

Appendix A

Each of the following sub-appendices contains a detailed chart of course description, competencies & learning outcomes revisions described within the Probe notice documentation.

- A1- RADT 1010: Introduction to Radiology
- A2- RADT 1030: Radiographic Procedures I
- A3- RADT 1060: Radiographic Procedures II
- A4- RADT 1065: Radiologic Science
- A5- RADT 1075: Radiographic Imaging
- A6- RADT 1085: Radiologic Equipment
- A7- RADT 1200: Principles of Radiation Biology and Protection
- A8- RADT 1320: Clinical Radiography I
- A9- RADT 1330: Clinical Radiography II
- A10- RADT 2090: Radiography Procedures III
- A11- RADT 2260: Radiologic Technology Review
- A12- RADT 2340: Clinical Radiography III
- A13- RADT 2360: Clinical Radiography IV

A1- RADT 1010: Introduction to Radiology

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Identify concepts and terms relating to exposure and control factors, such as density , IR exposure , contrast, exposure equations, directional terms, and critique points of radiographs.	Explain a radiographer's professional liability concerning drug administration. (duplicated)	
Identify basic radiographic and fluoroscopic equipment.		
Identify basic automatic processors imaging components of CR and DR.		
Identify basic radiographic accessories such as calipers, cushions, screens , films , grids, and other accessories.		
Describe each of the radiologic al modalities such as CT, Interventional Radiography, Nuclear Medicine, Magnetic Resonance Imaging, Sonography, Radiation Therapy, and Mammography.		

A2- RADT 1030: Radiographic Procedures I

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
The student will explain explain the structures visualized, functions demonstrated, and the general positioning considerations involved clinical simulations for routine and special projection/positions of the lower extremities.		

A3- RADT 1060: Radiographic Procedures II

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
The student student will explain the structures visualized, functions demonstrated, and the general positioning considerations involved clinical simulations for routine and special views of the spine.		
Describe routine and special projections/positions of the GU anatomy in terms of structures visualized; functions demonstrated; and general positioning considerations.		
The student will apply knowledge of radiographic procedures related to the biliary system via performance in a laboratory environment.		

A4- RADT 1065: Radiologic Science

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Describe the fundamental atomic structure and characteristics of protons, neutrons, and electrons.		
Describe radioactivity and radioactive decay in terms of alpha, beta and gamma emission. x-Ray Production.		

A5- RADT 1075: Radiographic Imaging

Revised Course Description

The content of this course introduces factors that govern and influence the production of the radiographic image using ~~analog and~~ digital radiographic equipment found in diagnostic radiology. Emphasis will be placed on knowledge and techniques required to produce high-quality diagnostic radiographic images. Topics include Image quality (radiographic ~~density IR exposure~~; radiographic contrast; ~~recorded detail spatial resolution~~; distortion; grids; image receptors and holders (~~analog and digital~~); processing considerations (~~analog and digital~~); image acquisition (~~analog, digital, and PACS~~); image analysis; image artifacts (~~analog and digital~~); and guidelines for selecting exposure factors and evaluating images within a digital system. ~~will assist students to bridge between film-based and digital imaging systems. Factors that impact image acquisition, display, archiving and retrieval are discussed.~~ Laboratory experiences will demonstrate applications of theoretical principles and concepts.

Revised Competencies

Competency #3: Image Acquisition and Processing (~~Analog and Digital~~)

Competency #5: ~~Analog vs. Digital~~ Imaging Systems

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Identify and analyze the relationships of factors that control and affect radiographic density receptor exposure .	Describe film screen characteristics of density, contrast, recorded detail and distortion.	Describe receptor exposure, contrast, spatial resolution and distortion.
Identify and analyze the relationship of factors that control and affect radiographic contrast.	Summarize the relationship of factors affecting exposure latitude and film latitude.	
Identify and analyze the relationships of factors that control and affect recorded detail and visibility of detail spatial resolution .	Identify causes of film screen image fog (film age, chemical, radiation, temperature safelight).	
Perform Perform calculations to determine image magnification and percent magnification.	Explain film-screen latent image formation.	
Apply conversion factors for changes in the following areas: distance (inverse square law), grid, image receptor speed class , mAs reciprocity, density exposure maintenance and the 15 percent rule.	Describe film-screen processing and film storage.	
Describe Describe the basic principles of digital radiography and the terminology associated with digital imaging systems.	Discuss the steps of the processing cycle (develop, fix, wash, dry) and effects on image quality.	
Define Define digital imaging characteristics of receptor exposure, contrast, spatial resolution and distortion.	Identify the purpose of a daily quality control program for processors.	

Identify Identify and compare grid types and identify the most appropriate grid for a given clinical situation.	Identify types and causes of film screen image artifacts.	
Interpret Interpret grid efficiency in terms of grid ratio and frequency.	Compare dynamic range to latitude of a screen/film receptor system to that of a digital radiography system.	
Identify grid use errors associated with grid cut off and Moiré (Moire) effect.		
Describe the components of imaging informatics (PACS, RIS, HIS, DICOM and EMR).		
Discuss and define digital image processing, to include equalization, smoothing, electronic masking, edge enhancement, and grayscale (bit depth and and LUT), quantization, image stitching, VOI and ROI.		

A6- RADT 1085: Radiologic Equipment

Revised Course Description

Content establishes a knowledge base in radiographic, fluoroscopic and mobile equipment requirements and design. The content also provides a basic knowledge of Automatic Exposure Control (AEC) devices, beam restriction, filtration, quality control, and quality management principles of **analog and** digital systems. Laboratory experiences will demonstrate applications of theoretical principles and concepts.

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Demonstrate proper use of AEC devices, to include radiation detectors, back-up timer and density exposure adjustment (e.g. +1 or -1).		
Discuss automatic brightness control (ABC), automatic exposure rate control (AERC) , image intensifier positioning, magnification mode, kerma display and last image hold.		

