College of Allied Health Sciences
Advanced Medical Imaging Technology
University of Cincinnati
PO Box 670394
Cincinnati, OH 45267-0394

Health Sciences Building
3225 Eden Ave
AdvMedImaging@uc.edu

Advanced Medical Imaging Technology

Nuclear Medicine Clinical Document Addendum

Student Handbook
2026-2027

Last Revision: *August 10, 2026*
Implementation: *August 24, 2026*

Nuclear Medicine Technology Didactic and Clinical Competency Requirements

Nuclear Medicine Scope of Practice

The spectrum of responsibilities for a nuclear medicine technologist varies widely across the United States. Practice components presented in this document provide a basis for establishing the areas of knowledge and performance for the nuclear medicine technologist. The nuclear medicine technologist must be in compliance with all federal, state, and institutional guidelines, including proper documentation of initial and continued competency in those practices and activities.

Continuing education is a necessary component in maintaining the skills required to perform all duties and tasks of the nuclear medicine technologist in this ever-evolving field.

The Nuclear Medicine Technologist Scope of Practice and Performance Standards document is intended to set forth the standards in important areas of the nuclear technologist's responsibilities. It may not cover all areas which may present themselves in actual practice. These standards do not supersede the judgment of the individual nuclear medicine technologist and other healthcare professionals serving the patient in light of all of the facts of the individual case. THE SOCIETY OF NUCLEAR MEDICINE AND MOLECULAR IMAGING AND THE SOCIETY OF NUCLEAR MEDICINE AND MOLECULAR IMAGING TECHNOLOGIST SECTION DISCLAIM ALL LIABILITY ARISING FROM USE OF THESE DOCUMENTS.

NMT Scope of Practice and Performance Standards - *Approved Oct. 2024*

Nuclear Medicine Technology Program Mission

Consistent with the mission of the University, the Nuclear Medicine Technology curriculum is dedicated to serving the professional education and experience-based learning needs of its students, whether they are from Ohio, the region, the nation, or the world. All students who are dedicated to their studies and the betterment of humankind through medical imaging will find this a safe environment for advancing their education.

Nuclear Medicine Program Technology Goals

- Students who complete the NMT curriculum will pass the NMTCB or ARRT nuclear medicine technology exam on their first attempt at a rate that exceeds national averages.
- Students who complete the NMT curriculum will either continue their education in MRI or find employment within 12 months of graduation.
- Graduates will be satisfied with their program of study.
- Graduates are prepared for entry-level work in nuclear medicine technology.

NMT Student Learning Objectives

- Graduates will possess the oral and written communication skills for advanced and leadership roles.
- Graduates will understand the processes for contributing to the knowledge base of the professional community.
- Graduates will demonstrate professionalism and compassion in the clinical setting.
- Graduates will perform imaging procedures according to program and/or departmental protocol integrating scientific knowledge and patient care skills.
- Graduates will demonstrate knowledge of anatomy and physiological function of specific organs or organ systems.
- Graduates will be cognizant of the effects of radiation and the methods utilized to reduce radiation exposure.
- Graduates will be capable of performing quality assurance procedures on the various imaging, counting, and measuring instruments. Knowledge base will include the mechanics of nuclear medicine instrumentation.
- Graduates will be proficient and/or knowledgeable of the imaging procedures likely to be encountered by recent graduates in the clinical setting.

Nuclear Medicine Student Supervision Policy

All students are required to perform imaging procedures under the **direct supervision** of a qualified Nuclear Medicine Technologist until the student achieves competency. Demonstration of a clinical competency means the student is able to perform the procedure from beginning to end independently while under supervision. After achieving competency, students are required to perform imaging procedures under **indirect supervision** of a qualified Nuclear Medicine technologist.

Further guidance in "qualified nuclear medicine technologist": Students are only allowed to work under the direct and indirect supervision from Nuclear Medicine registered technologists. Under no circumstances should students be supervised, either indirectly or directly, by a technologist who is not registered by the NMTCB or ARRT in nuclear medicine imaging. If a student should be in a clinical area without an NMTCB or ARRT nuclear medicine registered technologist due to clinical instructor or qualified personnel absence, they should contact the program director immediately for clinical reassignment.

