

VA SCHOOL OF RADIOLOGIC
TECHNOLOGY
VETERANS AFFAIRS HEALTH CARE SYSTEM
MINNEAPOLIS, MN
PROGRAM POLICY HANDBOOK
2016-17

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Program Mission Statement

It is the mission of the Minneapolis VA Health Care System, 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 Minneapolis VA Health Care System, 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.

Goals/Outcomes

- 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 the 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

Accreditation

The Joint Review Commission on Education in Radiologic Technology accredits our program. MVAHCS graduates are eligible to write the American Registry for Radiologic Technologists. Upon passing this examination, the graduate becomes a Registered Technologist in Radiography. This certification is the nationally accepted standard for our profession.

Questions or comments regarding compliance with the Joint Review Committee on Education in Radiologic Technology (JRCERT) Standards by the Minneapolis VA Health Care System, School of Radiologic Technology is directed to:

JRCERT
20 N. Wacker Drive, Suite 2850
Chicago, IL 60606-3182
Phone: (312) 704-5300
Fax: (312) 704-3182
mail@jrcert.org
e-mail: www.jrcert.org

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) (3/30/2016)

(2/21/08)

(7/10/09)

(8/16/10)

(9/5/12)

(6/11/13)

(07/13/13)

(05/20/15)

(9/14/2015)

Program completion

The definition of program completion is the number of students who complete the entire clinical and didactic phase of the program within 150% of the stated program length. The program length for the VA School of Radiologic Technology is 24 months and program completions are those students graduating within 36 months of beginning the program.

Admission Procedures

The radiography program at the Minneapolis VA Health Care System 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 are received by the closing date of each year. **The closing date for the 9/5/16-8/24/18 is 2/17/17 16:00 hours.** A personal interview is conducted if the applicant meets admission criteria as stated in the registration material. 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 24 applicants.

Attendance Policies

A good attendance record is an important part of overall performance. A review of the attendance record will be included in evaluations of the student's performance

Attendance at all radiographic lectures and clinical assignments is mandatory.

School officials are notified when there is an excused absence. Prior notification and approval of time off is needed. Clinical time cards are maintained at each clinical site. Each student has 12 personal leave days per year. If student uses any time after their 12 personal leave days, they may be placed on disciplinary actions. The student may be dismissed, if any other time is used except for a medical leave.

All time missed will be made up immediately after graduation. If a student misses any time during the makeup time, he/she is dismissed immediately. If a student has missed because of medical reasons, he/she will need to have a doctor's excuse to be readmitted to finish their makeup time. If there is no doctor's excuse, the student is dismissed.

The above does not apply to students on a leave of absence; however, it is noted, on the transcript as an incomplete for course work that is not completed. The incomplete is removed when the incomplete class has been completed. Clinical make up assignments will be determined by school officials to ensure competency has been achieved.

Blood Donating

In an effort to contribute to the well-being of our patients, students, employees and volunteers are encouraged to consider donating blood. Donating blood is not a requirement of the program.

1. Appointment must be scheduled one week in advance with the program officials and the blood bank (extension 2275)

Classroom Courtesy

Students will attend all scheduled classes and student activities unless previously excused by the program officials.

Classes begin promptly at the specified time.

Students are responsible for all lecture and test material. If a student misses a test for any unforeseen reason, the student is required to speak to that instructor within twenty-four hour. The student and instructor will decide on a mutual date to make-up the examination. Quizzes are not made up.

Disruption in class is unprofessional upward instructors and fellow classmates. It will not be tolerated. The initial disruption, there will be a letter of reprimand and the students will be asked to leave the classroom and leave the property. The second disruption will end with dismissal.

Anytime the student misses time due to suspension, class time will be made up after graduation.

Clinical Progression

To assure meaningful clinical participation, the student must master the following classroom and didactic aspects, which are necessary to perform in the clinical setting.

- a. The student begins clinical participation by first observing a practicing technologist in the execution of duties.
- b. This participation moves from a passive mode of observation to a more active mode of assisting the technologist in radiographic examination. The rate of student progress is dependent upon the ability of the student to comprehend and perform the various tasks assigned to him/her.
As the student gains experience in various examinations and procedures, independence in doing examinations is encouraged. The student performs procedures under the direct supervision of a technologist defined as: Direct supervision assures patient safety and proper educational practices. The JRCERT defines direct supervision as student supervision by a qualified radiographer who: reviews the procedure in relation to the student's achievement evaluates the condition of the patient in relation to the student's knowledge is physically present during the conduct of the procedure reviews and approves the procedure and/or image students must be directly supervised until competency is achieved even if the student is competent in performing a portable, a registered technologist must accompany the student

Students need to practice 5 times on examinations and record it in the ASRT handbook by placing a "P" besides the examination.

- c. **Indirect supervision promotes patient safety and educational practices. The JRCERT defines indirect supervision provided by a qualified radiographer immediately available to assist students regardless of the level of student achievement. "Immediately available" is interpreted as the physical presence of a qualified radiographer adjacent to the room or location where a radiographic exam is being performed. This availability applies to all areas where ionizing radiation equipment is in use on patients.**
- d. **A student who repeats a radiograph will be under direct observation of a technologist. When the film has been finished, the observing technologist will sign the repeat form and the student will turn in the form to the clinical coordinator.**
- e. The clinical coordinator will post the failed competencies and repeat forms. If there is a trend in the failed competencies, the program official will follow the competency workflow chart in following up on failed competencies.
- f. The clinical instructor in the central area of the radiology department does posting of the competency periodically.
- g. The purpose of clinical education in Diagnostic Imaging is to provide opportunities for the student to apply theoretical principles of radiography, patient care and procedures to practical experience. Students will have the status of learners and will not replace members of the affiliated clinical staff. All students will have direct supervision until competency is completed. After meeting the competency, the student may perform that examination under indirect supervision. (indirect supervision is a technologist within fifty feet of the room where the student is imaging)

Clinical Radiography

The student is in the clinical area for approximately 2400 hours for the two years.

Student's clinical rotations are assigned to areas within the department from one to four weeks. In the event that the student leaves an assigned clinical area, he/she must notify the room technologist or clinical coordinator that they are going to another area. Students should receive a fifteen-minute break for every four-hour segment of clinical time. If the program director or clinical coordinator is unable to find the student; or the supervising technologist is unable to say where the student is, the student may face disciplinary action. Time missed due to disciplinary actions is completed after graduation.

At "low volume" time, students will use this time for discussing procedures and cases with the assigned room technologist. Practicing simulated procedures at this time are encouraged.

It is the student's responsibility, along with the assigned technologist, to maintain a clean working environment. This includes the radiographic examination rooms, central areas and hallways.

Each student is responsible for keeping a clinical record handbook of the procedures he/she is involved in completing. Record books must be current at all times. Program officials review the record keeping at the end of each month.

The Veterans Affairs Medical Center and our affiliate hospitals are non-smoking facilities.

Telephones usage is to be at a minimum.

All students at their clinical facilities will use professional and ethical behavior.

Clinical Record Book

Each student must purchase a clinical record book each year. Each student should record examinations in which he/she is actively involved (assisted in positioning and setting exposure factors). Each entry must include the patient identification, examination, date and initials of the supervising technologist. The clinical coordinator routinely reviews clinical record books. The books are purchased from the American Society of Radiologic Technology (ASRT) Forms are sent to each new student.

Clinical Responsibilities of the Student

Students not adhering to the following responsibilities are asked to leave the clinical area and will receive disciplinary action requiring make-up for that day.

The student must:

- a. Show evidence of having a current physical examination verifying health status.
- b. Prepare for assignment for the clinical experience:
 1. Review radiographic procedures and protocol routinely
 2. Review emergency procedures
 3. Lead markers (QC Area)
- c. Arrive promptly for clinical experience
- d. Notify program officials when late or unable to attend
- e. Arrange with program officials to make up missed clinical time
- f. Assume legal responsibility for providing safe and effective patient care
- g. Communicate with technologist, co-workers, patients, and their families in a respectful, non-judgmental manner
- h. Practice the Code of Ethics of the American Registry of Radiologic Technologist
- i. Adhere to the program dress code for radiography students
- j. Record clinical competencies as required for current rotation
- k. Complete assignments in a timely fashion as scheduled in the Clinical Training plan
- l. Students will maintain weekly patient logs for procedures they have seen and completed

Clinical Rotations

The MVAHCS clinical rotation is from 07:30-12:30 hours on Monday through Friday. You are to be in the classroom at 07:20 for morning information. These hours may vary slightly due to coursework. There is thirty minutes allowed for lunch. The second shift clinical rotation is from 16:30-22:00 hours. These hours may vary slightly due to coursework. This also allows thirty minutes for dinner. Any deviation from this schedule is discussed with program officials. Class and clinical time will not exceed forty hours per week. Our week runs Sunday through Saturday.

When assigned to clinical affiliate sites, the student will honor the rules and departmental procedures of that facility. Student rotating to Hennepin County Medical Center (HCMC) will work Monday through Friday evening @ 14:30-22:00. These hours may vary slightly due to coursework. When rotating through Minneapolis Children's Health Center and Gillette Children's Hospital the hours are 07:30-12:30, Monday through Friday. These hours may vary slightly due to coursework. The program director sets the date for the review class. Starting date usually is in the 6th quarter. This class is for preparing students to take the ARRT examination.

Clinical rotations are for one, two and four weeks in length. One to two week rotations are for the sub-specialties in the imaging department. Two-week rotations are for the imaging department and Gillette Children's Hospital. The four-week rotation is at Hennepin County Medical Center and Minneapolis Children's Hospital.

At the end of each rotation, lead technologists will complete the Clinical Performance Evaluation with information supplied from technologists. The clinical coordinator will accept these evaluations for a two-week period. Each two weeks, the evaluation is not turned in; the grade will be lowered by five percent.

Each two-week period, the student needs to maintain an eighty percent. A student, who does not maintain the eighty percent, will make up that two-week rotation after graduation. A student who does not maintain an eighty percent for a second two-week rotation is placed on academic probation. A student who does not maintain an eighty percent for a third two-week rotation, is dismissed from the program.