A7- RADT 1200: Principles of Radiation Biology and Protection

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Define terms used to measure ionizing radiation such as rem, roentgen, rad , C/kg, seivert, air kerma and gray.		Describe DAP and radiographic dose documentation.
Explain how patient restraint immobilization devices are used to reduce personnel exposure during radiographic, fluoroscopic, mobile, and surgical procedures.		Discuss handling and disposal of radioactive material.
Determine dose equivalent in terms of SI and traditional units when given the quality factor and absorbed dose for different ionizing radiations.		
Explain two purposes of Public Law 97-35 (Patient Consumer Radiation Health and safety Act of 1981).		
Distinguish between stochastic and deterministic (early and late tissue reactions) effects of ionizing radiation.		

A8- RADT 1320: Clinical Radiography I

Revised Course Description

Introduces students to the hospital clinical setting and provides an opportunity for students to participate in or observe radiographic procedures. Topics include but not limited to: orientation to hospital areas and procedures; orientation to mobile/surgery; orientation to radiography and fluoroscopy; participation in and/or observation of procedures related to body cavities, the shoulder girdle, and upper extremities. Activities of students are under direct and indirect supervision.

Content and clinical practice experience should be designed to sequentially develop, apply, critically analyze, integrate, synthesize, and evaluate concepts and theories in the performance of radiologic procedures. Through structured, sequential, competency-based clinical assignments, concepts of team practice, patient-centered clinical practice and professional development are discussed, examined, and evaluated. Clinical practice experiences should be designed to provide patient care and assessment, competent performance of radiologic imaging and total quality management. Levels of competency and outcomes measurement ensure the well-being of the patient prior to, during and following the radiologic procedure.

Revised/Deleted Competencies

Competency 2: ~~Orientation to Mobile Surgery~~ **Participation in and/or Observation of Procedures**

Competency 3: ~~Orientation to Radiography and Fluoroscopy~~ **Patient Care**

Competency 4: ~~Participation in and/or Observation of Procedures Related to Body Cavities~~ **Final Completion of All Required Clinical Competencies**

Competency 5: Participation in and/or Observation of Procedures Related to the Should Girdle **(REMOVED)**

Competency 6: Participation in and/or Observation of Procedures Related to the Upper Extremity (REMOVED)
 Competency 7: Participation in and/or Observation of Procedures Related to the Boney Thorax (REMOVED)
 Competency 8: Participation in and/or Observation of Procedures Related to the Lower Extremity (REMOVED)

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.	Describe the role of health care team members in responding/reacting to a local or national emergency.
	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.	Recognize the influence of professional values on patient care.
	Describe the layout of the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Explain how a person's cultural beliefs toward illness and health affect his or her health status.
	Describe the services provided by the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Examine demographic factors that influence patient compliance with medical care.
	Describe the radiographic services offered outside departmental areas.	Comply with departmental and institutional response to emergencies, disasters and accidents.
	Identify the function of the radiology, radiation therapy, nuclear medicine, and diagnostic sonography departments in terms of membership in a total health care delivery system.	Adhere to national, institutional and departmental standards, policies and procedures regarding care of patients, providing radiologic procedures and reducing medical errors.
	Discuss the rationale for hospital program policies.	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.
	Describe the rules and regulations of the clinical evaluation center(s).	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.
	Identify the major responsibilities and duties of a student radiographer.	Describe the layout of all imaging departments within the clinical setting.
	Describe and/or perform administrative tasks required of a student radiographer.	Describe the services provided by all imaging departments within the clinical setting.
	Observe and/or participate in determining exposure factors and setting exposure controls on mobile/surgical radiographic equipment.	Identify the function of all imaging departments within facility and their role within the in total health care delivery system.
	Observe and/or participate in the use of radiation protection	Exercise the priorities required in daily clinical practice.

	procedures for mobile/surgical environments.	
	Observe and/or participate in conducting mobile/surgical radiographic procedures.	Execute medical imaging procedures under the appropriate level of supervision.
	Observe and/or participate in determining exposure factors and setting exposure controls for fixed radiographic and fluoroscopic equipment.	Adhere to team practice concepts that focus on organizational theories, roles of team members and conflict resolution.
	Observe and/or participate in the use of radiation protection procedures for radiography and fluoroscopy.	Adapt to changes and varying clinical situations.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the thoracic cavity.	Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity or culture.
	Observe and/or participate in routine radiographic procedures involving the thoracic cavity.	Integrate the use of appropriate and effective written, oral and nonverbal communication with patients, the public and members of the health care team in the clinical setting.
	Observe and/or participate in the evaluation of thoracic cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Integrate appropriate personal and professional values into clinical practice.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the abdominal cavity.	Use patient and family education strategies appropriate to the comprehension level of the patient/family.
	Observe and/or participate in routine radiographic procedures involving the abdominal cavity.	Provide desired psychosocial support to the patient and family.
	Observe and/or participate in the evaluation of abdominal cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competent assessment skills through effective management of the patient's physical and mental status.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the shoulder girdle.	Respond appropriately to medical emergencies.
	Observe and/or participate in routine radiographic procedures involving the shoulder girdle.	Adapt procedures to meet age-specific, disease-specific and cultural needs of patients.
	Observe and/or participate in the evaluation of shoulder girdle image in terms of positioning accuracy, image quality, and anatomical structures visualized.	Assess the patient and record clinical history.
	Observe and/or participate in the positioning of patients undergoing	Demonstrate basic life support procedures.

	routine radiographic procedures involving the bony thorax.	
	Observe and/or participate in routine radiographic procedures involving the bony thorax.	Use appropriate charting methods.
	Observe and/or participate in the evaluation of bony thorax images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Recognize life-threatening electrocardiogram (ECG) tracing.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the lower extremities.	Apply standard and transmission-based precautions.
	Observe and/or participate in routine radiographic procedures involving the lower extremities.	Apply the appropriate medical asepsis and sterile technique.
	Observe and/or participate in the evaluation of lower extremity images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competency in the principles of radiation protection standards.
		Apply the principles of total quality management.
		Report equipment malfunctions.
		Examine procedure orders for accuracy and make corrective actions when applicable.
		Demonstrate safe, ethical and legal practices.
		Integrate the radiographer's practice standards into clinical practice setting.
		Maintain patient confidentiality standards and meet HIPAA requirements.
		Demonstrate the principles of transferring, positioning and immobilizing patients.
		Differentiate between emergency and non-emergency procedures.
		Select technical factors to produce quality diagnostic images with the lowest radiation exposure possible.
		Critique images for appropriate anatomy, image quality and patient identification.
		Determine corrective measures to improve inadequate images.
		Execute the priorities required in daily clinical practice.
		Execute medical imaging procedures under appropriate level of supervision.

