

PROGRAM INFORMATION

1. Clinical Education

Students are admitted in the fall, with a limited number of openings each year. The program is 24 consecutive months with the following schedule:

Clinical rotation hours:
Monday-Friday 07:30-12:00

Class hours:
Monday-Friday 12:30-16:00

Hennepin County Medical Center rotation:
Monday-Friday 14:30-22:00

Minneapolis Children's Hospital rotation:
Monday-Friday 07:30-12:30

Clinical hours may change due to the class schedule.

Clinical Sites

Hennepin County Medical Center
701 Park Avenue
Minneapolis, MN 55415

Children's Hospital and Clinics of Minnesota
2525 Chicago Avenue S
Minnesota, MN 55404

University Affiliates

Briar Cliff University
3303 Rebecca St.
Sioux City, IA 51104

Minot State University
500 University Ave W
Minot, ND 58701

Mount Marty
1105 W 8th St.
Yankton, SD, 57078

North Dakota State University
1340 Administration Avenue
Fargo, ND 58102

University of Mary
7500 University Avenue
Bismarck, ND 58504

Program Officials reserve the right to adjust class schedules.

Thirty minutes is allotted for a lunch break. During the 8th quarter an additional class day a week will be assigned by the program officials. This program prepares students for the American Registry of Radiologic Technology examination (A.R.R.T.). When assigned to clinical affiliate sites, the student will honor the rules and departmental procedures of that facility. Class and clinical time will not exceed forty hours per week. The school week runs from Sunday through Saturday. **Any deviation from this schedule must be discussed with program officials.**

Students must produce proof of immunization for measles and chicken pox prior to their rotation. Hepatitis B shots are required and are provided by the VAMC Personnel Physician's Office. There is no charge for the series.

2. Radiologic Technologist (Definition)

Radiologic Technologists, also referred to as radiographers, x-ray technologist and x-ray technicians, produce x-ray films (radiographs) of different parts of the human body for use in diagnosing medical problems. They prepare patients for radiologic or fluoroscopic examinations by explaining the procedure, prepping the patient, and positioning patients so that the parts of the body can be appropriately imaged. They practice radiation safety procedures concerning radiation exposure.

Experienced radiographers may perform more complex imaging procedures or modalities such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Ultrasound (U/S), Nuclear Medicine, Radiation Therapy, Interventional Imaging, and Cardiac Catheterization.

For a complete description of various Radiologic Technologist (R.T.) positions, you may write to the American Society of Radiologic Technologists, 15000 Central Avenue SE, Albuquerque, New Mexico, 87123 (505-298-4500). You also have the option of talking to one of the instructors at the VAMC School of Radiologic Technology, contacting your high school counselor, or discussing opportunities with radiographers in your area.

3. Employment and Salaries

VAMC graduates are employed locally and in many states. Wages will vary according to experience and employment situations. Employment will vary by state and region. According to the November 2004 State Occupational Employment and Wage Estimates of Minnesota, part of the U.S. Department of Labor Bureau of Labor Statistics the median annual earnings of radiologic technologists and technicians was \$48,650 and the average hourly wage was \$23.38.

4. Accreditation

The Joint Review Commission on Education in Radiologic Technology (JRCERT) accredits our program. VAMC graduates are eligible to take the American Registry for Radiologic Technologists. Upon successful completion of this examination, the graduate becomes a Registered Technologist in Radiography. This certification is the nationally accepted standard of the profession.

Questions or comments regarding compliance with the Joint Review Committee on Education in Radiologic Technology (JRCERT) Standards by the Minneapolis VA Medical Center School of Radiologic Technology should be directed to:

The Joint Review Committee on Education in Radiologic Technology (JRCERT)
20 North Wacker Drive, Suite 2850
Chicago, Illinois 60606-3128
Tel: 312-704-5300
Fax: 312-704-5304
mail@jrcert.org
www.jrcert.org

5. Tuition and Fees

Tuition: No cost. Student may choose to be employed at this facility. Hours are after school and on holidays. These hours are paid. Pay is subject to the students experiences.

Background Check: \$20.00/year

Books: \$2,000.00 – approximate for entire program.

Miscellaneous: Approximately \$150.00 per year – professional memberships, clinical record books.