Hennepin County Medical Center and Minneapolis Children's Hospital are unique in the clinical education they offer to the VA School of Radiologic Technology. The students attend each of the previous mentioned facilities for one calendar month. At the end of the first two-weeks, the lead technologist or their designate, completes the Clinical Performance Evaluation and faxes it back to the school. If the evaluation shows a problem, program officials will contact the facility and investigate the problem. If the problem can be worked out, the student will continue training there until the month is completed. If the problem cannot be resolved and the facility does not want the student to return, then the student is dismissed from the program for the following reason: The student has not met the clinical requirements for the program. If the student does not pass the month rotation at either of the facilities, the student is dismissed.

Program Officials reserve the right to adjust class schedules.

Communicable Disease

Communicable diseases vary in the virulence, duration, and mode of infection and effects. To protect students, patients and clinical staff; the following is required:

1. Students with communicable diseases should not attend clinical courses. They must inform the clinical coordinator of the absence from clinical. See the absence policy regarding make-up time.
2. Student with any of the following conditions are to report to program officials prior to clinical assignments:
 - a. Dermatitis, skin rash, lesions or boils
 - b. Chickenpox, shingles
 - c. Scabies
 - d. Hepatitis
 - e. Diarrhea
 - f. Eye infection
 - g. Productive/persistent cough
 - h. Tuberculosis
 - i. Lice
 - j. Measles, mumps, or rubella
 - k. HIV infection
 - l. Cold sore s(herpes simplex infection)
 - m. Influenza
 - n. Strep throat (must be on medication for twenty-four hours before reporting to clinical)
3. Students with communicable diseases that are relatively long duration must present a written diagnosis to the program officials. Dependent upon the diagnosis, the student may be able to continue clinical with directions regarding patient contact or will drop the clinical rotation until the illness is resolved. All missed clinical time is completed after graduation. All information is confidential and is not released unless mandated by law.

Course Descriptions

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 skills 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, 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.

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 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)

MEDICAL LAW AND ETHICS

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

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

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

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

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

PHYSICS II

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)

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 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.

RADIOGRAPHIC EXPOSURE AND TECHNIQUE I

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

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 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

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)

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 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

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 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

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 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

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

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

9/25/15

Curriculum Sequence 2016/2017

Course	Credits
1st Quarter	
Patient Care in Radiography	3.0
Medical Terminology 1	3.0
Radiologic Procedures 1	4.0
Radiographic Exposure and Technique 1	3.0
Radiologic Procedures 1 Lab	1.0
Clinical	7.0
2nd Quarter	
Radiologic Procedures 2	3.0
Radiologic Procedures 2 Lab	2.0
Medical Terminology 2	3.0
Radiographic Exposure and Technique 2	3.0
Clinical	8.0
3rd Quarter	
Radiographic Procedures 3	2.0
Radiologic Procedures 3 Lab	1.0
Radiation Biology/Protection	3.0
Clinical	9.0
4th Quarter	
Radiographic Procedures 4	2.0
Radiologic Procedures 4 Lab	2.0
Physics 1	4.0
Medical Law and Ethics	2.0
Clinical	8.0
5th Quarter	
Physics 2	4.0
Radiographic Pathology 1	3.0
Clinical	9.0
6th Quarter	
Radiographic Pathology 2	3.0
Radiographic Procedures 5	P/F
Clinical	9.0
7th Quarter	
Cross Sectional Anatomy	2.0
Registry Review 1	P/F
Topics in Radiology	1.5
Clinical	9.0

8th Quarter

Registry Review 2	P/F
Total Quality Management	1.0
Clinical	10.0

The VA 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
09/15/15

Equal Employment Opportunities

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.

Financial Assistance

The VA School of Radiologic Technology has no scholarship/grant/loan programs. The school does not participate in the federal financial aid funding

The VA Medical Center has decided to have students participate in part time employment.

Revised: 5/30/07

2/21/08

9/5/12

7/8/13

5/20/14

Floor Duty Rules/Procedures

1. The student will check in each tour of duty immediately by signing with the program director in the attendance book. Students then check with the technologist that is scheduled for their rotation.
2. It is the responsibility of the student to be aware of work in their assigned area and to assist as needed. If an examination is in your assigned room and you are not working with your technologist, you are assisting other technologist or students. If your technologist is not involved and your room is not in use, but others in the area are doing examinations, you should be assisting throughout your area as needed. If it is extremely quiet, you can practice positioning on your fellow classmates or technologists.
3. Practicing of positions is highly encouraged during down time.
4. Students are performing or assisting the technologist when patients are present in rooms.
5. When assigned in Fluoroscopy, Portables, GU or Surgery areas, students are to help with patients. after the schedule is finished

Revised 5/8/08

Revised 9/5/12

7/8/13

9/25/15

General Appearance

1. Hands are clean and washed after each patient. Nails short, well-groomed and only a neutral polish is used.
2. Breath should be free of offensive odors.
3. All uniforms are clean and pressed. Shoes worn must be clean and in good repair.
4. Hospital identification badges will be worn at all times while in the hospital/clinic areas
5. Student radiation protection badges will be worn in the clinical areas at all times during program hours.
6. Students reporting to classes or clinical sites with excessive perfume or cologne will be required to take a personal leave day.
7. Physicians are referred to as Dr. and their last name.
8. All hospital policies are adhered to.
9. Professional conduct, courtesy, and cooperation will be exercised at all times to the imaging staff, fellow students, patients, hospital employees, and the public.
10. Students will report promptly to classes and clinical areas according to the schedule.
11. Chewing gum is not allowed in the clinical area.
12. A white lab coat or a lab coat that is the same color as your uniform is required.
13. Students are required to be pleasant, courteous, modest and empathetic at all times with patients, co-workers, and other health professionals.

Any infractions of the above regulations may result in disciplinary action, probation and or dismissal from the program.

Grading Procedures

Clinical attendance is important. Excessive absences will affect the overall clinical grade.

Grades are determined by the following:

1. Rotations Objective Evaluation

Rotation objectives are designed to inform the student and technologist of the purpose of each rotation, as well as to provide an evaluation. All necessary forms are given to the student at the beginning of each clinical quarter. The technologist and student at the onset of the rotation should review the objectives. The evaluation form is completed at the end of each rotation by the room technologist, department supervisor or clinical tester. Each student is responsible for making certain the written evaluation is completed and turned in to the clinical coordinator. Evaluations are accepted only within two weeks of the end of the rotation.

2. Clinical Competency Evaluations

Clinical competency evaluations determine if the student is able to perform radiographic procedures on actual patients. The student requests competency evaluation after he/she has practiced 5 times on the body part. Clinical personnel, clinical instructors or school officials complete these evaluations. After the students have performed the procedure at mastery level of 80-100%, he/she may perform that radiographic procedure with indirect supervision. The clinical coordinator maintains a master list of these competencies. To ensure retention of procedural competency, random follow-up competencies are completed.

If the student fails to complete the competency, the student will turn in failed competency form to program officials. The students will also turn in a repeat form. The clinical coordinator will track failed competencies. Program officials will be able to assist students in better preparing themselves to be competent technologists.

3. Clinical Performance Evaluation

Clinical personnel at affiliate hospitals complete the clinical performance appraisals at the end of each two-week rotation. It is an evaluation of technical skills, radiation protection, organizational skills, patient rapport, working relationships, initiative, appearance and professionalism. Clinical personnel give the evaluations to program officials. These evaluations are discussed with students at the quarterly conference.

4. Film Critique

Film critique is a continuous exercise for the purpose of reviewing and discussing current radiographic cases.

Grading Criteria

The program consists of lectures, demonstrations, discussions, lab exercises and clinical rotations.

Classes begin promptly at the specified time.

If you are working on a procedure, notify the faculty before the procedure begins and inform them that you will be late for class.

Students are responsible for all lecture and test material. Make up examinations are given on Friday morning. Examinations start at 07:30. If the student doesn't complete the make-up examination, there will be a 10% reduction in the student's overall grade point.

All students are required to maintain a specific level of didactic and clinical education quality throughout their training. Therefore, the following criteria are being adapted:

- a. Students at the Minneapolis VA Health Care System, School of Radiologic Technology, will maintain an eighty percent in didactic and clinical areas.
- b. The final quarter grade consists of the following:
 1. Didactic Grade – 50%
 - a. Methods of evaluating didactic work may include the following:
 - true and false
 - multiple choice
 - fill in the blank
 - mix and match
 - problem solving
 - identification
 - essay
 2. Professional Grade – 25%
 3. Clinical Coordinator – 25%
- c. The following is the breakdown of percentages to grades

Grading	
100-95	A
94-88	B
87-80	C
79-75	D
74-below	F

Grading (Didactic)

The following actions are for students who do not maintain an 80% in the didactic part of the school:

1. On each examination, there are two grades. The first is the examination score and the second is the overall score.
2. At the mid-way point of the quarter (6 weeks), students who have not maintained an 80% in any classes will talk with program officials. A letter is given to the student outlining what needs to take place in the final 6 weeks of that quarter, for the student to reach 80%.
3. At the end of any quarter, program officials will discuss what happened the last 6 weeks. At that time, the student is on academic probation for six weeks. In a letter, program officials will outline steps to assist the student in achieving the required 80%.
4. In the same letter, program officials will explain how the class or classes are made up.
 - a. The class or classes are repeated the next quarter. (example: Classes failed the first quarter will be made up in the second quarter)
 - b. The class that needs to be repeated will be done on a self-study, with assistance from the primary instructor when asked.
 - c. Radiography personnel may assist in mentoring the student
 - d. At the end of each three weeks, program officials will meet with the student and their mentor to document the student's progress.
 - e. If the student does not maintain an eighty percent in current classes and the make-up class, the student will be dismissed.
5. The student, who does not meet didactic requirements for the same class or classes taught in successive quarters, will be dismissed from the program
6. The student who does not meet didactic requirements in any three classes during the program, will be dismissed

Grading (Clinical)

The following actions are for students who do not maintain an 80% in each clinical rotation.

1. Clinical rotations are two weeks in length. At the end of those two weeks, the technologists will complete the clinical performance and room evaluation.
2. Students who do not maintain an 80% for a clinical rotation, has failed that rotation. Program officials will meet with the student and go through the evaluations from the technologist's
3. Students who do not maintain an 80% on a second clinical rotation will meet with program official and go through the technologist evaluation. At this time, the student is place on academic probation with the knowledge that if there is a third time; the student is dismissed from the program.
4. Students, who do not meet standards for any clinical rotations, will make up that rotation at the end of school.
5. Students who do not meet requirements for HCMC and or Minneapolis Children's will be dismissed from the program.
6. Fluoroscopy – After the student has completed the didactic aspect of the fluoroscopic chapter, during future rotations, the student will complete a minimum of one barium study to pass the two week rotation. If the student does not complete one barium study, the student has failed that two week rotation. (see step two)

Clinical Competency Requirement

Sixty competency examinations are needed to complete the program.

