

VANDERBILT  UNIVERSITY
MEDICAL CENTER

Center for Programs in Allied Health

Nuclear Medicine Technology

Program Handbook

2024 - 25

INTRODUCTION TO PROGRAM HANDBOOK

The purpose of the Program Handbook is to serve as a reference and resource for VUMC Center for Programs in Allied Health (CPiAH) students. The Program Handbook is an important document that provides operational guidance to students to assist them in successful progression through the program.

Key documents regarding policy and procedure information for CPiAH students include:

Catalog of the VUMC Center for Programs in Allied Health

Source of important policies and other information related to VUMC, the CPiAH, and each program. The catalog is available on the VUMC CPiAH website.

Program Handbook

Each CPiAH program provides students its own Program Handbook. The policies and procedures in the Program Handbook are aligned with VUMC, CPiAH, and program policies that appear in the Catalog—as well as other locations. The purpose of the Program Handbook is to provide more specific details about each program, with a focus on operational information and procedures.

VUMC CPiAH Website and Program Website

The Center for Programs in Allied Health has its own website. From the CPiAH homepage, links to each program's website may be accessed. Important information regarding both the institution and the programs is available on these sites.

IMPORTANT NOTICE TO STUDENTS:

All students enrolled in VUMC Center for Programs in Allied Health (CPiAH) programs are bound by all VUMC, CPiAH, and Program policies. By enrolling in a CPiAH program, every student acknowledges their responsibility to abide by and adhere to all institutional and programmatic policies and procedures. Students, therefore, have the responsibility of being familiar with policies and procedures described in the following: 1) Program Handbook, 2) Catalog of the Center for Programs in Allied Health, and 3) CPiAH and respective program websites.

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IMPORTANT PROGRAM INFORMATION PROVIDED IN THE CPIAH CATALOG

The Catalog of the Center for Programs in Allied Health (CPiAH) contains important information about Vanderbilt University Medical Center, the Center for Programs in Allied Health, and this program, specifically.

Students are advised to refer to the CPiAH Catalog to obtain the following information about this program:

- Program Description
- Graduation Document
- Mission, Credo, and Goals
- Accreditation and Approvals
- Program Staff and Faculty
- Admission Information
- Academic Program
- Course List & Descriptions
- Graduation Requirements
- Student Assessment & Grading
- Satisfactory Academic Progress Requirements
- Student Conduct Information

CONTACT INFORMATION

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Clinical Rotation Sites:

- VUMC
 - Nuc Med/QC: (615) 322-0895
 - Cardiac: (615) 322-0886
 - Nursing: (615) 343-2215
 - PET: (615) 343-7512
 - Radiopharmacy: (615) 322-7117
- VHVI
 - Cardiac: (615) 936-0734
- VCH
 - Nuc Med: (615) 936-4938
- VAMC
 - Nuc Med: (615) 873-6813

PROGRAM ACADEMIC CALENDAR – 2024-25

Aug. 19 – 23, 2024	Orientation
Aug. 26	Program Start
Sep. 2, 2024	Labor Day – Off
Nov. 28 – 29, 2024	Thanksgiving Break – Off
Dec 16 – 27, 2024	Winter Break – Off
Jan. 1, 2025	New Year’s Day Observed – Off
Jan. 20, 2025	Martin Luther King Jr. Day – Off
Apr. 21 – 25, 2025	Spring Break – Off
May 26, 2025	Memorial Day – Off
Jul. 4, 2025	Independence Day – Off
Aug. 15, 2025	Projected Graduation Date

PROGRAM REQUIREMENTS

In order to graduate, students must receive a passing grade of 75 or better in all courses, including didactic and clinical rotations, and complete a list of clinical competency evaluations. A complete list of the Clinical Competencies is included as Appendix A. Students must also complete at least 1,626 clock hours during the 12-month program. In addition to hours, total days attended are also monitored. Students are allotted a maximum of 10 personal days, in addition to the scheduled holidays.

RADIATION MONITORING

Monthly radiation monitoring is conducted on each student using a dosimeter service through the VUMC Office of Clinical and Research Safety (OCRS). A permanent dosimetry record for each student is maintained by the institution. Reports are reviewed monthly by the institution—which includes the Radiation Safety Department as well as the Program Director. Students receive a summary of their dosimetry data in monthly reports. A cumulative dose report is available for future employers by special request made to the OCRS department and are not handled through the Program. Dosimeters are to be turned in to the Radiology Department Badge Representative at the end of each month.

NMT Students who are or become pregnant while enrolled in the program may confidentially and voluntarily contact OCRS to discuss the option of fetal radiation monitoring.

Information on policies and procedures related to dosimetry monitoring may be obtained from the OCRS website (<https://www.vumc.org/safety/rad>).