Uniforms: Uniforms are approximately \$75.00 for three sets. Shoes must be appropriate for the medical profession; nursing shoes are not required. Lab coats are provided by the hospital or the student can purchase a laboratory coat that matches the uniform. Appropriate attire is the responsibility of the student. Any final decision will be left to the discretion of the program director.

Refunds: There are no refunds given to students who decide to quit or are dismissed from the program

6. Graduation Requirement

A Certificate of Completion in Radiography is awarded to students who:

1. Fulfill all radiography course requirements.
2. Earn a grade of eighty percent or higher in all required radiography courses.
3. Complete clinical record book requirements.
4. Complete all clinical competency evaluation requirements.

You must complete all requirements for graduation to obtain eligibility to take the ARRT radiography examination.

7. Radiation Safety

While students and radiographers are exposed to ionizing radiation, much of the instruction involves minimizing the risks to everyone. Students are carefully monitored throughout their education.

8. Pregnancy Policy

Since ionizing radiation has been determined to be harmful to the developing embryo/fetus, the following recommendations and issues of compliance are required to protect the health of the student and child.

The recommendations of the National Committee on Radiation Protection Report #39, is that a maximum permissible dose to the fetus from occupational exposure of the expectant mother, should not exceed 0.5 rem. for the entire gestation period. Thus, the pregnant student shall voluntarily notify, in writing, the Program Director and Clinical Instructor at the earliest possible date. The form used, Pregnant Student Waiver, Voluntary Disclosure, located on page 45 of the 2013-15, policy handbook. Once the pregnancy is known, the approximate rem. dose exposure can be reviewed to determine if clinical course work can be continued; and assure that the student is within the framework of the limit set above; i.e., fluoroscopy, special procedures and nuclear medicine. A second radiation badge is ordered which will be worn at waist level. In the absence of a written, voluntary disclosure, the student is not considered pregnant.

When a student submits the voluntary disclosure document to the program officials, the following options are discussed:

1. Continue the program without any modification or interruptions.
2. Continue the program with modifications. With the student's voluntary disclosure, clinical rotations may be adjusted. Upon return to the program, the student will make up all time in areas that she missed due to her pregnancy.
3. Maintain the academic section and take a leave of absence from the clinical area with time made up.
4. Take a leave of absence from the program.
5. The student has the right to withdraw their voluntary declaration of pregnancy at any time, in writing

The following are options for a student who takes a leave of absence due to pregnancy.

1. If the student is able to continue didactic studies, assessments are mailed to a person who is defined as a proctor. After completing examination, the proctor will return the examinations back to the program director. Clinical time is completed after graduation.
2. If the student is unable to continue didactic studies upon returning to school, she will start with the current class by making up the time missed. In addition, with the assistance of the program director, the returning student will use independent study to catch up with the current class. This will include but not be limited to one-on-one tutoring with personnel, examinations and performing radiographs.

3. If the student has an extended leave due to medical reasons, the student will return and make up all time missed. She will return to class, when the current class and she are at the same point.
4. The student's physician must approve her return to work with appropriate documentation.

9. Leave of Absence.

Leave of absence may be granted to students at the discretion of the program director in accordance with Minneapolis Veterans Affairs Health Care System (MVAHCS) policy.

Generally, each student may be granted up to twelve weeks leave per year for bona fide events including: short-term disability or sick leave, and family leave. The program director will determine what constitutes a bona fide leave and the length of leave on a case-by-case basis. All requests for leaves of absence will be made in writing to the program director at least thirty days in advance, or as soon as reasonably practicable. Personal leave time and sick time must be taken as part of the leave of absence and counted against the twelve weeks leave.

Upon return students will make up any didactic or clinical time missed in that twelve week period. Make-up work must be completed within the following 90 days. Any work not completed will be cause for dismissal.

The student in conjunction with program officials will develop an independent study course of action to make up all didactic materials missed. Program officials, department officials or technologists may assist the student in making up the didactic portion

For a leave of absence that extends beyond the maximum 12 weeks the student will be required to start again, at the point where their studies have been discontinued, with the next class coming into the program.

Veteran Affairs Health Care System's Mission Statement

Honor American's veterans by providing exceptional health care that improves their health and well-being.

