RADIOLOGIC TECHNOLOGY (RAD)

RAD 101 - Introduction to Radiologic Technology (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Provides an introduction to the field of radiologic technology, health care delivery systems, issues related to the health care environment, importance of effective communication, team-building, professionalism, and diversity in the health care center. The student will develop basic skills in radiography and patient care essential for providing quality health care. Professional development and lifelong learning will also be emphasized by introducing the students to various organization and agencies within radiography and other health care systems. NOTE: Students must be admitted in the RAD program to register for this course.
Typically offered: Summer

RAD 102 - Radiologic Procedures I (3 Credits)
2 lecture, 2 lab, 4 total contact hours
Examines radiologic anatomy and examination procedures for the upper appendicular skeleton, the chest and the abdomen. The basic concepts of radiologic positioning are presented. Students are taught techniques and procedures related to reading various types of technique charts and are able to program X-ray units for correct exposure for designated examination. NOTE: Students must be admitted into the RAD program to register for this course. Prerequisite: RAD 101 with a grade of C or better. Corequisite: RAD 103 and RAD 107.
Typically offered: Fall

RAD 103 - Radiologic Principles I (3 Credits)
2 lecture, 2 lab, 4 total contact hours
Introduces students to the principles of radiography and factors controlling radiologic production and radiation protection. Radiation production, prime factors, producing qualitative radiographic images; and types of image receptors are presented. Prerequisite: RAD 101 with a C or better. Corequisite: RAD 102 and RAD 107.
Typically offered: Fall

RAD 105 - Radiologic Procedures II (3 Credits)
2 lecture, 2 lab, 4 total contact hours
Examines the radiologic anatomy and examination procedures for the lower extremity and bony thorax. Students are taught to read various types of technique charts and program X-ray units for correct exposure for these examinations. Prerequisite: RAD 102 and RAD 103 with grades of C or better. Corequisite: RAD 106 and RAD 108.
Typically offered: Spring

RAD 106 - Radiologic Principles II (3 Credits)
2 lecture, 2 lab, 4 total contact hours
Provides supervised environment to develop the necessary skills needed to evaluate the radiologic image and provide appropriate recommendations for improving the diagnostic quality of the radiograph. Introduces digital imaging. Prerequisite: RAD 102, RAD 103 and RAD 107 with grades of C or better. Corequisite: RAD 105 and RAD 108.
Typically offered: Spring

RAD 107 - Radiologic Clinical Practicum I (2 Credits)
0 lecture, 20 lab, 20 total contact hours
Applies principles of radiologic positioning under the supervision of qualified registered American Registry of Radiologic Technologists (ARRT) technologist. Emphasizes appendicular and axial skeleton. Includes principles of exposure, image quality and other associated professional skills. Placement of clinical assignment by program coordinator. NOTE: All health requirements, as mandated by clinical sites, must be completed prior to placement in a clinical rotation. Prerequisite: RAD 101 with a grade of C or better. Corequisite: RAD 102 and RAD 103.
Typically offered: Fall

RAD 108 - Radiologic Clinical Practicum II (2 Credits)
0 lecture, 20 lab, 20 total contact hours
Applies principles of radiologic positioning under the supervision of registered American Registry of Radiologic Technologists (ARRT) technologist. Continued emphasis on contrasted procedures, appendicular and axial skeleton, the chest and bony thorax, and other radiologic skills. Prerequisite: RAD 102, RAD 103, and RAD 107 with grades of C or better. Corequisite: RAD 105 and RAD 106.
Typically offered: Spring

RAD 215 - Principles and Procedures in Mammography (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Provides a detailed overview of the history, equipment and radiographic principles and their application to mammography. Course focuses on breast anatomy and physiology, mammographic techniques, positioning skills, critical equipment features, image receptor characteristics, and image quality management. Successful completion of this course along with RAD 216 will meet the required contact hours of documented learning required by the American Registry of Radiologic Technologist (ARRT). This course is offered every spring and fall. Prerequisite: Admission into the Mammography certificate program.
Typically offered: Fall, Spring

