

Course Descriptions for the Radiography Academic / Laboratory and Clinical Courses

MR 100 Introduction to Radiologic Technology and Lab: 3 Credits

The general goal of this course is to assist the student to become familiar with the basic medical terminology, procedures, exposure settings, and the patient care skills associated with the profession of Radiography. A combination of lectures, guided self-study, and laboratory experiences will assist the student to develop all cognitive, affective, and psychomotor skills prerequisite to safe and efficient entrance into the clinical environment. This course will be presented prior to the start of the fall semester.

MR 101 Radiologic Procedures & Related Anatomy I and Lab 3 Credits

In this first of a series of three courses, students will learn how to safely and efficiently move/manipulate typical types of radiographic equipment, locks, and accessories. The student will also study the anatomic structures/organs, as well as the standard body/part positions, associated with the chest, abdomen, upper extremity, and lower extremity. Learning activities will include classroom presentation, guided self-study exercises, demonstration, and practice. Students' first level performance competency will be evaluated in the lab setting.

MR 111 Radiologic Imaging I 3 Credits

This is an introductory course into radiologic imaging principles. Students will learn the primary factors of image production and become familiar with the basic radiographic equipment required to obtain diagnostic images within the radiology department. Discussions will include practical considerations necessary for acceptable image quality, assessing radiographic exposure on radiographic images, and analyzing the relationships of factors that control and affect image exposure. Students will learn to identify the appropriate factors that will result in an optimum diagnostic image with the minimum radiation exposure to the patient, through a variety of lectures and interactive exercises.

MR 120 Radiologic Clinical I 3 Credits

Starting with a formal orientation to the students' assigned clinical site, students will progress as follows: a) structured observational experiences b) guided clinical application/practice of skills associated with procedure performance and c) competency assessment of the radiologic exams studied in the Radiologic Procedures & Related Anatomy I course. Students will be given performance benchmarks as guidelines as they develop confidence and competence in the performance of selected radiographic exams. Clinical conferences/ critique sessions will be incorporated.

MR 102 Radiologic Procedures & Related Anatomy II and Lab 3 Credits

In this second of a series of a three-course series in this content/subject area, students will learn the gross and topographic anatomic structures and procedure performance elements which are associated with typical radiographic exams demonstrating: shoulder girdle, bony thorax, pelvic girdle, cervical spine, thoracic spine, lumbar / sacral spine, and coccyx. Concurrently, the routine body positions required to obtain routine radiographic images for these exams will be demonstrated, then practiced by students and evaluated within laboratory sessions as described for the MR 101 course.

MR 131 Radiologic Physics 3 Credits

An initial unit of study of the fundamental theories and principles relevant to classical, Newtonian Physics will be followed by a conceptually based study of atomic structure, electricity, magnetism, and electromagnetism. In addition, students will study the physical principles relevant to: (a) the function/operation of x-ray generating equipment; (b) five of the interactions of x-radiation with matter; and (c) radioactive decay processes. Correlations between the principles learned and procedures/practices involved with the production of radiographic images will also be studied.

MR 121 Radiologic Clinical II 3 Credits

Students will continue to develop confidence in the performance of those radiographic exams

incorporated within the first semester's study. In addition, students will follow the progression of practical application learning activities described in MR 120, associated with the radiologic exams studied in MR 102. Students will be given performance benchmarks as guidelines as they develop confidence and competence in the performance of selected, related radiographic (and in selected cases bedside/portable) exams. Clinical conferences/ critique sessions will be incorporated.

MR 140 Patient Care in Radiography

3 Credits

The goal of this course is to teach patient care and safety skills necessary for a radiographer in a hospital setting. Topics covered will include hospital organizational structure, ethics, patient assessment, safety, medical emergencies, infection control, asepsis, medical terminology, pharmacology, and venipuncture. Students will learn proper patient communication and care through a variety of lectures and interactive exercises.