Vision

To be a patient-centered, integrated health care organization for veterans by providing excellent health care, research and education; an organization where people choose to work; an active partner and a back up for national emergencies.

Hospital Values:

- Integrity
- Commitment
- Advocacy
- Respect
- Excellence

Curriculum Sequence 2015/2016

Course

	Credits
1st Quarter	
Patient Care in Radiography	3
Medical Terminology 1	4
Radiologic Procedures 1	4
Radiographic Exposure and Technique 1	3
Radiologic Procedures 1 Lab	3
Clinical	7
2nd Quarter	
Radiologic Procedures 2	4
Radiologic Procedures 2 Lab	3
Medical Terminology 2	4
Radiographic Exposure and Technique 2	3
Clinical	8
3rd Quarter	
Radiographic Procedures 3	4
Radiologic Procedures 3 Lab	3
Radiation Biology/Protection	3
Clinical	9
4th Quarter	
Radiographic Procedures 4	4
Radiologic Procedures 4 Lab	3
Physics 1	3
Medical Law and Ethics	3
Clinical	8
5th Quarter	
Physics 2	3
Radiographic Pathology 1	3
Clinical	9
6th Quarter	
Radiographic Pathology 2	3
Radiographic Procedures 5	4
Clinical	9
7th Quarter	
Cross Sectional Anatomy	3
Registry Review 1	P/F
Topics in Radiology	3
Clinical	9
8th Quarter	
Registry Review 2	P/F
Total Quality Management	2
Clinical	10

April 6, 2016

Minneapolis VA Health Care System
School of Radiologic Technology

The VAMC School of Radiologic Technology uses the professional curriculum developed by the American Society of Radiologic Technology (ASRT). Every two years, program officials revise and update the curriculum.

Program Officials reserve the right to revise curriculum as indicated.

Updated: 1/8/07
6/27/07
2/21/08
8/16/10
7/8/13
4/7/14
05/20/14
07/1/15
4/6/2016

School of Radiologic Technology's Program Mission Statement

It is the mission of the VAMC School of Radiologic Technology to educate radiologic technologists who recognize patient needs, who hold the skills, knowledge and attitudes required for safe, diagnostic radiology; and who are registry eligible upon program completion.

Purpose

The purpose of the VAMC School of Radiologic Technology is to prepare graduates with entry-level skills, knowledge, and attitudes of a staff technologist through successful completion of clinical and academic objectives.

General information

Radiologic Technology is the technical science that deals with the use of x-rays for diagnostic purposes in medicine. The term radiologic technologist refers to an individual qualified to use ionizing radiation to produce images of the body for interpretation by a radiologist. As an important member of the health care team, the radiologic technologist is employed in hospitals, clinics, imaging centers, mobile services, commercial sales and industrial imaging. Registered technologists may specialize in areas such as radiation therapy, nuclear medicine, sonography, computerized tomography, neuroradiology, vascular radiology, echocardiography, positron emission imaging scanning, magnetic resonance imaging and mammography.

Program

The VAMC Radiologic Technology program begins in September of each year and consists of a two-year (24 consecutive months) curriculum. Class hours are from 07:30 - 16:00 hours Monday through Friday. Classes and clinical times may vary from quarter to quarter. In addition to traditional classroom instruction, students participate in supervised clinical practice. Graduates of this program are awarded a certificate of completion and are eligible to take the national certification examination given by the American Registry of Radiologic Technologists. All course material is finished prior to the national certification examination.

Goals

Goal 1: Graduates will be clinically competent.

- Outcome 1: Students will be able to position patients to produce a diagnostic image.
- Outcome 2: Students will be able to adjust technical factors to produce diagnostic images
- Outcome 3: Students will use correct measures to protect the customers from radiation

Goal 2: Challenge students to develop problem solving and critical thinking skills.

- Outcome 1: Students will be able to distinguish between a diagnostic/ non-diagnostic image
- Outcome 2: Students will be able to adjust standard positioning to accommodate physical needs of a patient

Goal 3: Students will be able to communicate with internal and external clients.

- Outcome 1: Students will demonstrate effective written and oral communication
- Outcome 2: Students will demonstrate effective use of verbal and non-verbal communication.
- Outcome 3: Students will practice radiography characterized by the use of appropriate communication skills including the ability to read, comprehend, and analyze information

Goal 4: Graduate students who are professional.

