiology practices. Discussion of legal issues and doctrines with introduction of medico-legal terminology. Special emphasis on the American Registry of Radiologic Technologists' Standards of Ethics.

**Credit Hour(s):**

3

**Lecture Hour(s):**

2

**Lab Hour(s):**

3

**Other Hour(s):**

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## Requisites

**Prerequisite and Corequisite**

Departmental approval: admission to program.

## Outcomes

**Course Outcome(s):**

1. Provide basic patient care for individuals having radiographic examinations including communication, exam preparation and responding to medical emergencies.

**Objective(s):**

1. Demonstrate appropriate verbal and non-verbal communication techniques to use when interacting with patients and the health care team.
2. Discuss various medical interventions and appropriate procedures to follow for medical emergencies.
3. List and define the most frequently used terminology and acronyms in radiology.
4. Discuss appropriate patient preparations and care during contrast studies.
5. Demonstrate patient positioning and equipment placement techniques used for mobile radiography.

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**Course Outcome(s):**

2. Perform basic radiographic examinations using various image receptors in accordance with safety protocols.

**Objective(s):**

1. Describe the patient preparation, equipment preparation, contrast media used and routine projections necessary for radiographic examinations.
  2. Demonstrate competency in performing common radiographic procedures of the upper extremities, chest, abdomen, gastrointestinal systems, urinary systems, and lower extremities simulated in the radiography laboratory under direct supervision of qualified personnel.
  3. Apply general radiation safety and protection practices associated with radiologic examinations in an appropriate manner.
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**Course Outcome(s):**

3. Critically evaluate radiographic images for positioning errors, correct centering, and overall image quality.

**Objective(s):**

1. Correctly hang radiographic images for both film/screen and digital imaging.
  2. Recognize and correct basic positioning errors.
  3. Recognize and label basic anatomy in any imaging system.
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**Course Outcome(s):**

4. Apply knowledge of professional standards for radiographers.

**Objective(s):**

1. Summarize the responsibilities of the radiographer as a member of the healthcare team.
  2. Describe the practice standards for the radiographer as defined by the American Registry of Radiologic Technologists (ARRT), American Society of Radiologic Technologists (ASRT) and state licensure.
  3. Appreciate the ARRT Standards of Ethics for radiographers.
  4. Discuss common legal terminology (e.g. battery, negligence, malpractice, etc.).
  5. Explain legal doctrines (e.g. respondeat superior, res ipsa loquitur, Good Samaritan Law, etc.).
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**Course Outcome(s):**

5. Adapt to special technical and positioning variations for the pediatric age specific patients.

**Objective(s):**

1. Demonstrate proper and safe immobilization techniques.
  2. Establish effective communication and interaction skills with both the patient and the parents.
  3. Demonstrate knowledge of basic imaging routines.
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**Methods of Evaluation:**

- a. Examinations
- b. Quizzes
- c. Positioning lab pretests/competency
- d. Specific Radiography patient care skills checklist
- e. Class Participation/Attendance

**Course Content Outline:**

- a. Standard Terminology for Radiographic Positioning
  - i. Standard terms
    1. Position
    2. Projection
    3. View
  - ii. Positioning Terminology
    1. Recumbent
    2. Supine
    3. Prone
    4. Trendelenburg
    5. Fowler's
    6. Decubitus

