



Cleveland Clinic
School of Health Professions

Beachwood Radiologic Technology Program Supplemental Handbook

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Cleveland Clinic
Beachwood Radiologic Technology Program

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PROFESSIONAL ORGANIZATION INFORMATION:

[ARRT Continuing Education Requirements](#)

[ARRT Content Specifications for the Examination in Magnetic Resonance Imaging](#)

[ARRT Magnetic Resonance Imaging Clinical Experience Requirements](#)

[The International Society for Magnetic Resonance in Medicine \(ISMRM\)](#)

Links to the websites for the following organizations can also be found on the [Additional Information tab](#) of the program's website and on our learning management system.

[JRCERT Standards for an Accredited Educational Program in Radiologic Sciences](#)

[The American Registry of Radiologic Technologists \(ARRT\) Standards of Ethics](#)

[ARRT Application Process](#)

[The American Society of Radiologic Technologist \(ASRT\)](#)

[The Ohio Society of Radiologic Technologists \(OSRT\)](#)

Behavioral Objectives

Personal and professional development starts as a student and continues throughout a radiographer's career. The work ethic and attitudes developed or influenced during the training period greatly impacts the degree of professional success a radiographer enjoys.

Students will:

- Show initiative by displaying motivation and energy in starting and completing tasks.
- Demonstrate a professional attitude by displaying and/or creating a positive emotional and psychological environment for patients and co-workers.
- Develop professional interpersonal relationships as evidenced by positive interactions with patients, families and co-workers.
- Possess appropriate patient perception skills by demonstrating the ability to perceive patient's needs and respond to them as needed.
- Be productive, as demonstrated by the volume of work accomplished.
- Perform high quality work, as evidenced by the accuracy and thoroughness of procedure performance.
- Possess organizational skills by demonstrating the ability to perform in a systematic and logical fashion.
- Demonstrate the ability to follow direction by possessing the ability and willingness to listen, reason and interpret tasks.
- Demonstrate flexibility by being willing to be guided and instructed.
- Demonstrate adaptability by being able to adapt the procedure to the patient.
- Demonstrate self-confidence.
- Demonstrate a professional demeanor.
- Present a professional appearance in accordance with SOHP and program policy.
- Demonstrate dependability by being reliable and conscientious.
- Demonstrate accountability by taking responsibility for his/her actions and through attendance and punctuality.

In view of the critical role that communication plays in the successful provision of care to patients and to colleagues, all students will subscribe to the following principles:

- **Patients, their families and significant others are the most important people to the healthcare team.**
 - We communicate information that sets appropriate expectations and reduces anxiety.
 - We take the time to understand their needs and preferences.
- **We lead by setting a good example.**
- **We make ourselves accessible to others.**
 - We listen.
 - We respond to requests in a timely manner.
 - We are open to the opinions of others, options, and ways of doing things.
 - We are on time for patient-related commitments.
- **We exhibit a personable, pleasant and professional demeanor.**
 - We know the people with whom we work and address them by name.
 - We acknowledge and make eye contact with others.
 - We appreciate similarities and value differences.
 - We use “please”, “thank you”, and “I’m sorry” in our daily vocabulary.
- **We create a positive environment of support, respect and appreciation.**
 - We give and receive open and honest feedback to allow personal and professional growth.
 - We praise each other publicly and provide constructive criticism privately.
 - We refrain from gossip, rumors and malicious talk about others.
 - We avoid indirect communication and speak directly with the person involved.
 - We communicate in a clear and consistent manner using appropriate words, body language, and facial expressions.
- **We are all Caregivers and help each other achieve our potential.**
 - We educate each other.
 - We recognize value in every member of the care team.
 - We select the best people for roles based on their skills, strengths, and interests.
- **We manage stress appropriately both in the workplace and on a personal level.**
 - We manage stress to minimize impact on others.
 - We exhibit appropriate non-verbal communication particularly when under stress.
 - We take care of ourselves so we can take better care of others.
- **We value every member of the care delivery team equally and recognize the “main ingredient for success is the rest of the team.” (- J Wooden)**
 - We set and communicate expectations in a collaborative manner.
 - We ensure clarity of roles and responsibilities.
 - Our actions reflect our commitment to quality, safety, and efficiency.
 - We recognize and reward people in ways they appreciate.

Competency Examination

Competency examinations will be conducted as a means for students to demonstrate competence in performing procedures according to the following guidelines:

1. Students may not complete a competency examination on any procedure prior to educational instruction on that procedure. The curriculum is designed to teach radiographic procedures from simpler exams to the more complex as the student progresses in the program.
2. Competency examinations require a minimum score of 84% for the student to be considered competent. In addition, there is a mandatory section that is graded on a pass or no pass (P or NP) basis. A competency examination is not considered complete until a passing grade is achieved. The student is not considered competent with a score of less than 84% on that exam and must repeat the competency examination (see Failed Competency Exams section for more detail).
3. Students must complete one repetition for each procedure prior to the competency examination for the first 15 competencies. The purpose of the repetitions is to demonstrate areas of needed improvement prior to competency exam completion. Students must be fully prepared when performing a repetition but may ask for assistance with technique. Students should do as many repetitions as possible, however extra repetitions that are not paired with a competency do not convert into competency examinations. Once the required number of repetitions and competencies for the 2nd semester are completed (15 total), the student no longer needs to complete repetitions before performing a competency examination.
4. Competency examinations must be filled out using Trajecsys and must be electronically signed by the supervising technologist. The program faculty must then electronically validate each competency.
5. Once a student has successfully passed a competency examination on any given procedure, that student is then allowed to perform the procedure under indirect supervision, following the supervision policy. If the student subsequently demonstrates an inability to repeatedly correctly perform the procedure, the Program Director will deem the competency null and require the student to repeat the competency exam.
6. While performing a competency examination, the student cannot refer to notes or books. This should be done prior to the beginning of the exam and before the patient is brought into the room. Students must inform the technologist prior to the beginning of the procedure that they intend to perform a competency.
7. Students may only perform one competency exam per patient. If a patient has multiple orders, the student can only pick one of those orders for a competency exam, but they must perform all of the ordered exams on the patient.
8. When performing a competency examination on a GI procedure such as esophagus/barium swallow, UGI, or barium enema, the technologist should indicate on the competency examination form which, if any, images were performed.
9. If a student does not complete the required number of competencies in any given semester, they will receive an incomplete for the clinical semester and their clinical grade will drop one letter grade. For each subsequent week that the requirement is not met, the grade will continue to drop one letter grade. The only exception is when a student is on an approved

leave of absence (LOA). The student on an approved leave of absence is given additional time, equal to their absence, to complete the clinical requirements.