- Outcome 1: Students will have the knowledge to demonstrate professional behavior in the clinical setting
- Outcome 2: Student will participate in student professional organization

Admission Procedures

The Radiography Program at the Veterans Affairs Medical Center is an equal opportunity program. The student selection is non-discriminating with respect to race, color, creed, sex, age, handicap, or national origin.

The candidate's application materials, personal references and transcripts must be received by the closing date each year. The closing date for the 2017-2019 class is **February 17, 2017 @16:00 hours**. A personal interview is conducted if the applicant meets admission criteria. The program director, clinical coordinator and staff technologist (s) will conduct the interview. The selection is based upon the interview process and previously mentioned criteria.

The selected applicants are notified within thirty days of the interview and are requested to confirm the acceptance within seven days. The remaining applicants are notified after the confirmation of the selected applicants. The program reserves the right to select less than the maximum number of fifteen applicants

Financial Aid

The VAMC School of Radiologic Technology has no scholarship/grant/loan programs. We do not participate in the federal financial aid funding.

Learning Resources

1. Students have access to the VA library 24/7.
2. Students have access to the computers in the VA library 24/7.
3. Tutoring and mentoring services are available and provided by program officials and technologists as needed.
4. A physics tutoring class is provided in the student's senior year to refresh their physics knowledge before taking the national boards.
5. A general radiography review class is provided in the student's senior year to refresh their general radiography knowledge before taking the national boards.
6. Student Organization Meetings are available for the student to attend on a quarterly basis.
7. The student bowl is available for the students to attend on an annual basis.

Student Services

1. Parking
2. Hepatitis series
3. Flu vaccinations
5. Tuberculin or PPD Test
6. CPR training
7. Tutoring

Academic Calendar

Start of School – September 7-9 2016 New Employee Orientation

Program Orientation 12-13, 2016

First Quarter, 9/6/16-11/18/16

Columbus Day off – October 10, 2016

Veterans Day off – November 11, 2016

Thanksgiving off – November 24, 2016

Quarter 2nd, 12/5/2016-2/24/2017

Christmas off –December 26, 2016

New Year's Day January 2, 2017

Martin Luther King's Day – January 16, 2017

Third Quarter, 3/6/17-5/26/17

Presidents Day off – February 20, 2017

Fourth Quarter, 6/5/17-8/18/2017

Memorial Day off – May 29, 2017

Independence Day - July 4, 2017

Graduation Picnic – August, 2017

Graduation – August 18, 2017

Labor Day – September 4, 2017

Student Bowl –September 2017

Fifth Quarter, 9/6/2016-11/18/2016

Sixth Quarter, 12/5/2016-2/24/2017

Seventh Quarter, 3/6/2017-5/26/2017

Eighth Quarter, 6/5/2017-8/18/2017

Updated: (2/27/07)
(2/21/08)
(7/10/09)
(8/16/10)
(9/5/12)
(6/11/13)
(07/13/13)
(05/20/15)
(9/14/2015)
(3/30/2016)

Course Descriptions

CLINICAL ROTATIONS

The student's clinical experience includes performing as an actual member of the health care team. The clinical training plan will focus on patient care, protocol in the health care facility and imaging department, and on identification of diagnostic equipment and supplies. Students will also practice interpreting general radiographic considerations. Emphasis will be radiographic positioning and manipulation of radiographic equipment and accessories related to radiography.

The student will continue to acquire and build skills while performing radiographic procedures. The student will continue to increase skill in portable radiography.

Students are required to demonstrate competency in regular radiographic areas and procedures, also pediatrics and trauma. Competency is achieved in studies requiring the use of contrast agents, especially those of the digestive and urinary systems. In addition, the student is introduced to specialized studies of the vascular system, computed tomography, digital imaging, magnetic resonance, mammography and ultrasound. This course emphasizes the development of independence, discretion and judgment by the student while performing radiographic procedures. The student is expected to correlate all clinical and didactic experience while demonstrating proficiency and efficiency.