During quarters one and two, September - February of the first year, the student is required to complete a minimum of fifteen competencies. Of the fifteen competencies, program officials need to see the student perform five competencies.

During quarters three and four, March - August of the first year, the student is required to complete a composite of thirty competencies. Of the next fifteen competencies, program officials need to see the student perform five of these competencies.

During quarters five and six, September - February of the second year, the student is required to complete a composite of forty-five competencies. Of the next fifteen competencies, program officials need to see the student perform five of these competencies.

During the final quarters seven and eight, March - August of the second year, the student is required to complete a composite of sixty competencies. Of the next fifteen competencies, program officials need to see the student perform five of these competencies.

Students may complete as many competencies each quarter as they have the training and education to perform. All policies governing clinical competencies must be adhered to.

The following procedure is for the student who does not meet the above requirements:

1. Students who fail to meet the required number of competencies will receive a written notice.
2. The student has 10 school days to complete the necessary competencies. There will be a one letter grade drop for those students who do not complete the necessary competencies.
3. The student who after a composite of 20 days has not completed the required competencies, additional remedial actions will be taken.

Graduation Requirement

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

1. Fulfills all radiography course requirements.
2. Earns a grade of eighty percent or higher in all required radiography courses.
3. Completes clinical record book requirements.
4. Satisfactorily completes all clinical competency evaluation requirements.
5. Satisfactorily completes the written comprehensive examination.
6. Satisfactorily completes the clinical competency required by the American Registry of Radiologic Technologist (A.R.R.T.) Following are the competencies:
 - a. CPR
 - b. Vital signs (blood pressure, pulse, respiration, temperature)
 - c. Sterile and aseptic technique
 - d. Venipuncture
 - e. Transfer of patient
 - f. Care of patient medical equipment (e.g. oxygen tank, IV tubing)

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

Grievance/Appeal Policy

The MVAHCS, VA School of Radiologic Technology, recognizes the need to resolve complaints in a fair, impartial and timely manner and thus establishes a grievance procedure to review and/or resolve causes of dissatisfaction in an orderly and systematic manner.

This procedure is used in situations of major concern and is intended to protect the student while allowing for a formal method of appeal. There is also an EEO specialist available to the student.

Step One: If you have a grievance, submit a complete written summary of the complaint to the Program Officials (Program Director and Clinical Coordinator). The complaint is presented to program officials within 10 working days of the occurrence. You will receive a written response within 10 working days of presentation of the appeal/grievance. If you are satisfied and accept the Programs Officials decision, the appeal/grievance is over. If you are not satisfied with the results, proceed to Step Two.

Step Two: A complete written summary of the complaint and program officials' response is presented to the Advisory Board. The advisory board will meet within 15 working days of receiving the written complaint and response. The student will receive a written response within 10 working days of the presentation of the appeal/grievance. If you are satisfied and accept the Advisory Boards decision, the appeal/grievance is over. If not, within 5 working days, proceed to Step Three.

Advisory Committee members include, but are not limited to:

- Program Director
- Medical Advisor
- Clinical Coordinator
- Junior Student Representative
- Senior Student Representative
- Operation Manager
- Imaging Supervisor
- Medical Faculty

Step Three: A committee, made up of non-imaging personnel, is contacted to decide the final decision. The program director has 10 working days to convene this committee. At that time, the written complaint and responses from the program officials and advisory committee will be given to the committee. The committee will have 15 working days to read and recommend a solution. Their recommendation is final.

Health

After appointment to the radiography program and prior to the first day of class, student must have a physical examination. The physical/immunization record form must be completed. This examination is scheduled at the MVAHCS and is free to the student. A rubella titer and immunization record must be provided. Every student must have a Mantoux test. Hepatitis B vaccine is available to the students per hospital policy.

As students will be working with pediatric patients at our clinical affiliates, the following immunizations or documented histories of these diseases are required:

- a. Chicken Pox
- b. Measles(Rubella)
- c. Mumps
- d. Rubella

There is no charge for the required immunization.

Health (student)

If a student becomes ill or injured while participating in clinical radiography courses, treatment will be at the discretion of the student. An occurrence form must be complete and forwarded to program officials. Billing for treatment and/or services rendered shall be directly the student's responsibility.

Health Care Policy

1. The Minneapolis VA Health Care System School of Radiologic Technology does not offer health insurance for the student.
2. Some immunizations (Hepatitis) are given free of charge.
3. If a student is injured at the MVAHCS or an affiliate, they may receive treatment at the MVAHCS, located at 1 Veterans Drive, Minneapolis, MN 55417
4. Physical examinations for school admission are completed at the MVAHCS expense.

Immunization

All students born after January 1, 1957, must have documented proof of measles immunization and booster. In addition, all students must have chicken pox vaccine or documentation of the disease. This record will remain in the student's file indefinitely. This document is duplicated as needed by the program director for the various clinical sites. If needed, students will receive immunizations free of charge from the MVAHCS; also, hepatitis B vaccine is available for students. The three immunizations are given free of charge to students. Mantoux test is given yearly.

The student has three months from the first day of school to show proof of immunization. If no documentation is received by end of the third month, the student will be dismissed immediately.

Inclement Weather

In the event of inclement weather, students are expected to attend all clinical and classroom schedules unless notified of cancellation by program officials. Students will have an extra hour to get to school on days of extreme inclement weather. Students need to contact program officials by e-mail as soon as they arrive.

Learning Resources

1. The accessibility of the VA library 24/7.
2. The accessibility of computers in the VA library 24/7.
3. Tutoring and mentoring services available provided by program officials.
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 radiologic 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

Leave of Absence

Leave of absence is granted to students at the discretion of the program officials in accordance with MVAHCS policy.

Generally, each student is 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 officials 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.

Leave (Military)

Military leave is granted in full accordance with State and Federal Regulations. The Program Officials must be notified promptly in writing when a student requires military leave. The following schedule will be followed for students who are called for active duty:

1. Six months or less, the student starts over upon return.
2. Six to 24 months, the student will start with the current class where the veteran discontinued their studies.

Developed: 12/15/06
Revised: 2/2/07
5/15/07
5/30/07
2/21/08
9/5/12
7/8/13
4/4/14
9/30/15

Library

There are two libraries available to the students. One is located in the radiology classroom and is open from 07:00-16:00 hours, Monday through Friday. Student may sign out a book for a two-week period. Any damaged or lost reference material will be the responsibility of the student.

Located on the fourth floor of the MVAHCS's is the Medical Library. This library contains medical books and journals on all facets of medicine. It also has a study area and a large audiovisual section.

Locker

All students are assigned a locker for personal belongings. At no time will personal belonging be in radiographic rooms, classroom, or the medical library in the department. Students are required to provide a lock for the locker.

Personal Leave Time

Students are allowed fifteen days of personal leave per calendar year for a total of 120 hours.

Additionally, Christmas Holiday weeks will be split between the students. Students will be allowed to take either Christmas week or New Year's week in the following manner:

- a. an additional four days off will be given to personal leave balances of 120 hours
- b. these days will be taken in conjunction with the Christmas Holiday and New Year's Holiday
- c. students scheduled for clinicals, the opposite week, of their vacation, may not use personal time
- d. students may wish to make up time owed the program during the holidays.

School officials must approve personal leave time in advance. A personal leave time (PLT) request indicating the date and length of time requested must be given to school officials two weeks before the date (except in case of an emergencies in which case the request must be completed when the student returns).

Students calling in sick must do so within thirty minutes of their morning rotation and must speak or leave messages to both program officials. A personal leave slip is included in this manual. It is the responsibility of the student to keep track of used time in conjunction with the clinical coordinator.

It is the responsibility of the student to inform outside rotations e.g. Hennepin County Medical Center (HCMC), Children's Hospital and/or Gillette Children's Hospital if they are sick or in need of leave. The program officials must be informed, also.

Students may be dismissed for excessive use of personal leave time. Excessive use of personal time or sick time will be completed after graduation.

Philosophy of Training

The MVAHCS's, School of Radiologic Technology, is destined to produce competent medical radiographers that are eligible for immediate employment, advanced training, and competent to pass the national registry. It is accomplished by the following:

- a. Recruiting students who demonstrate maturity, motivation, academic ability, and the professional attitude to succeed in the academic and clinical structure of a twenty-four month radiography program.
- b. Providing all students with a quality education experience, this exceeds the minimum program accreditation requirements.
- c. Providing all students with didactic education based on sound learning principles and allowing them to master radiographic theory using instructional devices available
- d. Providing all students with a simulation lab experience designed to bridge the didactic and clinical education.
- e. Providing a clinical environment that includes, learning opportunities using the latest state of the art radiographic equipment.
- f. Perfection of radiographic technique, positioning and patient care correlate directly with didactic training.
- g. Providing all students, upon successful completion of the program, credentials and qualifications needed to allow for vertical and lateral career mobility and immediate employment.
- h. Providing all students with insight into professional growth and development among local, state and national professional organizations in radiographic imaging
- i. Providing all students with the knowledge necessary to prepare them for the national registry examination given through the American Registry of Radiologic Technology
- j. Prepare all students in the profession to the conversation of life, health and privation of disease.
- k. Encouraging students to pursue lifelong learning opportunities.

POSITION DESCRIPTION

Minneapolis VA Health Care System

- See student handbook: Position Description GS 6
Diagnostic Radiologic Technologist (Floor Technologist)
Diagnostic Radiologic Technologist Standards
- A. Scholastic: Applicant must be 18 years of age
Applicant must be a high school graduate or possess a valid G.E.D.
Applicant must have a baccalaureate degree or be in a 4 year degree radiography program
Applicant must have evidence of academic achievement in science, biology, computer, and math courses. Minimum 2.5
Applicant must have satisfactory performance on college ability test. (Composite score of 18 or above on ACT. SAT scores of verbal 450 and math 500.) Waived if the applicant graduated from high school more than five years prior to applying
Class ranking in upper half
- B. Personal: Applicants must possess a high sense of professionalism
Applicants must show willingness to work with the sick and disabled
Applicant should possess maturity, technical ability, and a sense of social responsibility
Applicant must meet technical standards of the program
- C. Technical Standards: (application materials)
- D. Workplace Skills:
Applicants must demonstrate the willingness to develop identified job skills:
- Interpersonal: Working on teams, teaching, being of service to customers, leading, negotiating and working well with people from culturally diverse backgrounds.
- Information: Acquiring and evaluating data, organizing and maintaining files, interpreting and communicating and using computers to process information. Program officials maintain security and confidentiality of student records, instructional materials, and other appropriate program materials. Program offices and file cabinets are locked and secure.
- Systems: understanding social, organization and technical systems, monitoring, and correcting performance.
- Technology: Selecting equipment and tools, applying technology to specific tasks.