		Recognize the influence of professional values on patient care.
		Integrate the use of appropriate and effective written, oral, and nonverbal communication with patients, the public and members of the healthcare team.
		Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity, or culture.
		Evaluate the number, types, and degree to which clinical competencies have been completed and mastered.
		Develop a plan in conjunction with on-site clinical supervisors and program faculty to outline future completion and mastery of clinical competencies contained in this course.
		Identify the benefits associated with participation in continuing education for radiographers.
		Develop a tentative plan for participation in continuing education for student radiographers.

A9- RADT 1330: Clinical Radiography II

Revised Course Description

Introduces students to the hospital clinical setting and provides an opportunity for students to participate in or observe radiographic procedures. Topics include but not limited to: orientation to hospital areas and procedures; orientation to mobile/surgery; orientation to radiography and fluoroscopy; participation in and/or observation of procedures related to body cavities, the shoulder girdle, and upper extremities. Activities of students are under direct and indirect supervision.

Content and clinical practice experience should be designed to sequentially develop, apply, critically analyze, integrate, synthesize, and evaluate concepts and theories in the performance of radiologic procedures. Through structured, sequential, competency-based clinical assignments, concepts of team practice, patient-centered clinical practice and professional development are discussed, examined, and evaluated. Clinical practice experiences should be designed to provide patient care and assessment, competent performance of radiologic imaging and total quality management. Levels of competency and outcomes measurement ensure the well-being of the patient prior to, during and following the radiologic procedure.

Revised/Deleted Competencies

- Competency 2: ~~Orientation to Mobile Surgery~~ **Participation in and/or Observation of Procedures**
 Competency 3: ~~Orientation to Radiography and Fluoroscopy~~ **Patient Care**
 Competency 4: ~~Participation in and/or Observation of Procedures Related to Body Cavities~~ **Final Completion of All Required Clinical Competencies**
 Competency 5: Participation in and/or Observation of Procedures Related to the Should Girdle **(REMOVED)**
 Competency 6: Participation in and/or Observation of Procedures Related to the Upper Extremity **(REMOVED)**
 Competency 7: Participation in and/or Observation of Procedures Related to the Boney Thorax **(REMOVED)**
 Competency 8: Participation in and/or Observation of Procedures Related to the Lower Extremity **(REMOVED)**

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.	Describe the role of health care team members in responding/reacting to a local or national emergency.
	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.	Recognize the influence of professional values on patient care.
	Describe the layout of the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Explain how a person’s cultural beliefs toward illness and health affect his or her health status.
	Describe the services provided by the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Examine demographic factors that influence patient compliance with medical care.
	Describe the radiographic services offered outside departmental areas.	Comply with departmental and institutional response to emergencies, disasters and accidents.
	Identify the function of the radiology, radiation therapy,	Adhere to national, institutional and departmental standards, policies

	nuclear medicine, and diagnostic sonography departments in terms of membership in a total health care delivery system.	and procedures regarding care of patients, providing radiologic procedures and reducing medical errors.
	Discuss the rationale for hospital program policies.	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.
	Describe the rules and regulations of the clinical evaluation center(s).	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.
	Identify the major responsibilities and duties of a student radiographer.	Describe the layout of all imaging departments within the clinical setting.
	Describe and/or perform administrative tasks required of a student radiographer.	Describe the services provided by all imaging departments within the clinical setting.
	Observe and/or participate in determining exposure factors and setting exposure controls on mobile/surgical radiographic equipment.	Identify the function of all imaging departments within facility and their role within the in total health care delivery system.
	Observe and/or participate in the use of radiation protection procedures for mobile/surgical environments.	Exercise the priorities required in daily clinical practice.
	Observe and/or participate in conducting mobile/surgical radiographic procedures.	Execute medical imaging procedures under the appropriate level of supervision.
	Observe and/or participate in determining exposure factors and setting exposure controls for fixed radiographic and fluoroscopic equipment.	Adhere to team practice concepts that focus on organizational theories, roles of team members and conflict resolution.
	Observe and/or participate in the use of radiation protection procedures for radiography and fluoroscopy.	Adapt to changes and varying clinical situations.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the thoracic cavity.	Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity or culture.
	Observe and/or participate in routine radiographic procedures involving the thoracic cavity.	Integrate the use of appropriate and effective written, oral and nonverbal communication with patients, the public and members of the health care team in the clinical setting.
	Observe and/or participate in the evaluation of thoracic cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Integrate appropriate personal and professional values into clinical practice.

	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the abdominal cavity.	Use patient and family education strategies appropriate to the comprehension level of the patient/family.
	Observe and/or participate in routine radiographic procedures involving the abdominal cavity.	Provide desired psychosocial support to the patient and family.
	Observe and/or participate in the evaluation of abdominal cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competent assessment skills through effective management of the patient's physical and mental status.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the shoulder girdle.	Respond appropriately to medical emergencies.
	Observe and/or participate in routine radiographic procedures involving the shoulder girdle.	Adapt procedures to meet age-specific, disease-specific and cultural needs of patients.
	Observe and/or participate in the evaluation of shoulder girdle image in terms of positioning accuracy, image quality, and anatomical structures visualized.	Assess the patient and record clinical history.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the bony thorax.	Demonstrate basic life support procedures.
	Observe and/or participate in routine radiographic procedures involving the bony thorax.	Use appropriate charting methods.
	Observe and/or participate in the evaluation of bony thorax images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Recognize life-threatening electrocardiogram (ECG) tracing.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the lower extremities.	Apply standard and transmission-based precautions.
	Observe and/or participate in routine radiographic procedures involving the lower extremities.	Apply the appropriate medical asepsis and sterile technique.
	Observe and/or participate in the evaluation of lower extremity images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competency in the principles of radiation protection standards.
		Apply the principles of total quality management.
		Report equipment malfunctions.
		Examine procedure orders for accuracy and make corrective actions when applicable.