COMPUTED TOMOGRAPHY:

This course provides knowledge of computed tomography imaging procedures. Emphasis is on head, chest, spine and pelvis procedures. Upon completion, students will demonstrate and/or explain specific CT imaging procedures relative to the head, chest, spine, and pelvis. This course will also provide the radiographer with knowledge of computed tomography physics and instrumentation to include system operation and components; image processing and display, image quality, and artifacts.

CROSS-SECTIONAL ANATOMY (3 credits)

This class provides students with the tools for understanding anatomy in three dimensions. Students will be able to visualize the appearance and the relationships in planar sections following completion of this material. Concentration will be on cranial, thoracic, abdominal, and pelvic structures. A field trip to the laboratory will be completed during this material.
(Prerequisite: Anatomy I, II, and III)

DIGITAL IMAGING:

This course is a class presently taught in Physics II. It offers an overview of digital applications in medical imaging. Basic principles of digital radiographic imaging technology are discussed, including image acquisition fundamentals, processing, physical and technological aspects of digital modalities, and effective use of digital imaging technologies.

MEDICAL LAW AND ETHICS (3 Credits)

The fundamentals of bioethics, ethical codes, confidentiality, patient rights and humanistic health care are taught in this course. Legal terminology, legal judgment, legal documents and litigation are also discussed.

MEDICAL TERMINOLOGY I (4 credits)

In this course students learn to recognize and build medical terms after learning the meaning of word parts. The application of radiographic terms will be discussed. The course is based on a systems approach. Students will also learn how to interpret and use common medical abbreviations and symbols.

MEDICAL TERMINOLOGY II (4 credits)

This is a continuation of Medical Terminology I. Students continue to learn to recognize and build medical terms after learning the meaning of word parts. The application of radiographic terms will be discussed. The course is based on a systems approach. Students will also learn how to interpret and use common medical abbreviations and symbols.
(Prerequisite: Medical Term. I)

PATIENT CARE IN RADIOGRAPHY (3 credits)

The radiography technologist provides for the patient's physical and psychological needs. Along with communication skills, body mechanics, isolation and aseptic techniques, students learn the care of IV's and drainage tubes. Emergency protocol and contrast reactions are also taught. Students complete CPR certification and achieve competency in venipuncture.

PHYSICS I (3 credits)

This course covers the fundamentals of physics. Material covered includes specific concepts of radiation science through electromagnetism.

PHYSICS II (3 credits)

This course will provide the student with knowledge of the equipment used routinely to produce diagnostic images. Imaging modalities, including fluoroscopy, automatic exposure devices and conventional tomography and various recording media techniques will be discussed.
(Prerequisites: Physics I, II)

RADIATION BIOLOGY AND PROTECTION (3 credits)

This course is a study of the principles of cell radiation interaction. Students study factors affecting cell response to acute and chronic results of radiation. Principles of radiation protection and responsibility by the radiographer to patients, personnel and the public are presented. Regulatory policy is discussed. Basic principles of measurement, energy, atomic

structure, electricity, magnetism and their application to radiation production take place in this course. Students also study x-ray production, scatter radiation and x-ray circuitry.

(Prerequisites: Physics I, II, and III)

RADIOGRAPHIC EXPOSURE AND TECHNIQUE I (3 credits)

This course covers an introduction to the scientific principles that govern radiographic exposure factors. Topics include density, contrast, detail and distortion. Photographic and geometric properties of radiographs are discussed. This course is designed to create a foundation of knowledge upon which an understanding of the principles that govern radiographic technique and quality can be built. During this course students learn the procedure for processing radiographic film. Dark room location and operation, film composition, film holders, intensifying screens and processing chemicals are discussed.

RADIOGRAPHIC EXPOSURE AND TECHNIQUE II (3 credits)

Emphasis is on radiographic image quality through presentation of prime exposure factors and their effect on radiographic quality. Students will be involved in solving technical problems and making technical adjustments related to prime exposure factors.

(Prerequisites: Radiographic Exposure I)

RADIOGRAPHIC PATHOLOGY I (3 credits)

This course will provide the student with the concepts of disease and its effects on the human body. Pathology and diseases as they relate to various radiographic procedures and radiographs will be discussed.

(Prerequisites: Clinical, Radiographic Procedures I, II, III, IV)

RADIOGRAPHIC PATHOLOGY II (3 credits)

This class is a continuation of the Radiographic Pathology I, where the students continue to learn about the effect of diseases on the human body.

