Cleveland Clinic
School of Health Professions
Mercy Radiologic Technology Program

Course Descriptions

RT101 - Patient Care in Imaging ***Clock Hours: 64***

This course provides an overview of radiography in addition to the basic concepts of patient care, infection control, and the role of the radiographer as a member of the health care team. Content includes pharmacology and administration of diagnostic contrast agents and intravenous medications; patient assessment; and vital signs. Topics include: critical thinking; history of radiography; professional roles and behavior; professional attitudes and communications. Also included will be hospital and departmental organization, and hospital and program affiliation.

Pre-requisite: Admission to Mercy Radiologic Technology Program

TECH101 - Radiographic Technique I ***Clock Hours: 64***

This course is designed to give the student a working knowledge of the exposure factors required to produce quality radiographs. The material presented will enable the student to vary factors to control density, contrast, visibility of detail, recorded detail, distortion, radiographic equipment, computed/digital radiography and the use of automatic exposure devices. Exposure compensation and technique calculations are emphasized.

Pre-requisite: Admission to Mercy Radiologic Technology Program

POS101 - Radiographic Positioning Procedures I ***Clock Hours: 64***

This course serves as an introduction to the basics of diagnostic radiography. The material presented will enable a student to interpret radiology requisitions; recognize the structure and organs visualized in a radiograph; and correctly position a patient for various radiologic examinations including pediatric and geriatric patients. A section on radiation protection will introduce the student to proper methods of protecting both the patient and themselves from ionizing radiation. Radiographic Positioning and Procedures I also includes the preliminary steps to taking a radiograph; general radiographic anatomy and positioning terminology; and anatomy and radiography of the thoracic viscera, upper extremities, lower extremities, shoulder girdle, bony thorax, urinary system, abdomen, pelvis, femur and hip. The student will participate in corresponding radiographic positioning labs.

*There is a corresponding sonography scan lab with this course.

Pre-requisite: Admission to Mercy Radiologic Technology Program

POSL101 – Radiographic Positioning Lab ***Clock Hours: 64***

Selected exercises designed to reinforce concepts covered in POS101.

This course serves as an introduction to the basics of diagnostic radiography. The material presented will enable a student to interpret radiology requisitions; recognize the structure and organs visualized in a radiograph; and correctly position a patient for various radiologic examinations including pediatric and geriatric patients. A section on radiation protection will introduce the student to proper methods of

protecting both the patient and themselves from ionizing radiation. Radiographic Positioning and Procedures I also includes the preliminary steps to taking a radiograph; general radiographic anatomy and positioning terminology; and anatomy and radiography of the thoracic viscera, upper extremities, lower extremities, shoulder girdle, bony thorax, urinary system, abdomen, pelvis, femur and hip. The student will participate in corresponding radiographic positioning labs.

Pre-requisite: Admission to Mercy Radiologic Technology Program

CL101M - Introductory Clinical Experience I ***Clock Hours: 256***

Supervised sessions emphasizing development of medical imaging skills. Practical application of radiographic positioning with emphasis on the thoracic viscera, upper extremities, lower extremities and shoulder girdle. Designed to give the student an introduction to the basics of diagnostic radiography in the clinical setting. Clinical experience in hospital environment for eight weeks, two and a half days a week.

Pre-requisite: Admission to Mercy Radiologic Technology Program

TECH102 - Radiographic Technique II ***Clock Hours: 32***

The course is designed to give an understanding of the components, principles and operation of digital imaging systems found in diagnostic imaging. Factors that impact image acquisition, display, archiving and retrieval are discussed. Guidelines for selecting exposure factors and evaluating images within a digital system assist students to bridge between film-based and digital systems. Principles of digital quality assurance and maintenance are presented.

Pre-requisite: TECH101

POS102 - Radiographic Positioning & Procedures ***Clock Hours: 32***

This course advances and increases the student's knowledge of diagnostic radiographic positioning. This course will cover the anatomy, positioning and radiography of the vertebral column, sacroiliac joints, digestive system, biliary system, skull, facial bones and paranasal sinuses. Trauma and surgical radiography will also be covered. The students will also participate in corresponding radiographic positioning labs.

*There is a corresponding sonography scan lab with this course.

Pre-requisites: POS101, POSL101

POSL102 - Radiographic Positioning Lab II ***Clock Hours: 64***

Selected exercises designed to reinforce concepts covered in POS102.

This course advances and increases the student's knowledge of diagnostic radiographic positioning. This course will cover the anatomy, positioning and radiography of the vertebral column, sacroiliac joints, digestive system, biliary system, skull, facial bones and paranasal sinuses. Trauma and surgical radiography will also be covered. The students will also participate in corresponding radiographic positioning labs.

Pre-requisites: POS101, POSL101

PHY102 - Principles of Radiation Physics ***Clock Hours: 32***

This course is designed to present the student with the fundamentals of electrical and radiation physics and the basic principles underlying the operation of X-ray equipment and the circuit and tube components. Topics will include the radiation concepts of matter, energy, electricity, electromagnetism and the properties of x-rays. This course will also present the nature and characteristics of radiation, X-ray production, units of measure and the fundamentals of photon interactions with matter. Mammographic, fluoroscopic and mobile equipment will be covered and tube rating charts and radiographic quality assurance and quality control will also be discussed.

