



RAD-530: RADIOGRAPHIC POSITIONING II

Effective Term

Fall 2025

BOT Approval Date

11/14/2024

Discipline

RAD - Radiologic Technology

Course Number

530

Course Title

Radiographic Positioning II

Short Title

Radiographic Positioning II

Credit Status (CB 04)

D - Credit - Degree applicable

Units**Lecture Units**

3.00

Lab Units

1.00

Total Units

4.00

Hours**Lecture Contact Hours**

48-54

Out of Class Hours Lecture

96-108

Lab Contact Hours

48-54

Out of Class Hours Lab

0.00

Total Contact Hours

96 - 108

Total Out of Class Hours

96 - 108

Total Student Learning Hours

192 - 216

Is this an existing Extensive Lab?

Yes

Distance Education

No

Catalog Description

This course offers positioning methods for the digestive and urinary systems, skull, and vertebral column. Trauma positioning and surgical/mobile techniques are discussed along with image evaluation and radiation protection for all procedures.

Attach Supporting Documents

ASRT 2022 radiography curriculum guide.pdf

JRCERT 2021 Radiography Standards pg 28.pdf

Requisites**Pre or corequisite(s)****Prerequisite or corequisite(s) (must be taken simultaneously if not taken before)**

RAD-510 (with a grade of C or better)

and RAD-515 (with a grade of C or better)

and RAD-520 (with a grade of C or better).

Codes**TOP Code (CB 03)**

1225.00* - *Radiologic Technology

CIP Code

51.0911 - Radiologic Technology/Science - Radiographer.

Repeatability Code

No

Grading Option

Letter grade OR P/NP

Learning Objectives**Learning Objectives****Learning Objective**

1. Analyze general procedural considerations for each selected radiographic examination of the digestive and urinary systems, skull, vertebral column, and trauma radiography.
2. List and explain the routine and special views for digestive and urinary systems, skull, vertebral column, and trauma radiography.
3. Evaluate general radiation safety and protection practices associated with each radiologic examination
4. Describe routine and special views of radiographic procedures in terms of structures visualized along with general and positioning considerations.
5. Evaluate radiographic examinations to identify anatomy and critique for diagnostic quality.
6. Describe the basic manifestations of pathological conditions and their relevance to radiologic procedures.
7. Adapt radiographic procedures based on special considerations.
8. Organize equipment and supplies necessary to complete radiographic procedures.
9. Identify methods and barriers of communication and describe how each may be utilized to effectively during patient education.
10. Simulate radiographic techniques and positioning used in trauma and mobile radiography procedures.
11. Combine methods of radiation protection for the radiographer and patient for each radiographic procedure with considerations for patients with different gender, culture, race, and disabilities.

Learning Outcome Information

Course Learning Outcomes

Learning Outcome

1. Students will properly role play a radiographic imaging procedure of a selected skull position to include communication, radiation protection, critical thinking skills, and patient care skills to patients that have different genders, cultures, race, and disabilities.
2. Students will properly perform a radiographic imaging procedure of a selected spine position to include communication, radiation protection, critical thinking skills, and patient care skills to patients that have different genders, cultures, race, and disabilities..
3. Students will properly perform a radiographic imaging procedure of a selected digestive system position to include communication, radiation protection, critical thinking skills, and patient care skills to patients that have different genders, cultures, race, and disabilities..

Program Learning Outcomes

Learning Outcome

- Apply positioning skills in all required radiographic examinations.
- Select appropriate technical factors for radiographic examinations.
- Practice radiation protection for all radiographic examinations.
- Employ proper patient care techniques and effectively provide care for patients from diverse groups/populations.
- Demonstrate oral and written communication skills.
- Relate to and anticipate the needs of the doctors and technologists.
- Adjust to changes, situations, patient conditions, updated evidence-based practice, and deviation from the normal routine.
- Demonstrate knowledge of ethical requirements for an entry level radiographer along with ethical practices in a healthcare setting.
- Understand professional obligations upon gaining the ARRT status.

Institutional Learning Outcomes

Aesthetic Awareness: The student will identify and evaluate how aesthetic expression leads to an appreciation of social and cultural context as well as the values of art and nature.

Communication: The student will effectively express and exchange ideas through listening, speaking, reading, writing, visual works, and other modes of interpersonal expression.

