



# Radiology

## (Medical Radiologic Technology)

### Program Information

The Radiology program at Trenholm State provides students with the necessary education to gain entry-level positions in the field of medical imaging as diagnostic radiologic technologists. Students will receive didactic, laboratory, and clinical education in preparation for the American Registry of Radiologic Technologists (ARRT) certification examination.

Radiologic technologists produce medical images of parts of the human anatomy for use in diagnosing medical problems. Radiologic technologists must follow physicians' orders and conform to regulations concerning the use of radiation to protect themselves, their patients, and their coworkers from unnecessary exposure. The program has a competitive admissions process.

### Occupational Choices

Employment is projected to grow faster than average and job opportunities are expected to be favorable. Although hospitals and medical centers still remain the primary employers, a number of new jobs will be found in physician's offices and diagnostic centers. Health facilities such as these are growing due to the shift toward outpatient care. Radiologic Technologists experienced in more than one diagnostic imaging modality, such as CT, MR, and mammography, will have the best employment opportunities.

With experience and additional training, staff technologists may qualify for advanced certification in CT, angiography, and MRI. Experienced technologists also may be promoted to supervisor, chief radiologic technologist, and, ultimately, department administrator or director.

Source: U. S. Department of Labor Occupational Outlook Handbook, 2014-2015 Edition.

### Average Full-Time Wage

The median annual wage for radiologic technologists was \$58,440 in May 2017. The lowest 10 percent earned less than \$39,840, and the highest 10 percent earned more than \$84,110.

The median annual wage for magnetic resonance imaging technologists was \$69,930 in May 2017. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$48,600, and the highest 10 percent earned more than \$97,460.

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-2026 Edition, 2018 Survey

### Admission Criteria

Applicants should complete and submit a Radiology program application and have official copies of all college and high school transcripts sent directly to the College's Admissions Office.

Minimum admission standards include:

- A Trenholm State Community College application
- A Radiology Program application
- Official transcripts from high school and all colleges attended; official GED scores if applicable. A minimum of 2.5 high school GPA (for students without previous college courses) or a cumulative GPA over the last 24 credit hours (for students with previous college courses) is required.
- Be eligible for placement into the following course: English 101, Math 100 and Biology 201.
- ACT test score greater than or equal to 18.
- Applicants must be at least 18 years of age.
- A completed essential functions form.
- Incomplete application packages submitted will not be considered. See Program Application

### Estimated Program Length & Cost \*

Award	Length	Credit Hours	Tuition Fees	Books	Tools	Supplies
Associate Degree	6 Terms	76	\$11,780	\$1197	0	\$750
Co-requisite Courses	5 Terms	24	\$3,720	\$547	0	0
Radiology Courses	5 Terms	52	\$8,060	\$650	0	\$750

\* Tax not included. Prices are subject to change without prior notice; cost of books may vary considerably among suppliers. Cost of general education books is in addition to the total listed above. The length of the program is based on full-time status of 12-15 credit hours per term. Enrollment in transitional level general education courses will alter the length of the program.

Packet on the program web page at: <http://www.trenholmstate.edu/academics/medical-radiology.cms>

NOTE: It is highly recommended that students successfully complete BIO-103 (General Biology) or its equivalent in preparation for BIO-201 (Human Anatomy & Physiology I).

Students in the Radiology program must meet the following requirements which will be completed at the student's expense prior to and throughout enrollment in the program:

- a. Verification of absence of drug and alcohol use by participation in random and scheduled drug/alcohol testing at the student's expense.
- b. Undergo a background screening.
- c. Provide proof of all vaccinations designated by the program.
- d. Submit proof of completed CPR for Healthcare Providers course.
- e. Undergo a student physical administered by a physician.
- f. Adhere to policies of affiliated clinical affiliates.

Admission to the Radiology Program is competitive, and the number of students is limited by the number of faculty and clinical facilities available. Meeting the minimum requirements does not guarantee acceptance.

