

# RADIOGRAPHY (RTE)

## **RTE 1000 Clinical Seminar**

**Credit Hours:** 3

**Prerequisites:** Admission into the Radiography Program

Introductory course for the limited access Radiography Program. Includes but not limited to an overview of medical imaging, orientation to academic and clinical responsibilities, basic imaging equipment, basic radiographic technique, primary radiation protection considerations, and patient care.

## **RTE 1092 Basic X-Ray Machine Operator**

**Credit Hours:** 2

The course is designed to help students with no prior experience or course work as a basic x-ray machine operator. This course will qualify the student to safely operate x-ray equipment under the direct supervision of a licensed practitioner as well as prepare for the certification examination required of basic x-ray machine operators and to help them acquire the knowledge and skills needed to perform as a Basic X-Ray Operator.

## **RTE 1385 Radiobiology and Radiation Protection**

**Credit Hours:** 2

This course studies the effects of radiation exposure on biological systems, typical medical exposure levels, methods for measuring and monitoring radiation, and methods for protecting personnel and patients from excessive exposure.

## **RTE 1418 Principles of Radiographic Imaging 1**

**Credit Hours:** 2

This course introduces the student to the concepts of image production, image quality, and the technical factors affecting both. The relationships between image quality and exposure factors are also covered. Students will perform and apply calculations for setting technical factors to produce diagnostic radiographic images utilizing both digital and film-screen image receptors.

## **RTE 1457 Principles of Radiographic Imaging 2**

**Credit Hours:** 2

This course, a continuation of Principles of Radiographic Imaging 1, examines the concepts of image production, image quality, and the technical factors affecting both. The applications of and relationships between image quality and exposure factors are also covered. Students will perform calculations for setting technical factors to produce diagnostic radiographic images utilizing both digital and film-screen image receptors.

## **RTE 1513 Radiographic Procedures 2**

**Credit Hours:** 2

This course, a continuation of Radiographic Procedures 1, provides instruction in anatomy and radiographic positioning of the appendicular skeleton, shoulder and pelvic girdle, and cervical and thoracic spines.

## **RTE 1523 Radiographic Procedures 3**

**Credit Hours:** 2

This course is a continuation of RTE 1513. This course provides instruction in anatomy and radiographic positioning of the lumbar spine, bony thorax, skull, facial bones, and contrast studies of the biliary, gastrointestinal, and urinary systems.

## **RTE 1613 Radiographic Physics**

**Credit Hours:** 2

This course introduces the fundamental principles of physics that underlie diagnostic x-ray production and radiography. Topics include electromagnetic waves, electricity and magnetism, electrical energy, and power and circuits as they relate to radiography.

## **RTE 1804 Radiographic Clinical Education 1**

**Credit Hours:** 2

**Lab Fee:** Yes

This is the first in a series of five clinical education courses. This course is designed to provide the student with the practical application, in a supervised clinical setting, of theory covered in RTEC 1503 and RTE 1513. Students will rotate through assigned areas of the Clinical Centers and will have the opportunity to assist the staff radiographers as they perform basic radiographic procedures.

## **RTE 1814 Radiographic Clinical Education 2**

**Credit Hours:** 2

This is the second course in a series of five clinical education courses. This course is designed to provide the student with the practical application, in a supervised clinical setting, of theory covered in the Radiographic Procedure classes. Students will rotate through and assist staff radiographers in assigned radiographic procedure areas.

## **RTE 1824 Radiographic Clinical Education 3**

**Credit Hours:** 3

This is the third course in a series of five clinical education courses. This course is designed to provide the student with the practical application, in a supervised clinical setting, of theory covered in Radiographic Procedure courses. Students will rotate through and assist staff radiographers in assigned radiographic procedure areas.

## **RTE 2473 Advanced Radiographic Imaging**

**Credit Hours:** 2

The content covered in this course includes dynamic imaging (fluoroscopy), image evaluation for artifacts, quality control, and quality assurance in radiographic imaging.

## **RTE 2533 Radiographic Procedures 4**

**Credit Hours:** 2

In this course the student will explore specialized radiographic procedures and equipment. Pharmacology and contrast media will be discussed. The advanced modalities in imaging and radiation therapy will also be covered.

## **RTE 2575 Introduction to Magnetic Resonance Imaging (MRI)**

**Credit Hours:** 3

This course is a study of the clinical applications and principles of magnetic resonance imaging. Basic Magnetic Resonance (MR) physics, history, hardware, safety and important aspects of the MR exam are among the topics covered to introduce the student to the MR imaging technology profession.

**RTE 2760 Magnetic Resonance Imaging (MRI) Sectional Anatomy and Physiology 1**
**Credit Hours:** 3

This is the first of two courses that provide a study of human anatomy as seen in axial, sagittal, coronal and oblique (as required) planes. Bony, muscular, vascular, organs and soft tissues of the following anatomical regions are studied: central nervous system (brain and spine), structures of the head and neck, and thoracic region. Focus will cover the common pathologies found in magnetic resonance imaging and their appearance with various imaging protocols. The study of normal anatomy and abnormal variations and its appearance in planes enables the student to better recognize abnormal conditions and thus make associated changes in imaging requirements to adequately demonstrate the patient's anatomy and physiology.

**RTE 2762 Cross-Sectional Anatomy**
**Credit Hours:** 2

**Prerequisites:** RTE 1513 with a grade of "C" or higher

Introduction of cross-sectional anatomy for radiography students. Normal and abnormal anatomic structures of the brain, thorax, abdomen, pelvis, and extremities will be studied in multiplanar sections by CT and MRI images.