Direct supervision is defined as student supervision by a qualified nuclear medicine technologist 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, and reviews and approves the injection, procedure and/or image.

Indirect supervision is defined as that supervision provided by a qualified nuclear medicine technologist immediately available to assist students regardless of the level of student achievement. "Immediately available" is interpreted as the physical presence of a qualified nuclear medicine technologist adjacent to the room or location where a nuclear medicine procedure is being performed and immediately available to provide direct supervision. This availability applies to all areas where nuclear medicine equipment is in use.

All students are required to perform imaging procedures under the **direct supervision** of a qualified technologist until the student achieves competency. Demonstration of a clinical competency means the student is able to perform the procedure from beginning to end independently while under supervision. After achieving competency, students are required to perform imaging procedures under **indirect supervision** of a qualified nuclear medicine technologist.

I have read and understand the information in this policy.

To be signed within your Trajecsys account.

Trajecsys

The Trajecsys platform is the official method for students to document clinical attendance and clinical progression. The following items will be documented within Trajecsys during the entire academic year.

- Clinical Rotation Schedule
- Clinical Attendance/Time Sheets
- Conference Attendance/Time Sheets
- NM Supervision Policy (Student to complete)
- Clinical Site Orientation Checklist
- Student Mid-Rotation Assessment
- Student Performance Evaluations
- Student Evaluations of NM Clinical Site & Clinical Preceptor

Students will refer to their directed practice syllabi and the clinical coordinator for the number of hours and number of competencies required during any semester. The student shall meet with the clinical coordinator when needed to review clinical hours or competencies. These meetings may NOT be during class time and will be scheduled with the clinical coordinator directly. While the program makes every effort to share received documentation with students, **it is the student's responsibility to maintain a copy of all records relating to clinical activities.**

• Each student will maintain their clinical time In Trajecsys each clinical day.
• Students will be signed in AND out by supervising technologists present at the time the student comes in/leaves for the day.
• Each student must use their own Trajecsys account to document their own time each day. Students attending the same clinical site rotation may not complete one-time record collectively.
• Each student must submit a time exception within Trajecsys to document all absences.
• Any deficit in clinical time or competencies must be addressed before the end of the semester. Students failing to address clinical deficits with the clinical coordinator in a timely manner will receive an incomplete (I) for the semester and will be at risk of grade reduction and/or dismissal from the program. Receiving a grade of an incomplete during the summer semester will result in board examination eligibility delays and/or program dismissal.

Nuclear Medicine Student Clinical Site Orientation Checklist

This form is to be completed by the Supervising Technologist on the first day of clinical rotation to ensure each Nuclear Medicine student technologist has been formally orientated on the items listed below.

Upon completion, the student technologist will submit this form to Nuclear Medicine clinical coordinator. This form must be completed and submitted by the second week of each rotation or the student's rotations will be suspended until completed.

- HIPAA training
- Emergency Overhead Code training
- Cardiac/Respiratory Code training and procedures (including crash cart location)
- Fire safety and procedures
- Electrical hazard procedures
- Evacuation procedures
- Chemical spill/hazard procedures
- RAM spill procedures (including location of cleanup materials)
- RAM storage & waste locations
- Standard precautions
- Venipuncture (including location of supplies, sharps containers & syringe shields)
- Protocol book

_____ Clinical Site

_____ Supervising Technologist (Print & Signature)

_____ Student Technologist Signature (Print & Signature)

_____ DATE

Nuclear Medicine Technology

Introduction

The University of Cincinnati Nuclear Medicine Technology Program requires students to complete a number of clinical competencies over the clinical year in order to fulfill program requirements for graduation and to comply with regulations of the organizations who administer board examinations, the American Registry of Radiologic Technologists – Nuclear Medicine Technology (ARRT) and the Nuclear Medicine Technology Certification Board (NMTCB). The purpose of clinical competency requirements is to verify examinees have demonstrated the competencies that a new graduate can realistically expect to encounter in their day-to-day duties as an entry-level nuclear medicine technologist. All students who successfully complete this program will meet the requirements of both organizations.

