

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

North Dakota State University
1340 Administration Avenue
Fargo, ND 58102

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.

We welcome and encourage perspective students to contact the VAMC Radiology Department and complete a job shadowing experience.

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
20 North Wacker Drive, Suite 2850
Chicago, Illinois 60606-3128
Tel: 312-704-5300
Fax: 312-704-5304
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: \$1700.00 – 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. Satisfactorily complete all clinical competency evaluation requirements.
5. Satisfactorily complete the written comprehensive examination.

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 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 44 of the 2007-08, 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.

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 VAMC 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 Medical Center's Hospital 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

June 1, 2012

Veteran Affairs Medical Center
School of Radiologic Technology

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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 Technologist. All course material is finished prior to the national certification examination.

Outcomes Objectives

1. To graduate competent radiographers that who possess clinical and didactic knowledge to be successful in an entry level position.
2. To graduate students who will be clinically competent.
3. To challenge the students to develop problem solving, critical thinking, and communication skills that will allow them to apply and adapt what they have learned in the didactic setting to the clinical setting.
4. To graduate students who have the knowledge of a professional radiographer working in an inclusive work environment where diverse skills, perspectives and backgrounds are valued.

Program Objectives

The objective for the school is to prepare each student both didactically and clinically for a career in radiography. The school gives individual attention to professionalism, communication, and total patient care. At the conclusion of the twenty-four month training the student will be able to:

- Use oral and written medical communication
- Demonstrate knowledge of human structure, function and pathology
- Anticipate and provide basic patient care and comfort
- Apply principles of body mechanics
- Operate radiographic imaging equipment and accessory devices
- Position the patient and imaging system to perform radiographic examinations and procedures
- Modify standard procedures to accommodate for patient conditions and other variables
- Process radiographs
- Determine exposure factors for the best radiograph using **ALARA** (as low as reasonably achievable)
- Practice radiation protection for the patient, self and all other personnel
- Recognize emergency patient conditions and initiate first aid with basic life-supporting measures
- Evaluate radiographic images for appropriate positioning and imaging quality
- Exercise independent judgment and discretion in technical performance of medical imaging procedures
- Have knowledge of the legal rights of self and patient
- Seek life-long learning opportunities and career enhancement through education.

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 2010-2012 class is February 5, 2010. 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. A 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 2011/13

- Start of School – September 5th-7th, 2012 Orientation
- Labor Day –September 2, 2012
- Columbus Day off – October 8, 2012
- Veterans Day off – November 12, 2012
- Thanksgiving off – November 22, 2012
- Christmas Day December 12/25/12
- New Year’s Day- 1-1-13
- Martin Luther King’s Day – January 21, 2013
- Presidents Day off – February 18, 2013
- Memorial Day off – May 27, 2013
- Student Bowl – ????????????
- July 4th Off
- Graduation Picnic – August 2013
- Graduation – August 16th, 2013
- Labor Day – September 2, 2013

The school begins in September, goes for 24 months consecutively and ends approximately the third week of August.

The current class dates are as follows:

September 5 th -7 th 2012	Orientation
August 16th, 2013	End of classes, Graduation

- Revised: 2/2/07
- 3/21/08
- 4/28/09
- 5/1/10
- 8/8/11
- 8/27/12

Curriculum Sequence 2012/14

<u>First Year Curriculum</u>		<u>Second Year Curriculum</u>	
<u>Course</u>	<u>Hours</u>	<u>Course</u>	<u>Hours</u>
<u>1st Quarter</u>		<u>5th Quarter</u>	
Patient Care in Radiography	1.5	Physics II	2.0
Medical Terminology I	1.5	Radiographic Pathology I	2.0
Radiographic Procedures I	2.0	Clinical	9.0
Radiographic Procedures Lab I	1.0		
Radiographic Exposure and Technique I	2.0	<u>6th Quarter</u>	
Clinical	7.0	Radiographic Pathology II	2.0
		Radiographic Procedures V	2.0
		Clinical	9.0
<u>2nd Quarter</u>		<u>7th Quarter</u>	
Radiographic Procedures II	2.0	Cross Sectional Anatomy	2.0
Radiographic Procedures Lab II	1.0	Registry Review I	P/F
Medical Terminology II	1.5	Topics in Radiology	1.5
Radiographic Exposure and Technique II	2.0	Clinical	9.0
Clinical	8.0		
<u>3rd Quarter</u>		<u>8th Quarter</u>	
Radiographic Procedures III	2.0	Registry Review II	P/F
Radiographic Procedures Lab III	1.0	Total Quality Management	1.0
Radiographic Biology/Protection	2.0	Clinical	10.0
Clinical	9.0		
<u>4th Quarter</u>			
Radiographic Procedures IV	2.0		
Radiographic Procedures Lab IV	1.0		
Physics I	2.0		
Medical Law and Ethics	1.0		
Clinical	8.0		

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.