Critical Thinking: The student will analyze problems, gather and synthesize relevant information, evaluate ideas, information, and evaluate alternative points of view to create, innovate and implement effective solutions.

Cultural Awareness and Humility: The student will demonstrate knowledge of and sensitivity toward individuals of diverse ethnicity, age, gender, sexual orientation, and religious affiliations, as well as toward those individuals with diverse abilities and socio-economic classes to respectfully interact with individuals of diverse perspectives, beliefs and values while being mindful of the limitation of their own cultural frameworks.

Information and Technology Literacy: The student will access, interpret, evaluate, and apply relevant information sources and digital media effectively, and in an ethical and legal manner.

Scientific Awareness: The student will apply the scientific method of inquiry to assess potential solutions for real-life challenges by employing science-based knowledge and methodologies in daily life.

Social Awareness: The student will recognize and analyze the interconnectedness of global, national, and local concerns, analyzing cultural, political, social, and environmental issues from multiple perspectives and appreciate similarities and differences among cultures.

Civic

Personal

and Professional Responsibility

Content

Course Lecture Content

1. Evaluation of Radiographic Orders
 - a. Patient identification
 - b. Verification of procedure(s) ordered
 - i. Requisition interpretations
 - ii. Medical reports
 - c. Review of clinical history
 - d. Clinical history and patient assessment

- i. Role of radiographer
 - ii. Questioning skills
 - iii. Determining the chief complaint
 - iv. Localization
 - v. Chronology
 - vi. Quality
 - vii. Severity
 - viii. Onset
 - ix. Aggravating or alleviating factors
 - x. Associated manifestations
 - xi. Special considerations for age, disability, gender, and cultural background
 - xii. Determining any allergies
2. Establish Patient Rapport
 - a. Patient status evaluation
 - i. Cooperation/uncooperative
 - ii. Trauma
 - iii. Geriatric/Pediatric
 - iv. Gender considerations
 - v. Race considerations
 - vi. Hearing or sight impairment
 - vii. Other
 - b. Explain procedures
3. Determine Patient Condition Regarding Pregnancy
4. Patient Preparation/Gowning
 - a. Dietary
 - b. Medication
 - c. Disrobing
 - d. Potential artifacts
 - e. Other
5. Room preparation
 - a. Appearance/cleanliness
 - b. Necessary supplies and accessory equipment available
 - c. Other
6. Patient assistance/application of positioning aids
7. Patient monitoring
 - a. Infants/children
 - b. Adults
 - i. Geriatric/pediatric
 - ii. Comatose
 - iii. Disoriented
 - iv. Other
8. Image evaluation
9. Patient post exam instructions
10. Technique formation/selection
11. Beam limitation/shielding
12. Beam alignment/angulation
13. Patient instructions
14. Special considerations
 - a. Atypical conditions
 - b. Mobile procedures
 - c. Age specific
 - d. Special needs patients
 - e. Trauma
15. Anatomy of structures demonstrated
16. Radiograph evaluation criteria

17. Positioning related to the digestive system
 - a. Esophagram
 - b. Upper gastrointestinal
 - c. Lower gastrointestinal
 - d. Biliary system
18. Positioning related to urinary system
 - a. IVU
 - b. Cystography
 - c. Voiding Cystography
 - d. Retrograde pyelogram
 - e. Retrograde urethrography
19. Skull Positioning
 - a. Skull lines
 - b. Skull Landmarks
 - c. Radiographic positions
 - i. Cranium
 - ii. Facial bones,
 - iii. Nasal bones
 - iv. Orbits/optic foramina
 - v. Zygomatic arches
 - vi. Mandible
 - vii. Temporomandibular articulations
 - viii. Paranasal sinuses
 - d. Skull image evaluation criteria
20. Positioning related to Vertebral Column
 - a. Cervical
 - b. Thoracic
 - c. Lumbar
 - d. Sacrum and coccyx
 - e. Sacroiliac articulations
 - f. Scoliosis survey
21. Positioning related to Trauma Radiography
 - a. Upper extremities
 - b. Lower extremities
 - c. Chest and bony thorax
 - d. Vertebral column
 - e. Skull
22. Mobile/surgical techniques
 - a. Chest
 - b. Abdomen
 - c. Surgical considerations

