



Basic Principles of CT Imaging Systems - COURSE OVERVIEW

Course: Basic Principles of CT course is designed for service engineers. Course covers Basic CT principles, Theory, Image reconstruction, image performance, Simplified block diagrams. The course will be conducted in class room and on fully functional CT systems.

Qualifications for Admission: Students should have prior service experience, preferably with X-ray devices. They should have a minimum of a two- year degree in electronics or equivalent experience. Students should have basic computer skills and a laptop computer.

Course Overview:

Features: Basic CT X-ray & theory principles, history, image generation algorithms, simplified CT system block diagrams, general CT Image Quality Assurance CT systems overview. Review of theory applied to CT system bays (Labs).

CT principles:

- CT X-ray principles
- Algorithms & Back projection
- CT numbers
- Helical and Multi-slice Principles
- Spatial Resolution and Z-sensitivity
- Noise and Low Contrast Resolution
- Newer Iterative Reconstruction methods
- CT Image analysis – QA
- ACR CT Overview

System hardware – General CT block diagrams and basic functions:

- Power distribution, X-ray system, Gantry, Table, Data acquisition, Image Reconstruction and Console Computer block diagrams

Lab Exercises

- Basic CT scanning, Hardware Identification – Consoles – Gantry – Table – X-ray generator – Detector - , General Image QA, and Use of ACR Phantom

Summary: Upon Completion of the 5 day course, the engineer should be able to understand CT theory and CT basic subsystems and their impact to Image Quality and Image Artifacts.

Course outline may change to meet student's needs