		Demonstrate safe, ethical and legal practices.
		Integrate the radiographer's practice standards into clinical practice setting.
		Maintain patient confidentiality standards and meet HIPAA requirements.
		Demonstrate the principles of transferring, positioning and immobilizing patients.
		Differentiate between emergency and non-emergency procedures.
		Select technical factors to produce quality diagnostic images with the lowest radiation exposure possible.
		Critique images for appropriate anatomy, image quality and patient identification.
		Determine corrective measures to improve inadequate images.
		Execute the priorities required in daily clinical practice.
		Execute medical imaging procedures under appropriate level of supervision.
		Recognize the influence of professional values on patient care.
		Integrate the use of appropriate and effective written, oral, and nonverbal communication with patients, the public and members of the healthcare team.
		Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity, or culture.
		Evaluate the number, types, and degree to which clinical competencies have been completed and mastered.
		Develop a plan in conjunction with on-site clinical supervisors and program faculty to outline future completion and mastery of clinical competencies contained in this course.
		Identify the benefits associated with participation in continuing education for radiographers.
		Develop a tentative plan for participation in continuing education for student radiographers.

A10- RADT 2090: Radiographic Procedures III

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
Evaluate sinus positioning accuracy , image quality, and anatomical structures visualized on the image.	Explain basic CT acquisition protocol for the head.	
Define define terms and phrases related to special procedures to include: a) arthrogram; b) endoscopic retrograde cholangiopancreatogram (ERCP); c) myelogram; d) venogram ; d) surgical cholangiogram; and e) hysterosalpingogram.		
Discuss the indications and contraindications for the following procedures to include: a) arthrogram; b) endoscopic retrograde cholangiopancreatogram (ERCP); c) myelogram; d) venogram ; d) surgical cholangiogram; and e) hysterosalpingogram.		
Discuss imaging, equipment, and supplies used for the following procedures to include: a) arthrogram; b) endoscopic retrograde cholangiopancreatogram (ERCP); c) myelogram; d) venogram ; d) surgical cholangiogram; and e) hysterosalpingogram.		
Explain explain various minor radiographic procedures, describe the contrast medium utilized in terms of type, administration method, and quantity.		
Define terms and phrases related to special procedures to include: a) arthrogram; b) endoscopic retrograde cholangiopancreatogram (ERCP); c) myelogram; d) venogram ; d) surgical cholangiogram; and e) hysterosalpingogram		

A11- RADT 2260: Radiologic Technology Review

Revised Course Description

Provides a review of basic knowledge from previous courses and helps the student prepare for national certification examinations for radiographers. Topics include: image production and evaluation; radiographic procedures; anatomy, physiology, pathology, and terminology; equipment operation and quality control; radiation protection; and patient care and education.

Provides a review of basic knowledge from previous courses and helps the student prepare for national certification examinations for radiographers. Topics include: Patient Care (Patient Interactions and Management), Safety (Radiation Physics, Radiobiology and Radiation Protection), Image Production (Image Acquisition, Technical Evaluation, Equipment Operation and Quality Assurance), and Procedures (Head, Spine, Pelvis, Thorax, Abdomen and Extremities).

Revised/Deleted Competencies

- Competency 1: ~~Image Production and Evaluation~~ Patient Care
- Competency 2: ~~Radiographic Procedures~~ Safety
- Competency 3: ~~Anatomy, Physiology, Pathology and Terminology~~ Image Production
- Competency 4: ~~Equipment Operation and Quality Control~~ Procedures
- Competency 5: ~~Radiation Protection~~ (Remove)
- Competency 6: ~~Patient Care and Education~~ (Remove)

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
	The student will review factors affecting recorded detail, density, distortion, and contrast.	The student will discuss patient’s rights, including informed consent, confidentiality, Patient’s Bill of Rights, etc.
	The student will discuss the relationships among density, distortion, contrast, and recorded detail.	The student will identify legal issues when performing radiography, including patient ID verification, common legal terminology, legal doctrines, use of restraints, and manipulation of electronic data.
	The student will review factors that govern the selection of films, screens, and grids.	The student will list the ARRT Standards of Ethics.
	The student will discuss the relationship between films and screens.	The student will describe various types of patient communication, including verbal and non-verbal forms.
	The student will review the effect of factors influencing exposure control such as the nature of the radiographic procedure; films, screens, and grids selected; power setting used; and beam limitation and scatter.	The student will identify various challenges to patient communication (i.e. language barriers, cultural and social factors, physical or mental impairment, age, etc.)
	The student will perform exposure calculations for various radiographic procedures.	The student will demonstrate proper patient education, including explanation of current procedure, verifying informed consent, pre- and post-examination instructions