MR 220 Radiologic Clinical III

5 Credits

The summer starts with an intensive, one-to-two week academic and lab component focusing on gastrointestinal tract studies. Following this, students will be engaged in a ten-week clinical externship. This intensive experience will help students develop a higher level of performance competency and efficiency in the exams covered during the freshman year, as well as the performance of gastrointestinal studies covered in class/lab. Students will be expected to demonstrate progressively increasing levels of organizational skills, performance speed, and accuracy as they progress through the semester. Clinical conferences / critique sessions will be incorporated.

MR 201 Radiologic Anatomy with Related Procedures III and Lab

3 Credits

In this third and last of the procedures and anatomy series of courses, students will learn the gross and topographic anatomic structures as well as relevant body positions and sequences which are associated with more advanced radiographic exams of the skull, sinuses, facial bones, urinary, biliary, hysterosalpingiogram, arthrogram, and lumbar puncture. Concurrently, the routine body positions required to obtain routine radiographic images for these exams will be practiced and evaluated within laboratory sessions. A review of exams covered in prior semesters will also occur. An oral presentation pertaining to the organs of the ear is a course requirement.

MR 211 Radiologic Imaging II and Lab

3 Credits

This course will discuss the fundamentals of digital imaging systems. A detailed review of computed radiography, digital radiography, DICOM, and PACS will be provided, as well as information on HIS and RIS systems. Discussions will include the terminology associated with digital imaging systems, the various types of digital receptors, the response of digital detectors to exposure variations, and the advantages and limits of each receptor type. Class discussions and image analysis will help students to evaluate such factors as the spatial resolution, contrast, and brightness of digital images. Students will learn to associate the impact of image processing parameters to the image appearance and apply the fundamental principles of radiographic exposure to digital detectors. Laboratory exercises will assist the student in the application of technical factors to produce quality diagnostic images with the lowest radiation exposure possible.

MR 231 Radiation Biology and Protection

3 Credits

After a brief review of the atomic and molecular physical principles covered in MR 131, a study of the fundamental biological principles relevant to the manifestation of biologic effects from radiation exposure will occur. This will be followed by study of these effects on the atomic, molecular, cellular, tissue, organ, and organism level. In addition, students will study the principles relevant to: the basic radiation safety practices; the safety regulations promulgated by state and federal agencies; and the general design considerations relevant to radiology facilities.

MR 221 Radiologic Clinical IV

4 Credits

Students will continue to develop confidence in the performance of those radiographic exams which were

incorporated in the prior three semesters. In addition, they will progress through (a) guided clinical application of procedural performance skills, to (b) assessment and achievement of appropriate clinical competency in the performance of those radiologic exams studied in Radiologic Procedures & Related Anatomy III and lab. Students will be given performance benchmarks as guidelines as they further develop in confidence and competence in the performance of radiographic studies, gaining practice in commonly-performed procedures. Clinical conferences / critique sessions will be incorporated.

MR 240 Advanced Radiologic Procedures

3 Credits

In this course, students will learn about advanced imaging modalities. Topics will include an overview of cross-sectional imaging, computed tomography, magnetic resonance imaging, mammography, nuclear medicine, interventional radiography, ultrasound, radiation therapy. A basic overview of each modality's data acquisition process, patient preparation, and radiation safety measures will be discussed. There will be a review of topics previously covered in radiologic imaging and patient care classes to reinforce the learning process.

MR 250 Radiologic Pathophysiology

2 Credits

In this course, common radiologic findings relating to those exams, which were covered during the prior semesters, will be presented. Basic pathophysiologic processes relating to those findings will also be covered. Emphasis will be placed on the students' ability to increase their proficiency in assessing the diagnostic completeness of the images they produce. Students will present cases studies.

MR 222 Radiologic Clinical V

4 Credits

Students will be expected to exhibit the "Exit Level Competency" in the performance of all radiographic exams, which were incorporated in the prior semesters' academic and clinical study, associated with the program's criteria. Students will also participate in observational experiences in MRI, CT, IR, US, and mammography on an elective basis. Clinical conferences / critique sessions will be incorporated.