

# Radiology Technician

## Theory & Practical Content

Assessable Outcomes	Performance Criteria (PC)
1. HSS/ N 0201: Follow radiological diagnostic needs of patients	PC1. Explain the subdivisions of anatomy, terms of location and position, fundamental planes, vertebrate structure of man, organization of the body cells and tissues
	PC2. Explain the pathology of various systems: cardiovascular system, respiratory system, central nervous system, musculoskeletal system, GIT, GUT and reproductive system
	PC3. Explain the pathology of radiation injury and malignancies
	PC4. Understand specific requests of physicians with respect to the scans required
	PC5. Take medical history of the patient and document it as required
	PC6. Understand and interpret instructions and requirements documented by the physician in the patient's prescription
	PC7. Determine the radiological diagnostic tests required for the patient based on the physician's prescription and the medical history
2. HSS/ N 0202: Prepare the patient and the room for the procedure	PC1. Prepare the room, apparatus and instruments for an x-ray, CT scan or MRI scan
	PC2. Set up the X-ray machine, MRI machine or CT scan machine for the procedure
	PC3. Position the patient correctly for an x-ray in the following positions: a. Erect b. Sitting c. Supine d. Prone e. Lateral f. Oblique g. Decubitus
	PC4. Explain relative positions of x-ray tube and patient and the relevant exposure factors related to these
	PC5. Explain the use of accessories such as Radiographic cones, grid and positioning aids
	PC6. Explain the anatomic and physiological basis of the procedure to be undertaken
	PC7. Explain the radiographic appearances of both normal and common abnormal conditions where elementary knowledge of the pathology involved would ensure application of the appropriate radiographic technique
	PC8. Position the patient correctly for a Computed Tomography scan

	PC9. Position the patient correctly for an MRI scan
	PC10. Apply modifications in positioning technique for various disabilities and types of subject
	PC11. Explain the use of contrast materials for a CT scan and how to administer them under supervision of a radiologist
	PC12. Explain the use of MRI Contrast agents and how to administer them under supervision of a radiologist
	PC13. Manage a patient with contrast reaction
	PC14. Explain the principles of radiation physics detection and measurement
	PC15. Explain the biological effects of radiation
	PC16. Explain the principles of radiation protection: a. Maximum permissible exposure concept b. Annual dose equivalent limits (ADEL) ALARA concept c. International recommendations and current code of practice for the protection of persons against ionizing radiation from medical and dental use
	PC17. Explain the use of protective materials: a. Lead b. Lead – impregnated substances c. Building materials d. Concept of barriers e. Lead equivalents and variations f. Design of x-ray tubes related to protection. g. Structural shielding design (work-load, use factor, occupancy factor, distance)
	PC18. Explain the instruments of radiation protection, use of gonad shield and practical methods for reducing radiation dose to the patient
	PC19. Ensure protection of self, patients, departmental staff and public from radiation through use of protection instruments and monitoring personnel and the work area
3. HSS/ N 0203: Operate and oversee operation of radiologic equipment	PC1. Describe the construction and operation of general radiographic equipment
	PC2. Describe the construction and operation of advanced imaging equipment including CT and MRI
	PC3. Reliably perform all non-contrast plain Radiography, conventional contrast studies and non-contrast plain radiography in special situations
	PC4. Apply quality control procedures for all radiologic equipment
	PC5. Control and manipulate parameters associated with exposure and processing to produce a required image of desirable quality
	PC6. Practice the procedures employed in producing a radiographic image
	PC7. Describe methods of measuring exposure and doses of radiographic beams
	PC8. Help in administration of correct contrast dosage
	PC9. Discuss and apply radiation protection principles and codes of