Position Description-GS 6

Diagnostic Radiologic Technologist (Floor Tech)

Position Summary:

Provides health care services, applying x-ray energy to assist in diagnosis and treatment. Performs radiographic procedures and related techniques, production images for interpretation by, or at the request of a licensed practitioner.

Provides appropriate patient care and recognizes patient conditions essential for successfully completing the procedure.

Duties and Responsibilities:

1. Corroborates patient's clinical history with procedures ordered. Assures information is documented and available for use by a physician.
2. Prepares patient for procedures; provides instructions to obtain desired results, gain cooperation and minimize anxiety.
3. Provides patient education regarding examination and post examination care.
4. Respects confidentiality and follows established policy regarding patient records.
5. Assumes responsibility for specific job requirement, reports, and equipment malfunctions.
6. Helps provide input for equipment purchases and supply decisions.
7. Provides clinical instruction for students, residents and other health care professionals.
8. Participates in the department's continuous improvement plan and quality assessment. May be responsible for specific quality control duties in assigned areas.
9. May be responsible for stocking rooms with supplies and inventory in assigned areas.
10. Positions patient to best demonstrate anatomic area of interest, respecting patient abilities and comfort
11. Immobilizes patients as required for appropriate examination.
12. Assures responsibility for providing for the physical and psychological needs of patient during procedures.
13. Practices aseptic techniques.
14. Initiates basic life support action when necessary.
15. Understands and applies patient relations skills.
16. Assists in the day-to-day operation of the department in routine housekeeping and equipment care that the department is responsible for.
17. Selects and operates radiographic equipment, imaging equipment and or assorted accessories to successfully complete the procedures.
18. Applies principles of radiation protection to minimize exposure to the patient, self and others.
19. Evaluates radiographs or images for technical quality, assuring proper identification is recorded.
20. Understands various methods and is capable in performing venipuncture.
21. Prepares, identifies and administers contrast and or medication as prescribed a physician.
22. Verifies informed consent forms and assists physicians with interventional procedures.
23. Assists with fluoroscopic and various interventional procedures.
24. May perform non-interpretive fluoroscopic procedures as appropriate.
25. Is a registered technologist (ARRT) and maintains annual registry renewal. Also, pursues required continuing education as set by the registry.
26. Serves as "team leader" as assigned by the supervisor, and has duties in that area relating to work flow, break assignments, and communication of problems to the supervisor.
27. Provides students with appropriate and adequate clinical instruction.
28. Performs competency based clinical evaluations.
29. Conducts film evaluation with students.

Pregnancy Policy

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

The recommendation 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. The student may notify, voluntarily, in writing, Program Officials at the earliest possible date. The form used is, Pregnant Student Waiver, Voluntary Disclosure, located in the policy handbook. Once the pregnancy is known, the approximate rem dose exposure can be reviewed to determine if clinical coursework can be continued, yet assure that the student is within the framework of the limits 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, a student cannot be 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 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.

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 limited to one on one 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.

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 5/30/07 8/19/11
 2/21/08 9/5/12
 6/23/08 7/8/13
 8/18/09 4/4/14

Probation

The Program Director has the option of placing students on probation rather than dismissing the student from the program if they fail to meet minimum requirements of academic and or clinical performance; or fails to comply with hospital, departmental and school activities. The length of the probationary period may vary depending on the circumstances. At the end of the probation period, if the student is not meeting minimum requirements, the student will be dismissed from the program. If the student violates the terms of probation, he/she will be dismissed from the program immediately.

Professional Associations

Each student is required to become student members of the following professional associations: of the MSRT.

1. Minnesota Society of Radiologic Technology MSRT (MARS student organization)
2. American Society of Radiologic Technology (ASRT)
15000 Central Avenue SE
Albuquerque, NM 87123-3090 9 9(Elective)
3. American Registry of Radiologic Technology (ARRT)
1255 Northland
St. Paul, MN 55120-1155 (Ethics and Examination)
4. Joint Review Committee on Education in Radiologic Technology (JRCERT)
20 N. Wacker Drive
Suite 2850
Chicago, IL 60606-3183 (Accreditation Organization)

Students may attend the MSRT annual meeting. Professional conduct is required. All expenses are the responsibility of the student.

- a. Students must attend all classes, presentations, and business sessions.
- b. Students must submit a paper for presentation and if selected will give the presentation at the annual conference.
- c. Submit meeting/presentation notes on the following Wednesday after the conference.

If the student fails to fulfill the above requirements, the student may be subject to disciplinary action.

Professional Conduct

For any organization to function properly, particularly a hospital caring for sick and injured patients, all employee and students must cooperatively work together. The importance of this matter necessitates that the school takes equitable and consistent corrective actions for any acts of misconduct. Serious or repeat of minor violations would be grounds of dismissal. The following are examples of misconduct:

- Dishonest or falsifying any records including time cards.
- Leaving a work area during school time without the permission of the technologist in charge.
- Neglect of duty or refusing to follow the instructions of supervisors.
- Any immoral conduct.
- Possession or being under the influence or use of illegal drugs or intoxicants on hospital property. Suspected use of abuse of drugs/alcohol may be subject to testing. See Substance Abuse Guide.
- Fighting, disorderly conduct, acts of violence or the possession of weapons on hospital property.
- Threatening or coercing any person while at the hospital.
- Discourtesy displayed toward patients, visitors, physicians or fellow workers/students. This includes using vile or abusive language.
- Abuse of time spent on breaks, lunch or in the department.
- Disregard for safety rules, creating or contributing to unsafe or unsanitary conditions.
- Posting, removing or defacing bulletins or notices on hospital property without authorization from the hospital.
- Unauthorized use, possession, copying or reading of hospital records, or disclosing any information from those records without authorization from the hospital.
- Theft, unauthorized removal, destruction or misuse of hospital property or property belonging to any person at the hospital. These include scrubs.
- Soliciting for or against any cause or organization during school time or during working time of the person being solicited, or distributing literature of any outside cause or organization in work areas at any time.
- Soliciting tips or gifts from patients or visitors.
- Violation of dress standards.
- Loitering in the hallways.
- Use of the department telephone for personal calls.
- Leaving personal belongings in the department.
- Eating, drinking, chewing gum, smoking, etc., at unauthorized times or locations.
- Violation of any rules or standards now established or subsequently established by the school or by the hospital for students of the school or employees of the hospital.
- Excessive absenteeism
- A student with more than 3 absences will receive a written reprimand.

The forgoing examples are not intended to be an all-inclusive list of what is considered misconduct. The school reserves the right to review any conduct and to determine what disciplinary action, if any should be taken, or what it determines in its sole discretion to be misconduct. BE PROFESSIONAL

Program Dismissal

Program requirements for both academic and clinical performance are established.

Each student is expected to follow the MVAHCS hospital, departmental and school policies. Failure to do so is grounds for dismissal. It should be pointed out that a student may be dismissed from the program at any time during their training for violation of any one of the grounds listed below. This includes but is not limited to:

- Failing grades in any course (including first year comprehensive examination)
- Insubordination
- The conviction and or known use of, distribution of, or possession of illegal drugs or controlled substances
- Failure of the student to accomplish clinical assignments and objectives
- Unprofessional or unethical conduct
- Cheating
- Theft or misconduct
- Students are expected to be present all scheduled tours. All students are required to notify the program director of any anticipated absences or tardiness
- Public display of disrespectful behavior towards supervisors, school officials, imaging personnel, other hospital staff, patients, or fellow students anywhere on hospital grounds or within the facility itself. This would include loud, threatening, abusive, or profane language. Any attempt to coerce or intimidate or interfere with supervisors
- Public behavior of discourteous actions
- Failure to deal courteously and tactfully with others
- Failure display sensitivity and concern for peers, department staff, school officials, public, patients
- Failure to comply with department dress standards, unacceptable personal hygiene or grooming
- Failure to wear identification nametag
- Knowingly violating hospital safety rules
- Smoking in the hospital
- Failure to immediately report an injury (self/others) or incident (including theft). An incident is defined as any happening which is not consistent with the routine operation of the hospital or routine care of patients
- Disturbing written or printed matter on hospital premises
- Interfering with the rights and privacy of fellow students, members of the medical staff, patients, visitors or anyone associated with this hospital; including disrespect and displayed attitudes detrimental to patient care
- Fighting on hospital grounds
- Theft or willful misuse, destruction or damage of patients, employees, students, or hospital property
- Sleeping on duty
- Falsifying hospital or employee/student records
- Falsifying time cards
- Inappropriate release of confidential information.
- Possession of any weapons, including firearms
- Violations of probation arrangements
- Intoxication/odor of alcohol
- Repeating a radiograph without direct supervision
- Excessive absenteeism

As a member of the MVAHCS radiology team, which is dedicated to total patient care, it is important that students observe the program, department, and hospital policies and procedures. It is only through cooperative effort that total patient care is a reality. Therefore, it is only right that students be made aware of what types of infractions are serious enough to warrant disciplinary action.

Should student at any time violate MVAHCS hospital, department, or school standards of performance, attendance, or conduct; you may receive a verbal or written counseling, be placed on probation, or dismissed from the program. Dismissal depends on severity and or frequency of the infraction. This will be determined by the Program Director. The grievance/appeal procedure is located in the school handbook as well as the master plan. The Program Director can also be used as a resource

Program Progression Standards

Failure of the student to attain, maintain and abide by any of the following criteria will cause the student to be placed on probation for a period of four to six weeks. If at the end of this time the student shows no improvement, he/she will be dismissed from the MVAHCS School of Radiography.

1. Achieve a grade of 80 percent or above in each course comprising the program
2. Obtain a satisfactory rating on all clinical performance evaluations
3. Able to perform the technical standards located in this handbook.