		and responding to inquiries about other imaging modalities.
	The student will describe the advantages and disadvantages associated with automatic exposure control.	The student will review the principles of body mechanics applicable to patient care.
	The student will discuss factors affecting the decision to use automatic exposure controls.	The student will demonstrate procedures for patient transfer such as table to table, table to wheelchair, wheelchair to bed, bed to stretcher, the three-man lift, and draw sheet lift.
	The student will select exposure factors from a technique chart for a simulated radiographic procedure.	The student will describe the proper procedure for assisting patients with medical equipment, including infusion pumps, oxygen delivery systems, nasogastric tubes, and urinary catheters.
	The student will review film storage considerations.	The student will demonstrate routine patient monitoring for vital signs, physical signs and symptoms, fall prevention and variance documentation.
	The student will review radiographic identification procedures.	The student will identify the symptoms of common medical emergencies, including cardiac arrest, anaphylactic shock, convulsion, seizure, hemorrhage, apnea, emesis, aspiration, fractures, and diabetic coma/insulin reaction.
	The student will discuss the daily and periodic maintenance for automatic film processors.	The student will discuss the cycle of infection in healthcare settings and identify modes of transmission (direct vs. indirect).
	The student will discuss the procedures for loading and unloading.	The student will describe the disinfection and sterilization procedures in terms of types and methods used when given various radiographic procedures and patient information.
	The student will discuss the exposure indicators for the 3 major computed radiography systems.	The student will list the CDC Standard Precautions (hand hygiene, PPE, safe injection practices, safe, disposal of contaminated materials, etc.).
	The student will describe the effects of frequency, contrast, and noise on digital image quality.	The student will define transmission-based precautions (contact, droplet and airborne) and other additional precautions (neutropenic precautions and nosocomial infections).
	The student will discuss the function of digital image window level and width controls.	The student will identify various hazardous materials by types, handling and disposal requirements, as listed on material safety data

		sheets (including disposal of radioactive materials).
	The student will describe picture archival and communication systems (PACS).	The student will discuss patient preparation in terms patient history, medication reconciliation, premedication and sequencing/scheduling of exams per the patient's pharmacological history.
	The student will discuss film archival.	The student will define various routes of drug administration (i.e. IV, oral, etc.).
	The student will discuss the criteria used to evaluate the diagnostic quality of radiographs.	The student will demonstrate proper venipuncture technique.
	The student will list the possible causes of poor radiograph quality.	The student will list various types of contrast media and their appropriateness to different ordered exams.
	The student will review positioning terminology.	The student will describe the different complications or adverse reactions to contrast media.
	The student will describe types and functions of immobilization and positioning devices.	The student will discuss the principles of x-ray production and target interactions within the x-ray tube (bremsstrahlung and characteristic).
	The student will state the appropriate breathing instructions for the patient when given a radiographic procedure.	The student will describe the x-ray beam in terms of quality and quantity and factors that affect each.
	The student will discuss positioning and technique variations for various radiographic procedures.	The student will define the types of x-ray photon interactions with matter and attenuation by various tissues.
	The student will discuss various radiographic procedures, describe the requisite procedures for patient preparation.	The student will identify the SI units of measurement for radiation for absorbed dose, dose equivalent, exposure, effective dose and air kerma.
	The student will list the types of contrast media.	The student will discuss the radiosensitivity of various biologic tissue in terms of dose-response relationships, LET, RBE, cell survival and oxygen effect.
	The student will match contrast media with radiographic procedures.	The student will list somatic radiation effects in terms of both short- and long-term effects.
	The student will list the indications, contraindications, and the adverse reactions associated with its use when given a specific contrast medium.	The student will define the major phases of acute radiation sickness (hemopoietic, gastrointestinal and CNS syndromes).
	The student will explain the steps for patient preparation and patient	The student will describe embryonic/fetal risks to radiation

	positioning when given a list of routine and special radiographic procedures.	exposure and the genetic impact of exposure when it comes to gonadal shielding.
	The student will select the equipment needed and the exposure settings that are consistent with A.R.R.T. specifications when given a list of routine and special radiographic procedures.	The student will discuss minimizing patient exposure in terms of exposure factors, shielding, beam restriction, filtration, patient considerations, dose documentation, types of image receptors, use of grids, fluoroscopy considerations, and use of the dose area product measurement.
	The student will label each anatomical structure with its accepted medical term when given diagrams of the skeletal, digestive, circulatory, respiratory, reproductive, urinary, and nervous/sensory systems.	The student will discuss personnel protection in terms of radiation source, basic protection methods, protective devices, special considerations with mobile/fluoroscopy units, radiation monitoring devices and NCRP recommendations for dose limits (occupational, public and embryo/fetus exposure, etc.).
	The student will define a list of terms relating to physiology and pathology.	The student will review factors affecting receptor exposure, contrast, spatial resolution and distortion.
	The student will evaluate radiographic images of the skeletal, digestive, circulatory, respiratory, genitourinary, and nervous/sensory systems in terms of positioning accuracy, image quality, and anatomical structures and physiological functions visualized.	The student will discuss the development and use of radiographic technique charts.
	The student will evaluate radiographic images of the skeletal, digestive, circulatory, respiratory, genitourinary, and nervous/sensory systems in terms of pathologies revealed.	The student will identify the purpose of automatic exposure control (AEC) and its advantages and disadvantages.
	The student will label diagrams of the component parts of various radiographic equipment and accessories.	The student will define various digital imaging characteristics, including equipment-related spatial resolution, contrast resolution and image signal.
	The student will describe equipment used for computed radiography and digital radiography.	The student will review the methods and legal considerations for proper image identification.
	The student will discuss the differences in various types and models of portable radiographic equipment.	The student will identify components of various types of radiographic image equipment, including the operating console, x-ray tube, AEC/manual exposure

		controls and beam restriction devices.
	The student will discuss the differences in portable and non-portable radiographic equipment.	The student will list the basic components of the x-ray generator, transformers and rectification system.
	The student will describe the theory of operation of an X-ray tube.	The student will identify components of fixed and mobile fluoroscopic units, including types of image receptors, viewing systems, recording systems, automatic brightness control (ABC), magnification mode and table types.
	The student will describe the construction and function of an X-ray tube.	The student will describe the components of digital imaging, including both CR and DR receptors.
	The student will determine the maximum allowable exposure factor for various radiographic procedures using an X-ray tube rating chart.	The student will review image processing and display characteristics in terms of raw data (pre-processing data), corrected data, display data, post-processing, display monitors and imaging informatics (DICOM, PACS, RIS/HIS and EMR/EHR).
	The student will determine the rate of anode and tube housing cooling when given simulations of radiographic exposures and anode and tube housing cooling charts.	The student will identify criteria for image evaluation of technical factors, including exposure indicators, quantum mottle, saturation, contrast, spatial resolution, distortion, identification markers, image artifacts and radiation fog.
	The student will review X-ray tube warm-up procedures for radiographic equipment from various manufacturers.	The student will discuss quality control of imaging equipment and accessories in terms of beam restriction, recognizing and reporting of malfunctions, digital imaging receptor system QC, and shielding accessories.
	The student will perform safety checks of radiographic equipment and accessories such as lead aprons and gloves and collimator accuracy.	The student will discuss positioning and technique variations for various radiographic procedures, including head, spine, pelvis, thorax, abdomen/GI, urologic, upper and lower extremity studies.
	The student will identify symptoms of malfunctions in radiographic equipment.	The student will label each anatomical structure with its accepted medical term when given diagrams of the skeletal, digestive, circulatory, respiratory, reproductive, urinary, and nervous/sensory systems.