7. Erect, upright
8. Anterior position
9. Posterior position
10. Lateral position
11. Oblique position
- iii. General Planes
  1. Sagittal or mid-sagittal
  2. Coronal or mid-coronal/midaxillary
  3. Transverse/axial
- iv. Room Preparation and clean-up
  1. Cleanliness, organization and appearance
  2. Necessary supplies and accessory equipment
  3. I.D. image receptor
  4. Check accession number
- v. Patient Preparation
  1. Communication guidelines
  2. Identification of self (radiographer)
  3. Patient identification
    - a. Interviewing/questioning
    - b. Chart/requisition evaluation
    - c. Terminology and acronyms specific to radiology
    - d. Wrist band
  4. Patient instructions
  5. Determination of pregnancy status
  6. Removal of items that may cause artifacts
  7. Patient assistance
- b. Considerations for Routine Radiographic Procedures
  - i. Patient positioning
  - ii. Part placement
  - iii. Image receptor selection and placement
  - iv. Beam-part-receptor alignment
  - v. Beam restriction and shielding
  - vi. Image evaluation
- c. Basic Radiographic Projections for the following, including the anatomical structures.
  - i. Upper Extremity
    1. Finger
      - a. Posteroanterior (PA) entire hand
      - b. PA finger only
      - c. Lateral
      - d. Oblique
      - e. Anteroposterior (AP) Thumb
      - f. Oblique thumb
      - g. Lateral thumb
    2. Hand
      - a. PA
      - b. Lateral
      - c. Oblique
    3. Wrist
      - a. PA
      - b. Lateral
      - c. Oblique 45 degrees
      - d. PA for scaphoid
      - e. Scaphoid (Stecher)
      - f. Carpal canal
    4. Forearm
      - a. AP
      - b. Lateral
    5. Elbow

- a. AP
- b. Lateral
- c. External oblique
- d. Internal oblique
- e. AP partial flexion
- f. Axial trauma (Coyle)
- 6. Humerus
  - a. AP non-trauma
  - b. Lateral non-trauma
  - c. AP neutral trauma
  - d. Scapular Y trauma
  - e. Transthoracic lateral trauma
  - f. Lateral, mid and distal, trauma
- 7. Shoulder
  - a. AP internal and external rotation
  - b. Inferosuperior axial, non-trauma
  - c. Posterior oblique (Grashey)
  - d. Transthoracic lateral trauma
  - e. Scapular Y trauma
  - f. Tangential non-trauma
  - g. AP neutral trauma
- d. Basic Radiographic Projections for the following, including the anatomical structures
  - i. Thorax/chest
    - 1. PA upright
    - 2. Lateral upright
    - 3. Posterior oblique
    - 4. Anterior oblique
    - 5. AP lordotic
    - 6. AP supine/cart chest
    - 7. Lateral decubitus
  - ii. Abdomen
    - 1. AP supine
    - 2. AP upright
    - 3. Lateral decubitus
    - 4. Dorsal decubitus
  - iii. Gastrointestinal
    - 1. Esophagus
      - a. Right anterior oblique (RAO)
      - b. Left lateral
      - c. AP
      - d. PA
      - e. PA oblique (LAO)
    - 2. Swallowing Dysfunction Study
    - 3. Upper GI Series (single or double contrast)
      - a. AP scout
      - b. RAO
      - c. PA
      - d. Right lateral
      - e. Left posterior oblique (LPO)
      - f. AP
    - 4. Small Bowel Series
      - a. PA scout
      - b. PA (follow through)
      - c. Ileocecal spots
      - d. Enteroclysis
    - 5. Large Bowel
      - a. Left lateral rectum
      - b. Left lateral decubitus

- c. Right lateral decubitus
  - d. Left and right posterior obliques (LPO and RPO)
  - e. PA
  - f. Left and right anterior obliques (LAO and RAO)
  - g. AP and PA axial
  - h. PA post-evacuation
- iv. Urinary System
- 1. Intravenous urography
    - a. AP, scout and series
    - b. RPO and LPO 30 degrees
    - c. PA or AP post-void
    - d. AP ureteric compression
    - e. CT urogram
- e. Explanation of contrast media used for gastrointestinal and urinary procedures
- i. Contrast Media
    - 1. Purpose
    - 2. Types
      - a. Digestive System
        - i. Single and double contrast
          - 1. Upper gastrointestinal system
          - 2. Lower gastrointestinal system
        - ii. Swallowing dysfunction study
        - iii. Small bowel
      - b. Urinary System
        - i. Intravenous urography
- f. Contrast Studies
- i. Standard precautions
  - ii. Medications and their administration
  - iii. I.V.s and needle types
    - 1. Solution withdrawal from vial
  - iv. Barium instillation
  - v. Bed pan/urinal administration and gown changing procedures
  - vi. Patient preparation, instruction and care
- g. Basic Radiographic Projections for the following, including the anatomical structures
- i. Lower Extremity
    - 1. Toe
      - a. AP, entire foot
      - b. Oblique toe
      - c. Lateral toe
    - 2. Foot
      - a. AP angle toward heel
      - b. Medial oblique
      - c. Lateral oblique
      - d. Mediolateral
      - e. Lateromedial
      - f. Lateral weight bearing
      - g. AP weight bearing
      - h. Sesmoids, tangential
    - 3. Ankle
      - a. AP
      - b. AP mortise
      - c. Mediolateral
      - d. Oblique, 45 degrees internal
      - e. Lateromedial
      - f. AP stress views
    - 4. Calcaneus
      - a. Lateral
      - b. Plantodorsal axial
      - c. Dorsoplantar axial