STUDENT CLINICAL EVALUATION

Students receive weekly clinical rotation evaluations by their preceptors. These evaluations allow for frequent, constructive feedback to students on their professional development and are counted toward the semesterly review of Satisfactory Academic Progress. Both the Program Director and the Clinical Coordinator review these evaluations on a routine basis and may request formal meetings with students to discuss clinical performance deficiencies. An example of the rotation evaluation survey used to assess student performance is included in Appendix B.

MONITORING SATISFACTORY ACADEMIC PROGRESS

Each student's academic progress is formally evaluated semesterly during a process referred to as a performance review. A student is considered to be achieving satisfactory academic progress (SAP) if they maintain a grade of 75 or better in each didactic course, which includes clinical rotations. In addition, students must maintain satisfactory attendance and professional conduct in order to maintain SAP.

Prior to the determination of SAP status, the student, the Program Director and the Clinical Coordinator meet to discuss the student's progress. These meetings include discussion of grades in didactic courses, evaluations in clinical rotations, radiation exposure reports, absences, contact hours, behavior, etc. Students are given the opportunity to discuss any questions or concerns they may have related to their progress during their SAP meeting. Following this meeting, the Program Director and the Clinical Coordinator determine whether or not the student is maintaining Satisfactory Academic Progress. Students are notified of their status in writing.

Academic Performance and Remediation Plans

Students are expected to monitor their in-progress course grades and seek assistance from course instructors, as needed. A student's knowledge base may be assessed at any point during the program by the Program Director. Formal remediation plans may be provided as deemed necessary and appropriate by the Program Director following assessment. Remediation plans are personalized and based on the documented assessment of the student's knowledge base. Remediation plans are approved by the Program Director, working in conjunction with course instructors, and intended to provide students with a structured strategy to improve knowledge base. Students who do not complete the remediation plan are subject to disciplinary action up to and including probation, suspension, or dismissal from the program. Remediation plans are not directly tied to course grades and may not be used as a tool to increase in-progress or final course grades.

Grading System

Scale	Grade	GPA
95-100%	A	4.0
90-94%	A-	3.5
85-89%	B	3.0
80-84%	B-	2.5
75-79%	C	2.0
<75%	F - FAILURE	0
P	Pass - Any course with a "P" grade is not calculated into the grade point average.	
F	Fail - Any course with an "F" grade is not calculated into the grade point average. However, the course must be repeated and passed to graduate.	
I	Incomplete - May be used at the discretion of the instructor in those cases in which the student is not able to complete work in the normal time. In those instances, the student and instructor develop a written plan for an extension to provide work by a specific date that falls within the period of time specified by the relevant program's requirements (but in no circumstances greater than one month). An "I" that is not replaced by a letter grade within the period of time specified by the relevant program's requirements, due to unsatisfactory completion of the student's plan, will be changed to an F after the period specified by the program (a period not to exceed one month). Any course with an "I" grade is not calculated into the grade point average. Once a grade is assigned to the course (when conditions are met that allow for the removal of the "I" and assignment of a final grade), that grade will factor into the student's GPA.	
W±	Withdrawal - Utilized when a student leaves the course due to an approved leave-of-absence or withdraws from the school prior to the scheduled completion of a course. Any course with a "W" grade is not calculated into the grade point average.	

ATTENDANCE

Documenting Attendance

Students are required to be on time for all required learning experiences (clinical rotations, classes, etc.). Students are required to use the designated time tracking software, Trajecsys, to document their attendance.

Students must clock in/out themselves. Under no circumstances are students allowed to clock in/out, log time, or otherwise document attendance for each other. Students engaging in this behavior—or any other form of fraudulent time tracking—are subject to disciplinary action up to and including probation, suspension, or dismissal from the program.

Arrival Time for Scheduled Hours

Students should not clock in more than 15 minutes prior to their scheduled start time—whether it be for class or clinical rotation—unless they have received special approval from the Program Director or Clinical Coordinator to arrive early. Early arrivals are only approved for necessary circumstances (i.e., completing make-up hours or competencies).

Lunch and Breaks

Students are allotted a 30-minute lunch break during each full day in attendance. This applies to both clinic and classroom days. Fifteen-minute breaks are scheduled between class periods—and two 15-minute breaks (one in the morning and one in the afternoon) are allotted to students while in clinical rotations. Should an incident arise where a student needs to be excused or leave the clinic, both the clinical staff and the Program Director should be notified prior to departure.

Absence Policy

In addition to scheduled holidays and breaks, students are allotted 10 personal days to use as time off throughout the academic year. Excessive absences are defined as more than 10 absences during the academic year. Excessive absences or tardiness—with tardiness being defined as reporting over 7 minutes late to any clinic assignment or class—may result in disciplinary action, up to and including probation, suspension, or dismissal from the program.