If the number of eligible applicants exceeds the space available to new enrollees, applicants are rank-ordered using a point system based on: ACT Exam scores and grades from prior courses. See Ranking Form on the program webpage at: <http://www.trenholmstate.edu/academics/medical-radiology.cms>

### **Awards Available**

Associate of Applied Science  
Medical Radiologic Technology

### **Program Contact**

Laurie Burnett  
Program Coordinator/Instructor  
334-420-4342  
Location: Trenholm Campus - Bldg. H

As part of ongoing planning and evaluation, the College regularly evaluates student learning outcomes for each program.

## Associate of Applied Science Medical Radiologic Technology

### General Education Requirements \* (24 hours)

#### Area I - Written Composition (6 hours)

ENG-101 *	English Composition I	3
ENG-102	English Composition II	3
ENG-130	Technical Report Writing	3

#### Area II - Humanities & Fine Arts (3 hours)

(Humanities and Arts disciplines include but are not limited to: Area/Ethnic Studies, Art and Art History, Foreign Languages, Music and Music History, Philosophy, Ethics, Religious Studies, Theater and Dance.)

**Note:** If SPH-106, SPH-107, SPA-101 or SPA-102 has been taken an additional 3 semester hours in Humanities and Fine Arts must be taken to satisfy requirements in Area II.

#### Arts:

ART-100	Art Appreciation	3
MUS-101*	Music Appreciation	3

#### Humanities:

PHL-106	Intro to Philosophy	3
PHL-200	Ethics in the Workplace	3
PHL-206	Ethics & Society	3
PHL-210	Ethics and the Health Sciences	3
REL-100	History of World Religions	3
REL-151	Survey of Old Testament	3
REL-152	Survey of New Testament	3
SPA-101	Intro Spanish I	3
SPA-102	Intro Spanish II	3
SPH-106 *	Fundamentals of Oral Comm	3
SPH-107	Fundamentals of Public Speaking	3

#### Literature:

ENG-251	American Literature I	3
ENG-252	American Literature II	3
ENG-261	English Literature I	3
ENG-262	English Literature II	3
ENG-271	World Literature I	3
ENG-272	World Literature II	3

#### Area III - Natural Science & Mathematics (6-7 hours)

(In addition to Mathematics, disciplines in the Natural Sciences include: Astronomy, Biological Sciences, Chemistry, Geology, Physical Geography, Earth Science, Physics, and Physical Science.)

**Note:** 3 semester hours in MTH must be completed. Additional hours can be taken in the Natural Science area.

#### Mathematics:

MTH-100 *	Intermediate Algebra	3
MTH-103	Intro to Technical Mathematics	3
MTH-104	Plane Trigonometry	3
MTH-110	Finite Mathematics	3
MTH-112	Precalculus Algebra	3
MTH-116	Mathematical Applications	3

#### Natural Sciences:

BIO-101	Introduction to Biology I	4
BIO-102	Introduction to Biology II	4
BIO-103	Principles of Biology I	4
BIO-104	Principles of Biology II	4
BIO-201 *	Human Anatomy & Physiology I	4
BIO-202 *	Human Anatomy & Physiology II	4

PHS-111	Physical Science I	4
PHS-112	Physical Science II	4
PHY-120	Introduction to Physics	4

#### Area IV - History, Social & Behavioral Sciences (3 hours):

(Social and Behavioral Sciences include, but are not limited to: Anthropology, Economics, Geography, Political Science, Psychology, and Sociology.)

**Note:** Must complete 3 semester hours.

#### History:

HIS-101	Western Civilization I	3
HIS-102	Western Civilization II	3
HIS-121	World History I	3
HIS-122	World History II	3
HIS-201	United States History I	3
HIS-202	United States History II	3

#### Social and Behavioral Sciences:

PSY-200 *	General Psychology	3
PSY-210	Human Growth and Development	3
SOC-200	Introduction to Sociology	3
POL-200	Introduction to Political Science	3
POL-211	American National Government	3

#### Area V: Pre-Professional/College Requirements:

(Courses appropriate to the degree requirements and major of the individual student and electives.)