Each semester, students will be responsible for completing a given number of these competencies at a variety of levels of completion. Levels of completion refer to the amount of student participation on the given exam. Students may submit competencies from studies they perform on actual patients, simulated at the clinic, observed at the clinic or by journal (P/S/O/J); exact numbers and completion levels (P/S/O/J) for your program year will be found in your directed practice syllabus. Students who do not complete competencies as the syllabus dictates, have not satisfied program requirements and will receive a grade of "I" or "F" (at the instructor's discretion) in the Directed Practice course for that semester.

By the end of the clinical year, all studies below must be completed at some level (P/S/O/J) in order to receive a grade for the Directed Practice III course. Students having an "I" or "F" at the end of the program year in this or any course, will not be eligible for board examination, program advancement or graduation. Students may be offered the opportunity to remediate grades of I over 1 semester following the semester where they received the I grade.

Definitions:

1. Patient: Student performs a study on an actual clinical patient. A limited number of aspects of the procedure may be simulated when the clinical situation deems necessary but overall, the student must perform the imaging/therapy protocol(s) independently and meet 'acceptable' standards as seen fit by the supervising technologist.
2. Simulated: The student performs all possible hands-on tasks of the procedure on a live human being [doesn't have to be a clinical patient] using proper equipment such as gamma camera and processing station with the same level of cognitive, psychomotor, and affective skills required for performing the procedure on a real patient.

3. Observation: Student watches and/or simulates all aspects of a clinical study or therapy from start to finish with a supervising technologist. Student is able to explain the procedure after the observation to the satisfaction of supervising technologist.
4. Jornal: Students study the steps of a particular procedure to connect didactic learning with clinical application. Students submit this write up to AMIT instructional staff for review.

Clinical Procedures

Patient Care Procedures ***All 9 Required**	**Date Completed**	**Competence Verified By**
CPR/BLS Certified		
Vital Signs – Blood Pressure		
Vital Signs – Pulse Rate		
Vital Signs – Pulse Oximetry		
Vital Signs - Respiration		
Venipuncture		
Assisted Patient Transfer (e.g., Slider Board, Mechanical Lift, Gait Belt)		
ECG (e.g. Lead Placement and Recognition of Common Dysrhythmias)		
Maintain and Care for Patient Ancillary Equipment (e.g., Pump, Collection Bag, Oxygen Delivery)		

Quality Control Procedures ***All 8 Required**	**Date Completed**	**Competence Verified By**
SPECT Gamma Camera— Uniformity		
SPECT Gamma Camera— Resolution		
SPECT Gamma Camera— Center of Rotation		
Dose Calibrator (Constancy, Linearity, Accuracy & Geometry)		
Well Counter/Uptake Probe (Energy Calibration)		
Survey Meter (Battery Check, Constancy, use, Components & QC)		

CT— Phantom scan and tube warm up		
PET or PET/CT (Reference or Blank Scan, Normalization, 2D-3D Well Counter)		

Please note that this list is continuously under review. Student responsibilities are discussed in the Directed Practice courses. Students will also review ARRT guidelines on their own.

Nuclear Medicine Performance Category S=Simulated, O=Observed, P=patient, J=Journal	**Date Completed**	**Category (S,O,P,J)**	**Competence Verified By**
Cardiovascular (2 must be patient)			
Myocardial Perfusion Gated Rest (P)			
Myocardial Perfusion Gated Stress (P)			
Gated Blood Pool Study (P/S/O/J)			
Cardiac Amyloid Imaging (P/S/O/J)			
Cardiac Viability (FDG or Tl) (P/S/O/J)			
Central Nervous System (1 must be patient)			
Brain SPECT (P) non DaT (P/S/O/J)			
DaT Scan SPECT (P)			
Brain dynamic (such as brain death) (P/S)			
Shunt patency (P/S/O/J)			
Cisternography – Routine & Leak (J)			
Endocrine/Exocrine (3 must be patient)			
Thyroid Uptake (P)			
Thyroid Scan (P) -			
Parathyroid–Planar (P)			
Parathyroid – SPECT (P)			
Thyroid Metastatic Survey (P/S/O/J)			
Abscess and Infection (1 must be P or S)			
FDG or Ga-67 infection imaging (P/S/O/J)			
WBC Imaging (P/S/O/J)			
Gastrointestinal (3 must be P or S)			
Gastroesophageal Reflux (J)			
Gastric Emptying (Solid or Liquid) (P)			
Hepatobiliary W or WO GBEF (P)			
Hemangioma (J)			