Pre-requisites: TECH101

CL102M - Introductory Clinical Experience II ***Clock Hours: 256***

Supervised sessions emphasizing development of medical imaging skills. Practical application of radiographic positioning with emphasis on the vertebral column; scoliosis; spinal fusion; sacroiliac joints; bony thorax (sternum, sternoclavicular joints, ribs); digestive system; urinary system; biliary tract and gallbladder; abdomen; pelvis; femur; and hip radiography. Students are required to successfully complete 15 clinical competency examinations supervised by a registered radiographer or clinical instructor. Clinical experience in hospital environment for 16 weeks, four days a week.

Pre-requisite: CL101M

ETH101 - Healthcare Ethics and Law ***Clock Hours: 24***

This course is designed to provide the student with a fundamental background in healthcare ethics and law. The historical and philosophical bases of ethics as well as the elements of ethical behavior are discussed. The student will examine a variety of ethical issues and dilemmas that occur in clinical practice. An introduction to legal terminology, concepts and principles will also be presented. Topics include misconduct, malpractice, unintentional and intentional torts, HIPAA standards and compliance, legal and professional standards and the ASRT scope of practice. The importance of proper documentation and informed consent will be emphasized.

Pre-requisites: RT101

POS201 - Advanced Radiographic Procedures ***Clock Hours: 24***

Advanced Radiographic Procedures will include radiographic anatomy and positioning terminology that are relevant to the following: contrast arthrography, long bone measurement, and radiography of the mouth, salivary glands and anterior neck, reproductive systems, and mammography. Additional topics include radiation oncology, ultrasound, nuclear medicine, and bone densitometry.

Pre-requisite: POS102

BIO201 - Radiation Biology & Protection ***Clock Hours: 32***

This course provides the student with information on the fundamental principles of radiation protection and radiation biology. Knowledge provided in this course is essential to understanding the biological effects of ionizing radiation and radiation protection at a basic scientific level and will serve as a standard

for radiographers to promote the safe use of medical ionizing radiation. The course includes the study of legal and ethical radiation protection responsibilities of radiation workers, personnel monitoring devices, public and occupational dose limits, theory and operation of radiation detection devices, and state regulations governing radiation protection practices. Additional topics include the study of radiation sources, units of measure, effective dose limits, and biologic effects of radiation.

Pre-requisite: PHY102

CL103M - Intermediate Clinical Experience I ***Clock Hours: 384***

Supervised sessions emphasizing development of medical imaging skills. Practical application of radiographic positioning with emphasis on the skull, facial bones, and paranasal sinuses. Students are required to successfully complete 15 clinical competency examinations supervised by a registered radiographer or clinical instructor.

Clinical experience in hospital environment for 12 weeks, four days a week.

Pre-requisite: CL102M

SP201 - Special Procedures in Radiologic Technology ***Clock Hours: 24***

This course is designed to advance the student's knowledge of specialized procedures in the imaging department. The material presented will enable a student to recognize the structure and organs visualized in a radiograph, and to correctly position a patient for various advanced and special radiologic examinations. Special Procedures will include vascular; cardiac and interventional radiography; central nervous system; magnetic resonance imaging; and computed tomography.

Pre-requisite: POS202

RT202 - Radiographic Analysis ***Clock Hours: 32***

This course is designed to provide a basis for analyzing the radiographic quality of the following procedures: chest, abdomen, upper extremities, shoulder girdle, lower extremities, hip/pelvis, spine, skull, facial bones, gastrointestinal tract, and pediatric radiography. The students will demonstrate patient assessment, proper positioning, exposure factors, and radiation protection. Included are the importance of minimum imaging standards, discussion of a problem-solving technique for image evaluation and the factors that can affect image quality.

Pre-requisite: TECH101, TECH102

CL201M - Intermediate Clinical Experience II ***Clock Hours: 384***

Supervised sessions emphasizing development of medical imaging skills. Practical application of radiographic positioning. Students are required to successfully complete 20 clinical competency

examinations supervised by a registered radiographer or clinical instructor. Clinical experience in hospital environment for 16 weeks, four days a week.

Pre-requisite: CL103M

PATH201 - Radiographic Pathology ***Clock Hours: 32***

This course is designed to introduce concepts related to disease and etiological considerations with emphasis on radiographic appearance of disease and impact on exposure factor selection. The material covered should enhance the students' knowledge regarding interpretation of clinical information provided on the requisition and/or patient's chart. Case studies and critical thinking exercises allow the student the opportunity to consider the relevance of radiographic procedures with regard to technical and patient considerations. The course also includes a written research paper on a chosen pathology with oral presentation.

Pre-requisite: Anatomy and Physiology (Program Prerequisite)

REG201 - Registry Review I ***Clock Hours: 32***

This course provides a review of basic knowledge from previous courses and helps the student prepare for national certification examinations for radiographers. Topics include: image production and evaluation; radiographic procedures; anatomy, physiology, pathology, and terminology; equipment operation and quality control; radiation protection; and patient care and education.

Pre-requisite: Departmental Approval

REG202 - Registry Review II ***Clock Hours: 32***

This course is a continuum of Registry Review I in preparation for the ARRT Registry Examination. This course provides a review of basic knowledge from previous courses and helps the student prepare for the national certification examination for radiographers. Topics include image production and evaluation; radiographic procedures; anatomy, physiology, pathology, and terminology; equipment operation and quality control; radiation protection; and patient care and education.

Pre-requisite: REG201

CL202M - Advanced Clinical Experience ***Clock Hours: 384***

Supervised sessions emphasizing practical application of radiographic positioning with clinical experience. Emphasis on enhanced student knowledge of pathology and the relation to radiographic imaging quality. Clinical experience will be in the hospital environment for 16 weeks, three days a week.

Pre-requisite: CL201M