

Specialization	Radiologic Technology
Course Number	020810262
Course Title	Quality Assurance & Quality control
Credit Hours	(3)
Theoretical Hours	(2)
Practical Hours	(3)

Brief Course Description:

- This course provides the student with the basic knowledge about the concept of quality assurance & control, and their benefits. It also provides the student with the necessary information about the procedures used in quality control tests for different X-Ray systems, as well as retake film analysis and protective devices

Course Objectives:

Upon the completion of the course, the student will be able to:

1. Know the concept of QA&QC, and team of quality control addition to the importance and benefit of quality assurance.
2. Know and perform the various procedures of quality control tests used for various X-Ray Systems.
3. Know the devices used in QC tests.
4. Know the importance of retake film analysis (repeat film analysis).
5. Apply practical skills related to theoretical material.

Unit Number	Unit Name	Unit Content	Time Needed
	Introduction	<ul style="list-style-type: none"> • Definition of quality assurance • Benefits of QA & QC. • Team Of QC (committee of QA). • Factors affecting image quality: <ul style="list-style-type: none"> ○ Image contrast. ○ Blur or lack of sharpness. ○ Distortion & artifacts. ○ Image noise. • Standards of acceptable image. 	
	Quality Assurance Equipment	<ul style="list-style-type: none"> • Sensitometer. • Densitometer. • Multifunction meter. 	
	Processors Quality Control (PQC)	<ul style="list-style-type: none"> • Equipments used in PQC. • Procedures used PQC. • Precautions. • Dark room fog: sources and causes of fog. • Evaluation of dark room. • Film storage. • Screen cleaning. • Replenishment rate test. 	
	Quality Assurance for X-Ray Systems:	<ul style="list-style-type: none"> • Visual check. • Tube potential or tube output measurement (KV). • Screen film contact or combination, and performance. • Collimation and beam alignment. • Grid alignment test. • Half value layer. • Photo timers (automatic exposure cont.) 	
	Radiographic Density	<ul style="list-style-type: none"> • Definition. • Radiographic film structure. • Characteristic curve and film sensitivity parameters. • Focal spots size and its measuring objects. • Illuminators test (viewing box test). • Cassette structure, contents, function and care. 	
	Fluoroscopic quality control	<ul style="list-style-type: none"> • objectives • T.V. monitor setup. • Fluoroscopic film test and setup. • Fluoroscopic exposure rate . 	

	Tomography	<ul style="list-style-type: none"> • Definition. • Special techniques of tomography. • Tomographic cut location test. • Extant and symmetry of tomographic movements tests. • Bucky tray movement test. • Problems of tomography. 	
	Mammography	<ul style="list-style-type: none"> • Low dose mammography system. • Breast phantom. • Mammography: accreditation phantom (square wax box). • Screen film test of monographic mammographic. 	
	Portable Radiography machines	<ul style="list-style-type: none"> • Types of portable machines. • Objectives of QC. • Equipment used in QC. • Procedure of QC test. • Problems of portable machines. 	
	Rejected Or Repeated Films (retake Film Analysis)	<ul style="list-style-type: none"> • Objectives. • Reasons of rejected images. • Importance of retake film analysis. • Procedure of QC test. • Problems. • Accepted rates. 	
	Quality Control Of Protective Devices	<ul style="list-style-type: none"> • Aprons. • Gloves. • Neck collar. • Eye glasses. • Gonad shields. • Lead Barriers. 	
	Quality control In Modern Imaging Modalities	<ul style="list-style-type: none"> • MRI. • CT. • U/S. • Nuclear Medicine. 	
	Clinical Part	<ul style="list-style-type: none"> • Equipment Warm-up Procedure. • Processor Quality Control (Sensitometry/Densitometry). • Laser Film Printer Quality Control. • Light Field/X-ray Field Alignment. • Repeat Analysis. • Artifact Evaluation. • Screen-Film Contact/Cassette 	

		<ul style="list-style-type: none"> • Integrity/Screen Cleanliness. • Lead Aprons, Gloves, Gonadal and • Thyroid Shield Integrity Check. 	
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Teaching Methodology

1. Lectures.
2. Demonstration.
3. Discussion and quizzes

Text Books and References:

1. Chiropractic Radiography and Quality Assurance Handbook 1st Edition, by Russell Wilson (Author), 1999.
2. Quality Assurance and Control in Diagnostic Radiology and Imaging Paperback – 2015 by BHARGAVA S. K. (Author)
3. Total Quality in Radiology: A Guide to Implementation, Henry George Adams, Sudhir Arora, 1994.
4. Christensen's Physics of Diagnostic Radiology Fourth Edition by Thomas S. Curry III MD (Author), James E. Dowdey PhD (Author), Robert E. Murry Jr. PhD (Author).
5. Quality Control in Diagnostic Imaging: A Quality Control Cookbook by Joel E. Gray (Author) Baltimore 1983).
6. Quality Assurance in Diagnostic Radiology, WHO Geneva 1982.