GI Bleeding (P/S/O/J)			
Liver/Spleen Planar (P/S)			
Liver SPECT of any kind (P/S/O/J)			
Liver-Lung Shunt Map imaging (P/S/O/J)			
Meckel's Diverticulum (P/S/O/J)			
Genitourinary (1 must be patient)			
Renogram with or without Lasix (P)			
Renogram with Captopril (J)			
Effective Renal Plasma Flow/GFR (P/S/O/J)			
Radionuclide Cystogram (P/S/O/J)			
Renal Cortical Planar or SPECT (J)			
Lymphatics (1 must be P or S)			
Lymphoscintigraphy – breast (P/S/O/J)			
Lymphoscintigraphy – melanoma (P/S/O/J)			
Lymphangiography (P/S/O/J)			
Respiratory (2 must be patient)			
Perfusion (P)			
Ventilation Gas (P)			
Quantitative VQ (P/S)			
Ventilation Aerosol (P/S/O/J)			
Lung SPECT (P/S/O/J)			
Skeletal (3 must be patient)			
Limited Planar/Static (P)			
Three Phase or 4 phase (P)			
Whole Body (P)			
Bone SPECT (P)			
Tumor/Other (1 on P/S/O/J)			
Neuroendocrine Planar or SPECT (P/S/O/J)			
MIBG (P/S/O/J) Planar or SPECT (P/S/O/J)			
Bone Marrow Imaging (P/S/O/J)			
Other (P/S/O/J)			
Therapeutic Procedures (1 must be patient)			
Thyroid Ablation (P)			
Thyroid Hyperthyroidism (P/S/O/J)			
Palliative Bone/Prostate (P/S/O/J)			
Other/Endocrine (Lutathera) (P/S/O/J)			

Selective Internal Radiation Therapy Y-90 SIRT (P/S/O/J)			
PET/CT (3 must be patient)			
NaF Bone (P/S/O/J)			
FDG Brain (P)			
Other Brain (amyloid/tau) (P/S/O/J)			
FDG oncology (P)			
Neuroendocrine (dotatate) (P/S/O/J)			
PSMA PET (P)			
Breast (FES) PET (P)			
Cardiac MPI (P/S/O/J)			
Cardiac other (sarcoid) (P/S/O/J)			
CT procedures (1 must be patient)			
CT for attenuation correction (P)			
Diagnostic CT (P/S/O/J)			
CT contrast study (P/S/O/J)			

WRITE UP FOR NUCLEAR MEDICINE PROCEDURES

THIS FORM IS TO BE COMPLETED BY THE STUDENT, REVIEWED BY THE CLINICAL PRECEPTOR AND UPLOADED INTO CANVAS. DO NOT INCLUDE ANY PATIENT NAMES OR NUMBERS THAT MAY BE LINKED TO A SPECIFIC PATIENT.

Student: _____ Study: _____

Location: _____ Supervising Technologist/Faculty: _____

Select One: Patient Simulated Observed Journal In-Class

1. Relevant Patient Information (e.g. Reason for admission, diagnosis, age. Is patient deaf, blind, obese, paralyzed, comatose, etc.?)

2. What is the clinical question?

3. What are the isotopes utilized and how are they administered? Are there alternative radiopharmaceuticals available that would yield the same or similar information? Why were these not used?

4. Is there any special patient prep (i.e., hydration, NPO, etc.?).

5. Describe techniques used for scanning and why (e.g.. was patient supine, upright, inclined, imaging time, delay time, images acquired, etc.).