10. Students may not have an elective rotation until they have completed required examination competencies.

FAILED COMPETENCY EXAMS:

1. A failed exam is one that was failed by points (less than 21 points or 84%) or if a no pass (NP) was received in the Mandatory Skills section. The student is not considered competent on that exam and must repeat the competency examination until an 84% or higher is achieved and all Mandatory Skills have a pass (P). Students must have direct supervision until successfully passing the examination competency exam.
2. All failed competency examinations must have a competency form filled out and returned to the clinical preceptor by the technologist. The clinical preceptor will then send the failed competency examination to program faculty.
3. Students who fail a competency examination must perform remediation on the specific procedure with a clinical preceptor or technologist. Remediation will consist of a review of the procedure attempted and a debriefing of why the student failed the competency and how to perform the exam correctly going forward. A Competency Examination Remediation Form must be completed by the preceptor or technologist and signed by the student.
4. Any student who fails more than three competency examinations per semester will receive a documented counseling action which may affect their clinical grade. Further failure of an additional competency examination within the same semester will require the next disciplinary action, a written disciplinary action. Another failed competency examination in the same semester will require the student to be on suspension or final written disciplinary action, and another failed competency examination will require dismissal from the program. See the Conduct & Performance for more detail.

COMPETENCY EXAMS ON VOLUNTEERS:

Thirty-eight mandatory exams and 15 elective procedures must be performed satisfactorily to fulfill graduation requirements. Every effort must be made to complete all 35 mandatory radiologic procedure competencies on patients (not simulated). In the event a student does not complete all mandatory or elective competency examinations by the last week of the clinical experience, the following circumstances allow for performance of the competency exam on a volunteer with program official approval:

- Only elective procedures can be performed on volunteers.
- Simulated procedures must be completed with clinical preceptor or designee.
- Images of the procedure must be available to complete the anatomy recognition and image analysis portion of the examination competency.

COMPETENCY EXAMINATION SCHEDULE:

1. Students are required to complete the competency examinations according to the following schedule:

1 st Semester – 0	4 th Semester – 20
2 nd Semester – 15 with repetitions	5 th Semester – 20 plus 3 terminals
3 rd Semester – 15 plus 3 mid-programs	
2. Students are not permitted to complete competency examinations during the first semester.

- The following list of competency exams serves as a guide for the student to follow in obtaining the required 70 regular competencies plus three mid-program and three terminal competency exams required for graduation from the Beachwood Radiologic Technology Program.
- The clinical preceptor or their designee can assign a mid-program or terminal competency to the student. Refusal to perform the assigned mid-program or terminal competency could result in disciplinary action.

Mandatory Exams (35 required)

Abdomen Supine (KUB)	Abdomen Upright
Ankle	C-Arm Procedure (requires manipulation to obtain more than one projection)
C-Arm Procedure (requires manipulation around a sterile field)	Cervical Spine
Chest – AP (Wheelchair or Stretcher)	Chest Routine
Clavicle	Elbow
Femur	Finger or Thumb
Foot	Forearm
Hand	Hip
Hip – Cross Table Lateral (horizontal beam)	Humerus
Knee	Lumbar Spine
Pelvis	Portable Abdomen
Portable Chest	Portable Upper or Lower Extremity
Ribs	Shoulder
Tibia-Fibula	Thoracic Spine
Trauma Upper Extremity – non-shoulder*	Trauma: Lower Extremity*
Trauma Shoulder or Humerus*	Geriatric Chest Routine**
Geriatric Hip or Spine**	Geriatric Upper or Lower Extremity**
Wrist	

*Trauma is considered a serious injury or shock to the body and requires modification in positioning and monitoring of the patient's condition.

Geriatric patients are defined as at least 65 years old and **physically or cognitively impaired as a result of aging.

Elective Exams (17 required)

At least one headwork exam and two fluoroscopy exams are required under Elective Exams

Abdomen Decubitus	AC Joints
Arthrography	Barium Enema Double or Single Contrast
Calcaneus (Os Calcis)	Chest Lateral Decubitus
Cross Table Lateral Spine (horizontal beam)	Cystography / Cystourethrography
Esophagus (NOT Swallowing Function Study)	ERCP
Facial Bones	Hysterosalpingography
Mandible	Myelography
Nasal Bones	NG/OG Tube Placement
Orbits	Paranasal Sinuses

Patella	Pediatric Abdomen
Pediatric Chest Routine	Pediatric Mobile (any)
Pediatric Upper or Lower Extremity	Sacroiliac Joints
Scapula	Scoliosis Series
Small Bowel Series	Soft-Tissue Neck (Upper Airway)
Skull	Sternoclavicular Joints
Sternum	Temporomandibular Joints
Thoracolumbar Spine	Toes
UGI Single or Double Contrast	

5. Three mid-program competency examinations will be completed with the clinical preceptor or designee during the 3rd semester. Any three of the following can be completed for mid-program competency:
 - Abdomen Series
 - Extremity: Elbow, Knee, or Wrist (choose one)
 - Spine Series (may be chosen by clinical preceptor)
 - Portable Chest or Cart Chest
6. Three terminal competency examinations will be completed with the clinical preceptor or designee in the 5th semester. The following is a list of possible terminal competencies:
 - Barium Enema (single or double)
 - Multiple Spine Series (2 or more on the same patient)
 - Cranial/Facial Exam (skull – 2 or more views)
 - Ribs
 - Multiple Extremities (3 or more on the same patient)
 - Translateral Hip
 - Shoulder with Y-view or Axillary view
 - Decubitus Chest
 - Any Pediatric Case (excluding bone age)
 - Portable Abdomen

Contingency Plan

If a catastrophic event prevents clinical involvement for the safety of the students or patients, faculty will make every effort to mitigate the loss of clinical education through schedule alterations, reassignments, simulated clinical experiences and virtual clinical demonstrations, such as ASRT clinical resources. When restrictions are lifted and at the discretion of program faculty, students may be responsible for completing all or a portion of missed clinical assignments to satisfy graduation requirements and qualify for participation in the ARRT credentialing examination.

Severe Weather:

- In the event of severe weather, such as excessive snow or ice, the Program Director will make a determination regarding closure, including both classes and clinical.
- The Program Director will contact the program faculty and students via text message. The clinical preceptors will be contacted via email.

Fire Plan Rally Point:

The rally point at the Cleveland Clinic Administrative Campus is the sidewalk in front of the

fountain pond that is beside Building 4. When at the clinical site, the clinical preceptor will review the fire plan with students.

