



St. Vincent Health / St. Joseph Hospital
Radiography Program
Course Descriptions
2011 - 2013



SEMESTER I

Introduction to Radiography – INT 101 (2.0 credit hour)

Introduction to the Radiography Program, the field of radiology and the organization. Topics for discussion will include program policies and procedures; general radiology history; professional organizations; accreditation, licensure, and professional pathways. Fundamentals of radiation protection for the patient, general public, and radiographer/student with emphasis on minimizing radiation exposure and methods to accomplish ALARA concepts will be discussed. Fundamentals of radiobiology including somatic and genetic effects and units of radiation measurement will be discussed. Basic presentation of exposure factors and their application to the clinical setting is included. More complete courses on radiation protection and exposure factors will be presented in the senior year.

Medical Terminology I - MET 101 (0.5 credit hour)

Introduction to the origin and derivation of medical terms and abbreviations, as well as their meaning. An exploration of prefixes, suffixes and root word combinations to create specific medical terms. Medical terminology specific to the musculoskeletal and respiratory system will be included. This course is largely self-guided with instructor direction.

Patient Care - PAC 101 (2.25 credit hours)

This course provides the student with the basic concepts of patient care including consideration for the physical and psychological needs of the patient. Some topics to be covered include: Safety and transport of a patient, infection control, handling acute situations, pharmacology, emergency recognition and response, and vital signs.

Radiographic Positioning I - POS 101 (4.0 credit hours)

The principles of this class are to obtain basic knowledge, skills, and application of alignment of body parts, cassettes, and x-ray tube in each elementary radiographic examination correlated with patient care procedures. Emphasis will be placed on positioning terms, projections of the chest, abdomen, upper extremities, shoulder, lower extremities, and pelvis as well as corresponding radiographic analysis. A laboratory component is included.

Anatomy and Physiology I - ANP 101 (2.75 credit hours)

This course is designed to study the human structure and its functions. Specific emphasis will be placed on structure and function of cells, tissues, and systems to include respiratory, general abdomen, basic digestive anatomy, and the appendicular skeleton including the upper extremities, shoulder, lower extremities, and bony pelvis.

Clinical Education I - CLE 101 (3.0 credit hours)

Clinical Education I is the first in a series of five courses that provide the student with the necessary clinical education needed in the actual practice of radiography. This course takes place in the clinical area. The student is exposed to actual patient contact. The student will begin to rotate through clinical areas of general radiology and will begin to master the basic skills necessary to function in a radiography room. Student rotations through support areas of radiology including transport and clerical/office are included but limited. The student will

also begin to learn to master basic radiographic examinations under the direct supervision of a technologist. Students will be assigned clinically to approximately 24 contact hours / week. Students will perform competency exams as identified by the syllabus.

SEMESTER II

Medical Terminology II - MET 102 (0.5 credit hour)

A continuation of Medical Terminology I. Medical terminology specific to the gastrointestinal, urinary, reproductive, cardiovascular, integumentary, endocrine, nervous, and sensory systems is presented. This course is largely self-guided with instructor direction.

Anatomy and Physiology II - ANP 102 (4.0 credit hours)

This course is a continuation of Anatomy and Physiology I and is designed to study the human structure and its functions. Structures and functions to be discussed include the axial skeletal system including the vertebral column, bony thorax, cranial and facial bones, digestive, urinary, biliary, reproductive, endocrine, muscular, integumentary, central nervous, cardiovascular, and lymphatic systems. Sectional anatomy of the head, thorax, abdomen and pelvis will be presented with CT and or MRI image correlation to line diagrams.