#### College Requirements:

ORI-101	Orientation to College	1
RAD-111	Introduction to Radiography	2
RAD-112	Radiographic Procedures I	4
RAD-113	Patient Care	2
RAD-114	Clinical Education I	2
RAD-122	Radiographic Procedures II	4
RAD-124	Clinical Education II	5
RAD-125	Imaging Equipment	3
RAD-134	Clinical Education III	5
RAD-135	Exposure Principles	3
RAD-136	Radiation Protection and Biology	2
RAD-212	Image Evaluation & Pathology	2
RAD-214	Clinical Education IV	8
RAD-224	Clinical Education V	8
RAD-227	Review Seminar	2

\*These are co-requisite requirements, but may be completed prior to the start of the program. The student must be eligible for placement into the following courses: English 101, Math 100 and Biology 201 to apply.

Students must successfully complete all required co-requisite general education courses listed above prior to completion of the Radiology Program.

**Area V Credit Hours: 53**

**Total Credit Hours: 76**

## Course Descriptions Medical Radiologic Technology

Course #	Course Title	Credit Hours
<b>RAD-111</b>	<b>INTRODUCTION TO RADIOLOGY</b> COREQUISITE: RAD-112, RAD-113, RAD-114 PREREQUISITE: Admission into program This course provides students with an overview of radiography and its role in health care delivery. Topics include the history of radiology, professional organizations, legal and ethical issues, health care delivery systems, introduction to radiation protection, and medical terminology. Upon completion students will demonstrate foundational knowledge of radiologic science.	2
<b>RAD-112</b>	<b>RADIOLOGIC PROCEDURES I</b> COREQUISITE: RAD-111, RAD-113, RAD-114 PREREQUISITE: Admission into program This course provides the student with instruction in anatomy and positioning of the Chest and Thorax, Upper and Lower Extremities, and Abdomen. Theory and laboratory exercises will cover radiographic positions and procedures. Upon completion of the course the student will demonstrate knowledge of anatomy and positioning skills, oral communication and critical thinking in both the didactic and laboratory settings.	4
<b>RAD-113</b>	<b>PATIENT CARE</b> COREQUISITE: RAD-111, RAD-112, RAD-114 PREREQUISITE: Admission into program This course provides the student with concepts of patient care and pharmacology and cultural diversity. Emphasis in theory and lab is placed on assessment and considerations of physical and psychological conditions, routine and emergency. Upon completion, students will demonstrate / explain patient care procedures appropriate to routine and emergency situations.	2
<b>RAD-114</b>	<b>CLINICAL EDUCATION I</b> COREQUISITE: RAD-111, RAD-112, RAD-113 PREREQUISITE: Admission into program This course provides the student with the opportunity to correlate instruction with applications in the clinical setting. The student will be under the direct supervision of a qualified practitioner. Emphasis is on clinical orientation, equipment, procedures, and department policies. Upon completion of the course, the student will demonstrate practical applications of specific radiographic procedures identified in RAD-112.	2
<b>RAD-122</b>	<b>RADIOLOGIC PROCEDURES II</b> COREQUISITE: RAD-124, RAD-125 PREREQUISITE: Successful complete of RAD-111, RAD-112, RAD-113, RAD-114 This course provides the student with instruction in anatomy and positioning of spine, cranium, body systems and special procedures. Theory and laboratory exercises will cover radiographic positions and procedures with applicable contrast media administration. Upon completion of the course the student will demonstrate knowledge of anatomy and positioning skills, oral communication and critical thinking in both the didactic and laboratory settings.	4
<b>RAD-124</b>	<b>CLINICAL EDUCATION II</b> COREQUISITE: RAD-122, RAD-125 PREREQUISITE: Successful completion of RAD-111, RAD-112, RAD-113, RAD-114 This course provides students with the opportunity to correlate previous instruction with applications in the clinical setting. Students will be under the direct supervision of a qualified practitioner. Practical experience in a clinical setting enables students to apply theory presented thus far and to practice radiographic equipment manipulation, radiographic exposure, routine radiographic positioning, identification, and patient care techniques. Upon completion of the course, students will demonstrate practical applications of radiographic procedures presented in current and previous courses.	5
<b>RAD-125</b>	<b>IMAGING EQUIPMENT</b> COREQUISITE: RAD-122, RAD-124 PREREQUISITE: Successful completion of RAD-111, RAD-112, RAD-113, RAD-114 This course provides students with knowledge of basic physics and the fundamentals of imaging equipment. Topics include information on x-ray production, beam characteristics, units of measurement, and imaging equipment components. Upon completion, students will be able to identify imaging equipment as well as provide a basic explanation of the principles associated with image production.	3