Goals

1. Graduates will be clinically competent
2. Challenge the students to develop problem solving and critical thinking skills
3. Student will be able to communicate with internal and external clients
4. Graduate students who are professional

Radiation Badges

- A. Radiation badges are worn at or close to the neck at all times while on duty. If you are wearing a thyroid shield or have on lead aprons, the radiation badge is located on the outside of the protective lead apparel
- B. If you do not have your radiation film badge:
 1. You will be dismissed from clinical for that day with the time being completed after graduation.
 2. You will be sent home to get it and the time missed will be made up.
 3. You may be permitted in non-radiation areas.
- C. Accidental exposure of the film badge must be reported to school officials and the radiology supervisor immediately.
- D. Loss of a radiation film badge must be reported to school officials and the radiology supervisor immediately. You will be removed from all radiation areas until a replacement film badge is obtained.
- E. Radiation badges are changed the first day of each month.
- F. Badges are worn at all time when a student is in the clinical setting.

Protection Policy and Procedure for Radiation Monitoring

General Radiation Protection Policy and Procedures

To help ensure that all student radiologic technologists are learning in a safe working environment, a radiation physicist monitors the amount of radiation. A radiation film badge and holder is issued for each student.

ALARA Policy: The Radiologic Technology Program is committed to maintaining radiation exposure levels as low as reasonably achievable (ALARA) while still allowing each student to obtain all required clinical and didactic competencies. Student exposures will be maintained in compliance with NCRP Report N0. 105. Page 14: Education and training exposures (annual) for those under age 18; 1. Effective dose equivalent (1 mSv, 0.1 rem); above age 18; educational dose is equivalent to Occupational exposures (annual) 5rem (5000 mrem, 50 mSv.)

Radiation Exposure Records:

Student/Faculty radiation exposure will be monitored during the entirety of the program and will be maintained by the Program Director. The most current radiation monitoring report will be kept by the RSO officer. The records are also maintained in the Imaging Department by the Imaging Chief Technologist. These reports are stored indefinitely in the Imaging Office locked room. The Program Officials review the reports monthly. Infractions are dealt with in accordance with *Radiation Monitoring Devices* below. This Program does not accept students under the age of eighteen (18).

Student and Staff Radiation Monitoring Devices:

Monthly Radiation Badges are provided for students and faculty – Control Badges are maintained by the Imaging Department and included with badges returned for reading. Radiation badges used during education clinical hours will be distinguished with the label 00114STU. These badges will keep record of radiation exposure readings acquired during the student’s education clinical experience. A separate badge with the 00114DIR label will be issued for students working after hours and on weekends as an employee. This will be done in order to distinguish and keep separate exposure readings acquired either as a student or as an employee. The student will be responsible for changing badges and wearing the appropriate badge as needed. Badges will be kept in the classroom wall holder.

To assure compliance:

Students will:

- Wear the badge labeled 00114STU during education clinical hours. When working after hours and on weekends as an employee, the student will change the radiation badge to the 00114DIR label.
- The student will be responsible for changing badges and wearing the appropriate badge as needed.
- Take the extra time to assure they are properly protected under all circumstances (portable, fluoroscope, etc.)
- Practice ALARA time, distance and shielding concepts
- Always wear badge at neck level and OUTSIDE the apron
- Not allow the body to be in the primary beam
- NOT hold patients under any circumstances
- NOT use fluoroscopy to position patients
- Take proper precautions with film badges; do not leave it in the radiation area
- Report lost or damaged badges to the instructor of record immediately
- Report to the Program Director any event involving byproduct, source, or special nuclear material used by the student that may have caused or threatens to cause any excess of exposure to student, staff or the public.

Program Staff will:

- Monitor badge reports
- The following plan will be followed if students' badges exceed allowable amounts within one (1) week of badge report review:
 - Average Quarterly Dose less than 50 mrem (0.5 mSv) no action
 - Any dose above 50 mrem (0.5 mSv) discussion with student and possibly with the RSO officer. Each case will be dealt with as necessary.
- Should the reading continue to be high after the discussion, a Remediation Plan and Outcome Form will be completed and required discussion with the RSO will be implemented
 - Level 1 – Exceeds dose limits of 10% or greater than 125 mrem (1.25mSv) per calendar quarter
Counsel student with a remediation plan to lower dose, and form letter will be sent by RSO officer.
 - Level 2 – Exceeds dose limits of 30% or greater than 375 mrem (3.75 mSv) per 3 calendar quarters
Counsel student with a remediation plan to lower dose, time off will be recommended, and form letter will be sent by RSO officer.
- Maintain Radiation Badge Audit Report
- Report all infractions (variances) to the RSO
- In the event an unusual occurrence happens where any student or staff member is either exposed to a high-dose of radiation in a single event or if the badge reading is exceptionally high RHB will be notified as in Program Reporting Responsibility.

Annual Occupational Dose Limits:

Any dose received must not exceed the annual occupational dose equivalent limits established by the Minnesota Code of Regulations and Nuclear Regulatory Commission regulations standard 10 CFR subpart C-Occupational Dose Limits 20.1201.

5 rem/year 50 mSv/year	Whole body	Total Effective dose Equivalent
50 rem/ year 500 mSv/year	Extremities	Shallow Dose Equivalent
15 rem / year 150 mSv/year	Lens of the eye	Eye Dose Equivalent

To obtain previous records of film badge reading, the student must request that such information to be released by the program. Questions about film badge readings and radiation safety may be directed to the Radiation Safety Officer:

WHITE, WILLIAM C
SERVICE/SECTION: DIRECTORS OFFICE SAFETY
TITLE: RADIATION SAFETY OFFICER
Office phone: 612-467-2620
Digital pager:
Mail Code: 115

Revised 9/3/14
4/6/16
4/18/16

Radiographic Markers

Radiographic identification markers are a legally binding form of information and are used for radiographic examinations.

Upon starting clinical rotations, each student will receive one set of leaded right and left markers. Markers are available through the radiology department.

Markers are made using supplies in the QC Area.

The student is responsible for having his/her markers available each clinical day. If markers are lost please make them with the supplies available. No student is allowed to use another student or technologist's markers.

Relationships between Students, Staff, Patients, Former Patients and Patient's Families

Students are encouraged to establish a warm and trusting environment at this medical center in order to enhance patient recovery and promote satisfaction with the care and services provided. However, to step beyond the bounds of professional courtesy in establishing relationships that go beyond the traditional customer/student relationship may constitute a boundary violation. An example would be establishing a personal or business relationship with a patient for personal gain.

Policy:

Student professional relationships with patients must be distinct from and not co-exist with personal or intimate social relationships with those same persons. The student must not provide direct services to a family member, business associate or a friend.

- a. The student must not establish or reestablish a personal or intimate social or business relationship with a patient, to which s/he provides direct services as part of their schooling at this medical center. Where such an outside relationship already exists prior to the patient seeking services, the student should not be in a position whereby they would be providing direct services to that patient unless this cannot be avoided for legitimate reasons.
- b. The student must not use his/her position to their personal and potentially unfair advantage of any patient with whom they have any relationship.
- c. The student must not gain access to medical or other records of the patient for other than professional or therapeutic reasons
- d. The student must not accept gifts from patients
- e. Physical contact between patients and students is a powerful form of interaction and should only happen when the clinical situation warrants it. It should not be used as a matter of routine of clinical style. Sexualized touch is never appropriate. The policy recognizes the appropriateness of shaking hands and touch in the performance of clinical procedures.

Procedure:

- a. The student must report any pre-existing relationship with a patient (an example, neighbor or friend), that subsequently receives direct services from the students work area, in writing to his/her supervisor. The supervisor will offer direction and support and may do so in consultation with higher level managers.

- b. Where specific relationships are unclear concerning whether they are prohibited, the student or others knowing of the relationship will refer the situation to the student's supervisor. The supervisor will determine the action to be taken and may do so in consultation with higher-level managers.
- c. Students or others who become aware of a relationship, which appears to be a violation of the above prohibitions, will report the suspected violation immediately to their supervisor.
- d. Students receiving notes or expressions of affection, sexual interest, or provocation from patients, or who are experiencing difficulties in managing any aspect of therapeutic relationship, should immediately report to their supervisor. The supervisor will offer direction and support and may do so in consultation with higher management.

Addendum:

At no time will any student take any type of examination without physicians order generated through the proper hospital channels. This is a hospital policy and will be strictly enforced. The student may, for practice purposes, during assigned ultrasound rotation, practice ultrasound examinations. This can be done under the direct supervision of a registered technologist, trained in ultrasound on a non-patient. At no time is this to be done for a medically diagnostic purpose or without a qualified technologist's guidance.

RETURNING STUDENTS

Students who would like to return to the VA School of Radiologic Technology from a dismissal will need to do the following:

- Reapply to the school
- Supply two additional letters of recommendation
- Supply additional transcripts, if you have completed any additional coursework at another school
- Updated resume

Students, who are accepted back into the radiography program, will be required to be compliant with the following provisions:

Be placed on probation for the first two quarters. During the probation period, the student will be required to be in compliance with all policies located in the policy handbook. After the first six-week, program officials will evaluate the student in the didactic and clinical setting. If the student is in compliance, he/she will continue on probation with the next evaluation being completed at the end of the quarter. The next evaluation will be at the eighteen-week time and the final will be at the 24-week time. At any time during those evaluations, the student in non-compliant, he/she is dismissed immediately.

Student Conduct

1. MVAHCS is a smoke free facility. Designated areas are located adjacent to the building
2. Chewing tobacco is forbidden in clinical and didactic areas
3. Student can hold a part time job as long as the student's educational time is not jeopardized.

4. A student will never disclose privileged and/or confidential information about any patient at the MVAHCS or other clinical sites to patients, relatives or friends. Student should refrain from discussing patient matters in hallways, cafeteria, or other places where they may be overheard and misunderstood.
5. All doctors are addressed properly and treated with respect without exception. Disrespect from a student to a faculty member, members of the imaging department, other physicians or patients are grounds for dismissal. Any infractions should be reported to program officials. Seek assistance for difficult and/or unfamiliar situations. A professional attitude must be developed and maintained by all members of the medical team.
6. The department or hospital does not tolerate disorderly conduct, loud talking, etc.
7. As a student, you are entitled to proper respect. If there are any concerns in this area, please notify the program officials.

Student Participation

Students have the status of “learner” in the radiography department. It is understood that students are guest of the hospital and are required to follow hospital, departmental, and school policies and procedures.

Students in the medical field have a direct responsibility to practice “medical ethics.”

Although a student may know and understand what is happening to a patient, they are neither trained nor capable of taking responsibility for making or interpreting radiographic images.