	The student will discuss reporting procedures for malfunctions of radiographic equipment.	The student will evaluate radiographic images of the skeletal, digestive, circulatory, respiratory, genitourinary, and nervous/sensory systems in terms of positioning accuracy, image quality, and anatomical structures and physiological functions visualized.
	The student will describe the use and function of beam limiting devices, beam filtration, and shielding devices.	The student will evaluate radiographic images of the skeletal, digestive, circulatory, respiratory, genitourinary, and nervous/sensory systems in terms of pathologies revealed.
	The student will describe the relationship between exposure factors and patient dosage.	The student will explain the steps for patient preparation and patient positioning when given a list of routine and special radiographic procedures, including procedure adaptation for body habitus, trauma, pathology, age or limited mobility.
	The student will describe the nature and function of the ten-day rule.	The student will select the equipment needed and the exposure settings that are consistent with A.R.R.T. specifications when given a list of routine and special radiographic procedures.
	The student will determine the film, screen, and exposure setting combinations that will minimize the radiation dosage that patients receive when given various radiographic procedures.	
	The student will discuss methods to avoid repeat radiographs.	
	The student will describe the purpose of primary and secondary radiation barriers and room construction and design in terms of personnel protection.	
	The student will discuss the radiographic equipment and techniques used to reduce personnel exposure during radiographic, fluoroscopic, mobile, and surgical procedures.	
	The student will discuss the types and purposes of personnel protective devices used during radiographic, fluoroscopic, mobile, and surgical procedures.	
	The student will describe the types, uses, and purposes of patient restraint devices for reducing personnel radiation exposure.	

	The student will describe personnel monitoring devices in terms of purposes, types, characteristics, advantages, and disadvantages.	
	The student will validate the patient's identity by asking the patient and/or by checking the wrist band.	
	The student will validate the radiographic procedure requested by checking the procedure requisition form.	
	The student will review the principles of body mechanics applicable to patient care.	
	The student will demonstrate procedures for patient transfer such as table to table, table to wheelchair, wheelchair to bed, bed to stretcher, the three-man lift, and draw-sheet lift.	
	The student will describe the procedures for turning patients who have severe trauma, unconsciousness, disorientation, or amputated limbs.	
	The student will list the patient preparation steps when given various radiographic procedures.	
	The student will state the appropriate instructions to be given to the patient for various radiographic procedures.	
	The student will list the appropriate contrast agent for various radiographic procedures when given procedures using contrast agents.	
	The student will discuss patient preparation in terms of procedures, indications, contraindications, and symptoms of and treatment for adverse reactions to contrast agents when given various radiographic procedures.	
	The student will describe the disinfection and sterilization procedures in terms of types and methods used when given various radiographic procedures and patient information.	
	The student will demonstrate the procedures for scrubbing, donning gowns and gloves, removing gowns	

	and gloves, and handling sterile instruments.	
	The student will discuss procedures for handling and disposing of infectious wastes.	
	The student will describe the function, purpose, and procedures for each when given a list of isolation techniques.	
	The student will discuss the psychological considerations for the management of infectious patients.	
	The student will describe the vital signs used to assess patient condition.	
	The student will identify normal values for measurements of temperature, pulse, blood pressure, and respiration.	
	The student will demonstrate the clinical measurement and recording of temperature, pulse, blood pressure, and respiration.	
	The student will describe the symptoms of cardiac arrest, anaphylactic shock, convulsion, seizure, hemorrhage, apnea, emesis, aspiration, fractures, and diabetic coma/insulin reaction.	
	The student will describe the acute care procedures for cardiac arrest, anaphylactic shock, convulsion, seizure, hemorrhage, apnea, emesis, aspiration, fractures, and diabetic coma/insulin reaction.	
	The student will describe the use of medical equipment and supplies in treating medical emergencies.	

A12- RADT 2340: Clinical Radiography III

Revised Course Description

Introduces students to the hospital clinical setting and provides an opportunity for students to participate in or observe radiographic procedures. Topics include but not limited to: orientation to hospital areas and procedures; orientation to mobile/surgery; orientation to radiography and fluoroscopy; participation in and/or observation of procedures related to body cavities, the shoulder girdle, and upper extremities. Activities of students are under direct and indirect supervision.

Content and clinical practice experience should be designed to sequentially develop, apply, critically analyze, integrate, synthesize, and evaluate concepts and theories in the performance of radiologic procedures. Through structured, sequential, competency-based clinical assignments, concepts of team practice, patient-centered clinical practice and professional development are discussed, examined, and evaluated. Clinical practice experiences should be designed to provide patient care and assessment, competent performance of radiologic imaging and total quality

management. Levels of competency and outcomes measurement ensure the well-being of the patient prior to, during and following the radiologic procedure.

