LIMITED MEDICAL RADIOLOGIC TECHNOLOGIST WITH MEDICAL ASSISTING SKILLS

Certificate Program

Offered at DA Campus

Program Objective: Limited Medical Radiologic Technologist with Medial Assisting Skills - Certificate Program students are trained to perform routine diagnostic X-ray exams of the skull, extremities and vertebral column. The emphasis of training is on the anatomy of the human body and the proper positioning of the patient to achieve a quality radiograph. Training also includes the history, theory and application of diagnostic X-rays and their effect upon the human body. Students learn the theory of radiation production and the proper procedures and techniques to reduce radiation exposure to the patient and themselves. Students will also learn the operation, maintenance and quality control of the radiology equipment. Students learn medical terminology, professionalism, medical office skills to include patient triage, patient care, assisting physicians, basic phlebotomy technique, and basic pharmacology. These skills will prepare the student to become an effective member of the health care team and provide quality care to their patients. Graduates will have obtained the knowledge and skills necessary to pass the state licensing exam and find employment in a variety of medical clinics and physicians' offices. The program objectives are achieved through classroom and clinical hands on training as well as professional development.

Program Requirements: Each program participant must have a high school diploma or GED and should be able to read and write English. All entrants must pass the Scholastic Level Exam with a minimum score of 16. The participant should also have good coordination, be neat, professional, and be able to lift 40 pounds.

**Note: Any person convicted of a misdemeanor or felony offense under various titles of the Texas Penal Code will be denied a license in X-ray, and should therefore not enroll in this program.*

Program Length: Overall program length is 1,608 total clock hours, 60 weeks in length.

Delivery Method: Blended

COURSE CODE	COURSE TITLE	LECTURE HOURS	LAB HOURS	CLINICAL HOURS	TOTAL HOURS	SEMESTER CREDITS
MODULE I						
RAD400	INTRODUCTION TO RADIOLOGIC SCIENCES	18	0	0	18	1.0
RAD420	ANATOMY AND PHYSIOLOGY WITH MEDICAL TERMINOLOGY	48	0	0	48	3.0
	TOTAL MODULE I	**66**	**0**	**0**	**66**	**4.0**
MODULE II						
RAD401	PATIENT CARE IN RADIOLOGIC SCIENCES	32	0	0	32	2.0
RAD402	RADIATION PRODUCTION AND EXPOSURE	64	0	0	64	4.0
	TOTAL MODULE II	**96**	**0**	**0**	**96**	**6.0**
MODULE III						
RAD403	RADIATION PROTECTION & SAFETY/RADIATION BIOLOGY	64	0	0	64	4.0
RAD404	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE ENDOCRINE, URINARY, REPRODUCTIVE, AND INTEGUMENTARY SYSTEMS	32	0	0	32	2.0
	TOTAL MODULE III	**96**	**0**	**0**	**96**	**6.0**
MODULE IV						
RAD405	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE UPPER EXTREMITY	32	0	0	32	2.0
RAD406	RADIOGRAPHIC PROCEDURES AND IMAGE ANALYSIS OF THE UPPER EXTREMITY LABORATORY	0	64	0	64	2.0
	TOTAL MODULE IV	**32**	**64**	**0**	**96**	**4.0**
MODULE V						