- a. Interpretation of radiology data should be referred to the radiologists, department supervisor, program director or staff technologist
- b. Students do not prescribe treatment, medication, or give medical advice
- c. Patient’s questions regarding their condition are to be referred to staff technologist or radiologist

Student Placement

This program does not guarantee employment placement: however every effort to assist the student in finding employment.

Student Conferences

Conferences are held semi-annually with each student. The objective of the conference is to provide feedback to the student regarding his/her performance in the radiography program. Unscheduled conferences are arranged if the need arises. Students are encouraged to discuss questions, ideas or problems with the radiography school or hospital.

Student Services

1. Parking
2. The hepatitis series and flu vaccinations.
3. Tuberculin or PPD Test
4. CPR training
5. Tutoring

Tardiness

Punctuality is an indication of dependability. Students must be in uniform and in their assigned areas at the start of their shift. This includes returning from lunch and breaks.

When a student is late, the clinical coordinator must be notified when the student arrives. If the student is going to be more than fifteen minutes late, the coordinator must be notified by telephone. All time lost due to tardiness will be made up the same day. All make-up time is arranged with the clinical coordinator.

If a student arrives late for clinical two times within one quarter, the clinical coordinator will notify the program director and documentation will be made in the student's record.

Failure to call in or a no show for any reason:

- a. Results in suspension from clinical until he/she has met with program officials
- b. Next offense is dismissal from the program

Technical Standards

The student must have:

Sufficient eyesight to observe patients manipulates equipment and evaluates radiographic quality.

Sufficient hearing to assist patient needs and communicate verbally with other health care providers.

Sufficient verbal and written skills to communicate needs promptly and effectively in English.

Sufficient gross and fine motor coordination to respond promptly, manipulate equipment, lift a minimum of 30 pounds and ensure patient safety.

Satisfactory intellectual and emotional functions to exercise independent judgment and discretion in the safe technical performance of medical imaging procedures.

Please read the following statements identifying the technical standards appropriate to radiologic technology.

The radiologic technologist must have sufficient strength and motor coordination required to perform the following physical activities:

- Heavy Lifting - 45 pounds and over
- Moderate lifting - 15-44 pounds
- Light lifting – under 15 pounds
- Moderate carrying 15-44 pounds
- Pushing
- Reaching above shoulder
- Use of fingers
- Both hands required
- Walking 8 hours
- Standing 8 hours
- Repeated bending
- Near vision correctable at 13” to 16” to Jaeger 1 to 4
- Far vision correctable in one eye to 20/20 and to 20/40 in the other
- Working closely with others
- Working alone
- Protracted or irregular hours of work
- Working around machinery with moving parts
- Working around electrical energy
- Frequent reaching and manual dexterity in handling accessory equipment for diagnostic purposes
- Frequent transporting, moving, lifting and transferring patients from a wheelchair or stretcher to and from a radiographic table
- Ability to communicate clearly to instruct patients during procedures
- Process normal visual and audio acuity.
- Hearing adequate to perceive and interpret patient and equipment signals

Are you able to satisfactorily to perform all of the technical standards identified above?

Yes

No

Print Name _____

Signature: _____

Date: _____

School Official: _____

Date: _____

Telephone

The telephones in the department are not to be used for personal calls unless they are for an emergency. No one may use the telephones for long distance calls.

The office staff is extremely busy and should not field personal phone calls. Please instruct all friends, relatives and business associates that you may receive emergency calls only.

Cell phone usage is to be kept to a minimum. No phone usage during clinical or classroom instruction

You are instructed in the use of the phone system during the first couple of weeks.

Tuition and Fees

Tuition:	No cost. Students are classified as a WOC
Background Checks:	\$20.00 per year
Books:	\$2,000.00 – approximate for entire program.
Miscellaneous:	Approximately \$150.00 per year – professional memberships, clinical record books.
Conferences:	Approximately \$300.00 Conferences/Student meeting
Uniforms:	Uniforms are approximately \$75.00 for three sets. Appropriate shoes for the medical profession are required. They do not have to be nursing shoes. Program officials have the final decision. Attire is the responsibility of the student. Lab coats are provided by the hospital or the student can purchase a laboratory coat that matches the uniform.
Refunds:	There are no refunds given to students who decide to quit the program or are dismissed.

Revised: 2/21/08

8/18/09

8/16/10

9/5/12

7/8/13

4/7/14

Uniform

The student is required to comply with the uniforms selected by the program officials. They will be kept clean and neat.

If a student is chilled, a white sweater, lab coat or a plain white sweatshirt may be worn. Undershirts can be white, black, or gray. Any other colors or designs, the students may be sent home for not being uniform.

If the student is not in proper uniform, there will be a verbal warning with documentation to the student's file and the student is sent home to change with time made up at the end of the twenty-four months.

A second time will result in a written warning and placed on probation.

A third time will result in a dismissal from the MVAHCS radiography program

Withdrawal-Dismissal

Students wishing to withdraw from the programs will need to write a letter stating this. Students who withdraw or those asked to leave the program need to complete a Request for Personnel Action form to receive a checkout sheet. Items to be returned include MVAHCS issued lab coat, nametag, film badge, and volunteer badge for meals, department key, and any library materials and lead markers.

The school does not refund any money if a student withdraws or dismissed.

PART I: EMPLOYEE SAFETY POLICIES

1. PERMISSIBLE DOSES, LEVELS, AND CONCENTRATIONS

a. Radiation dose standards for individual workers in restricted areas. Radiation limits per calendar quarter:

- (1) Effective dose equivalent (stochastic effects) 1.25 rem
- (2) Dose equivalent for tissues and organs:
 - (a) lens of eyes 3.75 rem
 - (b) all others (red bone marrow, breast, lungs, gonads, skin, thyroid, extremities) 12.5 rem
- (3) Cumulative effective dose equivalent: one rem x age in years

b. Pregnant workers. When a woman declares her pregnancy in writing and if her embryo or fetus has a potential of receiving greater than 0.125 rem during her entire pregnancy, this institution will:

- (1) Provide a dosimeter to be worn at the level of the abdomen and under any lead shielding worn.
- (2) Ensure that:
 - (a) a reasonable effort is made to limit the dose of the embryo or fetus to 0.05 rem in any one month of pregnancy, excluding medical exposure; and
 - (b) the total effective dose equivalent to the embryo and fetus for a full term pregnancy does not exceed 0.5 rem.

2. PROHIBITED USES OF RADIATION

a. General provision. No individual shall be exposed to the useful beam except for healing arts purposes and only if the exposure has been authorized by a licensed practitioner of the healing arts. Any exposure of an individual for the following other purpose is prohibited:

- (1) Exposure for training, instruction, demonstration or research except when the research has been approved by the institutional review board and is conducted under federal regulations for the protection of human subjects in research.
- (2) Exposure for the purpose of healing arts screening except as authorized by the Mammography Quality standards Act of 1992, United States Code, title 42, section 263b, and regulations adopted thereafter.

b. Prohibited radiation producing equipment and procedures. The following x-ray equipment shall not be used nor the specified procedures performed:

- (1) Hand-held radiographic or fluoroscopic imaging devices.
- (2) The use of fluoroscopy by x-ray machine operators for positioning a patient for radiographic imaging, except when done by a licensed practitioner of the healing arts.
- (3) The use of fluoroscopy by a person other than a licensed practitioner of the healing arts when the licensed practitioner of the healing arts is not physically present in the room except during maintenance activities, quality assurance testing, performance testing, or training courses.
- (4) The use of direct exposure x-ray film (without intensifying screens) for all radiological imaging other than intraoral dental radiography.
- (5) Non-image intensified fluoroscopic x-ray equipment.
- (6) Dental intraoral radiography units operating at 50 kVp or less.
- (7) The use of mammographic imaging systems not specifically designed by the manufacturer for imaging of the breast.

c. Unauthorized exposure of personnel monitoring dosimeters. Exposure of personnel monitoring dosimeters to deceptively indicate a dose delivered to an individual is prohibited.

3. SAFETY REQUIREMENTS

a. X-ray system compliance. An x-ray system that is not functioning properly shall not be operated for diagnostic purposes.

b. Individuals who may apply radiation. Only those individuals who are licensed practitioners of the healing arts, radiologic technologists registered by the American Registry or Radiologic Technology, or individuals who have passed the x-ray operator's basic radiation safety examination of the Radiology Department may intentionally apply radiation to an individual.

c. Individuals operating x-ray equipment during training. An individual participating in a training course for physicians, dentists, chiropractors, podiatrists, radiologic technologists, chiropractic radiologic technologists, dental hygienists, or dental assistants is exempt from the above equipment for the duration of the training course. The exemption applies to activities conducted within the scope of the training course.

d. Procedure and safety instruction. All individuals who operate an x-ray system must be initially instructed and annually retrained in facility specific and system specific safe operating procedures, emergency procedures for malfunction equipment, and quality assurance procedures. Annual retraining shall include, but is not limited to review of this document.

e. Radiographic technique charts. A radiographic technique chart shall be provided in the vicinity of each x-ray system's control panel which specifies, for all examinations performed with that system, the following information:

- (1) The patient's anatomical size and corresponding technique factors to be used.
- (2) The type of the screen film combination, or direct exposure x-ray film for dental intraoral radiography, to be used.
- (3) The grid focal distance and the grid ratio to be used, if any.
- (4) The source-to-image receptor distance to be used.
- (5) For automatic exposure control (AEC) or phototimed units, the percent differences between the AEC increments.
- (6) For computed tomography systems, a current technique chart for each routine examination and the computed tomography conditions of operation must be provided.

f. Exposure of individuals other than the patient.