Radiographic Positioning II - POS 102 (5.25 credit hours)

This course is a continuation of Positioning I and emphasizes the application of skills learned in POS 101 to new clinical procedures including the vertebral column, bony thorax, cranial exams, and an in depth presentation of contrast media procedures with focus on the digestive, urinary, and biliary systems. In depth analysis of contrast media pharmacology including uses, contraindications and adverse reactions is included. Venipuncture administration is likewise discussed. Emphasis will be placed on radiographic analysis and corrective measures for sub-optimal quality. Additionally, a basic presentation of procedures of the reproductive system, arthrography, and myelography will be presented. An overview of imaging during trauma and surgery is discussed. Age specific considerations including the technical adaptation for and behavioral considerations of patients across a wide spectrum of age will be emphasized. A laboratory component is included.

Clinical Education II - CLE 102 (3.75 credit hours)

This course is a continuation of Clinical Education I as students continue to rotate through various aspects of the radiology department to involve clinical participation under direct and indirect supervision of procedure taught in Radiographic Positioning I and II and to master basic patient care. Students will be assigned clinically to approximately 24 contact hours / week. Students will perform competency exams as required by syllabus.

SEMESTER III

Ethics and Law – ETH 103 (1.0 credit hour)

This course is a basic presentation of standards of ethical conduct and behavior relevant to the medical field in general and radiology in specific. Ethical principles and doctrines are reviewed. Discussion of professional responsibility to patient and the profession in terms of Patient Bill of Rights, Code of Ethics, Scope of Practice, and Standard of Care. The basics of legal aspects of medicine will also be discussed. Various situations pertaining to moral, legal and professional conduct will comprise the core material. Among the legal topics to be discussed will be medico-legal consideration, confidentiality, liability, and informed consent.

Studies in Medical Imaging - SMI 103 (1.0 credit hour)

This course is an overview of the various fields of medical imaging that correlates with the studies completed in diagnostic radiology. A basic review of Ultrasound, Nuclear Medicine, Radiation Oncology, MRI, angiography / interventional radiology, and Mammography will be discussed. This course is self-guided via faculty-prepared presentations and will serve as a fundamental to modality rotation in Clinical Education IV and V.

Clinical Education III - CLE 103 (2.75 credit hours)

This course is a continuation of Clinical Education II and serves as an intensive focus on the advancement of clinical skills acquired in Clinical Education I and II. Students will continue to rotate through various aspects of the radiology department to involve clinical participation under direct and indirect supervision of procedures taught in Radiographic Positioning I and II. Supplemental outside rotations at secondary clinical education sites within the St. Vincent Health system and primary care/ambulatory clinics to promote a wider range of experiences with equipment, protocols, and patient care may be utilized. Students will begin pediatric rotations to advance age specific consideration skills. Students will be assigned clinically to approximately 36 contact hours / week. Students will perform competency exams as required by syllabus.

SEMESTER IV

Fundamentals of Radiation Production (FRP 201) (2.25 credit hours)

This course is an overview of how x-rays are produced and their interactions in human tissue. To provide a foundation for understanding the production of x-rays, the fundamentals of units of measurements and mathematics, atomic structure and nomenclature, electrodynamics and x-ray circuits, x-ray tubes, and characteristics of x-rays will be discussed.

Radiographic Principles I - PRI 201 (4.25 credit hours)

Basic fundamentals concerned with the production, analysis, and recording of radiographic images are included in this course. Understanding density, contrast, detail and distortion as well as their interrelationships will be emphasized. Subject matter will include mAs, kVp, distance relationships, geometric image formation, grids, beam limiting devices, filtration, computers, digital image acquisition and processing, and technique charts. A laboratory component is included.

Radiographic Pathology - PTH 201 (2.0 credit hours)

This course includes the nature and causes of disease, injury and illness, especially as it applies to radiology. This course is intended to provide the student a focus on pathology that can affect the technical factors used to obtain a radiographic image. The course correlates various anatomic systems of the body with pathologies found in those systems. Terminology and technical characteristics will be of major emphasis. Systems will include osseous, respiratory, digestive, cardiovascular, and nervous. Non-systemic neoplasia pathologies and general terms will also be discussed. Basic epidemiology will be presented. This will culminate in the presentation of a comprehensive report / project on a specific radiologically identified pathology.