RAD 216 - Mammography Externship (1 Credit)
0 lecture, 8 lab, 0 clinical/other, 8 total contact hours
Provides students with clinical experience to gain required skills to perform quality breast imaging mammograms in a health care setting under the direct supervision of a qualified practitioner. Emphasis on principles and procedures of mammography. Presented as a preceptor clinical experience according to ARRT guidelines. Prerequisite: Prior or concurrent enrollment in RAD 215.
Typically offered: Fall, Spring

RAD 221 - Radiologic Procedures III (3 Credits)
2 lecture, 2 lab, 4 total contact hours
Covers the radiologic anatomy and examination procedures for the vertebral column, the cranium, paranasal sinuses and facial bones. Includes instruction of how to read various types of technique charts and program X-ray units for correct exposure for these examinations. Prerequisite: RAD 225 with a grade of C or better. Corequisite: RAD 223, RAD 224, and RAD 228.
Typically offered: Fall

RAD 223 - Advanced Radiologic Principles (2 Credits)
2 lecture, 0 lab, 2 total contact hours
Provides a continuation of topics covered in RAD 106 such as the principles involved in diagnostic X-ray production and radiographic and fluoroscopic equipment. Topics include X-ray production, electromagnetic interactions with matter, X-ray devices, equipment circuitry, targets and filtration. Covers the application of physical concepts as related to X-ray image production. Prerequisite: RAD 106 and RAD 225 with grades of C or better. Corequisite: RAD 221, RAD 224, and RAD 228.
Typically offered: Fall

RAD 224 - Radiobiology (2 Credits)
2 lecture, 0 lab, 2 total contact hours
Provides an in-depth study of radiation biology, radiation regulations and radiation measurements. Somatic and genetic effects of ionizing radiation are presented. Radiation safety practices for staff and patients/clients are covered. Prerequisite: RAD 106 and RAD 225 with grades of C or better. Corequisite: RAD 221, RAD 223 and RAD 228.
Typically offered: Fall

RAD 225 - Radiologic Clinical Practicum III (3 Credits)
0 lecture, 12 lab, 12 total contact hours
Provides a continuation of radiologic experiences with emphasis on radiographic positioning of the cranial and facial bones; trauma; surgery and mobile procedures; and observation of radiologic interpretation. Placement of clinical assignment by program coordinator. Prerequisite: RAD 108 with a grade of C or better.
Typically offered: Summer

RAD 228 - Digital Imaging (2 Credits)
1.5 lecture, 1 lab, 2.5 total contact hours
Provides an in-depth investigation of digital medical imaging including digital radiography systems, image acquisition, exposure principles, image processing and post-processing, image display and quality control, and picture archiving communication systems. The student will gain a comprehensive understanding of computer system components and function, digital imaging systems (including comparison with film/screen systems), radiation safety principles, cassette-based compared with cassetteless systems, exposure factor and processing selections, quality assurance and acceptance standards. Prerequisite: RAD 106 with a grade of C or better. Corequisite: RAD 223 and RAD 224.
Typically offered: Fall

RAD 236 - Radiologic Pathology (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Examines the etiology and processes of trauma and disease. Emphasis placed on radiologic pathology of body systems. Prerequisite: RAD 224 and RAD 240 with grades of C or better. Corequisite: RAD 238, RAD 239, and RAD 251.
Typically offered: Spring

RAD 238 - Sectional Anatomy For Imaging (2 Credits)
2 lecture, 0 lab, 2 total contact hours
Studies human anatomical structures in multiple imaging planes. Reviews images created by MRI and Computed Tomography, as well as gross anatomical images. Focuses primarily on identification of normal anatomy, but includes some pathological conditions. Discusses the role of MRI in physiological imaging. Prerequsitie: BIO 261 with a grade of C or better.
Typically offered: Fall, Spring

RAD 239 - Radiologic Special Procedures (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Emphasizes routine special procedures including cardiovascular imaging, neuroradiography, reproductive system radiography and special studies of the viscera. The course details portable and surgical radiography, pediatric and geriatric radiography and related imaging modalities such as mammography, computed tomography, magnetic resonance imaging, ultrasonography and neuroradiography. Includes interventional radiology procedures such as stent-coil placement and venous access placement. The student will be able to participate and function in each of these different special procedures. Prerequisite: RAD 221 with a grade of C or better. Corequisite: RAD 236, RAD 238, and RAD 251.
Typically offered: Spring

