

COMPUTED TOMOGRAPHY IMAGING (CTIC)

CTIC 1010 - Fundamentals of CT (1 Credit)

This hybrid interactive, web-based course is designed to provide students with an overview of CT instrumentation, imaging applications, physics, data acquisition, and history. Students will learn to apply theory to different types of CT equipment, Module 1 describes the history and evolution of computed tomography and the most common uses of CT scanning in medical imaging. You will learn the location and function of major CT equipment components and the basic digital imaging process. Module 2 provides an in-depth description of major CT equipment components and the sequence of events from the application of electrical current to the radiographic tube to the image. You will learn how adjusting the operator console parameters can affect CT image data and the elements of a digital image. Module 3 describes the methods of acquiring computed tomography images, the process of data acquisition and the factors influence that process. You will learn the functions of the data acquisition system and the selectable scan factors used to acquire an image. Note: Students must be accepted into the CT certificate program. Course meets 4 hours a week for 5 weeks. Other: 4 hours

Corequisite(s):CTIC 1020, CTIC 1030

CTIC 1020 - Procedures and Protocols in CT Imaging (2 Credits)

This hybrid interactive, web-based course is designed to provide students with an overview of CT procedures. Students will match pathologic processes with the appropriate procedures; choose scan parameters; perform patient history assessments, preparation, filming, and archiving; and review CT images for anatomy, quality, and pathology and common diseases diagnosed via CT. Module 4 describes the steps for computed tomography image reconstruction and the post-processing techniques needed for image enhancement. Students will learn how certain tools are used to view a CT image and the methods used for recording and archiving CT data. Workstation applications for specialized CT scanning are also described in this module. Module 7 explains how to properly position a patient and select appropriate scan parameters for common CT examinations. Students will learn why different window widths and levels are selected and the imaging planes required for each procedure. Module 6 explains methods used to determine image quality in computed tomography and factors that affect image quality. You will learn how to identify CT image artifacts and the factors that influence artifacts. The tests associated with quality control programs are also discussed in this module. Note: Students must be accepted into the CT certificate program. Course meets 4 hours a week for 10 weeks. Other: 4 hours

Corequisite(s):CTIC 1010, CTIC 1030

CTIC 1030 - Cross-sectional Anatomy I (6 Credits)

This hybrid interactive, web-based course will focus on anatomy of the human body as it is viewed in the various axial, coronal, and sagittal planes. Radiologic anatomy will be viewed in the context of illustrations and pictures of gross anatomical sections. Module 8 identifies and describes the anatomical planes and structures of the head and neck. You will also learn how to describe the stages of human embryo development as it relates to this region of the body Module 9 describes the major structures of the chest, abdomen and pelvis and how these structures function. You will learn how to identify abdominal quadrants and how to locate organs or structures on a diagram or CT image. CT Clinical Practicum I course is designed to allow qualified technologist to complete the number of clinical procedures mandated by the American Registry of Radiologic Technologist (ARRT) to be considered eligible to apply to sit for certification in CT, while emphasizing the importance of patient care, radiation safety and the principles of radiation protection in the CT department The course is designed to allow the students hands-on experience documenting and performing CT exams within the clinical setting under the direct supervision of a registered technologist. This course is competency based, and students will be assessed through competency exams to document the achievement of clinical objectives. Note: Students must be accepted into the CT certificate program. Course meets 3.5 lecture hours and 16 clinical hours a week for 10 weeks. Lecture: 3.5 hours, Lab: 16 hours

Corequisite(s):CTIC 1010, CTIC 1020

CTIC 2010 - Patient Care for CT (1 Credit)