**RTE 2771 Magnetic Resonance Imaging (MRI) Sectional Anatomy and Physiology 2**
**Credit Hours:** 3

This second course in sectional anatomy and pathology is a continuing study of human anatomy as seen in axial, sagittal, and coronal planes. The knowledge of the disease processes and their signal characteristics on different imaging sequences is studied. The students learn to recognize the need for additional sequences, changes in protocols, and the need for contrast studies based upon the recognition of pathological changes.

**RTE 2782 Radiographic Pathology**
**Credit Hours:** 2

This course is an introduction to diseases and their effects on the body. The diseases will be grouped according to the body systems with emphasis on those disease processes that are demonstrated radiographically.

**RTE 2834 Radiographic Clinical Education 4**
**Credit Hours:** 3

**Lab Fee:** Yes

This is the fourth course in a series of five clinical education courses. This course is designed to provide the student with the practical application, in a supervised clinical setting, of theory covered in the radiographic procedure courses. Students will rotate through and assist staff radiographers in assigned radiographic procedure areas.

**RTE 2931 Radiographic Seminar**
**Credit Hours:** 2

**Lab Fee:** Yes

This course provides a reinforcement of comprehensive radiographic knowledge in preparation for the National Registry Boards. Multiple choice test taking skills will be enhanced and practiced. Employability skills and professional licensure will also be discussed.

**RTE 3101 Magnetic Resonance Imaging Patient Care and Technique**
**Credit Hours:** 3

**Prerequisites:** Departmental approval or admission to Bachelor's program required

This course provides technical and patient care related content as it pertains to the technologists' role before, during, and after magnetic resonance imaging (MRI) examinations. Discussions include, but are not limited to, routine and emergency patient care, proper body mechanics, infection control and standard precautions, patient education, patient history and assessment, contrast media, patient positioning, and scan parameters.

**RTE 3102 Computed Tomography Patient Care and Technique**
**Credit Hours:** 3

**Prerequisites:** Department approval or admission to the Bachelor's program required

This course provides technical and patient care related content as it pertains to the technologists' role before, during, and after a Computed Tomography (CT) examination. Discussions include, but are not limited to, routine and emergency patient care, proper body mechanics, infection control and standard precautions, patient education, patient history and assessment, contrast media, patient positioning, and scan parameters.

**RTE 3591 Physics and Instrumentation of Magnetic Resonance Imaging**
**Credit Hours:** 3

**Prerequisites:** Departmental approval or admission to Bachelor's program required

This course provides the student with a comprehensive overview of magnetic resonance imaging (MRI) principles. Topics include, but are not limited to, magnetism, the history of MRI, nuclear MRI signal production, pulse sequencing, imaging parameters and tradeoffs, image formation, radio frequency (RF), gradients, system components, and MRI safety.

**RTE 3595 Physics and Instrumentation of Computed Tomography**
**Credit Hours:** 3

**Prerequisites:** Departmental approval or admission to the Bachelor's program required

This course explores the physical principles and instrumentation involved in Computed Tomography (CT). Contents include, but are not limited to, the historical development and evolution of CT, physical principles and instrumentation, computer basics, image processing, image reconstruction, image display, CT beam attenuation, linear attenuation coefficients, Hounsfield numbers, dose, image quality, quality control, and CT image artifacts.

**RTE 3765 Advanced Sectional Anatomy**
**Credit Hours:** 3

**Prerequisites:** Departmental approval or admission to the Bachelor's program required

This course will lead students through a detailed, systematic study of anatomical structures by location, relationship to other structures, and functions. Anatomical structures are located and identified in axial, sagittal, coronal, and oblique planes, as well as in three dimensions. Illustrations and anatomy images will be compared with computed tomography (CT) and magnetic resonance (MR/MRI) images in the same imaging planes and at the same level, when applicable. This course will also introduce the student to concepts of disease processes for which CT and MRI are used in diagnosis.

**RTE 4940 Computed Tomography Clinical Education 1****Credit Hours:** 3**Prerequisites:** Departmental approval or admission to the Bachelor's program required**Lab Fee:** Yes

Computed Tomography (CT) Clinical Education 1 is designed to sequentially develop, apply, integrate, and evaluate concepts and theories in performance of CT examinations. Practical clinical knowledge is gained through structured and sequential clinical assignments, team practices, and patient-centered clinical practices.

**RTE 4941 Computed Tomography Clinical Education 2****Credit Hours:** 3**Prerequisites:** Departmental approval or admission to the Bachelor's program required

This course is a continuation of Computed Tomography Clinical Education 1 and is designed to sequentially develop, apply, integrate, and evaluate concepts and theories in performance of Computed Tomography (CT) examinations. Practical clinical knowledge is gained through structured and sequential clinical assignments, team practices, and patient-centered clinical practices.

**RTE 4942 Magnetic Resonance Imaging Clinical Education 1****Credit Hours:** 3**Prerequisites:** Departmental approval or admission to the Bachelor's program required**Lab Fee:** Yes

This course will allow the student, under direct supervision, to apply the skills necessary for patient and personal safety, obtain high quality magnetic resonance (MR) images, objectively alter protocols based on patient anatomy, pathology and physical condition, identify image quality and equipment problems, and make appropriate corrections.

**RTE 4943 Magnetic Resonance Imaging Clinical Education 2****Credit Hours:** 3**Prerequisites:** Departmental approval or admission to the Bachelor's program required

This course is a continuation of Magnetic Resonance Imaging Clinical Education 2 and will allow the student, under direct supervision, to apply the skills necessary for patient and personal safety, obtain high quality magnetic resonance (MR) images, objectively alter protocols based on patient anatomy, pathology, and physical condition, identify image quality and equipment problems, and make appropriate corrections.