Emergency Codes:

- During the Patient Care class in the first semester, the students are educated on the Emergency Codes and the procedures associated with each code.

Conduct & Performance

Students enrolled in the Beachwood Radiologic Technology Program must conduct themselves in an appropriate and professional manner and must adhere to the rules and regulations of the School of Health Professions, program, and clinical sites. The purpose of this section is to provide guidelines to assist with managing student performance or conduct issues that interfere with the safe, orderly, effective and efficient operation of the program and the organization. It provides standards and rules governing performance and a procedure for consistent, non-discriminatory application of the rules in the interest of maintaining the highest quality patient care and educational environment.

RECORD OF DISCIPLINARY ACTIONS:

- Records of attendance are retained for a period of 7 years and are reviewable for matters pertaining to employment references, dismissal and reinstatement after dismissal.
- Records of disciplinary actions remain active in the student's record for a 7-year period. Records of disciplinary actions received by a student in their role as an employee (if applicable) may also be considered relevant.
- Any student receiving a second disciplinary action suspension within the length of the program, whether the two suspensions are for related or unrelated conduct, shall be dismissed.
- The receipt of all disciplinary action may result in denial of access to clinical sites and/or dismissal from the program.
- The School of Health Professions administration reserves the right to fully disclose all issues of disciplinary action received prior to clinical site reassignment.
- If a student is denied access to the clinical site for any reason, and cannot be reassigned to another site, the student will not be able to complete the program's requirements and is therefore dismissed from the program.

PROCEDURE:

All students are expected to conduct themselves in a professional and caring manner at all times. If professional behavior is not exhibited, disciplinary actions may be implemented up to and including dismissal from the program. When it becomes necessary to implement disciplinary actions for performance deficiencies, acts contrary to established policies or procedures, or to assure that the program and clinical site best interests are served, reference will be made to the categories below which relate the severity of the offenses to the disciplinary action. However, categories are not all-inclusive, and students may be disciplined for actions not specifically designated. Students who disagree with the action taken may proceed through steps outlined in the Grievance Procedure in the SOHP Catalog. If a student is dismissed from the program, utilizes the Grievance Procedure, and is denied re-acceptance, that student will not be permitted to reapply to the program.

IMPLEMENTATION:

Students who fail to abide by established standards and rules may be subject to disciplinary action. The step of disciplinary action may vary depending upon the nature of the infraction, the circumstances surrounding the offense, and the student's past records. If a student does not

conduct him/herself in a professional manner, the following disciplinary actions may take place. How rapidly a student goes through the following progressive steps, or at what stage the disciplinary actions will be initiated, will depend upon the seriousness of the offense. The Program Director will use their judgment to determine the appropriate step which applies in each particular circumstance. Regardless of the category in which an offense is listed, a flagrant violation may result in more severe discipline than that which is indicated for that category. Conversely, if mitigating circumstances are judged to exist, less severe discipline may be imposed than would otherwise be indicated for the category of offense involved. Some infractions are not progressive in nature.

The four steps of Corrective Action (as defined in the SOHP Corrective Action Policy) are as follows:

- **Step 1: Documented Counseling**
- **Step 2: Written Disciplinary Action**
- **Step 3: Suspension or Final Written Disciplinary Action**
- **Step 4: Dismissal**

A. CATEGORY I

- 1st Offense: Documented Counseling
 - 2nd Offense: Written Disciplinary Action
 - 3rd Offense: Suspension or Final Written Disciplinary Action
 - 4th Offense: Dismissal
1. Attendance related offenses (see Attendance Policies in SOHP Catalog).
 2. Failure to inform the clinical site and the program regarding absence within two hours of scheduled start time, whether scheduled or unscheduled (no call/no show) for clinical rotation.
 3. Failure to call the program faculty for a class or clinical absence.
 4. Loitering during scheduled working and off-duty hours.
 5. Eating or drinking in unauthorized areas.
 6. Violation of hospital parking regulations.
 7. Sleeping during class or clinical.
 8. Unauthorized extended meal period or breaks.
 9. Failure to get approval from program officials for clinical schedule changes.
 10. Failing score on more than three competency examinations in one clinical semester (see Failed Competency Exams for details).
 11. Failure to perform in a courteous, conscientious, and caring manner in responding to the needs of patients, visitors, fellow students, or employees.
 12. Unauthorized use of the internet, electronic devices, or cell phone during class, lab or clinical.
 13. Failure to adhere to reasonable standards of personal hygiene, grooming and dress code. This includes failure to adhere to established uniform requirements and failure to wear the appropriate CC identification badge.
 14. Copying answers directly from the answer key for workbook and classroom assignments.

B. CATEGORY II

- 1st Offense: Written Disciplinary Action
- 2nd Offense: Suspension or Final Written Disciplinary Action
- 3rd Offense: Dismissal

1. Arriving to your assigned area late or leaving your assigned area early.
2. Conduct prejudicial to the best interest of the hospital and/or SOHP.
3. Unacceptable or unsatisfactory job performance including causing or contributing to unsanitary or unsafe conditions and performing unsafe procedures.
4. Profane or unprofessional language.
5. Careless neglect or improper or unauthorized use of hospital, SOHP, or program property or equipment.
6. Collecting funds or accepting gratuities.
7. Repeated or chronic infractions of hospital, SOHP, or program policies with no evident improvement in performance or conduct.
8. Failure to observe program policies regarding required supervision and during repeat radiographs.
9. Inefficiency, incompetence or negligence in performance of duties.
10. Reporting to class, lab, or clinical in an unfit or unsafe condition to work.
11. Failure to perform duties at minimally acceptable standards after counseling and guidance.
12. Repeated failure to pass an additional competency examination in one clinical semester.
13. Violation of Academic Integrity Policy.
14. Unauthorized use of Cleveland Clinic identification badge.
15. Improper or negligent acts that cause damage to/waste of supplies, equipment or other property.
16. Any other failure of good behavior or neglect of duty to include not properly screening MRI patients.