6. Acquisition parameters utilized on the camera and computer (camera position, matrix, zoom, imaging time, etc.):

7. Critique the technical outcome of scan and why it appeared as such (e.g. were the pictures ideal or could something been done to make them better, was the quality compromised by the patient's condition, etc.). What do you think the results of this study are/how would you identify normal vs abnormal?

Student: _____ Study:_____

Location: _____ Supervising Technologist/Faculty: _____

	Performance Skills	Acceptable	Simulated	Observed	Write-Up	N/A
1	Check requisition/order					
2	Patient interaction (explain test, reassure patient)					
3	Signed pregnancy/nursing statement (if applicable)					
4	Patient history noted/obtained					
5	Prepare radiopharmaceutical kit (if applicable)					
6	Calibrate and log radiopharmaceutical					
7	Set up gamma camera and/or other instrumentation					
8	Set up computer/Select correct acquisition					
9	Patient identification (2 means)					
10	Administer radiopharmaceutical by appropriate route					
11	Position patient					
12	Image patient					
13	Organization of procedure					
14	Check images and take/suggest additional views if necessary					
15	Post process images (if applicable)					
16	Check images with physician (if applicable)					
17	Give patient post-image instructions					
18	Clean up area					

	Educational Performance	Acceptable	Simulated	Observed	Write-Up	N/A
1	Student performs all stated objectives without instruction from senior technologist (attitudinal consideration)					

2	Student applies basic understanding and reasoning in performance of all stated objectives (cognitive consideration)					
3	Student demonstrates coordination and efficiency associated with the physical performance of all stated objectives (psychomotor consideration)					

SIGNATURES

_____STAFF TECHNOLOGIST

_____STUDENT TECHNOLOGIST

*Refer to online rubric to complete journal write-ups.

TECHNOLOGIST/FACULTY GUIDELINES FOR STUDENT EVALUATIONS

The numbers 0-4 will be used to evaluate the student's performance in each categories. The meaning associated with these numbers are as follows:

4 = EXCELLENT The student performs in a clearly superior manner. This person is on track to become a superior technologist.

3 = GOOD The student is a solid and dependable performer. They continuously strive to do the right thing. This person is on track to become a versatile and dependable technologist.

2 = AVERAGE This student is usually reliable. Although they possess only a few negative characteristics, they likewise possess only a few positive characteristics. This individual is on track to become a dependable and predictable technologist.

1 = POOR This person is not likely to hurt anyone; however, their current clinical performance leads you to believe that they will not make a trustworthy and competent technologist without significant improvement.

0 = DEFICIENT This student either has no concept of what is going on (considering the amount of time they have been in the program) or does not perform what is expected (i.e. procedures, conduct, etc.) Their actions lead you to believe that they may hurt a patient due to ineptitude. Without drastic improvement, this person will not make it as a technologist.

N/A= UNABLE TO RATE This student has not been observed enough in this category to detect any trends.

At the end of the semester, an average is calculated from all evaluations for the semester and this makes up a large portion of the grade the student will receive for the course Directed Practice. The results of the evaluations are shared with the students but the technologist will remain anonymous. Signatures are requested to document authenticity.

CLINICAL STUDENT EVALUATION REPORT

Students will be rated for each category using this rating scale:

0= Deficient
1= Poor
2= Average
3= Good
4= Excellent
N/A = Unable to rate

Initiative

- Prepare camera for acquisition ahead of time?
- Does the student assist the technologist without prompting?
- Take initiative in performing imaging procedures?
- Attempt to help with unfamiliar procedures?

Professional Demeanor

- Exhibit ethical, mature and professional conduct?
- Does the student dress appropriately for clinicals?
- Is the student punctual and have good attendance?

Attitude

- Take responsibility for their education?
- Follow through on written or verbal orders?
- Does the student take constructive feedback well?
- Demonstrate self confidence in their ability?\

Interest

- Stay late or come early when situation warrants?
- Find out additional information when warranted?
- Willingly help on projects or anything that needs done?
- Express curiosity and ask questions?