Course Lab Content

1. Phantom imaging of selected radiographic images of the digestive and urinary systems, skull, vertebral column, and trauma radiographic procedures
 - a. Part placement
 - b. Image receptor selection and placement
 - c. Beam alignment and angle
 - d. Beam limitation and shielding
2. Role play scenarios for positions for selected radiographic procedures of the digestive and urinary systems, skull, vertebral column, and trauma radiographic procedures
 - a. Patient instructions
 - b. Patient positioning
 - c. Part placement
 - d. Image receptor selection and placement

- e. Beam alignment and angle
 - f. Beam limitation and shielding
- 3. Selection of technical factors
 - a. Milliampere
 - b. Time
 - c. Kilovoltage
 - d. Focal spot size
- 4. Radiation protection practices
 - a. Collimation
 - b. Gonadal shielding
 - c. Technical factors
- 5. Special Considerations
 - a. Atypical conditions
 - b. Mobile procedures
 - c. Age specific
 - d. Special needs patients
- 6. Radiographic critique
 - a. Position
 - b. Anatomy
 - c. Technical factors
 - d. Beam limitation
 - e. Central ray position
 - f. Image criteria
- 7. Image anatomy labeling
 - a. Digestive system
 - b. Urinary system
 - c. Skull
 - d. Vertebral column
 - e. Trauma positions
- 8. Mobile radiography
 - a. Chest
 - b. Abdomen
 - c. Surgery considerations

Methods of Instruction

Method

Lecture

Integration

Lecture and demonstration will be used to present information about the proper positions for patient imaging of the digestive and urinary systems, skull, vertebral column, trauma, and mobile radiography procedures.

Method

Reading

Integration

Students are required to complete reading assignments from the required textbook, Radiographic Positioning and Related Anatomy, Chapters 8-9 and 11-15. Following these assignments, there will be classroom discussions aimed at nurturing the critical thinking skills essential for radiographers to produce high-quality radiographic images of the digestive and urinary systems, skull, vertebral column, and trauma/mobile procedures.

Method

Film/video Viewing and Discussion

Integration

YouTube video presentations demonstrating patient positioning of the digestive and urinary systems, skull, vertebral column, and trauma/mobile procedures will be presented. These videos provide students with a realistic preview of what to expect when imaging real patients. Students will review these videos before performing them on actual patients in their clinical training situation. This will contribute to the student's confidence and competence in performing the required imaging exams leading to better competency evaluation scores. Discussion will follow on the challenges the radiographer may have in imaging a diverse population of patients while performing these exams.

Method

Lab Activities

Integration

Students will actively participate in positioning and imaging x-ray phantoms within a laboratory setting. This hands-on approach is designed to enhance their proficiency as radiographers, with a strong focus on the crucial elements of patient care and communication, specifically tailored to effectively serve a diverse patient population. Utilizing the provided phantoms, students will refine their techniques across various anatomical regions, including the skull, spine, digestive and urinary systems, as well as trauma imaging, all of which are fundamental to their professional growth. Throughout this learning experience, students will acquire and apply patient care and communication skills, ensuring their readiness to engage with and provide high-quality care to patients from various backgrounds.

Method

Role Playing/Simulation

Integration

Students will role play positioning other students in lab to improve their skills as a radiographer. They will develop effective communication skills for a diverse population of patients. Through role playing they will learn how to position the "patient" as a whole and not just the body part they are imaging. Students will role play imaging a patient from start to finish to prepare them for the hospital setting and imaging actual patients. Role playing scenarios will include imaging of the skull, spine, digestive and urinary systems procedures.

Methods of Evaluation**Method**

Exams/Tests

Integration

Exams and tests will be used to measure knowledge of radiographic procedures to include digestive and urinary systems, skull, and vertebral column. Trauma positioning and surgical/mobile techniques are also assessed. Exams will be given to measure student understanding of the subject matter and the ability to analyze proper patient positioning and radiation protection. The exams will be multiple choice to help prepare the students to pass the American Registry of Radiologic Technologists exam which is also multiple choice and graded for accuracy.