- (1) Except for the patient, only the staff and ancillary personnel required for the medical or dental procedure or training shall be in the room during the radiographic exposure.
- (2) All staff and ancillary personnel required for assistance with the radiographic procedures shall be positioned so no part of the body, including the hands, will be struck by the useful beam unless protected by 0.5 millimeter lead equivalent material.
- (3) All staff and ancillary personnel who must remain in the room to assist during radiographic, fluoroscopic, portable, or computed tomography procedures must be protected from scattered radiation by protective aprons or whole body protective barriers of not less than 0.5 millimeter lead equivalence.
- (4) Patients and individuals who are not involved in diagnostic radiographic procedures or demonstrations using either stationary or portable x-ray equipment, who cannot leave the room and who cannot be protected by adequate distance for the exam being performed, must be protected from scattered radiation by protective lead aprons or whole body protective barriers of at least 0.25 millimeters lead equivalence.
- (5) During any radiographic or fluoroscopic exposure, any door which is part of the protective barrier must be closed.
- (6) Thyroid and eyes must be protected if the potential exposure to the worker will exceed 25 percent of the dose limits listed for those organs in Section A. above.

g. Gonad protection. Except for cases in which it would interfere with the diagnostic procedure, during radiographic procedures in which the gonads are in or within two inches (5 cm) of the useful beam, gonad shielding of not less than 0.5 millimeter lead equivalence must be used for patients who have procreative potential.

h. Holding. When a patient, film cassette, or intraoral film must be provided with auxiliary support during a radiation exposure, mechanical holding devices shall be used when the technique permits. No individual shall be used routinely to hold intraoral film, film cassettes, or patients. If it is necessary for an individual to hold the patient or equipment, an individual not normally exposed to radiation will be selected to hold. The human holder must be protected by lead apron and gloves. Any portion of the body, other than the area of clinical interest struck by the useful beam, shall be protected by not less than 0.5 millimeter lead equivalent material.

i. Radiological practice standards. Procedures and auxiliary equipment designed to minimize patient and personnel exposure commensurate with the needed diagnostic information shall be used.

- (1) The speed of screen film combinations, or direct exposure x-ray film in intraoral dental radiography, shall be the fastest speed consistent with the diagnostic objective of the examinations.
- (2) Intensifying screens shall be used in combination with the compatible film, with the exception of dental intraoral films and radiation therapy port films.
- (3) The radiation exposure to the patient shall be the minimum exposure required to produce images of good diagnostic quality.
- (4) The darkroom for film development must be free of extraneous light so fog is not added to film during handling and processing.
- (5) Darkroom safelight filters must be compatible with the films being processed.
- (6) The darkroom for film development must be tested for film fog at least every six months; any time fog is suspected; whenever there is a change in film speed or a change of safelight bulb or filters; or any time the integrity of any seal around the processor, other equipment, or the darkroom may have been compromised.
 - (a) The darkroom fog test and sensitometry must, at a minimum, be performed on the film most sensitive to light and processor changes.
 - (b) The amount of fog (increase in optical density) for a two minute fog test must not exceed 0.05 for facilities doing mammographic film development and 0.08 for all other radiographic film development.
- (7) Image processing must meet the following requirements:
 - (a) all images must be processed to achieve optimal sensitometric performance;
 - (b) the image capture systems manufacturers if usedC images must be free of artifacts that could cause a misinterpretation.
- (8) Portable x-ray equipment shall be used only for examinations where it is impractical to transfer the patient to a stationary x-ray system.
- (9) Radiographic systems other than fluoroscopic, dental intraoral, and dental panoramic systems must not be used in procedures where the source-to-skin distance is less than 30 centimeters.
- (10) Protective aprons and gloves shall be monitored annually for lead protection integrity. A record of the monitoring shall be maintained.

j. Personnel monitoring. Personnel supplied with personnel dosimeters are required to wear the dosimeter.

k. Placement of personnel monitoring dosimeter. When protective clothing is worn and personnel monitoring dosimeters are required, at least one such dosimeter shall be worn as follows:

- (1) When a protective apron is worn, the personnel monitoring dosimeter shall be worn at the collar outside of the protective apron.
- (2) When more than one personnel monitoring dosimeter is used, the record shall identify the location of the monitor on the body and shall state whether it was worn outside or under the protective clothing.

1. Control dosimeters. The control dosimeter which accompanies personnel monitoring dosimeters during shipment shall be obtained and kept in an area of natural background radiation at the facility between shipments.

4. ORDERING OF RADIOGRAPHIC EXAMINATIONS

The following requirements must be met except when the radiographic examination is part of a healing arts screening program:

a. The order for a radiographic examination can be made only by a physician, dentist, chiropractor, podiatrist, or osteopath. A certified nurse midwife, certified nurse practitioner, physician assistant, or registered physician assistant must show eligibility to order radiographic procedures through a written delegation agreement.

b. The technologist must not carry out a radiographic procedure ordered by a certified nurse midwife, certified nurse practitioner, physician assistant, or registered physician assistant unless a copy of a written delegation agreement is on file with the facility.

c. The order for a radiographic procedure must include clearly stated clinical indications for the examination and be available to procedure personnel at the time of the examination.

5. RADIATION PROTECTION FOR WOMEN OF CHILD BEARING AGE

a. Information regarding the effects of radiation on the embryo and fetus.

(1) Studies of animals have shown that the embryo and fetus are more sensitive to the effects of radiation than the adult. Exposure of mice to large doses (200 rad) during the period prior to implantation of the embryo in the uterus showed a significant increase of prenatal and neonatal death. This period is typically the first two weeks of pregnancy

(2)

(3)

(4)

(5) in the human. The same exposure lead to significant increases in birth defects when applied after implantation but within the first trimester of pregnancy (two weeks to three months in humans). Exposure in the utero during the bombings of Hiroshima and Nagasaki to doses as low as 50 rad showed a statistically significant increase in the number of children with mental retardation and microcephaly (small head size). The likelihood of these effects are thought to be proportional to the radiation dose, but no evidence is available for persons exposed to lower doses. Studies of the rate of leukemia in children exposed during gestation provide less certain results; some indicate greater risk others do not. The risk of childhood leukemia and cancer may be elevated during gestation, are thought to increase in proportion to the dose and do not decrease after the first trimester.

(2) Accordingly the National Council on Radiation Protection and Measurements has recommended reducing radiation exposure to pregnant workers to 500 mR during the gestation period and to 50 mR during any month of pregnancy. Some states, including Minnesota, have made this a law. The Nuclear Regulatory Commission has made it a requirement for nuclear workers. The 50 mR per month requirement is not law for x-ray workers in federal agencies. However, this hospital intends to voluntarily comply with this policy.

b. Exposure to pregnant personnel. By law pregnant workers are limited to lower exposures in the work place than non-pregnant workers. Because of possible discrimination these regulations only apply to women who have declared their pregnancy in writing. If you become pregnant and wish this added protection you must contact your supervisor and declare your pregnancy in writing. Under these conditions the radiation dose to the embryo or fetus must not exceed the limits listed in Section a above. When pregnancy is declared, the employee's radiation history will be reviewed to determine if these exposure levels are likely and if any special precautions, monitoring, or change of duties are needed.

c. Exposure to pregnant patients.

- (1) Signs are posted in the radiology waiting room notifying potentially pregnant women to tell the x-ray technologist of their condition.
- (2) Technologists will ask all women of childbearing age if they are or think they may be pregnant before proceeding with any x-ray examination.
- (3) If the patient replies affirmatively, the technologist will contact the ordering physician before proceeding with the exam.
- (4) If the ordering physician is not available, the technologist will request the staff or resident radiologist to determine if the exam should be performed.
- (5) If the exam is approved by the appropriate physician, the technologist will use the shielding if possible to reduce the potential of exposure to the embryo or fetus.

PART II. ADMINISTRATIVE POLICIES

1. DETERMINATION OF ACCUMULATED OCCUPATIONAL DOSE

a. Disclosure before first entry into a restricted area. Within the first calendar quarter of an individual starting work in a restricted area where the individual will receive or is likely to receive in one calendar quarter an occupational dose in excess of 25 percent of the doses listed in Section A. above, the individual must disclose in a written, signed statement, either:

- (1) that the individual had no prior occupational dose; or
- (2) the nature and amount of any occupational dose which the individual may have received from sources of radiation possessed or controlled by another person.

Records of the statements will be retained for the lifetime of the individual worker or a minimum of 30 years after termination of employment with the facility, whichever is less.

b. Preparation of accumulated dose records. A reasonable effort will be made to obtain reports of the individual's previously accumulated occupational dose. In any case where reports of the individual's occupational dose cannot be obtained, it will be assumed that the individual worker has received the occupational dose specified in whichever of the following columns that applies.

	Column 1	Column 2
Part of Body	Assumed dose in rem (mSv) for calendar quarters before January 1, 1961	Assumed dose in rem (mSv) for calendar quarters beginning on or after January 1, 1961
Whole body, gonads active blood forming organs, head and trunk, lens of eye	3.75 rem (37.5 mSv)	1.25 rem (12.5 mSv)

Records used in preparing the accumulated dose record will be preserved for the lifetime of the individual worker or a minimum of 30 years after the individual's termination of employment with the facility, whichever is less. If calculation of the individual worker's accumulated occupational dose for all periods before January 1, 1961 yields a result higher than the worker's age in rem, the excess will be disregarded.

2. EXPOSURE OF MINORS. No individual who is under 18 years of age will be allowed to receive an occupational radiation dose greater than 0.1 rem per year.

3. PERIODIC TESTING. The radiation safety officer shall perform or cause to be performed tests of sources of radiation, facilities where sources are used, and radiation detectors, monitoring instructions, and other equipment and devices used in connection with use of sources of radiation. Results of such tests shall be retained for inspection.

4. NOTIFICATION AND REPORTS TO INDIVIDUAL WORKERS

a. Quarterly dosimetry report. Each worker will be advised at least quarterly of the worker's dose of radiation as shown in records maintained by the institution.

b. Report at end of employment. The institution will furnish to a worker who is terminating employment, or to a worker who, while employed by another person, is terminating a work assignment involving radiation dose in the registrant's facility within a calendar quarter, a report of the worker's dose of radiation.

5. RECORDS TO BE MAINTAINED

a. Records of personnel monitoring, radiation safety surveys, and equipment performance measures for x-ray equipment.

b. Current copies of delegation, agreements from physician assistants, registered physician assistants, certified nurse practitioners, and certified nurse midwives signed by all supervising physicians.

c. For each radiographic and fluoroscopic imaging procedure, except dental procedures, the following information:

- (1) age of patient, if under age 18;
- (2) imaging procedures performed; and
- (3) name or initials of person performing the imaging procedure.

d. For individual x-ray systems:

- (1) the maximum rating of the x-ray tube and generator;
- (2) the manufacturer and serial numbers or other permanent identification number of the control console and x-ray tubes;
- (3) the half value layer of the x-ray beam and the kVp at which the half value layer was measured; and
- (4) records of site-specific radiation safety surveys, radiation leakage measurements, calibrations, equipment performance measurements, maintenance, and equipment modifications performed on the x-ray system with the names of individuals who performed the services.

e. Records of attendance at in-service training signed by employees.

f. All fluoroscopic onetime for each fluoroscopic procedure in excess of five minutes must be recorded and dictated on the patient's radiology report or procedure report.

g. All mammography images will be retained as required by the Mammography Quality Standards Act of 1992, United States Code, title 42, section 263b, and regulations adopted hereunder.