Revised: 1/2/09
 2/2/10
 8/27/12

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VAMC School of Radiologic Technology Course Descriptions

CLINICAL RADIOGRAPHY (Competency based)

This is the student's experience in performing as an actual part 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 skills in portable radiography.

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

COMPUTED TOMOGRAPHY: IN DEVELOPMENT

CROSS-SECTIONAL ANATOMY

This class provides students with the tools for understanding anatomy in three dimensions. Students will be able to visualize the appearance and relationships in planar sections following completion of this material. Concentration will be on cranial, thoracic, abdominal, and pelvic structures.

(Prerequisite: Anatomy I, II, and III)

DIGITAL IMAGING: IN DEVELOPMENT

MEDICAL LAW AND ETHICS

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

MEDICAL TERMINOLOGY I

In this course, students learn to recognize and build medical terms after learning the meaning of word parts. The applications of radiographic terms are examined. The course is a systems approach. Students will also learn how to interpret and use common medical abbreviations and symbols.

MEDICAL TERMINOLOGY II

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 applications of radiographic terms are 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 (INTRO TO RAD TECH)

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 discussed in length. Students complete CPR certification and achieve competency in venipuncture.

PHYSICS I

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

PHYSICS II

This course is a continuation of Physics I. Areas included are the x-ray unit through x-rays interaction with matter. This 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 are discussed.

(Prerequisites: Physics I)

RADIATION BIOLOGY AND PROTECTION

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 responsibilities to the public are discussed along with regulatory policy. 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.

RADIOGRAPHIC EXPOSURE AND TECHNIQUE I

This course covers the scientific principles that govern radiographic exposure factors. Topics include density, contrast, detail and distortion. Photographic and geometric properties of radiographs are also covered. This course creates a foundation of knowledge in producing a diagnostic image. During the course, students learn the procedure for processing radiographic film. Discussion incorporates the following areas: Dark room location and operation, film composition, film holders, intensifying screens and processing chemicals.

RADIOGRAPHIC EXPOSURE AND TECHNIQUE II

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

This course provides the student with concepts of disease and its effects on the human body. Pathology and diseases as they relate to various radiographic procedures and radiographs are covered.

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

RADIOGRAPHIC PATHOLOGY II

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

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

RADIOGRAPHIC PROCEDURES I

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.

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.

RADIOGRAPHIC PROCEDURES II

This course will provide the student with the knowledge necessary to perform radiographic procedures relative to the femur, hip and pelvis, the vertebral column. 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

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

RADIOGRAPHIC PROCEDURES III

This course provides students knowledge necessary to perform radiographic procedures relative to the mouth and salivary glands, anterior neck, digestive system (accessory organs), digestive system (alimentary canal, urinary system along with venipuncture). Emphasis will be on anatomy, radiographic terms, positioning and patient considerations related to radiography.

(Prerequisites: Rad. Proc. I, II)

RADIOGRAPHIC PROCEDURES III LABORATORY

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

RADIOGRAPHIC PROCEDURES IV

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

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

RADIOGRAPHIC PROCEDURES V

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

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

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

This course provides students with opportunities to investigate and participate in a radiologic technology facet of their choosing. Emphasis on areas of specialization, career options and mobility are areas of investigation.

TOTAL QUALITY MANAGEMENT

This course provides students with a systematic process for solving problems within a radiography department. Students are required to find a problem in the imaging department and solve it using the principles learned during TQM.

Program Officials reserve the right to revise curriculum as indicated

Revised:

03/27/00
05/18/00
03/15/01
04/19/01
03/25/02
04/28/03
10/21/03
05/14/04
03/08/05
4/27/05
10/24/05
4/25/06
9/11/06
12/19/06
1/8/07
2/27/07
4/17/07
5/14/07
5/29/07
9/10/07
2/21/08
3/21/08
3/28/08
1/2/09
6/18/09
6/30/11
8/8/11
8/27/12