Method

Role-playing/Simulation

Integration

Competency evaluations, guided by a skills checklist, will appraise the student's proficiency in accurate patient positioning for radiographic examinations. This assessment will also evaluate the student's ability to communicate effectively with patients of varying gender, cultural backgrounds, races, and abilities while strictly adhering to radiation protection protocols and employing appropriate patient care skills. Radiographic exams encompass the digestive and urinary systems, skull, vertebral column, and trauma/mobile procedures. These evaluations will be graded based on the precision of positioning and techniques, in addition to the demonstration of suitable patient care skills and communication.

Method

Projects

Integration

Students will be tasked with laboratory assignments focused on radiographic imaging of phantoms while upholding proper radiation protection protocols. Lab assignments include digestive and urinary systems, skull, vertebral column along with trauma positioning and surgical/mobile techniques. Each lab assignment will be assessed to gauge the student's comprehension of aspects such as positioning, anatomical considerations, exposure techniques, and adherence to the established image criteria.

Assignments**Assignment Type**

Writing

In-class and/or outside of class

In-class

Formative or Summative

Summative

Assignment

Complete weekly laboratory assignments encompassing radiographic procedures related to the digestive and urinary systems, skull, vertebral column, trauma positioning, and surgical/mobile techniques. These assignments entail capturing radiographic images of phantoms in various positions using radiography equipment.

Label the anatomical structures visible in the radiographic images, referring to the provided list of anatomy specified in the assignment. Additionally, participation extends to the critique of radiographic images supplied by the instructor, focusing on assessing appropriateness in terms of positioning, anatomical representation, technical factors, collimation, and identification of any potential pathology.

An analysis is required to determine the suitability of the technical factors employed, with proposals for corrective measures for future image acquisitions where necessary. Evaluation of these lab assignments will be grounded in the overall completeness and accuracy they exhibit.

Assignment Type

Reading

In-class and/or outside of class

Outside of class

Formative or Summative

Formative

Assignment

Read chapters 8-9 and 11-15 in the required course textbook by J. Lampignano, which covers topics related to skull, spine, digestive and urinary tract procedures along with trauma/mobile radiography.

Preparation: For each of the assigned chapters, prepare a summary that includes the following details:

Radiographic positions covered in the chapter.

Part position (how the patient should be positioned), including any variations.

Degree of rotation (if applicable).

Tube angulation (if applicable).

Central ray position.

Patient instructions and considerations, with a focus on cultural sensitivity and diversity (e.g., consider how gender, race, culture, and disabilities might impact patient care and instructions).

Appropriate collimation techniques.
Anatomical structures visible in each position.
Image evaluation criteria (what to look for in a correctly positioned image).

Class Discussion: Be prepared to actively participate in class discussions for each chapter. During these discussions, we will explore the radiographic positions and anatomy covered in the assigned chapters. You will share your summaries and engage in a collaborative learning environment.

Questions and Clarifications: Feel free to bring any questions or seek clarifications during the class discussion. This is an opportunity to deepen your understanding of radiographic positioning and anatomy.

Grading Criteria:

Active participation in class discussions.
Quality and completeness of the prepared summaries for each chapter.
Demonstrated understanding of radiographic positions, anatomy, and related concepts.
This assignment is designed to enhance your comprehension of radiographic positioning and anatomy, which are crucial skills for a radiographer. Engage actively in the discussions to maximize your learning experience.

Assignment Type

Other

In-class and/or outside of class

In-class

Formative or Summative

Formative

Assignment

Engage in role-playing exercises and simulations to practice radiographic positioning techniques for various anatomical areas, including the digestive and urinary systems, skull, and vertebral column along with trauma positioning and surgical/mobile techniques.

Role-playing scenarios encompass comprehensive steps, such as patient introductions, confirming patient identification, preparing the patient for the procedure, gathering patient history, positioning the patient correctly, offering clear instructions, and completing the examination.

You will perform a total of 3 competency evaluations will be performed throughout the semester. These competency evaluations will be of the skull, spine, and one on the digestive and urinary system procedures combined.

Assessment of proficiency is based on the accuracy of positioning, communication, radiation protection techniques, and equipment manipulation. This checklist is provided in the lab manual. Also included in the assessment is the capacity to sensitively consider factors such as gender, culture, race, and disabilities when communicating with patients during these simulations.