Students are required to complete 1,626 clock hours in order to complete the program, with a particular number of contact hours counted toward coursework and clinical rotations. This number may be reduced by the program due to extraordinary circumstances for which the administration deems necessary. Hours during which affiliate university and program-related activities occur are counted toward program completion.

Absence Requests

Foreseen Absences

If a student anticipates being absent from either a clinical assignment or a class period, they should notify the Program Director or Clinical Coordinator as soon as they are planning to be absent. At a minimum, students must send advance notification no later than 12 hours before the beginning of the shift/class. Notifications must be sent directly to the Program Director or Clinical Coordinator from the student via e-mail. In addition to notifying the Program Administration, students should provide advance notification directly to clinical preceptors if they plan to be absent on a clinical day. Foreseen absences do not require documentation or justification if the student has not exceeded the 10 personal day allotment. If the student has exceeded 10 personal days, documentation or justification may be requested by the Program.

Unforeseen Absences

An unforeseen absence is defined as an unplanned absence—i.e., without a 12-hour advance notice. If an emergent situation arises where a student must be absent, the Program Director or Clinical Coordinator must be notified as immediately as possible. Notifications must be sent directly from the student via e-mail. Documentation or justification for unforeseen absences may be requested by administration as it relates to

compliance with the absence policy. Students in violation of this policy are subject to disciplinary action, up to and including probation and dismissal from the program.

Progressive Discipline Process for Attendance

To ensure students' progress appropriately and demonstrate an expected level of professionalism throughout the program, a progressive discipline process for unforeseen absences and tardiness is followed.

Each unapproved absence and/or tardiness shall result in a documented occurrence. Two occurrences result in a written warning. Four occurrences result in a final written warning. Six occurrences result in attendance probation. Once a student is on probation for attendance, they maintain this status for the remainder of the program. All written warnings will be documented in the student's file and included in semesterly evaluation determinations of satisfactory academic progress (SAP). Students in violation of this policy are subject to disciplinary action, up to and including probation and dismissal from the program per the discretion of the program and institutional administration.

STUDENT CONDUCT / PROFESSIONALISM

All students are bound by several standards of conduct, as outlined in the CPiAH Catalog, including:

- VUMC Code of Conduct
- VUMC Credo
- VUMC Center for Programs in Allied Health Honor Code
- Vanderbilt Nuclear Medicine Technology Program Honor Code

Professional conduct is routinely assessed by program administration based on direct observation and feedback from colleagues, instructors, and preceptors. At a minimum, these evaluations are documented during SAP assessments. Should an acute event arise, Program Administration will work directly with CPiAH Administration to determine appropriate actions. In order to ensure students clearly understand the behaviors that are expected, acceptable and unacceptable, the following examples are provided. These examples are not all encompassing.

Alcohol and/or other Substance Use – The use of alcohol and/or other chemical substances during program academic and clinical activities is strictly forbidden under the policies of Vanderbilt University Medical Center. Students suspected of using alcohol and/or other chemical substances are subject to immediate evaluation in the VUMC Emergency Department. If a forbidden substance is documented, the student is subject to disciplinary action up to and including temporary suspension and dismissal from the program. Please see the VUMC Alcohol and Drug Use Policy, included as an appendix to the Catalog of the Center for Programs in Allied Health.

Patient Medical Records and Confidentiality – The privacy of medical records (paper-based, electronic, etc.) is legally protected under Federal Law through the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Patients' medical records are considered legal documents and require careful handling. Therefore, information contained in the medical record must not be discussed with anyone other than the patient, approved patient representatives and responsible health care team members for purposes directly related to patient care. Photocopying the contents of a medical record is strictly prohibited. Students violating patient confidentiality and/or HIPAA regulations are subject to immediate disciplinary action, up to and including temporary suspension and dismissal from the program.

Scope of Student Practice – Communicating with patients and other professionals regarding medical care is highly sensitive and requires the utmost in professional behavior. It is both inappropriate and unprofessional for NMT Program students to engage in discussions with patients concerning their clinical histories, with the exception of obtaining pertinent clinical information. NMT Program students are also strictly forbidden from engaging in discussions with patients regarding the results of studies performed, as well as speculation regarding the origin of the patient's illness. In addition, NMT Program students are

expressly prohibited from performing studies, preparing, dispensing, and administering radiopharmaceuticals, and reporting results to physicians unless these actions are performed under the direct supervision of a staff nuclear medicine technologist or authorized clinical preceptor.

Academic Integrity – The Vanderbilt system maintains that there is an agreement of mutual trust between students, faculty, and staff. Each student promises integrity in all submitted work and the instructors, in turn, presume the honesty of the student. The honor system provides an atmosphere of trust essential to the fulfillment of the program’s purpose of educating individuals of professional character. The members of the Vanderbilt community regard a breach of honor as a serious breach of their principles, their purpose, and the academic enterprise. All work submitted as part of course requirements is assumed and expected to be the product of the student submitting it unless credit is given by the student using proper citation. Cheating, plagiarizing, falsifying results, or any action designed to deceive a member of the faculty are prohibited. These activities will not be accepted whether they are intentionally or unintentionally performed.