C. CATEGORY III

- 1st Offense: Suspension or Final Written Corrective Action
 - 2nd Offense: Dismissal
1. Reporting to classes or clinical experience under the influence of alcohol or narcotics as evidenced by:
 - a) inability to perform assigned duties or participate in class
 - b) demonstration of undesirable characteristics (such as the odor of alcohol or other substances, attitude, uncooperativeness toward patients, staff, students, visitors, others).
 2. Refusing to submit to a medical evaluation including testing when reasonably suspected of being under the influence of alcohol or drugs.
 3. Inappropriate treatment of a patient for any reason.
 4. Failure to fulfill responsibilities at clinical to an extent that might reasonably or does cause injury.
 5. Insubordination or refusal to perform a reasonable assignment after having been instructed to.
 6. Immoral or illegal conduct and any acts of dishonesty, including cheating or copying another person's work.
 7. Sale, loan or gift of a parking pass.
 8. Any serious failure of good behavior or serious neglect of duty.
 9. Failure to conform to professional ethics.
 10. Fighting or gambling on Cleveland Clinic premises.
 11. Repeated failure to pass another competency examination in one clinical semester after failing five competencies.
 12. Solicitation and/or distribution of literature in violation of hospital policy.
 13. Posting any information or event regarding patients, visitors, students, or employees that occur at the clinical site or class on social media.

14. Clocking in and not reporting to your assigned area without permission or leaving your assigned area without permission.
15. Using an unapproved method/device to clock in and out for class, lab, or clinical.

D. CATEGORY IV

o 1st Offense: Dismissal

1. Possession, use, or sale of alcohol, narcotics or controlled substances on hospital premises.
2. Threat of or actual physical or verbal abuse of patients, visitors, staff, employees or students.
3. Falsification of any official hospital or program records.
4. Unauthorized use of time keeping by having someone else clock in and out on your behalf.
5. Any act of academic dishonesty as described in the Academic Integrity Policy in the SOHP Catalog.
6. Willful damage to or theft of property of the program, hospitals, patients, visitors, employees or students.
7. Absence from class, lab, or clinical experience without justifiable reason or without reporting off for two consecutive clinical and/or class/lab days, or two incidents of no-call/no-show in a 12 month period.
8. Possession of firearms or other weapons on program/hospital premises.
9. Unauthorized possession, use, copying or revealing of confidential information regarding patients, employees, students, hospital, SOHP, or program activity including on social media sites.
10. Sexual, racial or other harassment or verbal or physical threats against a fellow student, employee, visitor or patient.
11. Conviction of a felony.
12. Theft, removal of unauthorized possession, tampering with or use of property belonging to others.
13. Failing the fourth competency examination in one clinical semester.
14. Any conduct seriously detrimental to patient care, fellow students, employees, and the program or Cleveland Clinic operations.
15. Any other serious failure of good behavior or gross neglect of duty.

The list of offenses contained herein is meant to be illustrative and not all inclusive. Engaging in activity which is inconsistent with ordinary and reasonable standards of behavior necessary to the mutual welfare of Cleveland Clinic, its employees, patients, and visitors will also subject a student to disciplinary action.

GENERAL

Providing the best possible patient care and understanding customer service is a priority at Cleveland Clinic. In support of this philosophy, Cleveland Clinic does not allow inappropriate treatment or behavior towards the customer. "Customer" is defined as any individual that comes in contact with the department or student during the normal course of doing business. This could include patients, visitors, family members, co-workers, etc. All students are expected to conduct themselves in a professional and caring manner at all times when interacting with the customer.

Employment Guidelines for Students

The School of Health Professions does not attempt to control whether or not a student works or the number of hours worked. Should a student be hired as a technologist assistant (or any other

position) at a clinical site, time as an employee cannot be used as clinical experience.

Clinical competencies cannot be performed during hours worked as a technical assistant, technologist aide or any other employment position within the hospital. All clinical competencies must be completed during scheduled program clinical hours.

The Program will not change rotation schedules, objectives, test dates or other requirements to accommodate a student's employment schedule.

Evaluations & Counseling

- Students are required to have their technologists complete the required number of student evaluation forms per semester in Trajecsys. These evaluation forms are available for review by the clinical preceptor and program faculty, who will review them with the student. All evaluations must be turned in promptly and not all at the end of the semester.
- Counseling sessions will be conducted throughout the semester as needed to review:
 - Summary of student evaluation forms
 - Student competency examination summary form
 - ARRT mandatory and elective summary form
 - Semester grades
 - Attendance
 - Additional counseling sessions will be conducted if the Program Director, education coordinator or clinical preceptor finds them necessary.
- Students are responsible for compliance and disciplinary actions may be imposed for non-compliance.

Magnetic Resonance Imaging Safety

Any student entering the MR environment must have reviewed and signed the MRI Safety and Medical Eligibility Attestation. It is the student's responsibility to review their eligibility with their healthcare provider and notify the program immediately if they do not meet the eligibility requirements, especially upon implantation of a mechanical, metal or ferrous device. The electromagnetic fields associated with the MR environment pose a serious risk of injury to anyone with certain implants, devices, or materials. Hazards associated with the electromagnetic field include, but are not limited to; missile effect accidents, dislodgement or excessive heating of a ferromagnetic object, induction of electrical currents, and the misinterpretation of an imaging artifact as an abnormality.

The missile effect refers to the fringe field's ability to attract a ferromagnetic object into the scanner with considerable force. Common objects associated with these incidents include oxygen cylinders, floor buffers, IV poles, mop buckets, carts, chairs, ladders, monitors, tools, scissors, traction weights, and sand bags containing metal fillings. Allowing such devices into the MR environment can result in injury to the patient and/or the technologist.

Any ferromagnetic object or device placed in the magnetic field must have research documentation stating that the object's associated attractive force is insufficient to move or dislodge the object in situ or affect its intended function. Students must also adhere to the pulse sequences and techniques recommended by the manufacturer of these devices. This will eliminate temperature elevations in the object and avoid the induction of a current in the device. Examples of objects capable of generating an electrical current include electrocardiographic leads, indwelling catheters with metallic components, guide wires, disconnected or broken surface coils, certain cervical fixation devices, or improperly used physiologic monitors.

Implants, devices, and materials within the magnetic field, although proven safe, may still cause artifacts. Artifacts cause signal loss and distortion of the image resulting from a disruption of the magnetic field. The artifact's severity is associated with the object's magnetic susceptibility, quantity, shape, orientation or position in the body.

Any student in the MR environment must adhere to the safety standards outlined above, as well as abide by the rules set forth by the clinical site. If there is any question of the safety of a patient or student, the student must consult a qualified technologist or physician and documentation must be filed with the School. Any student that does not adhere to the rules, or jeopardizes the safety of any individual, including themselves, will minimally receive a written disciplinary action. Any blatant violation of the safety requirements may result in dismissal from the program, upon review by the advisory committee.

Students must have an MRI Safety and Medical Eligibility Attestation on file with the School if completing clinical training in MRI. Additionally, the Cleveland Clinic requires students who are doing a rotation in MRI to bring a copy of their safety attestation form to the MRI department.

