SPECIAL NOTE:
This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.
TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):

Please check with the LCC bookstore http://www.labette.edu/bookstore for the required texts for this class.

COURSE NUMBER: RADI 127

COURSE TITLE: INTRODUCTION TO COMPUTED TOMOGRAPHY
& CROSS-SECTIONAL ANATOMY

SEMESTER CREDIT HOURS: *2* HOURS

DEPARTMENT: RADIOGRAPHY

DIVISION: HEALTH SCIENCE

PREREQUISITE: Radiographic Procedures II – RADI 104

REVISION DATE: 11/ 2018

COURSE DESCRIPTION:
This course explores the basic computed tomography concepts for the entry level radiographer.

COURSE OUTCOMES AND COMPETENCIES:
Students who successfully complete this course will be able to with 86% accuracy:

1.   Comprehend the historical development and identify the various generations of Computed Tomography imaging system.

- Discuss the history of CT and its evolution to present day.
- Discuss CT Generation Classifications.
- Describe the general purpose of CT.

2. Explain the basic components, operations and processes for Computed Tomography.

- Describe the data acquisition process.
- Identify the components and functions of the data acquisition system.
- Examine the process of image reconstruction for producing a CT image.
- Discuss the equipment components associated with the image reconstruction.
- Identify the terminology associated with the image reconstruction process.
- Differentiate between raw data and image data during the image reconstruction process.
- Differentiate between the methods and elements for scanning.
- Explain the importance of Image Display for computed tomography imaging.
- Review the purpose of the display monitors for the image display process.

- Describe the common image display options and window settings.
- Discuss the three general methods of Data Acquisition: Localizer Scan, Step & Shoot Scanning, and Helical Scanning.

3. Examine the factors that influence the Image Quality and Post Processing of Computed Tomography images.

- Identify the scanning parameters directly associated with image quality.
- Differentiate between Spatial and Contrast Resolution.
- Review the factors affecting both Spatial and Contrast Resolution.
- Discuss the affects of Spatial and Contrast Resolution on quality assurance of an image.
- Identify the types of image artifacts associated with CT imaging.
- Discuss the difference between reconstruction and image reformation of a CT image.
- Identify the factors that degrade reformatted images.
- Introduce imaging informatics as associated with CT imaging departments.
- Discuss the process of Data Management with emphasis on PACS fundamentals.

4. Discuss patient and occupational radiation protection procedures for Computed Tomography.

- Discuss the methods for reducing radiation dose to the patient and the growing concern.
- Discuss the comparison of dose from CT with dose from Conventional Radiographic studies.
- Recognize the technical factors that directly affect patient dose including pediatric technical considerations.
- Identify strategies for reducing scatter radiation for both adult and pediatric imaging.
- Discuss reducing occupational exposure.

5. Compare cross-sectional anatomy in the sagittal, coronal, and axial planes on Computed Tomography and Magnetic Imaging Resonance (MRI) images of the chest, extremities, abdomen, pelvis, and head.

- Discuss the advantages and disadvantages with the utilization of MRI scanning rather than CT for obtaining cross-sectional images.
- Identify the safety concerns associated with MRI and CT scanning.
- Identify Terms for Imaging Planes.
- Recognize anatomical Structures in the different imaging planes.
    - Chest
    - Abdomen
    - Extremities (Upper & Lower)
    - Pelvis
    - Head