5. Tibia/fibula
  - a. AP
  - b. Lateral
  - c. Oblique
6. Knee
  - a. AP
  - b. Lateral
  - c. AP weight bearing
  - d. Lateral oblique, 45 degrees
  - e. Medial oblique, 45 degrees
  - f. PA
  - g. PA axial - intercondylar fossa (tunnel view)
7. Patella
  - a. Lateral
  - b. Supine flexion 45 degrees (Merchant)
  - c. PA
  - d. Prone flexion, 90 degrees (Settegast)
  - e. Prone flexion, 55 degrees (Hughston)
8. Femur
  - a. AP
  - b. Mediolateral
9. Pelvis and Hip
  - a. AP hip only
  - b. Cross-table lateral hip
  - c. Unilateral frog-leg, non-trauma
  - d. Axial lateral inferosuperior trauma
  - e. AP Pelvis
  - f. AP Pelvis, bilateral frog-leg
  - g. AP Pelvis, inlet/outlet
  - h. Anterior oblique pelvis, acetabulum (Judet)
- h. Medical Interventions and Emergencies
  - i. Nasogastric/nasoenteric tubes
  - ii. Tracheostomy patients/endotracheal tube
  - iii. Dobhoff/Enteroflex feeding tubes
  - iv. Thoracostomy tube/chest tube
  - v. Central Venous Lines/PICC lines
  - vi. Urinary Catheters
  - vii. Mobile radiography
  - viii. Portable equipment
- i. Radiographer as a Health Care Team Member
  - i. Professionalism
  - ii. Professional Societies
- j. Legal Issues
  - i. Legal terminology (e.g. battery, negligence, etc.)
  - ii. Legal doctrines (e.g. *respondeat superior*, *res ipsa loquitur*, Good Samaritan Law, etc.)
  - iii. Patient rights/responsibilities
  - iv. Patient education
  - v. Advanced directives
  - vi. Informed consent
- K. Radiographic positioning for pediatric radiography
  1. Immobilization techniques
  2. Patient interaction/communication skills
  3. Basic imaging routines

## Resources

Rollins, JH; Long, BW; Curtis, Tammy. *Merrill's Atlas of Radiographic Positions & Radiologic Procedures*. 15th. St. Louis, MO: Elsevier, 2023.

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Rollins, JH; Long, BW; Curtis, Tammy. *Workbook for Merrill's Atlas of Radiographic Positions & Radiologic Procedures*. 15th ed. St. Louis, MO: Elsevier, 2023.

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Adler, A; Carlton, R; & Stewart K. *Introduction to Radiologic & Imaging Sciences & Patient Care*. 8th. St. Louis, Mo, Elsevier, 2023.

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## Resources Other

Bontrager, K. *Radiographic Positioning and Related Anatomy* 10<sup>th</sup> edition, St. Louis, MO: Elsevier 2021`

- <http://www.getbodysmart.com> (<http://www.getbodysmart.com/>)
- Clover Learning | Radiography Training & Registry Exam Prep (<https://cloverlearning.com/>)
- <http://www.asrt.org> (<http://www.asrt.org/>) American Society of Radiologic Technologists Radiography Curriculum
- <http://www.arrt.org> (<http://www.arrt.org/>) American Registry of Radiologic Technologists Examination Content Specifications

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