RAD 240 - Radiologic Clinical Practicum IV (3 Credits)
0 lecture, 30 lab, 30 total contact hours
Covers advanced clinical experiences with guided practice of special procedures. Experience with mobile units at bedside and in the operating room and emergency room. Placement of clinical assignment by the program coordinator. (Formerly RAD 210). Prerequisite: RAD 225 with a grade of C or better. Corequisite: RAD 221, RAD 223, and RAD 224.
Typically offered: Fall

RAD 251 - Radiologic Clinical Practicum V (3 Credits)
0 lecture, 30 lab, 30 total contact hours
Provides a continuation of advanced clinical experiences with guided practice of special procedures. Experience with mobile units at bedside, in the operating room and in the emergency room. Placement of clinical assignment by the program coordinator. Prerequisite: RAD 223, RAD 224, RAD 228, and RAD 240 with grades of C or better. Corequisite: RAD 236, RAD 238, and RAD 239.
Typically offered: Spring

RAD 258 - Radiologic Seminar (1 Credit)
1 lecture, 0 lab, 1 total contact hours
Provides a review and discussion of radiologic principles, techniques and methods, and film critique. Emphasis is placed on the interdependence of theory and principles in preparation for the American Registry for Radiologic Technology (ARRT) examination and resume writing and job search skills. Prerequisite: RAD 223, RAD 224, and RAD 228 and RAD 240 with grades of C or better. Corequisite: RAD 236, RAD 238, RAD 239, and RAD 251.
Typically offered: Spring

RAD 260 - CT Procedures/Patient Care (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Provides detailed coverage of procedures for CT imaging. Procedures include, but are not limited to. indications fo the procedures, patient education, preparation, orientation and positioning, patient history and assessment, contrast media usage, scout image, selectable scan parameters, filming and archiving of the images. CT procedures will be taught for differentiation of specific structures, patient symptomology and pathology. CT imaging studies will be reviewed for quality, anatomy and pathology. CT procedures vary from facility to facility and normally are dependent on the preferences of the radiologists. Prerequisite: Admission into the Computerized Tomography (CT) program and prior or concurrent enrollment in RAD 238 with a grade of C or better. Corequisite: RAD 261.

RAD 261 - CT Principles I (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Imparts the fundamentals of the physical principles and instrumentation utilized in computer tomography (CT). Reviews the hitstorical development and evolution of CT. Physics topics covered include CT beam attenuation, linear attenuation coefficeints, tissue characteristics and Hounsfield number application. Explains data acquisiiton and manipulation techniques, image reconstructon algorithms such as filtered back-projection. Explores CT systems and operations with full coverage of radiographic tube configuration, collimator design and functions, detector type, characteristics and functions of the CT computer and array processor. Examines CT image processing and display from data acquisition through post-processing and archiving. Explains patient factors related to other elements affecting image quality, artifact production and reduction, and image communication. Prerequisite: Admission into the Computerized Tomography (CT) program is required or consent of instructor, and prior or concurrent enrollment in RAD 238 with a grade of C or better. Corequisite: RAD 260.

RAD 262 - CT Principles II (2 Credits)
2 lecture, 0 lab, 2 total contact hours
Covers part two of the physical principles and instrumentation involved in computerized tomography (CT). Physics topics covered include the characteristics of x-radiation, CT beam attenuation, linear attenuation coefficients, tissue characteristics and quality control procedures. Also includes an overview of the pinciples of radiation protection including the responsiblilites of the radiographer for patients, personnel and the public. Incorporates radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies and health care organizations. Prerequisite: RAD 238, RAD 260 and RAD 261 with grades of C or better.

RAD 263 - CT Clinical Education I (3 Credits)
0 lecture, 12 lab, 12 total contact hours
Applies principles of computed tomography (CT) procedures under the supervision of a qualified registered American Registry of Radiologic Technologists (ARRT) technologist. Emphasizes principles of exposure, image quality, patient care, radiation safety and other associated professional skills. Placement of clinical assignment will be done by the program coordinator. NOTE: American Heart Association Cardiopulmonary Resuscitation (CPR) certification and required Healthstream modules must be completed prior to placement in an clinical roatation. Prerequisite: RAD 238, RAD 260 and RAD 261 with grades of C or better. Corequisite: RAD 262.