RAD407	Imaging Equipment and Bone Density	32	0	0	32	2.0
RAD408	A&P, Pathology And Medical Terminology of the Respiratory and Cardiovascular Systems	32	0	0	32	2.0
CSP130	Customer Service and Professional Skills	16	16	0	32	1.5
	Total Module V	**80**	**16**	**0**	**96**	**5.5**
Module VI						
RAD409	A&P, Pathology and Medical Terminology of the Lower Extremity and Pelvis	32	0	0	32	2.0
RAD 410	Radiographic Procedures and Image Analysis of the Lower Extremity and Pelvis Laboratory	0	64	0	64	2.0
	Total Module VI	**32**	**64**	**0**	**96**	**4.0**
Module VII						
RAD411	Digital Image Acquisition, Display and Film/Screen Image Production	48	0	0	48	3.0
RAD412	A&P, Pathology and Medical Terminology of the Muscular System, Nervous System, and Special Senses	48	0	0	48	3.0
	Total Module VII	**96**	**0**	**0**	**96**	**6.0**
Module VIII						
RAD413	A & P, Pathology and Medical Terminology of the Chest, Bony Thorax, Digestive System and abdomen	48	0	0	48	3.0
RAD414	Radiographic Procedures and Image Analysis of the Chest, Bony Thorax, Digestive System and abdomen Laboratory	0	48	0	48	1.5
	Total Module VIII	**48**	**48**	**0**	**96**	**4.5**
Module IX						
RAD415	A&P, Pathology and Medical Terminology of the Vertebral Column	32	0	0	32	2.0
RAD416	Radiographic Procedures and Image Analysis of the Vertebral Column Laboratory	0	64	0	64	2.0
	Total Module IX	32	64	0	96	4.0
Module X						
RAD417	A&P, Pathology and Medical Terminology of the Skull and Facial Bones	48	0	0	48	3.0
RAD418	Radiographic Procedures and Image Analysis of the Skull and Facial Bones Laboratory	0	48	0	48	1.5
	Total Module X	48	48	0	96	4.5
Module XI						
PCM302	Patient Care with Medical Assisting Skills	16	32	0	48	2.0
RXT500	Clinical Externship I	0	0	285	285	6.0
CTR301	Cert Review	16	44	0	60	2.5
RXT501	Clinical Externship II	0	0	285	285	6.0
	Total Module XI	32	76	570	678	16.5
Totals Hours/Credits		658	380	570	1608	65.0

Total Hours = 1,608 Total Semester Credits = 65.5

NOTE: Students are required to successfully pass all courses with a minimum GPA of 2.0 within the maximum allowable time frame. Upon successful completion of all course work, externship, and payment of all monies due, the student is awarded a Certificate Degree.

COURSE DESCRIPTIONS:

Course descriptions include the course number, title, and synopsis, a listing of lecture, laboratory, externship hours, total clock hours and academic credits. For example, the listing "15/30/0/45/2.0" indicates that the course consists of 15 hours of lecture, 30 hours of laboratory, 0 externship hours, 45 total clock hours and 2.0 academic credits.

Note: Students must successfully complete all courses before entering externship. Courses may not be offered in the sequence list below.

RAD400	INTRODUCTION TO RADIOLOGIC SCIENCES	18/0/0/18/1.0
	The student will study the history of radiology and professional organizations that are a part of radiology They will learn the Code of Ethics and how it applies in today's workplace. Explain the laws that impact the LMRT and the makeup of a modern radiology department and its functions with an introduction to x-ray equipment and the technical aspects. Prerequisite: None	
RAD420	ANATOMY AND PHYSIOLOGY WITH MEDICAL TERMINOLOGY	48/0/0/48/3.0
	Students will learn and identify basic structures, functions, and dysfunctions of the body. This course covers a general treatment of the sensory, muscular, nervous, endocrine, digestive, respiratory, circulatory, urinary, reproductive, integumentary, and skeletal system. Students will learn the study of the word roots, prefixes, suffixes as well as abbreviations and symbols that are necessary tools for building a medical vocabulary. Prerequisite: None	
RAD401	PATIENT CARE IN RADIOLOGIC SCIENCES	32/0/0/32/2.0
	Students will learn about the Health Insurance Portability and Accountability Act (HIPPA). Students will learn about the transmission of diseases, hand washing techniques, and gloving. This course will ensure that students are aware of biohazards and airborne pathogens, including infection control procedures and laboratory safety. Students will learn the Code of Ethics and how it applies in today's workplace. Explain the laws that impact LMRT. Students will learn to identify their scope of practice and legal aspects pertaining to patient care. They will learn the aspects of death and the grieving process as well as the value of communication. Students will learn the importance of vital signs as a diagnostic tool and what are considered to be normal ranges and how to identify medical emergencies. Students will learn/demonstrate patient transfer techniques. Prerequisite: Mod I	
RAD402	RADIATION PRODUCTION AND EXPOSURE	64/0/0/64/4.0
	Content imparts knowledge to the students for performing functions with fractions and decimals. Students will learn to solve problems involving fractions (proper and improper) ratios and proportions and will learn how to solve word problems. Content is also designed to simplify algebraic expressions and convert units within the SI system, reading and solving word problems. Students will explain production of x-rays in the tube (Bremsstrahlung vs. Characteristics); distinguish between density, contrast, and the factors that control them. The will understand the fundamentals of photon interactions with matter. They will have a basic understanding of energy, wavelength and frequency. They will define total filtration (inherent and added) and its effect on the primary beam, compare factors in technique (mA, time, kVp, and distance) and their related effects on density and contrast. The student will learn X-Ray interactions with matter (Photoelectric, Compton, and Coherent). Apply conversion factors for changes with distance, grids, image receptors, reciprocity law and 15% rule. Prerequisite: Mod I	
RAD403	RADIATION PROTECTION & SAFETY/RADIATION BIOLOGY	64/0/0/64/4.0
	Content presents an overview of the principles of radiation protection, including the responsibilities of the radiographer for patients, personnel, and the general public. Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies, and health care organizations are incorporated. Prerequisite: Mod I and Mod II	
RAD404	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE ENDOCRINE, URINARY, REPRODUCTIVE, AND INTEGUMENTARY SYSTEMS	32/0/0/32/2.0
	The student will learn anatomy and physiology of the upper extremities as well as major components of the endocrine, urinary, and reproductive systems. Students will also learn to identify the anatomical landmarks associated with these regions. Medical terminology	

	specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisites: Mod I and Mod II	
RAD405	A & P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE UPPER EXTREMITY	32/0/0/32/2.0
	The student will learn anatomy and physiology of the upper extremities and structures associated with these regions. Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisite: Mod I and Mod II	
RAD406	RADIOGRAPHIC PROCEDURES AND IMAGE ANALYSIS OF THE UPPER EXTREMITY LABORATORY	0/64/0/64/2.0
	This course will teach the student how to correctly position the anatomy of the upper limb to include the shoulder girdle and acromioclavicular joints in order to produce quality diagnostic radiographic images. This course will also teach the student how to analyze the images for radiographic and diagnostic quality. Prerequisite: Mod I and Mod II	
RAD407	IMAGING EQUIPMENT AND BONE DENSITY	32/0/0/32/2.0
	Students will be introduced to the ionization of matter and its various interactions. Identify the units of radiation as well as explain the electromagnetic spectrum and its makeup. They will learn and explain the radiographic tube construction, the x-ray table, circuitry, generators and their purposes. The will have a basic knowledge of Electricity. They will understand the factors that affect and control the recorded image. Students will learn how differences in IR's and grids interact with x-rays. Explain the basic construction of grids and their effect on density and contrast. Prerequisite: Mod I and Mod II	
RAD408	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE RESPIRATORY AND CARDIOVASCULAR SYSTEMS	32/0/0/32/2.0
	The student will learn anatomy and physiology of the respiratory and cardiovascular system and structures associated with these regions. Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisites Mod I and Mod II	
CSP130	CUSTOMER SERVICE AND PROFESSIONAL SKILLS	16/16/0/32/1.5
	This course will teach the student about professionalism, including work-place behaviors that result in positive business relationships. Students will learn goal-setting, stress-management, time-management, professional dress, etiquette, diversity in the work place relationships, excellent customer service skills, communication at work, conflict resolution, job search skills, building resumes, and interview techniques. Prerequisites: Mod I and Mod II	
RAD409	A & P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE LOWER EXTREMITY AND PELVIS	32/0/0/32/2.0
	The student will learn anatomy and physiology of the lower extremities and structures associated with these regions. Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisite: Mod I and Mod II	
RAD410	RADIOGRAPHIC PROCEDURES AND IMAGE ANALYSIS OF THE LOWER EXTREMITY AND PELVIS LABORATORY	0/64/0/64/2.0
	This course will teach the student how to correctly position the anatomy of the lower limb including the pelvic girdle in order to produce quality diagnostic radiographic images. This course will also teach the student how to analyze the images for radiographic and diagnostic quality. Prerequisite: Mod I and Mod II	
RAD411	DIGITAL IMAGE ACQUISITION, DISPLAY AND FILM/SCREEN IMAGE PRODUCTION	48/0/0/48/3.0
	Content imparts an understanding of the components, principles and operation of digital imaging systems found in diagnostic radiology. Factors that impact image acquisition, display, archiving and retrieval are discussed. Principles of digital system quality assurance and maintenance are presented. Students will receive an overview of automatic film processing and film sensitometry. Prerequisite: Mod I and Mod II	
RAD412	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE MUSCULAR SYSTEM, NERVOUS SYSTEM, AND SPECIAL SENSES.	48/0/0/48/3.0
	Student will learn the anatomy and physiology of the muscular systems, nervous systems, and special senses, along with structures associated with these regions.	

	Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisite: Mod I and Mod II	
RAD413	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE CHEST, BONY THORAX, DIGESTIVE SYSTEM AND ABDOMEN.	48/0/0/48/3.0
	The student will learn anatomy and physiology of the chest, bony thorax, digestive system, and abdomen, along with structures associated with these regions. Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisite: Mod I and Mod II	
RAD414	RADIOGRAPHIC PROCEDURES AND IMAGE ANALYSIS OF THE CHEST, BONY THORAX, DIGESTIVE SYSTEM AND ABDOMEN LABORATORY	0/48/0/48/1.5
	This course will teach the student how to correctly position the anatomy of the chest, bony thorax, digestive system and abdomen, in order to produce quality diagnostic radiographic images. This course will also teach the student how to analyze the images for radiographic and diagnostic quality. Prerequisite: Mod I and Mod II	
RAD415	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE VERTEBRAL COLUMN	32/0/0/32/2.0
	The student will learn anatomy and physiology of the vertebral column and structures associated with these regions. Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisite: Mod I and Mod II	
RAD416	RADIOGRAPHIC PROCEDURES AND IMAGE ANALYSIS OF THE VERTEBRAL COLUMN LABORATORY	0/64/0/64/2.0
	This course will teach the student how to correctly position the anatomy of the vertebral column and sacrum and coccyx in order to produce quality diagnostic radiographic images. This course will also teach the student how to analyze the images for radiographic and diagnostic quality. Prerequisite: Mod I and Mod II	
RAD417	A&P, PATHOLOGY AND MEDICAL TERMINOLOGY OF THE SKULL AND FACIAL BONES	48/0/0/48/3.0
	The student will learn anatomy and physiology of the skull, facial bones, and structures associated with these regions. Medical terminology specific to this anatomical area will be discussed, as well as provide a knowledge base necessary to define pathologic conditions. Prerequisite: Mod I and Mod II	
RAD418	RADIOGRAPHIC PROCEDURES AND IMAGE ANALYSIS OF THE SKULL AND FACIAL BONES LABORATORY	0/48/0/48/1.5
	This course will teach the student how to correctly position the anatomy of the skull, facial bones and sinuses in order to produce quality diagnostic radiographic images. This course will also teach the student how to analyze the images for radiographic and diagnostic quality. Prerequisite: Mod I and Mod II	
PCM302	PATIENT CARE WITH MEDICAL ASSISTING SKILLS	16/32/0/48/2.0
	Students will learn basic patient care skills, phlebotomy, medication administration, basic pharmacology, vital signs, triage, labs, and CPR. Prerequisite: Mod I – X	
RXT500	CLINICAL EXTERNSHIP I	0/0/285/285/6.0
	This course provides placement of the student in a clinical setting in which the student will have the opportunity to gain hands-on experience as a clinical X-ray technologist. Students will utilize the knowledge and demonstrate skills learned in the classroom and laboratory. Prerequisite: MOD I – X	
CTR301	CERT REVIEW	16/44/0/60/2.5
	This course provides students the opportunity to review for the Texas Limited Examination in Medical Radiologic Technology so they may procure a permanent Texas Limited Medical Radiologic Technologist license. This is done through using review materials as well as utilizing practice exams in all areas of the test. The students will also fill out an application for the Temporary Limited Medical Radiologic Technologist license. Prerequisite: Mod I – X	

RXT501	CLINICAL EXTERNSHIP II	0/0/285/285/6.0
	This course provides placement of the student in a clinical setting in which the student will have the opportunity to gain hands-on experience as a clinical X-ray technologist. Students will utilize the knowledge and demonstrate skills learned in the classroom and laboratory. Prerequisite: MOD I – X and Radiology Externship I	