	practice
	PC10. Demonstrate an understanding of processing of images in digital form and be familiar with recent advances in imaging
	PC11. Set up the X-ray machine, MRI machine or CT scan machine for the procedure
	PC12. Carry out routine procedures associated with maintenance of imaging and processing systems
	PC13. Ensure protection of patients, departmental staff and public from radiation through use of protection instruments and monitoring personnel and the work area
4.HSS/ N 0204: Process radiographic images	PC1. Explain the principles of radiographic imaging
	PC2. Apply knowledge of radiographic imaging to the production of radiographs and the assessment of image quality
	PC3. Understand the construction and operation of image processing equipment
	PC4. Control and manipulate parameters associated with exposure and processing to produce a required image of desirable quality
	PC5. Perform X-ray film/image processing techniques (including dark room techniques)
	PC6. Explain and implement the fundamentals, concepts and applications of processing of images in digital form using computer based systems
	PC7. Carry out quality control for automatic film processing, evaluate and act on results
5.HSS/ N 0205: Prepare and document reports.	PC1. Correctly identify anatomical features on the radiographs and identify some major pathological and traumatic conditions
	PC2. Seek the advice of the Radiologist on conditions identified
	PC3. Document the comments and diagnosis of the Radiologist in a report for the patient
6.HSS/ N 0206: Recognize contrast induced adverse reactions	PC1. Know the patient's medical history
	PC2. Select proper agent to be used
	PC3. Promptly recognize and assess the reactions
	PC4. Ensure immediate availability of necessary equipment and drugs in case of reaction
	PC5. Know the correct medications and other treatment options
	PC6. Know the different types of adverse reactions
	PC7. Recognize the contraindications of allergic reactions
7. HSS/ N 9608: Follow radiation safety guidelines	PC1. Confirm sources of radiation and likely type of exposure for all individuals within the work area
	PC2. Apply appropriate assessment methodology suitable for source, type of exposure, dose, level of risk and the recipients' exposure time
	PC3. Confirm that all required procedures and associated safety measures are compliant with current and relevant legislation requirements
	PC4. Determine and assess the appropriateness of the projected radiation dose over a suitable period of time for an individual or key staff and other

	personnel
	PC5. Record the results of the assessment accurately and in correct format, referencing any monitoring measurements taken to accepted published values to indicate conformance within accepted safety guidance limits for the procedures undertaken within the work practice
	PC6. Communicate and provide information, advice and guidance effectively in the appropriate medium to meet the individuals needs and preferences
	PC7. Report actual and potential risks from radiation, in context, to other healthcare professionals and where appropriate seek assistance and advice
	PC8. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, policies and protocols
	PC9. Confirm that all required procedures and associated safety measures are current and compliant with relevant legislation
	PC10. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols
8. HSS/ N 9610 (Follow infection control policies and procedures)	PC1. Perform the standard precautions to prevent the spread of infection in accordance with organization requirements
	PC2. Perform the additional precautions when standard precautions alone may not be sufficient to prevent transmission of infection
	PC3. Minimize contamination of materials, equipment and instruments by aerosols and splatter
	PC4. Identify infection risks and implement an appropriate response within own role and responsibility
	PC5. Document and report activities and tasks that put patients and/or other workers at risk
	PC6. Respond appropriately to situations that pose an infection risk in accordance with the policies and procedures of the organization
	PC7. Follow procedures for risk control and risk containment for specific risks
	PC8. Follow protocols for care following exposure to blood or other body fluids as required
	PC9. Place appropriate signs when and where appropriate
	PC10. Remove spills in accordance with the policies and procedures of the organization
	PC11. Maintain hand hygiene by washing hands before and after patient contact and/or after any activity likely to cause contamination
	PC12. Follow hand washing procedures
	PC13. Implement hand care procedures
	PC14. Cover cuts and abrasions with water-proof dressings and change as

	necessary
	PC15. Wear personal protective clothing and equipment that complies with Indian Standards, and is appropriate for the intended use
	PC16. Change protective clothing and gowns/aprons daily, more frequently if soiled and where appropriate, after each patient contact
	PC17. Demarcate and maintain clean and contaminated zones in all aspects of health care work
	PC18. Confine records, materials and medicaments to a well-designated clean zone
	PC19. Confine contaminated instruments and equipment to a well-designated contaminated zone
	PC20. Wear appropriate personal protective clothing and equipment in accordance with occupational health and safety policies and procedures when handling waste
	PC21. Separate waste at the point where it has been generated and dispose of into waste containers that are color coded and identified
	PC22. Store clinical or related waste in an area that is accessible only to authorized persons
	PC23. Handle, package, label, store, transport and dispose of waste appropriately to minimize potential for contact with the waste and to reduce the risk to the environment from accidental release
	PC24. Dispose of waste safely in accordance with policies and procedures of the organization and legislative requirements
	PC25. Wear personal protective clothing and equipment during cleaning procedures
	PC26. Remove all dust, dirt and physical debris from work surfaces
	PC27. Clean all work surfaces with a neutral detergent and warm water solution before and after each session or when visibly soiled
	PC28. Decontaminate equipment requiring special processing in accordance with quality management systems to ensure full compliance with cleaning, disinfection and sterilization protocols
	PC29. Dry all work surfaces before and after use
	PC30. Replace surface covers where applicable
	PC31. Maintain and store cleaning equipment