Revised/Deleted Competencies

Competency 2: ~~Orientation to Mobile Surgery~~ **Participation in and/or Observation of Procedures**

Competency 3: ~~Orientation to Radiography and Fluoroscopy~~ **Patient Care**

Competency 4: ~~Participation in and/or Observation of Procedures Related to Body Cavities~~ **Final Completion of All Required Clinical Competencies**

Competency 5: Participation in and/or Observation of Procedures Related to the Shoulder Girdle **(REMOVED)**

Competency 6: Participation in and/or Observation of Procedures Related to the Upper Extremity **(REMOVED)**

Competency 7: Participation in and/or Observation of Procedures Related to the Bony Thorax **(REMOVED)**

Competency 8: Participation in and/or Observation of Procedures Related to the Lower Extremity **(REMOVED)**

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.	Describe the role of health care team members in responding/reacting to a local or national emergency.
	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.	Recognize the influence of professional values on patient care.
	Describe the layout of the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Explain how a person’s cultural beliefs toward illness and health affect his or her health status.
	Describe the services provided by the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Examine demographic factors that influence patient compliance with medical care.
	Describe the radiographic services offered outside departmental areas.	Comply with departmental and institutional response to emergencies, disasters and accidents.
	Identify the function of the radiology, radiation therapy, nuclear medicine, and diagnostic sonography departments in terms of membership in a total health care delivery system.	Adhere to national, institutional and departmental standards, policies and procedures regarding care of patients, providing radiologic procedures and reducing medical errors.
	Discuss the rationale for hospital program policies.	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.
	Describe the rules and regulations of the clinical evaluation center(s).	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.
	Identify the major responsibilities and duties of a student radiographer.	Describe the layout of all imaging departments within the clinical setting.

	Describe and/or perform administrative tasks required of a student radiographer.	Describe the services provided by all imaging departments within the clinical setting.
	Observe and/or participate in determining exposure factors and setting exposure controls on mobile/surgical radiographic equipment.	Identify the function of all imaging departments within facility and their role within the in total health care delivery system.
	Observe and/or participate in the use of radiation protection procedures for mobile/surgical environments.	Exercise the priorities required in daily clinical practice.
	Observe and/or participate in conducting mobile/surgical radiographic procedures.	Execute medical imaging procedures under the appropriate level of supervision.
	Observe and/or participate in determining exposure factors and setting exposure controls for fixed radiographic and fluoroscopic equipment.	Adhere to team practice concepts that focus on organizational theories, roles of team members and conflict resolution.
	Observe and/or participate in the use of radiation protection procedures for radiography and fluoroscopy.	Adapt to changes and varying clinical situations.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the thoracic cavity.	Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity or culture.
	Observe and/or participate in routine radiographic procedures involving the thoracic cavity.	Integrate the use of appropriate and effective written, oral and nonverbal communication with patients, the public and members of the health care team in the clinical setting.
	Observe and/or participate in the evaluation of thoracic cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Integrate appropriate personal and professional values into clinical practice.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the abdominal cavity.	Use patient and family education strategies appropriate to the comprehension level of the patient/family.
	Observe and/or participate in routine radiographic procedures involving the abdominal cavity.	Provide desired psychosocial support to the patient and family.
	Observe and/or participate in the evaluation of abdominal cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competent assessment skills through effective management of the patient's physical and mental status.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the shoulder girdle.	Respond appropriately to medical emergencies.

	Observe and/or participate in routine radiographic procedures involving the shoulder girdle.	Adapt procedures to meet age-specific, disease-specific and cultural needs of patients.
	Observe and/or participate in the evaluation of shoulder girdle image in terms of positioning accuracy, image quality, and anatomical structures visualized.	Assess the patient and record clinical history.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the bony thorax.	Demonstrate basic life support procedures.
	Observe and/or participate in routine radiographic procedures involving the bony thorax.	Use appropriate charting methods.
	Observe and/or participate in the evaluation of bony thorax images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Recognize life-threatening electrocardiogram (ECG) tracing.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the lower extremities.	Apply standard and transmission-based precautions.
	Observe and/or participate in routine radiographic procedures involving the lower extremities.	Apply the appropriate medical asepsis and sterile technique.
	Observe and/or participate in the evaluation of lower extremity images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competency in the principles of radiation protection standards.
		Apply the principles of total quality management.
		Report equipment malfunctions.
		Examine procedure orders for accuracy and make corrective actions when applicable.
		Demonstrate safe, ethical and legal practices.
		Integrate the radiographer's practice standards into clinical practice setting.
		Maintain patient confidentiality standards and meet HIPAA requirements.
		Demonstrate the principles of transferring, positioning and immobilizing patients.
		Differentiate between emergency and non-emergency procedures.
		Select technical factors to produce quality diagnostic images with the lowest radiation exposure possible.

		Critique images for appropriate anatomy, image quality and patient identification.
		Determine corrective measures to improve inadequate images.
		Execute the priorities required in daily clinical practice.
		Execute medical imaging procedures under appropriate level of supervision.
		Recognize the influence of professional values on patient care.
		Integrate the use of appropriate and effective written, oral, and nonverbal communication with patients, the public and members of the healthcare team.
		Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity, or culture.
		Evaluate the number, types, and degree to which clinical competencies have been completed and mastered.
		Develop a plan in conjunction with on-site clinical supervisors and program faculty to outline future completion and mastery of clinical competencies contained in this course.
		Identify the benefits associated with participation in continuing education for radiographers.
		Develop a tentative plan for participation in continuing education for student radiographers.

A13- RADT 2360: Clinical Radiography IV

Revised Course Description

Introduces students to the hospital clinical setting and provides an opportunity for students to participate in or observe radiographic procedures. Topics include but not limited to: orientation to hospital areas and procedures; orientation to mobile/surgery; orientation to radiography and fluoroscopy; participation in and/or observation of procedures related to body cavities, the shoulder girdle, and upper extremities. Activities of students are under direct and indirect supervision.

Content and clinical practice experience should be designed to sequentially develop, apply, critically analyze, integrate, synthesize, and evaluate concepts and theories in the performance of radiologic procedures. Through structured, sequential, competency-based clinical assignments, concepts of team practice, patient-centered clinical practice and professional development are discussed, examined, and evaluated. Clinical practice experiences should be designed to provide patient care and assessment, competent performance of radiologic imaging and total quality

management. Levels of competency and outcomes measurement ensure the well-being of the patient prior to, during and following the radiologic procedure.