RAD 264 - CT Clinical Education II (3 Credits)
0 lecture, 12 lab, 12 total contact hours
Continues to apply the principles of computed tomography (CT) procedures under the supervision of a qualifiied registered American Registry of Radiologic Technologists (ARRT) technologist. Emphasizes principles of exposure, image quality, patient care, radiation safety and other associated professional skills. Placement of clinical assignment will be done by the program coordinator. NOTE: American Heart Assocaitoin Cardiopulmonary (CPR) certification and required Healthstream modules must be completed prior to placement in a clinical rotation. Prerequisite: RAD 262 and RAD 263 with grades of C or better.

RAD 270 - MRI Patient Care and Procedures (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Provides detailed coverage of procedures for MR imaging. Procedures include, but are not lmiited to, indications for the procedure, patient education, preparation, orientation and positioning, patient history and assessment, contrast media usage, scout image, selectable scan parameters, filming and archiving of the images. MR procedures will be taught for differentiation of specific structures, patient symptomology and pathology. MR images studied wil be reviewed for quality, anatomy and pathology. MR procedures vary from facility to facility and normally are dependent on the preferences of the radiologists. Corequisite: RAD 271 Prerequisite: Admission into the Magnetic Resonance Imaging program, and prior or concurrent enrollment in RAD 238 with a grade of C or better.
Typically offered: Fall

RAD 271 - MRI Principles I (3 Credits)
3 lecture, 0 lab, 3 total contact hours
Reviews the historical development and foundation of magnetic resonance imaging (MRI). Explains basic principles and fundamentals classically and through quantum physics. Explores MRI systems and interactions of the magnetic fields within the systems. Discusses advantages of MRI imaging through contrast characteristics exploring the important mechanisms that affect image contrast in MRI. Explains resonance, interaction of radiofrequency, gradients including data collection and image formation. Explores hardware required for production of MRI to include magnet, radiofrequency source, image processor, computer system including MRI ancillary equipment. Discusses the artifacts causes and explores solutions to avoid artifact appearance. Corequisite: RAD 270 Prerequisite: Admission to the Magnetic Resonance Imaging (MRI) program is required or consent of instructor, and prior or concurrent enrollment in RAD 238 with a grade of C or better.
Typically offered: Fall

RAD 272 - MRI Principles II (2 Credits)
2 lecture, 0 lab, 2 total contact hours
Continues the physical principles and instrumentation involved in Magnetic Resonance Imaging (MRI). Explains data acquisition and processing, sequence parameters and imaging options. Explains quality control and quality assurance principles in magnetic resonance imaging. Incorporates magnetic resonance health and safety regulations of federal and state regulatory agencies, accreditation agencies and health care organizations. Prerequisite: RAD 271 with a grade of C or better.
Typically offered: Spring

RAD 273 - MRI Clinical Education I (3 Credits)
0 lecture, 12 lab, 12 total contact hours
Applies principles of magnetic resonance imaging procedures under the supervision of a qualified registered American Registry of Radiologic Technologist (ARRT) technologist. Emphasizes principles of exposure, image quality, patient care, radiation safety and other associated professional skills. Placement of clinical assignment by program coordinator. Corequisite: RAD 272 Prerequisite: RAD 270 and RAD 271 with grades of C or better.
Typically offered: Spring

RAD 274 - MRI Clinical Education II (3 Credits)
0 lecture, 12 lab, 12 total contact hours
Continues to apply the principles of magnetic resonance imaging procedures under the supervision of a qualified registered American Registry of Radiologic Technologists (ARRT) technologist. Emphasizes the principles of exposure, image quality, patient care, radiation safety and other associated professional skills. Placement of clinical assignment by program coordinator. NOTE: American Heart Association Cardiopulmonary Resuscitation (CPR) certification must be completed prior to placement in a clinical rotation. Prerequisite: RAD 272 and RAD 273 with grades of C or better.
Typically offered: Summer