Patient Rapport

- Does the student introduce themselves to the patient?
- Explain the exam clearly to the patient in a way they understand?
- Ask about pregnancy or breastfeeding appropriately?
- Anticipate patient needs and can assist them?

Patient Challenges

- Demonstrate patience with difficult patients?
- Adequately reassure nervous patients?
- Treat special patient population appropriately?

Clinical Setting Proficiency

- Clean, disinfect and supply work area?
- Use standard precautions as needed?
- Safeguard patient HIPAA privacy and modesty?

Technical Proficiency

- Can the student learn new procedures easily?
- Recognize and repeat scans when quality is in doubt?
- Adjust procedures to the individual patient and their needs?

Technical Knowledge

- Correctly set up camera and acquisitions?
- Correctly process and send acquisitions for read out?
- Know procedures and radiopharmaceuticals?

Radiation Safety

- Apply time, distance and shielding skills to reduce radiation worker exposure?
- Apply time, distance and shielding skills to reduce patient exposure?
- Always wears gloves, lab coats, and film badges when handling radioactive material?

Staff Rapport

- Attentively listen to the technologist?
- Communicate effectively with technologist?
- Interact with interpreting physicians appropriately?

Additional Comments:

Student Evaluation of Nuclear Medicine Clinical Site & Clinical Preceptor

Student's Name _____ **Semester & Year** _____

Clinical Site _____ **Clinical Preceptor** _____

This form is confidential and is intended to enhance the clinical experience for future Nuclear Medicine students. Your honest input is appreciated.

Clinical Site Evaluation

Please evaluate your Nuclear Medicine clinical site on the following categories/questions.
Responses: Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5, N/A

Answer Scale:						**Question:**
1	2	3	4	5	N/A	1. The pace of the site enhanced my learning experience.
1	2	3	4	5	N/A	2. The organization of the Nuclear Medicine department allowed for optimal learning experiences during your rotation.
1	2	3	4	5	N/A	3. The expectations of you were well outlined and communicated early on during your rotation.
1	2	3	4	5	N/A	4. Were you comfortable with the level of responsibility you had during your rotation.
1	2	3	4	5	N/A	5. The technologist-student relationships enhanced my learning experience.
1	2	3	4	5	N/A	6. The technologist(s) were helpful.
1	2	3	4	5	N/A	7. The physician(s) were helpful.
1	2	3	4	5	N/A	8. Do you feel that as a result of this rotation you have developed professionally?
1	2	3	4	5	N/A	9. Do you feel that your professional objectives were met during your rotation?
1	2	3	4	5	N/A	10. How likely would you be to recommend this site to other students?

Do you have any additional comments or feedback regarding your rotation?

_____

_____

_____

Clinical Preceptor Evaluation

Please evaluate your Nuclear Medicine clinical preceptor on the following categories/questions.

Responses: Strongly Disagree=1, Disagree=2, Neither Agree Nor Disagree=3, Agree=4, Strongly Agree=5, N/A

Answer Scale:						**Question:**
1	2	3	4	5	N/A	1. Does the preceptor allow for optimal learning experiences during your rotation?
1	2	3	4	5	N/A	2. Does the preceptor provide feedback/constructive criticism regarding your performance?
1	2	3	4	5	N/A	3. Does the preceptor communicate your expectations well?
1	2	3	4	5	N/A	4. Does the preceptor oversee your clinical experience during your rotation (daily and/or weekly)?
1	2	3	4	5	N/A	5. Does the preceptor make themselves available to help you when needed?
1	2	3	4	5	N/A	6. Does the preceptor display or express enthusiasm to have you as a student?
1	2	3	4	5	N/A	7. Does the preceptor answer your questions carefully and with patience?
1	2	3	4	5	N/A	8. Does the preceptor act approachable and responsive when you have questions?
1	2	3	4	5	N/A	9. Does the preceptor use explanations that are clear and understandable?
1	2	3	4	5	N/A	10. Does the preceptor encourage you to ask questions and participate in all aspects of Nuclear Medicine patient care and scanning?

Do you have any additional comments or feedback regarding your preceptor?

_____

_____

_____