This hybrid interactive, web-based course is designed to provide the basic concepts of patient care as they relate to CT. Topics include emergency procedures, sterile and aseptic techniques, phlebotomy, body mechanics, infection control and standard precautions, patient assessment, cultural competence, contrast media, and basic pharmacology in imaging. Introduces Radiation Safety. Module 5 describes the methods used to measure patient dose and the role of the computed tomography technologist in reducing radiation exposure. You will learn shielding and positioning techniques designed to keep both you and the patient safe. Special considerations for pediatric patients are detailed in this module as well. Module 5a presents the basic principles, concepts, and procedures of radiation protection and radiobiology. Topics include radiation units; principles of radiation protection; absorbed dose calculations; health physics procedures; radiation exposure regulations; and reduction of radiation exposure to patients, personnel, and the environment. Note: Course meets for 4 hours a week for 5 weeks. Other: 4 hours

Prerequisite(s): CTIC 1010 and CTIC 1020 and CTIC 1030

Corequisite(s):CTIC 2020, CTIC 2030

**CTIC 2020 - Advanced Applications and Pathology for CT
(3 Credits)**

This hybrid interactive, web-based course is designed to provide students with advanced applications involving other modalities such as Interventional Radiology. Students will be introduced to common pathology imaged using CT with its advantages. Module 10 describes the current trends and basic procedures in computed tomography and how modifications are used for trauma and pathology. You will learn the uses of virtual CT in medical imaging and how CT is used in radiation therapy treatment planning, nuclear medicine and mobile imaging. Module 11 explains how to identify selected pathology on CT images and how to distinguish between the CT appearance of normal organ tissues and tissues with pathological changes. You will also learn the causes for common pathologies and their processes. This is part one of a two-part series. Module 12 is a continuation of Module 11 and is part two of the two-part series. This module explains how to identify selected pathology on CT images and how to distinguish between the CT appearance of normal organ tissues and tissues with pathological changes. You will also learn the causes for common pathologies and their processes. Note: Course meets for 3.5 lecture hours and 16 clinical hours a week for 5 weeks.

Lecture: 3.5 hours, Other: 16 hours

Corequisite(s):CTIC 2010, CTIC 2030

**CTIC 2030 - Cross-sectional Anatomy II
(6 Credits)**

This hybrid interactive, web-based on-line course will focus on anatomy of the human body as it is viewed in the various axial, coronal, and sagittal planes. Radiologic anatomy will be viewed in the context of illustrations and pictures of gross anatomical sections. Module 2 presents sectional anatomy of the cranium and facial bones. This module is designed to enhance your study of your sectional anatomy course textbook. Sections 2 through 6 provide a detailed study of the anatomy of the cranium and facial bones divided into portions. Module 4 presents sectional anatomy of the vertebral column and spinal cord. This module is designed to enhance your study of your sectional anatomy course textbook. Sections 2 through 6 provide a detailed study of the spine. Module 6 presents sectional anatomy of the thorax. This module is designed to enhance your study of your sectional anatomy course textbook. Sections 2 through 8 provide a detailed study of thoracic anatomy. Module 9 presents sectional anatomy of the upper extremity, including the shoulder joint. This module is designed to enhance your study of your sectional anatomy course textbook. Sections 2 through 6 provide a detailed study of the anatomy of the upper extremity. Module 10 presents sectional anatomy of the lower extremity, including the hip joint. This module is designed to enhance your study of your sectional anatomy course textbook. Sections 2 through 5 provide a detailed study of the anatomy of the lower extremity, divided into portions. CT Clinical Practicum I course is designed to allow qualified technologist to complete the number of clinical procedures mandated by the American Registry of Radiologic Technologist (ARRT) to be considered eligible to apply to sit for certification in CT, while emphasizing the importance of patient care, radiation safety and the principles of radiation protection in the CT department. The course is designed to allow the students hands-on experience documenting and performing CT exams within the clinical setting under the direct supervision of a registered technologist. Note: Course meets for 3.5 lecture hours and 16 clinical hours per week for 10 weeks.

Lecture: 3.5 hours, Other: 16 hours

Corequisite(s):CTIC 2010, CTIC 2020