Ohio Department of Health

Radiologic Licensure

The Ohio Department of Health Radiologic Licensure program ensures standards of knowledge and skill for operators who apply radiation to humans for diagnostic or therapeutic purposes. Through continuous enforcement, initiative and action, the program assures medical patients receive quality diagnostic imaging and services.

The program is funded by initial license application fees, renewal fees and educational provider fees. The program has licensed more than 17,000 operators, 110 educational facilities, and 180 continuing educational courses.

Mailing Address:

Ohio Department of Health
Radiologic Licensure
246 North High Street
Columbus, OH 43215

Telephone: 614-752-2370

Fax: 614-564-2460

E-mail: Xray.Licensure@odh.ohio.gov

Post Exposure Shuttering, Cropping, Electronic Masking and Annotation

DEFINITIONS:

- **Cropping:** the process of selecting and removing a portion of the image.
- **Electronic masking:** electronic collimation or cropping of the digital radiographic image that occurs during post-processing of the acquired image and does not alter the size of the irradiated field.
- **Processing:** manipulation of the raw data just after acquisition.
- **Shuttering:** a post processing technique that may be used to eliminate ambient light

around an image for the sole purpose of improving the quality of the displayed image. It should not be used as a substitute for insufficient collimation of the irradiated field.

- **Annotation:** information added to digital images after processing.

DIGITAL IMAGING CROPPING OR MASKING IN RADIOGRAPHY:

A digital image should not be cropped or masked such that it eliminates areas of exposure from the image that are presented for interpretation. To determine that exposed anatomy on an image is not significant or of diagnostic value is a medical decision and is therefore outside of the scope of practice for a radiologic technologist.

Pre-exposure collimation of the x-ray beam is necessary to comply with the principle of as low as reasonably achievable (ALARA).

It is outside of the scope of practice of a Radiologic Technologist to use post-exposure shuttering, cropping, electronic collimation or electronic masking to eliminate any anatomical information. This information is a part of the patient's permanent medical record and should therefore be presented to the radiologist to determine whether the exposed anatomy obtained on any image is significant or of diagnostic value.

IMAGE ANNOTATION AND MARKERS:

Correct identification of all radiographs is vital. All radiographic images must be marked correctly with a right or left identification side marker which is placed directly on the IR or tabletop prior to exposure. Electronically annotating the right or left marker post-exposure is prohibited because of the potential for error and legal implications.

Pregnancy

This section provides guidance regarding occupational exposure considerations for radiography students who are pregnant.

As specified in 10 CFR 20.1208 of the U.S. Nuclear Regulatory Commission, it is the program's/hospital's responsibility to ensure that the dose to the embryo/fetus from the occupational exposure of a declared pregnant student/worker not exceed 5 mSv over the entire pregnancy. The program must also make an effort to avoid substantial variations in a uniform monthly exposure.

PROCEDURE:

A. Declaration of Pregnancy

The declaration of pregnancy must be in writing and is voluntary. That is, the pregnant student need not declare her pregnancy if she chooses. To declare pregnancy, the student must request a copy of the School's Declaration of Pregnancy form from the Program Director. In addition to completing the School's form, the student must complete the Cleveland Clinic Radiation Safety Program's Declaration of Pregnancy form to obtain a fetal dosimeter. The Cleveland Clinic Radiation Safety Program's form requires an estimated date of conception. The estimated date of conception will be necessary in the determination of the accumulated dose the embryo/fetus may have received prior to the declaration of pregnancy.

The program is not required to restrict the dose to the embryo/fetus to 5 mSv until a written declaration of pregnancy is made. It should also be noted that the declaration can be revoked by the pregnant student at any time. The revoking of the declaration of pregnancy must also be in writing. To revoke the declaration, students may request a Withdrawal of Declaration of Pregnancy form from the Program Director.

The accumulated dose the embryo/fetus may have received prior to the declaration of pregnancy will have to be subtracted from 5 mSv to determine the dose the embryo/fetus will be allowed to receive during the remainder of the pregnancy. If the dose is determined to be 4.5 mSv or greater by the time the declaration is made, it is the program's/hospital's responsibility to ensure that the embryo/fetus receives only 0.5 mSv during the remainder of the pregnancy.

B. Calculations of Exposure

The 5 mSv dose limit shall be the sum of the deep-dose equivalent to the declared pregnant worker from external sources of radiation and the dose from radionuclides in the embryo/fetus and/or pregnant student. Radionuclides that may have been administered to the worker for diagnostic or therapeutic procedures should not be considered.

It is the responsibility of the designated Radiation Safety Officers to implement this requirement.

PREGNANCY ACCOMMODATIONS:

Whether or not a student declares a pregnancy, students are entitled to request pregnancy accommodation. Information about requesting accommodation can be found in the School Catalog.

PREGNANCY INFORMATION:

When at the clinical site, all students must adhere to radiation safety practices. Since exposure to radiation may affect a developing fetus, it is in the best interest of the pregnant student to report the pregnancy to have the radiation exposure monitored accurately. However, the student is under no obligation to do so. If the student chooses to do so, she should notify the Program Director in writing.

It is the responsibility of the radiographic technology program that no program objective should be sacrificed however, consideration will be given to a change in the clinical rotation assignments due to pregnancy. It is advised that, based upon the knowledge that a fetus is particularly sensitive, the student should decide whether the added risk of working with radiation is sufficiently low. The student is advised that the American College of Radiology recommends that no consideration be given for termination of pregnancy if the fetus exposure is less than 100 mSv. This amount of radiation to a technologist/student is unheard of in routine diagnostic radiology. The recommendation applies to a patient who has received repeat x-ray examinations directly to the abdomen during pregnancy.

As part of the initial information provided to new students, the National Council on Radiation Protection and Measurements Report No. 116 recommends that the whole pregnancy exposure be limited to less than 5 mSv. If, during the course, the student wishes further information or a review of the known effects of radiation on the unborn, then this information may be obtained by contacting the program's radiation safety officer.

The student should notify her physician that she is enrolled in a radiography program and obtain a statement of recommendation for continuance in the program.