Course Materials

Textbooks

Lampignano, John (2024), Bontrager's Textbook of Radiographic Positioning and Related Anatomy, 11th Ed., Elsevier. ISBN#: 9780323936132

Class Size Information

Class Size

32

Class Size Category

G - Large lab 32

Diversity and Inclusion**Explain how diversity and inclusion(e.g., gender, culture/race, sexuality, etc.) is infused into the course.**

In the lab, students actively engage in role-playing exercises that simulate imaging procedures on mock patients. The significance of effective communication becomes evident during the process of gathering patient histories and delivering examination instructions. Throughout these simulations of the skull, spine, digestive and urinary procedures, along with trauma/mobile radiography, students are conscientious about various factors such as gender, culture, race, and disabilities, recognizing their pivotal roles in shaping interactions with patients. These experiences cultivate knowledge, empathy, and a commitment to patient advocacy, all of which are essential attributes for future healthcare professionals.

While students receive explicit instruction on proper patient care and communication during these role-playing scenarios, they also actively participate in these exercises alongside their peers. These small lab groups provide a valuable platform for students to collaborate with one another as they work through these simulations, fostering a sense of camaraderie and teamwork among them.

Describe how assignments, instruction, evaluation, course content, and interactions are contextualized for diverse learners promoting an equitable course.

The course provides a range of resources tailored to cater to the diverse learning preferences of the students.

For those who prefer auditory learning, in-class instructor lectures are readily accessible. Visual learners can utilize instructor-led PowerPoint presentations, as well as required textbook readings that comprehensively cover positioning procedures. Additionally, lab demonstrations of the skull, spine, digestive and urinary procedures, along with trauma/mobile imaging, are conducted to visually illustrate various phantom positions.

Furthermore, hands-on learners will have ample opportunities to actively participate in the lab. Here, they will physically position fellow students, simulating patients, and operate radiographic equipment to capture real radiographs.

Interactions**Explain how the course will incorporate student-to-student interaction.**

This course integrates a practical laboratory component, enhancing classroom discussions with interactive learning opportunities. Within the lab, students partake in simulations, frequently collaborating in pairs or groups to actively immerse themselves in patient positioning scenarios. These scenarios cover various anatomical regions, such as the digestive and urinary systems, skull, and vertebral column, in addition to trauma positioning and surgical/mobile techniques, fostering dynamic discussions and interactions among peers. Also, students are urged to embrace collaborative teamwork while collectively tackling laboratory positioning assignments.

Explain how the course will incorporate instructor-to-student interaction.

Instructors conduct in-person lectures, providing students with the chance to seek clarification and pose questions related to subjects like the digestive and urinary systems, skull, vertebral column, as well as trauma positioning and surgical/mobile techniques. Within the laboratory environment, instructors collaborate directly with students to nurture the growth of positioning skills and enhance effective communication strategies, especially for addressing the needs of a diverse patient population. Real-life experience stories are seamlessly woven into lectures to enhance the overall learning experience.

Explain how the course will incorporate student-to-content interaction.

This course provides students with a comprehensive textbook that serves as a valuable reference for understanding the positioning of the digestive and urinary systems, skull, vertebral column, as well as trauma positioning and surgical/mobile techniques. Throughout their studies, students will have the opportunity to delve into the textbook content, engage with PowerPoint lectures, and actively participate in practical exercises within the positioning lab.

Within the lab setting, students will immerse themselves in hands-on experiences, which involve simulating various positions and manipulating radiographic equipment to capture the desired images. This practical, hands-on approach is designed to complement the textbook material, enabling students to gain a deeper and more comprehensive understanding of the subject matter.

Explain how the course will incorporate student-to-self interaction (metacognitive).

This course provides students with the opportunity to explore techniques for generating high-quality radiographic images of the digestive and urinary systems, skull, vertebral column, as well as trauma positioning and surgical/mobile techniques. The primary focus is on attaining precise positioning while minimizing radiation exposure, thereby ensuring the safety of both patients and themselves. Furthermore, it aims to enhance the capability of students to enable accurate diagnostic interpretation by radiologists.



Through this course, students will not only gain confidence in their ability to prepare for real-world imaging scenarios within a hospital training setting but will also acquire valuable skills in effective communication with patients from diverse backgrounds. This includes individuals of various races, cultures, ethnicities, and those with disabilities.

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