Fundamentals of Computed Tomography – CAT 201 (0.5 credit hours)

This course presents the student with information necessary to achieve clinical competency in routine CT exams of the head / brain, thorax and abdomen / pelvis. Information covered includes basic operating principles of CT, patient care of the CT patient, radiation safety in CT, and procedural aspects of the head / brain (with and without contrast media), thorax and abdomen / pelvis (with and without contrast media).

Clinical Education IV - CLE 201 (3.5 credit hours)

This course is a continuation of Clinical Education III as students continue to rotate through various aspects of the radiology department to involve clinical participation under direct and indirect supervision of procedures taught in Radiographic Positioning I and II and to continue the advancement basic patient care skills. Supplemental outside rotations at secondary clinical education sites within the St. Vincent Health system and primary care/ambulatory clinics to promote a wider range of experiences with equipment, protocols, and patient care may be utilized. Students will continue pediatric rotations and will begin evening assignments as an introduction to radiography services performed after normal working hours. Students will begin dedicated CT rotations to foster clinical competency in required CT exams. Students will also begin rotations through medical imaging modalities of MRI, angiography, sonography, radiation oncology, and nuclear medicine to gain comprehensive understanding of medical imaging. Students will be assigned clinically to approximately 24 contact hours / week. Students will perform competency exams as required by syllabus.

SEMESTER V**Radiation Protection and Radiobiology – RPB 202 (2.25 credit hours)**

This course identifies the human response to ionizing radiation and identifies tissues that are more sensitive than others in radiation. A synopsis of health physics is also introduced to the student identifying specific agencies that govern the radiation exposure to the general public as well as the occupational worker. The application of radiation protection for patients and personnel will be emphasized.

Radiographic Image Analysis – RIA 202 (2.5 credit hour)

This course is designed to assess each student's ability to critique radiographic images for proper patient positioning, exposure factors, anatomy, artifacts and evidence of radiation protection. Critical thinking and problem solving skills are necessary in determining causes of technical problems and identifying corrective actions.

Radiographic Principles II – PRI 202 (3.5 credit hours)

This course provides the student with a thorough understanding of specific radiographic imaging equipment used in general radiology and the evaluation of these systems through systematic quality control testing. Also included is a thorough exploration of film processing and conditions. Topics of discussion will include tomography, image intensifiers and fluoroscopic equipment, mobile radiographic equipment, automatic exposure control, darkroom and processing equipment, film / screen structure and function, artifacts, sensitometry / characteristic curves, and quality control.

Registry Review – REG 202 (3.0 credit hours)

This course is a review session to help prepare the students for the national ARRT registry examination. A brief overview of the subjects studied during the course of the program will be addressed. The course also incorporates the use of mock board exams to help aid students in the review process and to chart progress toward ARRT board readiness.

Clinical Education V - CLE 202 (4.5 credit hours)

This course is a continuation of Clinical Education IV as students continue to rotate through various aspects of the radiology department with the expectation to refine clinical skills through clinical participation under direct and indirect supervision of procedures taught in Radiographic Positioning I and II and to continue the advancement basic patient care skills. Supplemental outside rotations at secondary clinical education sites within the St. Vincent Health system and primary care/ambulatory clinics to promote a wider range of experiences with equipment, protocols, and patient care may be utilized. Students will continue pediatric rotations and continue evening assignments as an introduction to radiography services performed after normal working hours. Students will continue dedicated CT rotations to foster clinical competency in required CT exams. Students will also continue rotations through medical imaging modalities of MRI, angiography, sonography, radiation oncology, and nuclear medicine to further their understanding of medical imaging. Students will be assigned clinically to approximately 24 contact hours / week. Students must complete all required competencies as defined in syllabus and the Clinical Competency Policy.