Spiral CT is a recent development that has allowed rapid, continuous acquisition of a volume of image data. This has led to significant improvements in diagnostic imaging methods, such as : volumetric acquisition and 3-D display of image data; improved vascular imaging and the development of CT angiography (CTA), single breathold thoracic scans which avoid breathing misregistration; and rapid acquisition of contrast enhancement protocols that allow tissues to be imaged during different phases of enhancement (arterial, venous and parenchymal). Spiral CT has also impacted the technical requirements of CT scanners, leading to designs which offer increased X-ray tube heat capacity, faster rotational speeds and increased data storage. In addition, the choice of operational parameters (such as slice thickness, table speed and reconstruction interval) effect image quality and/or patient radiation dose. Because of these developments, basic knowledge of spiral CT and an understanding of the design and operational characteristics are becoming essential for physicists, radiologists and technologists.

The educational objectives of this course are to:

- (1) Define Spiral CT and some affiliated terms (pitch, reconstruction interval and interpolation algorithm);
- (2) Describe the basic differences between conventional axial CT and spiral CT in how data is acquired and how images are formed;
- (3) Discuss the implications of Spiral CT on clinical usage (volumetric acquisitions, vascular imaging, single breathold thoracic scans, etc.);
- (4) Describe the equipment requirements for Spiral CT scanning (X-ray tube heat capacity, rotational speed, etc.)
- (5) Describe the effects of Spiral CT scanning and the selection of operational parameters on image quality and radiation dose;
- (6) Discuss some present and possible future developments in Spiral CT