INFORMATION FOR THE STUDENT RADIATION WORKER:

By definition a toxic substance is one which is able to cause some harm to humans. The factors which influence the harm depend upon the type of toxic substance, the dose given to the human and the susceptibility of the human. In general, humans are at reduced risk from toxic substances when the cells are either not dividing or dividing quite slowly as in the case of the oldest members of society. On the other hand, it is generally agreed that the fetus has a greater sensitivity to any toxic substance since its cells are dividing at an incredibly rapid rate. Even an individual that is four or five years old has a markedly reduced rate of growth when compared to the fetus. For this reason, radiation protection has always been directed towards the fetus and only recently have the other toxic substances in our environment been identified by the general population as being hazardous to the fetus. The NRC has reviewed the available scientific literature and has concluded that the 5 mSv limit specified in 10 CFR 20.1208 provides an adequate margin of protection for the embryo/fetus. This dose limit reflects the desire to total lifetime risk of leukemia and other cancers associated with radiation exposure during pregnancy.

PERSONNEL MONITORING:

The declared pregnant student that is likely to receive, from external sources, a deep dose equivalent in excess of 1 mSv must wear a second personnel monitoring device at waist level behind the lead apron, if applicable, to record the most representative exposure to the embryo/fetus. Since it is a requirement of the School of Health Professions for students to wear a dosimeter at the collar level, a second personnel monitoring device must be issued to be worn at waist level for the declared pregnant student. In this way the most representative exposure to the embryo/fetus can be recorded while maintaining a consistency with previous exposure records.

STUDENT RESPONSIBILITIES:

Once the declaration of pregnancy has been made in writing, a review of the individual's exposure history must be made. If it is determined to be unlikely that the embryo/fetus will receive in excess of 5 mSv during the entire gestation period, reassignment or restrictions may not be necessary. However, if it is determined that the dose to the embryo/fetuses is likely to exceed 5 mSv consideration may be given to reassignment of the declared pregnant student to an area of little or no radiation exposure or to placing certain duty restrictions on the individual to limit the exposure to the embryo/fetus. Clinical time missed during the clinical leave of absence must be completed prior to graduation.

The pregnant radiography student has the following options available:

- Continue in the Radiologic Technology Program as scheduled with no change in clinical rotation.
- Request pregnancy accommodation.
- The student can rescind the declaration of pregnancy at any time in writing.

Duties that may be considered for restriction because they represent a higher probability for the embryo/fetus to exceed 5 mSv are as follows:

- Radiology: General, Fluoroscopy, Portables, Specials, and CT: No restrictions necessary.
- Surgery: No restrictions necessary.

- Cath Lab: Wrap-around aprons with 0.5mm of lead or equivalent should be worn.
- Nuclear Medicine: The declared pregnant student should be restricted from involvement in I-31 therapies for the treatment of hyperthyroidism or thyroid carcinoma.
- Radiation Therapy: The declared pregnant student should be restricted from handling brachytherapy source.

EDUCATION:

Educational material is made available for the pregnant student to review. Examples of suggested publications are:

1. NRC Regulatory Guide 8.13
2. NCRP Report No.116

The pregnant student should already have reviewed the most recent NRC Regulatory Guide, "Instruction Concerning Prenatal Radiation Exposure" and the facility's policy for a pregnant radiation student during her initial training. Upon declaration, both the most recent Regulatory Guide and the program's pregnancy requirements should be presented to the pregnant student for review. All records of exposure to the embryo/fetus and the written declaration of pregnancy will be maintained on file. During radiography program orientation and also upon declaration of pregnancy, there will be documentation of the student's review of NRC Regulatory Guide 8.13, NCRP Report No.116, and the program's requirements for the declared pregnant radiography student.

Pregnant Patient

The section provides guidance regarding patients of childbearing age who are pregnant or suspect they are pregnant are not unnecessarily exposed to radiation.

PROCEDURE

Technologists and students performing radiographic exams on women of childbearing are responsible for asking patient if there is a possibility of pregnancy. This information must appear in the appropriate radiology information system or other computer system, if available.

When the radiology department is notified of possible pregnancy, the patient's exam will be delayed until the referring physician can be notified. A decision will be made by the radiologist and referring physician as to whether to proceed with the exam.

Proper radiation protection for the patient and fetus/embryo must be employed and documented in the radiology or hospital computer system, if available.

Radiation Safety - Equipment

All radiography students must be under direct supervision while performing any procedures in fluoroscopy, portables, or mammography. Students must not hold image receptors or patients during any radiographic procedure.

The purpose of this section is to outline the necessary precautions for radiation safety when operating radiation equipment.

PROCEDURE

- Students must be directly supervised during surgical and all mobile, including mobile

fluoroscopy, procedures regardless of the level of competency.

- All involved personnel shall have knowledge of the principles of radiation protection.
- The central principle is that maintaining distance is the greatest single safety factor.
- A technologist/student using mobile equipment must inform anyone in the room/area of use of ionizing radiation before initiating exposure.
- Lead aprons and lead thyroid shields shall be required when unable to remain positioned behind the protective screen during fluoroscopic procedures or when in close proximity of any ionizing radiation.
- Protective lead eyeglasses are available for personnel who cannot remain behind protective screens during fluoroscopic procedures.
- Protective lead gloves shall be worn when hands are in direct beam.
- Involved personnel shall be supplied with a radiation monitoring device according to department policy.
- It is the responsibility of the department manager to ensure that protective equipment is readily available.
- If requested, the patient can be shielded during exposure.
- All equipment malfunctions will be reported to the manager or supervisor.

A. Mobile Radiographic Units:

- The x-ray technologist/student shall stand at least 6 feet from the x-ray tube when making an exposure and must wear a lead apron.
- The technologist/student shall inform the surrounding patients and general public that they are about to make a radiographic exposure and allow them ample time to step back or leave the area prior to the exposure.
- Anyone (including patients and personnel) within six feet of the patient at the time of the exposure must wear a lead apron.
- All radiographic mobile units will be stored in an access-controlled location, or the keys will be removed and kept in a secure location where only licensed radiology personnel have access.
- Ancillary protective devices such as ceiling drop shields, rolling floor shields, etc., should be used when available and feasible to the exam.

B. Stationary Fluoroscopy Units:

- All personnel not required to be in the room during fluoroscopy exposures and/or spot film, cine and DSA exposures should leave. If they must remain in the room, a lead apron and thyroid shield must be worn, and they shall be positioned so that no part of their body is in the useful beam.
- All personnel in the room during radiation exposures must stand as far away from the patient/x-ray tube as possible.
- The image intensifier carriage lead drape must remain on (where applicable) except when the clinical exam indicates otherwise, i.e., myelogram.

C. Mobile Fluoroscopy C-Arms:

- The technologist/student shall stand as far away from the patient/x-ray tube as possible while making C-arm exposures.
- All personnel required to be in the room during C-arm exposures shall wear a lead apron and thyroid shield and shall be positioned so that no part of their body is in the useful beam.
- Where applicable, the technologist/student shall inform all persons within the vicinity that they are about to make a fluoroscopic exposure and allow them ample time to step back or leave the area prior to the exposure.