(Prerequisites: Clinical, Radiographic Procedures I, II, III, IV, Radiographic Pathology I)

(4 credits)

RADIOGRAPHIC PROCEDURES I (4 credits)

This course will provide the student with the knowledge necessary to perform radiographic procedures relative to the thoracic and abdominal cavities, upper extremities including shoulder girdle, and lower extremities excluding the hip. Emphasis will be on radiographic terms, positioning, manipulation of radiographic equipment and accessories and related patient care considerations. Portable radiographs will be introduced. (4 credits)

RADIOGRAPHIC PROCEDURES I LABORATORY

Instructors demonstrate projections, which will best demonstrate the anatomy learned during didactic learning. Students also will demonstrate projection they have learned. (3 credits)

RADIOGRAPHIC PROCEDURES II (4 credits)

This course provides students with the knowledge necessary to perform radiographic procedures relative to the lower limb, vertebral column to include pelvis, and bony thorax along with soft tissues of the chest. Emphasis will be on radiographic terms, positioning, manipulation of radiographic equipment and accessories, and related patient care considerations.

(Prerequisites: Rad. Proc. I)

RADIOGRAPHIC PROCEDURES II LABORATORY (3 credits)

Instructors demonstrate projections which will best demonstrate the anatomy learned during didactic learning. Students also will demonstrate projection they have learned.

RADIOGRAPHIC PROCEDURES III (4 credits)

This course provides the student knowledge necessary to perform radiographic procedures relative to the gallbladder and biliary ducts, upper and lower gastrointestinal track, urinary system. Emphasis will be on anatomy, radiographic terms, positioning and patient considerations related to radiography.

(Prerequisites: Rad. Proc. I, II)

RADIOGRAPHIC PROCEDURES III LABORATORY (3 credits)

Instructors demonstrate projections, which will best demonstrate the anatomy learned during didactic learning. Students also will demonstrate projection they have learned. (4 credits)

RADIOGRAPHIC PROCEDURES IV (4 credits)

This course emphasizes the basic radiographic procedures and positioning related to paranasal sinuses, temporal bones, facial and cranial bones. Students continue to develop the knowledge necessary to completely perform radiographic procedures relative to the bony thoracic, spine, extremities, trauma exams and other procedures previously covered.

(Prerequisites: Rad. Proc. I, II, III)

RADIOGRAPHIC PROCEDURES IV LABORATORY (3 credits)

Instructors demonstrate projections, which will best demonstrate the anatomy learned during didactic learning. Students also will demonstrate projection they have learned.

RADIOGRAPHIC PROCEDURES V (4 credits)

This course emphasizes the basic radiographic procedures and positioning related to special imaging to include by not limited to mammography, interventional, cardiac, oncology, ultrasound and bone density. The following areas are reviewed also: mobile, c-arm, surgical, digital and trauma.

(Prerequisites: Rad. Procedures I, II, III, IV)

REGISTRY REVIEW I (P/F)

This course is a review of all information given during the students' time spent in the classroom. The review can consist of mock registry test, worksheets for review, student instruction with guidance of the instructors.

REGISTRY REVIEW II (P/F)

This course is a review of all information given during the students' time spent in the classroom. The review can consist of mock registry test, worksheets for review, student instruction with guidance of the instructors.

TOPICS IN RADIOLOGY (3 credits)

This course provides the student with the opportunity to investigate and participate in a radiologic technology facet of their choosing. Emphasis will be placed on areas of specialization and career options and mobility.

TOTAL QUALITY MANAGEMENT (2 credits)

This course provides the students with a systematic process for solving problems within a radiography department. Emphasis is placed on the students actually solving a problem in this radiology department.

Program Officials reserve the right to revise curriculum as indicated.

Revised:

03/27/00

4/17/07

05/18/00

03/15/01

04/19/01

03/25/02

04/28/03

05/14/04

03/08/05

04/27/05

April 6, 2016

Minneapolis VA Health Care System
School of Radiologic Technology

10/24/05
04/25/06
09/11/06
12/19/06
01/08/07
2/27/07
05/15/07
05/29/07
09/10/07
02/21/08
03/21/08
8/2/14
5/20/15
7/1/15
4/6/16
4/18/16