Revised/Deleted Competencies

Competency 2: ~~Orientation to Mobile Surgery~~ **Participation in and/or Observation of Procedures**

Competency 3: ~~Orientation to Radiography and Fluoroscopy~~ **Patient Care**

Competency 4: ~~Participation in and/or Observation of Procedures Related to Body Cavities~~ **Final Completion of All Required Clinical Competencies**

Competency 5: Participation in and/or Observation of Procedures Related to the Should Girdle **(REMOVED)**

Competency 6: Participation in and/or Observation of Procedures Related to the Upper Extremity **(REMOVED)**

Competency 7: Participation in and/or Observation of Procedures Related to the Boney Thorax **(REMOVED)**

Competency 8: Participation in and/or Observation of Procedures Related to the Lower Extremity **(REMOVED)**

Revised Learning Outcomes	Deleted Learning Outcomes	Added Learning Outcomes
	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.	Describe the role of health care team members in responding/reacting to a local or national emergency.
	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.	Recognize the influence of professional values on patient care.
	Describe the layout of the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Explain how a person’s cultural beliefs toward illness and health affect his or her health status.
	Describe the services provided by the radiology, radiation therapy, nuclear medicine, and diagnostic medical sonography departments.	Examine demographic factors that influence patient compliance with medical care.
	Describe the radiographic services offered outside departmental areas.	Comply with departmental and institutional response to emergencies, disasters and accidents.
	Identify the function of the radiology, radiation therapy, nuclear medicine, and diagnostic sonography departments in terms of membership in a total health care delivery system.	Adhere to national, institutional and departmental standards, policies and procedures regarding care of patients, providing radiologic procedures and reducing medical errors.
	Discuss the rationale for hospital program policies.	Locate departments, clinics, patient wards, operating rooms, administrative offices, and supply storage areas.
	Describe the rules and regulations of the clinical evaluation center(s).	Identify the purpose of each department, office, and clinic in terms of its function as a part of a total health care delivery system.
	Identify the major responsibilities and duties of a student radiographer.	Describe the layout of all imaging departments within the clinical setting.

	Describe and/or perform administrative tasks required of a student radiographer.	Describe the services provided by all imaging departments within the clinical setting.
	Observe and/or participate in determining exposure factors and setting exposure controls on mobile/surgical radiographic equipment.	Identify the function of all imaging departments within facility and their role within the in total health care delivery system.
	Observe and/or participate in the use of radiation protection procedures for mobile/surgical environments.	Exercise the priorities required in daily clinical practice.
	Observe and/or participate in conducting mobile/surgical radiographic procedures.	Execute medical imaging procedures under the appropriate level of supervision.
	Observe and/or participate in determining exposure factors and setting exposure controls for fixed radiographic and fluoroscopic equipment.	Adhere to team practice concepts that focus on organizational theories, roles of team members and conflict resolution.
	Observe and/or participate in the use of radiation protection procedures for radiography and fluoroscopy.	Adapt to changes and varying clinical situations.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the thoracic cavity.	Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity or culture.
	Observe and/or participate in routine radiographic procedures involving the thoracic cavity.	Integrate the use of appropriate and effective written, oral and nonverbal communication with patients, the public and members of the health care team in the clinical setting.
	Observe and/or participate in the evaluation of thoracic cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Integrate appropriate personal and professional values into clinical practice.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the abdominal cavity.	Use patient and family education strategies appropriate to the comprehension level of the patient/family.
	Observe and/or participate in routine radiographic procedures involving the abdominal cavity.	Provide desired psychosocial support to the patient and family.
	Observe and/or participate in the evaluation of abdominal cavity radiographs in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competent assessment skills through effective management of the patient's physical and mental status.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the shoulder girdle.	Respond appropriately to medical emergencies.

	Observe and/or participate in routine radiographic procedures involving the shoulder girdle.	Adapt procedures to meet age-specific, disease-specific and cultural needs of patients.
	Observe and/or participate in the evaluation of shoulder girdle image in terms of positioning accuracy, image quality, and anatomical structures visualized.	Assess the patient and record clinical history.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the bony thorax.	Demonstrate basic life support procedures.
	Observe and/or participate in routine radiographic procedures involving the bony thorax.	Use appropriate charting methods.
	Observe and/or participate in the evaluation of bony thorax images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Recognize life-threatening electrocardiogram (ECG) tracing.
	Observe and/or participate in the positioning of patients undergoing routine radiographic procedures involving the lower extremities.	Apply standard and transmission-based precautions.
	Observe and/or participate in routine radiographic procedures involving the lower extremities.	Apply the appropriate medical asepsis and sterile technique.
	Observe and/or participate in the evaluation of lower extremity images in terms of positioning accuracy, image quality, and anatomical structures visualized.	Demonstrate competency in the principles of radiation protection standards.
		Apply the principles of total quality management.
		Report equipment malfunctions.
		Examine procedure orders for accuracy and make corrective actions when applicable.
		Demonstrate safe, ethical and legal practices.
		Integrate the radiographer's practice standards into clinical practice setting.
		Maintain patient confidentiality standards and meet HIPAA requirements.
		Demonstrate the principles of transferring, positioning and immobilizing patients.
		Differentiate between emergency and non-emergency procedures.
		Select technical factors to produce quality diagnostic images with the lowest radiation exposure possible.

		Critique images for appropriate anatomy, image quality and patient identification.
		Determine corrective measures to improve inadequate images.
		Execute the priorities required in daily clinical practice.
		Execute medical imaging procedures under appropriate level of supervision.
		Recognize the influence of professional values on patient care.
		Integrate the use of appropriate and effective written, oral, and nonverbal communication with patients, the public and members of the healthcare team.
		Provide patient-centered, clinically effective care for all patients regardless of age, gender, disability, special needs, ethnicity, or culture.
		Evaluate the number, types, and degree to which clinical competencies have been completed and mastered.
		Develop a plan in conjunction with on-site clinical supervisors and program faculty to outline future completion and mastery of clinical competencies contained in this course.
		Identify the benefits associated with participation in continuing education for radiographers.
		Develop a tentative plan for participation in continuing education for student radiographers.