6. SHIELDING AGAINST IONIZING RADIATION

a. Facility design requirements. Structural shielding requirements described in NCRP Report 49 shall be met. If an analysis of operating conditions indicates the possibility of an individual receiving a dose over the dose

limits listed in section A above due to inadequate structural shielding, structural shielding modifications will be made.

b. Determination of shielding requirements. A certified radiological physicist will be called upon to determine the appropriate the amount of shielding for all new or remodeled x-ray facilities.

c. Warning signs. The warning “CAUTION RADIATION” or “DANGER RADIATION AREA” will appear on signs located at the entrance to all radiographic procedure rooms.

7. RADIATION SAFETY QUALITY ASSURANCE PROGRAM

a. Radiation safety surveys. A survey will be performed at the time of the initial installation and after any change in the facility or equipment which might cause a change in radiation hazard. A report of each survey will be prepared, maintained. The safety survey must include the following:

- (1) an evaluation of tube housing integrity;
- (2) calibrations;
- (3) equipment performance measurements;
- (4) maintenance and equipment modifications; and
- (5) shielding plans or results from radiation shielding evaluations.

b. Diagnostic radiographic system calibrations. Calibrations will be performed on a diagnostic radiographic system whenever that system does not meet the minimum performance criteria specified below and when there is any change in the radiation output of that system.

c. In-service education is quality assurance. Each employee involved in x-ray quality assurance shall attend an in-service training program on quality assurance. Employees must sign or initial their attendance on a record to be provided. Written safety procedures for the facility and x-ray systems will be provided to these individuals including:

- (1) information on the effects of radiation exposure to the human body and the embryo-fetus;
- (2) projections where holding devices cannot be used; and
- (3) any restrictions of the operating technique required for the safe operation of the particular x-ray system.

PART III: EQUIPMENT QUALITY ASSURANCE

1. EQUIPMENT PERFORMANCE TESTS FOR QUALITY ASSURANCE PROGRAM

a. Equipment performance measurements for all x-ray facilities. Personnel involved in quality assurance testing must be familiar with the contents and recommendations of any NCRP report 99, “Quality Assurance for Diagnostic Imaging Equipment,” (December 30, 1988).

b. Radiation output measurements.

- (1) All measurements of radiation output must be performed with a calibrated dosimetry system. The calibration of the dosimetry system must be traceable to its calibration standard at the National Institute of Standards and Technology (NIST). The dosimetry system must have been calibrated within the preceding two years.

- (2) Measurements of radiation output from a computed tomography x-ray system must be performed annually and after any change or replacement of components which could cause a change in the radiation output.
- (3) Computed tomography dosimetry phantoms must be used in determining the radiation output of the computed tomography x-ray system. The phantoms must comply with Code of Federal regulations, title 21, section 1020.33.
- (4) The CT dose measurements must be made for the head and body technique used at the facility. The image quality measurements must be made for the head and body techniques used at the facility. The image quality measurements must be made using clinical technique in the head and body scan modes of operation.

2. DIAGNOSTIC EQUIPMENT PERFORMANCE TESTS

a. Image receptors:

Test Type	Minimum Test Interval	Performance Criteria
1. Screen sensitivity	Annually	Densities within speed match + 0.10 O.D. for all cassettes used for each diagnostic task

b. All diagnostic radiographic tubes as applicable:

Test Type	Minimum Test Interval	Performance Criteria
1. SID accuracy	Annually	+ 2% of measured value
2. X-ray and light field alignment	Annually	+ 2% of SID any one direction, + 3% of SID, both directions (total)
3. X-ray and image receptor alignment	Annually	+ 2% of SID
4. Collimator dial accuracy	Annually	+ 2% of SID
5. Reproducibility	Annually	Coefficient of variation < 5%
6. mR/mAs	Annually	+ 10% of baseline
7. Linearity	Annually	+ 10% over clinical range
8. Linearity-for mAs only units manufactured after May 3, 1994	Annually	Average ratios of exposure to the indicated mAs obtained in any two consecutive mAs settings shall not differ by more than 0.10 times their sum, or at two settings differing by no more than a factor of two where the mAs selector provides continuous selection.
9. Timer accuracy	Annually	Single Phase: use Table 4730.1692 or + 10% of setting. Three phase, high frequency and constant potential: use + 5% of selected time when measured - > than 100 milliseconds. At times shorter than 100 milliseconds, use manufacturers' specifications.
10. Half-value layer	Annually	> 2.5 mm Al equivalent filtration
11. kVp accuracy	Annually	+ 5% of indicated kVp for non-certified equipment. For certified equipment follow manufacturer's

		specified limits.
12. Phototimer	Annually	+ 5% of average exposure reproducibility, if present.
13. AEC (phototimer increments)	Annually	+ 10% of manufacturer's stated increments
14. I luminance of certified collimator.	Annually	> 15 foot-candles.
15. Film density vs. thickness change on AEC.	Annually	+ 0.30 O.D. of the averaged exposures over the range specified by the manufacturer.
16. Film density vs. kVp change on AEC	Annually	+ 0.30 O.D. of the averaged exposures when measured at > 1.2 O.D. and over the range as specified by the manufacturer
17. Spot film	Annually	+ 5% of average exposure reproducibility (fluoro units with manual mode)
18. Phototimer back-up timer cut off	At time of installation	Terminates exposure at installation < 600mAs
19. AEC density at normal or "0".	Annually	> 1.0 O.D.

c. Additional tests for conventional tomography systems:

Test Type	Minimum Test Interval	Performance Criteria
20. Section level	Annually	+ 5 mm
21. Level incriminations	Annually	+ 2 mm
22. Section thickness	Annually	Follow manufacturer's specifications
23. Spatial plane resolution	Annually	40 mesh screen or better

d. Fluoroscopes and C-arm fluoroscopes:

Test Type	Minimum Test Interval	Performance Criteria
1. Maximum output at tabletop or equivalent minimum SSD	Annually and at every tube change	> 5 R/min must have Automatic Exposure Rate control; > 10 R/min must have high level control; if no high level control maximum is < 10 R/min
2. High level control maximum output tabletop or equivalent minimum SSD	Annually and at every tube change	< 20 R/min
3. Fluoroscopic image size	Annually and every tube change	Error between fluorographic beam size and observed image size must be no more than + 3% of SID for all modes and at any tower height
4. Actual spot-film size vs. indicated	Annually	Error between actual fluorographic beam size at image receptor and indicated image size must be no more than + 3% of SID for all modes and at any tower height
5. Spot-film reproducibility	Annually	+ 5% of average exposure
6. Phototimer reproducibility, if present	Annually	+ 5% of average exposure

7. Fluoroscopic high contrast resolution and distortion.	Annually	15 centimeter (six inch) intensifier: center 30 and edge 24 (wires per inch) copper mesh; 23 centimeter (nine inch) F intensifier: center 24 and edge 20 (wires per inch) copper mesh.
8. Half-value layer	Annually and after every tube change	> 2.5 mm A1 equivalent filtration.
9. kVp accuracy	Annually and after every tube change	+ 5% for noncertified equipment. For certified equipment, follow manufacturer's specified limits.

e. Additional tests for cinefluorographic and special procedure systems:

Test Type	Minimum Test Interval	Performance Criteria
10. Cinefluorographic exposure rates	Annually	Approximately 10 to 20 uR (2.6 to 5.0 nR/kg) per frame at intensifier for nine inch (23 cm) mode; approximately 20 to 30uR (5 to 8 nC/kg) per frame at intensifier for six inch (15 cm) mode.
11. Film changer screen	Annually	No significant areas film contact of poor contact as measured by 8 wires/inch copper mesh or 7 holes/inch.
12. High contrast resolutions	Annually for cine and digital systems	No significant difference between static and dynamic conditions.
13. Optical density of films	Annually	<+ 0.2).D. difference over duration of filming run

f. Mammography systems. All tests on mammographic units must follow the Mammography Quality Standards Act of 1992, United States Code, title 42, section 263b, and regulations adopted thereunder.

g. Computed tomography scanners:

Test Type	Minimum Test Interval	Performance Criteria
1. Accuracy of scout localization view	Annually	+ 1 mm
2. Accuracy of distance measurements	Annually	+ 1 mm
3. CT dose index	Annually	+ 20% from manufacturer's recommendations.
4. CT number dependence on slice thickness	Annually	Mean +3 CT numbers averaged over 100 pixels.
5. CT number calibration and noise	Daily	Water: 0 + 5 CT numbers; Noise: + 3 standard deviations of the mean of the baseline noise variance measurements.
6. CT number uniformity and artifacts	Annually	Variation +5 CT numbers between the mean values of measurements made at center and edge of phantom that is at least 20 cm in diameter among a mean of 100 pixels. Artifacts: no noticeable artifacts.
7. Hard copy output and visual display	Daily	Luminance and contrast not significantly different.

h. Dental intraoral systems:

Test Type	Minimum Test Interval	Performance Criteria
1. Film processing	Before the first film of the day	Between 0.75 and 1.05 O.D. on the test tool or follow test tool manufacturer's recommendations.
2. Filtration (HVL)	Annually	> 1.5 mm A1 equivalent filtration for machines operating at < 70 kVp.
3. Radiation exposure at end of cone	Annually	Use table at the end of this section.
4. Timer reproducibility	Annually	+ 10% of indicated timer setting and accuracy
5. Reproducibility	Annually	Coefficient of variation < 5%
6. mA linearity	Annually	+ 10% over the clinical range

i. Exposure ranges at end of cone for intraoral dental units:

kVp	"D" Speed Film ESE (milliroentgens)	"#" Speed Film ESE (milliroentgens)	"D/E or E+" Speed Film ESE (milliroentgens)
50	310 – 400	165 – 230	165 – 230
65	270 – 400	140 – 200	140 – 200
70	240 – 350	120 – 170	120 – 170
75	170 – 260	100 – 140	100 – 140
80	150 – 230	90 – 120	90 – 120
85	130 – 200	80 – 105	80 – 105

Program Officials reserve the right to adjust class schedules and syllabi. New classes may be added per the professional curriculum used by accredited schools of radiologic technology

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