<b>Course #</b>	<b>Course Title</b>	<b>Credit Hours</b>
<b>RAD-134</b>	<b>CLINICAL EDUCATION III</b> COREQUISITE: RAD-135, RAD-136 PREREQUISITE: Successful completion of RAD-122, RAD-124, RAD-125 This course provides students with the opportunity to correlate previous instruction with applications in the clinical setting. Students will be under the direct supervision of a qualified practitioner. Practical experience in a clinical setting enables students to apply theory presented thus far and to practice radiographic equipment manipulation, radiographic exposure, routine radiographic positioning, identification, and patient care techniques. Upon completion of the course, students will demonstrate practical applications of radiographic procedures presented in current and previous courses.	<b>5</b>
<b>RAD-135</b>	<b>EXPOSURE PRINCIPLES</b> COREQUISITE: RAD-134, RAD-136 PREREQUISITE: Successful completion of RAD-122, RAD-124, RAD-125 This course provides students with the knowledge of factors that govern and influence the production of radiographic images and assuring consistency in the production of quality images. Topics include factors that influence density, contrast and radiographic quality as well as quality assurance, image receptors, intensifying screens, processing procedures, artifacts, and state and federal regulations.	<b>3</b>
<b>RAD-136</b>	<b>RADIATION PROTECTION &amp; BIOLOGY &amp; RADIATION BIOLOGY</b> COREQUISITE: RAD-134, RAD-135 PREREQUISITE: Successful completion of RAD-122, RAD-124, RAD-125 This course provides the student with principles of radiation protection and biology. Topics include radiation protection responsibility of the radiographer to patients, personnel and the public, principles of cellular radiation interaction and factors affecting cell response. Upon completion the student will demonstrate knowledge of radiation protection practices and fundamentals of radiation biology.	<b>2</b>
<b>RAD-212</b>	<b>IMAGE EVALUATION &amp; PATHOLOGY</b> COREQUISITE: RAD-214 PREREQUISITE: Successful completion of RAD-134, RAD-135, RAD-136 This course provides a basic understanding of the concepts of disease and provides the knowledge to evaluate image quality. Topics include evaluation criteria, anatomy demonstration and image quality with emphasis placed on a body system approach to pathology. Upon completion students will identify radiographic manifestations of disease and the disease process. Students will evaluate images in the classroom, laboratory and clinical settings.	<b>2</b>
<b>RAD-214</b>	<b>CLINICAL EDUCATION IV</b> COREQUISITE: RAD-212 PREREQUISITE: Successful completion of RAD-134, RAD-135, RAD-136 This course provides students with the opportunity to correlate previous instruction with applications in the clinical setting. Students will be under the direct supervision of a qualified practitioner. Practical experience in a clinical setting enables students to apply theory presented thus far and to practice radiographic equipment manipulation, radiographic exposure, routine radiographic positioning, identification, and patient care techniques. Principles of computed tomography and cross sectional anatomy will be presented. Upon completion of the course, students will demonstrate practical applications of radiographic procedures presented in current and previous courses.	<b>8</b>
<b>RAD-224</b>	<b>CLINICAL EDUCATION V</b> COREQUISITE: RAD-227 PREREQUISITE: Successful completion of RAD-212, RAD-214 This course provides students with the opportunity to correlate previous instruction with applications in the clinical setting. Students will be under the direct supervision of a qualified practitioner. Practical experience in a clinical setting enables students to apply theory presented thus far and to practice radiographic equipment manipulation, radiographic exposure, routine radiographic positioning, identification, and patient care techniques. Principles other imaging modalities will be presented. Upon completion of the course, students will demonstrate practical applications of radiographic procedures presented in current and previous courses.	<b>8</b>
<b>RAD-227</b>	<b>REVIEW SEMINAR</b> COREQUISITE: RAD-224 PREREQUISITE: Successful completion of RAD-212, RAD-214 This course provides a consolidated and intensive review of the basic areas of expertise needed by the entry level technologist. Topics include basic review of all content areas, test taking techniques and job seeking skills. Upon completion, the student will be able to pass comprehensive tests of topics covered in the Radiologic Technology Program.	<b>2</b>