- Ancillary protective devices such as rolling floor shields should be used when available and feasible for the exam.
- All mobile C-arms will be stored in an access-controlled location or the keys will be removed and kept in a secure location where only licensed radiology personnel have access.
- A safe distance of at least six feet should be maintained by anyone not needed at the patient's side during fluoroscopy exposures.

D. Mammography Units:

- The appropriate image receptor size and collimator shall be used for the breast size.
- All individuals other than those required to be in the room during exposure shall wear a lead apron and thyroid shield.
- The technologist/student shall stand behind the protective barrier when initiating an exposure.

Radiation Safety – Energized Lab

The purpose of this section is to outline the necessary precautions for radiation safety when in the energized radiography lab and operating the equipment. Students are required to adhere to these requirements at all times. The requirements are divided into three sections to address conduct, the energized lab, and the phantoms/mannequin. Violations of these requirements will result in disciplinary action pursuant to the Conduct and Performance Standards.

LAB CONDUCT:

- No food or drinks are permitted in the lab.
- The door must remain closed while the lab is occupied.
- No one is permitted to enter the lab when the exposure light is on. If the door is closed, knock before entering.
- Students are required to sign up ahead of time for available open lab time slots.
- Students are required to sign in and sign out when accessing the lab for open lab time.
- Students cannot enter the lab before or stay after the time slot they signed up for. A student can only sign up for one time slot on any given day.
- Up to four students can sign up for a time slot during open-lab hours. No more than four students are permitted to be in the lab at any time for open lab hours.
- Lab and open lab time are for lab activities ONLY - no homework is to be done for other classes and everyone must participate. Students signing up for the sole purpose of being with another classmate to socialize will not be tolerated, as this is taking time away from students who could benefit from the extra practice.
- No one is permitted to be in the lab outside of class and lab/open lab time - no loitering.
- At the end of class, lab, or open lab time, students are responsible for parking the x-ray tube, cleaning up the room and putting everything back in its proper location. If you are the last person scheduled to use the room for the day, it is your responsibility to properly shut down the room.

ENERGIZED LAB:

- Students are not permitted to be in the lab without a dosimeter on. This includes lab time, class time, or open lab time. Any student that forgets their dosimeter for lab or class must either leave to retrieve it and receive a tardy for the class, or they will miss the lab/class and receive an absence and a 0 for all work done that day.
- Students are only permitted to use the Technologist login and are not permitted to delete any images or exams or change any system settings.

- Students are required to self-report violations of this requirement.
 - Any failure to self-report will result in more serious disciplinary action.
- Students must be respectful of the lab equipment, being careful not to drop the IR or damage the lab equipment.
 - Damaging lab equipment will result in disciplinary action. Students are required to report any damage (accidental or otherwise) to the lab or lab equipment.
 - Misuse of lab equipment, such as standing on the x-ray table, is also a violation of this requirement.
 - Failure to report will result in more serious disciplinary action.
- Students are not permitted to take an exposure unless they are under direct supervision from an instructor.
 - Taking exposures without faculty present will result in disciplinary action. Any student that violates this requirement is required to self-report this to the faculty.
 - Any student that does not report an unsupervised exposure or attempts to cover it up will receive more serious disciplinary action.
- Students are required to verbally notify everyone in the room when they are making an exposure.
 - Failure to do so will result in disciplinary action.
- Exposures cannot be made unless everyone in the room is behind the protective barrier. It is the responsibility of the student making the exposure to make sure everyone is behind the barrier before the exposure is made.
 - Accidentally making an exposure when someone is not behind the protective barrier will result in disciplinary action.
- Intentionally exposing anyone in the lab to ionizing radiation will result in serious disciplinary action.

PHANTOM/MANNEQUIN:

- The phantoms are not toys. They are expensive learning tools that contain the remains of a real human being and should be treated as such.
- The phantoms are only to be used under direct supervision from an instructor.
- Phantoms should only be used for educational purposes and respectfully. Students are prohibited from any non-educational use of x-ray phantoms.
- Any misuse or damage caused to the phantoms will result in disciplinary action. Students are required to report any misuse or damage caused.
 - If a student does not self-report, it will result in more serious disciplinary action.
- If damage to a phantom is so excessive it limits or prevents future use of the phantom, the student responsible will receive serious disciplinary action.
 - If the damage was caused during unsupervised use or during use that is not education-related, then it violates the Phantom/Mannequin rules, and the individuals that caused the damage are financially liable to replace the phantom. The replacement cost will be issued as a fee, and all fees must be paid before a student can graduate from the program.

Radiation Safety-Individual Monitoring Devices and Exposure Reports

The purpose of this section is to establish guidelines for the recording of exposures and use of Individual Monitoring Devices by the student according to Ohio Administrative Codes.

Quarterly dosimeters will be provided by the program to each student and must be worn whenever the student is at the clinical site or in the lab. Failure to do so will result in a disciplinary action. If a student comes to clinical or lab without their dosimeter, they will not be permitted to continue their clinical experience or lab day until the dosimeter has been obtained. PTO time must be used during

this time or missed time can be made up after graduation.

LOCATION OF MONITORING DEVICES:

- If only one IMD is worn, it shall be worn at the collar level outside the lead apron.
- If two monitors are worn, one shall be at the collar level outside the lead apron and one shall be worn at the waist level under the apron. In case of pregnancy, a fetal badge should be worn at waist level, under a lead apron when one is worn (see Pregnancy Information section).
- When two monitors are worn, they must never be interchanged. In accordance with Ohio Administrative Code 3701:1-38-12(A)(4)(6)(i)(ii), the reported deep dose equivalent for the single IMD may be multiplied by 0.3 for determination of effective dose equivalent (EDE). For double IMD personnel, the EDE may be determined by multiplying the waist IMD reported value by 1.5 and adding the calculative value to the collar IMD dose value, multiplied by 0.04.

EXCHANGE OF INDIVIDUAL MONITORING DEVICES:

- A new dosimeter will be provided quarterly.
- No one shall purposely expose a personnel monitor.
- Since personnel monitors are designed to measure only radiation received occupationally, it should never be worn when receiving diagnostic and/or therapeutic radiation exposures as a patient.
- IMD must be worn only by the person to whom it is assigned.
- In the event of pregnancy, see the Pregnancy Information section.
- The student is responsible for returning the old dosimeter to the program designee for processing.
- If the dosimeter is lost, damaged, or not returned within 90 days of the wear date, a \$25.00 replacement fee will be assessed. This fee is charged to the program by the monitoring company and passed to the student via the Office of the Bursar and Financial Aid.
 - The student must complete the 'Lost, Damaged, or Not Returned Dosimeter Report' provided by the program and submit payment to the Office of the Bursar and Financial Aid.