## **Soft Skills and Communication**

<b>Assessable Outcomes</b>	<b>Performance Criteria (PC)</b>
<b>Part 1</b>	
<b>1. Attitude</b>	
HSS/ N9603 (Act within the limits of one's competence)	PC1. Adhere to legislation, protocols and guidelines relevant to one's role and field of practice

and authority)	PC2. Work within organizational systems and requirements as appropriate to one's role
	PC3. Recognize the boundary of one's role and responsibility and seek supervision when situations are beyond one's competence and authority
	PC4. Maintain competence within one's role and field of practice
	PC5. Use relevant research based protocols and guidelines as evidence to inform one's practice
	PC6. Promote and demonstrate good practice as an individual and as a team member at all times
	PC7. Identify and manage potential and actual risks to the quality and safety of practice
	PC8. Evaluate and reflect on the quality of one's work and make continuing improvements
<b>2. Work Management</b>	
HSS/ N 9602 (Ensure availability of medical and diagnostic supplies)	PC1. Maintain adequate supplies of medical and diagnostic supplies
	PC2. Arrive at actual demand as accurately as possible
	PC3. Anticipate future demand based on internal, external and other contributing factors as accurately as possible
	PC4. Handle situations of stock-outs or unavailability of stocks without compromising health needs of patients/ individuals
<b>3. Etiquette</b>	
HSS/N9601 (Collate and Communicate Health Information)	PC1. Respond to queries and information needs of all individuals
	PC2. Communicate effectively with all individuals regardless of age, caste, gender, community or other characteristics
	PC3. Communicate with individuals at a pace and level fitting their understanding, without using terminology unfamiliar to them
	PC4. Utilize all training and information at one's disposal to provide relevant information to the individual
	PC5. Confirm that the needs of the individual have been met
	PC6. Adhere to guidelines provided by one's organization or regulatory body relating to confidentiality
	PC7. Respect the individual's need for privacy
	PC8. Maintain any records required at the end of the interaction
<b>Part 2</b>	
<b>1. Safety management</b>	
HSS/ N 9606 (Maintain a safe, healthy, and secure working environment)	PC1. Identify individual responsibilities in relation to maintaining workplace health safety and security requirements
	PC2. Comply with health, safety and security procedures for the workplace
	PC3. Report any identified breaches in health, safety, and security procedures to the designated person
	PC4. Identify potential hazards and breaches of safe work practices
	PC5. Correct any hazards that individual can deal with safely, competently and within the limits of authority
	PC6. Promptly and accurately report the hazards that individual is not

	allowed to deal with, to the relevant person and warn other people who may get affected
	PC7. Follow the organization's emergency procedures promptly, calmly, and efficiently
	PC8. Identify and recommend opportunities for improving health, safety, and security to the designated person
	PC9. Complete any health and safety records legibly and accurately
<b>2. Waste Management</b>	
HSS/N9609 (Follow biomedical waste disposal protocols)	PC1. Follow the appropriate procedures, policies and protocols for the method of collection and containment level according to the waste type
	PC2. Apply appropriate health and safety measures and standard precautions for infection prevention and control and personal protective equipment relevant to the type and category of waste
	PC3. Segregate the waste material from work areas in line with current legislation and organizational requirements
	PC4. Segregation should happen at source with proper containment, by using different color coded bins for different categories of waste
	PC5. Check the accuracy of the labeling that identifies the type and content of waste
	PC6. Confirm suitability of containers for any required course of action appropriate to the type of waste disposal
	PC7. Check the waste has undergone the required processes to make it safe for transport and disposal
	PC8. Transport the waste to the disposal site, taking into consideration its associated risks
	PC9. Report and deal with spillages and contamination in accordance with current legislation and procedures
	PC10. Maintain full, accurate and legible records of information and store in correct location in line with current legislation, guidelines, local policies and protocols
HSS/ N 9611: Monitor and assure quality	PC1. Conduct appropriate research and analysis
	PC2. Evaluate potential solutions thoroughly
	PC3. Participate in education programs which include current techniques, technology and trends pertaining to the dental industry
	PC4. Read Dental hygiene, dental and medical publications related to quality consistently and thoroughly
	PC5. Report any identified breaches in health, safety, and security procedures to the designated person
	PC6. Identify and correct any hazards that he/she can deal with safely,

	competently and within the limits of his/her authority
	PC7. Promptly and accurately report any hazards that he/she is not allowed to deal with to the relevant person and warn other people who may be affected
	PC8. Follow the organization's emergency procedures promptly, calmly, and efficiently
	PC9. Identify and recommend opportunities for improving health, safety, and security to the designated person
	PC10. Complete any health and safety records legibly and accurately