REVIEW OF PERSONNEL MONITORING RECORDS:

Each student must review and initial the monthly radiation exposure reports indicating they are aware of their radiation exposure.

- Students receiving doses in excess of over ALARA Level II limits, Level I = 125 mrem (1.25 Sv) and Level II = 375 mrem (3.75 Sv), will be notified as soon as possible. For those individuals with doses in excess of Level II, an investigation will be performed and documented immediately as to the cause with possible suggestions for prevention of such doses in the future.
- The dosimetry reports are retained indefinitely by the program. Annual written reports of occupational exposure are available for review at the end of the first month of the next calendar year.

OVEREXPOSURE AND REPORTING OVEREXPOSURES TO THE STATE:

All exposures in excess of the legal limits as stated in Ohio Code 3701:1-38-21 will be investigated immediately. A written report will be filed to include the circumstances surrounding the overexposure and the measures taken to prevent it from happening again. Any individual receiving in excess of 5 rem (50 mSv) will report to the RSO any condition that may have led to the excess. All overexposures will be reported to the State in accordance with Ohio Code 3701:1-38-21 which

states the following:

- Immediate notification by telephone if there is an exposure or threat of an exposure to the whole body ≥ 25 rems (0.25 Sv), to the lens of eyes of 75 rems (0.75 Sv), or a shallow dose to the skin or extremities or total organ dose of ≥ 250 (2.5 Sv) rems.
- Twenty-four hour notification by telephone if there is an exposure or the threat of an exposure to the whole body ≥ 5 rem (0.05 Sv), to the lens ≥ 15 rem (0.15 Sv), or a shallow dose to the skin or total organ dose to the extremities of ≥ 50 rem (0.50 Sv).

In addition to the notification, a written report will be filed with the State within 30 days. The report will include a description of the licensed or registered source of radiation involved. If it is a radioactive material, the report will state kind, quantity, chemical and physical form. For radiation generating equipment, the report will state manufacturer, model and serial number, type and maximum energy of radiation emitted. The report will include for each occupationally overexposed person, the name, social security number, and date of birth. The individual who received the overexposure will also be notified no later than notifying the state in writing.

STATE REQUIRED EXPOSURE LIMITS FOR EDUCATION AND TRAINING:

Whole Body; Head & Trunk	1 mSv / year
Active Blood Forming Organs	500 mSv / year
Lens of the Eyes; or Gonads	15 mSv / year
Hands, Forearms, Feet & Ankles	50 mSv / year
Skin of Whole Body	50 mSv / year
Embryo/Fetus– entire pregnancy	5 mSv / term

Scheduling of Clinical Experiences

1. Students attend clinical Monday through Friday from 8:00 am to 3:30 pm. Student rotation schedules will be posted prior to the beginning of each clinical experience. In order to maximize the types of radiographic learning experiences and educational opportunities for the students, all students are required to participate in a two-week evening rotation during the summer semester which is scheduled from 3:30 – 11:00 p.m. Additional evening clinical rotations may be requested by a student. Students are expected to adhere to their rotation schedule. Students will not be scheduled for class and clinical time in excess of 35 hours per week or seven hours per day.
2. Students must complete all required competency examinations prior to participation in any alternate rotation.
3. Students will complete a minimum of two rotations at a hospital and rotations to family health centers/outpatient centers. All required clinical assignments will be posted in advance of each semester.
4. Student rotations will be determined by the program and may not be altered by the clinical site or student without approval by the program.
5. It is the responsibility of the clinical site to ensure that student experiences have educational merit. Students must not be used in place of employees.
6. Should a student's supervising technologist leave the department for any reason (illness, flex time, doctor's appointment, etc.) and there is no one to assume supervision of that

student, the student will be sent home. This time will not be taken out of the student's PTO.

7. The program must provide equitable learning opportunities for all students. For example, if an objective is for students to perform breast imaging and/or therapeutic procedures, then both genders must be provided with the same opportunities to attain the requirement.
8. Students must request a change in their clinical schedule no less than one week in advance. All changes to the clinical schedule must be approved by programs officials.
9. The program faculty reserves the right to move or reassign a student's clinical site due to extenuating circumstances.

Supervision of Students

1. Students will not take the responsibility or the place of qualified staff. Until students successfully complete a competency evaluation in a given procedure, all clinical assignments must be carried out under the direct supervision of qualified radiographers.
 - A qualified radiographer reviews the request and orders for examination in relation to the student's achievement.
 - A qualified radiographer evaluates the condition of the patient in relation to the student's achievement.
 - A qualified radiographer is present during the performance of the examination.
 - A qualified radiographer reviews and approves the radiographs.
2. After demonstrating competency, students may be permitted to perform procedures with indirect supervision. Indirect supervision is defined as that of supervision provided by a qualified radiographer immediately available to assist regardless of the level of student achievement. The following are the parameters of indirect supervision:
 - A qualified radiographer reviews the request and orders for examination in relation to the student's achievement; the student is also required to review the patient orders for accuracy.
 - A qualified radiographer evaluated the condition of the patient in relation to the student's achievement.
 - A qualified radiographer is present in an area adjacent to the student.
 - A qualified radiographer reviews and approves the radiographs.
3. The number of students assigned to the clinical site must not exceed the number of clinical staff assigned to the radiography department. The student to radiography clinical staff ratio must be 1:1, in addition students are never allowed to work together. However, it is acceptable that more than one student may be temporarily assigned to one technologist during uncommonly performed procedures. In the event there are not enough technologists to maintain the 1:1 ratio, students may be reassigned to a different area to maintain proper supervision requirements.
4. Unsatisfactory radiographs must be repeated only in the presence of a qualified radiographer.
5. Students must not perform any radiographic examination without direct supervision until they have completed a competency evaluation with an 84% or higher on that specific examination.
6. Students must be directly supervised during surgical and all mobile, including mobile fluoroscopy, procedures regardless of the level of competency.

Program clinical preceptors are assigned in each of the clinical facilities. If the program clinical preceptors are unavailable because of illness, time off, schedule, etc., the positions will be covered by department clinical preceptors. These individuals will be the supervisors, or their designee. This assures that students always have a clinical preceptor to provide instruction and assistance.