OTHER PROGRAM POLICIES

Students in violation of any program policy are subject to disciplinary action, up to and including probation or dismissal from the program.

Cell Phone Use

Cell phone use for any purpose (calls, texts, voice mail, web browsing, apps, etc.) is prohibited during all required learning experiences—including classroom sessions, exams, clinical rotations, etc. Cell phone use is strictly prohibited in the clinic, and devices should be silenced at all times. Students are allowed to use their cell phones during breaks.

Textbooks

Textbooks must be purchased or obtained by the student.

Uniforms/Dress Code

Students are required to dress in an appropriate professional manner, in keeping with VUMC Policies and Center for Programs in Allied Health (CPiAH) policies which are outlined in the CPiAH Catalog. Students must wear Allied Health approved scrubs to all clinical rotations. Students may wear appropriate professional clothing to the classroom and elsewhere on campus.

Personal Appearance

To convey a professional appearance to patients, visitors, and colleagues, students must adhere to the VUMC Radiology Policy “Dress Code and Personal Appearance.” In addition to these items, NMT Students are also required to meet the following standards in both classroom and clinical settings:

- Identification badges are worn in clear sight above the waist with name, title, picture, and other identifying information clearly visible. These must not be altered in such a way as to change the nature of the ID badge.
- Hair is clean and contained in such a manner that it does not come in contact with patients or visitors. Natural or neutral hair color is required.

Practice Liability Insurance

Students are covered by malpractice insurance under the blanket policy of Vanderbilt University Medical Center. The cost is included in the Program cost of attendance.

ADA Accommodations

Students who wish to disclose a disability should do so by providing the Program Director a description of the request in writing, which will be forwarded to the Center for Programs in Allied Health. The Program Director will work with the student, the Center for Programs in Allied Health, and other necessary parties to determine and provide reasonable accommodations. Students should refer to the Catalog for further details regarding ADA accommodations.

Needlestick Protocol

The needlestick protocol applies to all clinical rotation sites that NMT students are assigned—this includes the VAMC, VCH, and VHVI rotations. The following actions should be taken by a student in the event of a needlestick:

1. Wash affected area thoroughly with soap and water.
2. Notify clinical preceptor and radiation safety—if radioactive material was involved.
3. Record patient's name and MRN—if incident involved a patient.
4. Report to Occupational Health.
 - a. If incident involved a patient, blood samples could be taken from the student for standard testing. Essential blood tests include: Rapid HIV, Hepatitis B profile, and Hepatitis C
 - b. If after hours, student may report to the Emergency Dept. In this case, student may need to register under personal insurance.
5. Optional: After receiving permission from the patient, draw 2 RED top tubes from the patient (source of exposure) and send to lab for testing.
6. Reporting within 24 hours:
 - a. VERITAS report must be made. Clinical preceptor should assist student in filing the report.
 - b. Notify the Program Director of incident

Normal Program Hours

Normal program hours for didactic courses are scheduled on certain weekdays from 8:00 am – 3:30 pm. Clinical rotations are scheduled on certain weekdays and have various start and end times based on the rotation site. A detailed course and clinic schedule is provided to students during orientation. Normal hours for each clinical rotation are outlined below:

CLINICAL ROTATION HOURS		
Rotation Site	Type of Day	Time
Radiopharmacy	Class	5:30 am – 8:00 am
	Clinic	4:30 am – 11:00 am
QC Nuclear Medicine	Class	n/a
	Clinic	6:30 am – 3:30 pm
General Nuclear Medicine	Class	n/a
	Clinic	8:00 am – 3:30 pm
PET	Class	n/a
	Clinic	8:00 am – 3:30 pm
VUMC Cardiac	Class	n/a
	Clinic	8:00 am – 3:30 pm
VHVI Cardiac	Class	n/a
	Clinic	7:00 am – 2:30 pm
VCH	Class	n/a
	Clinic	8:00 am – 3:30 pm
VA	Class	n/a
	Clinic	6:30 am – 2:00 pm

Clinical Workshops and Additional Clinical Training

Required clinical workshops are scheduled during the fall semester. The purpose of these workshops is to provide students with standardized early clinical training provided by Program Administration with uninterrupted, hands-on access to clinical equipment and resources during times when patients are not typically scheduled. In the fall semester, workshops are scheduled every Wednesday from 3:30 – 5:00 pm; No clinical workshops are scheduled in the spring or summer semesters. A detailed schedule is provided to students during orientation.

Each clinical workshop hour represents an equivalent of one clinical rotation hour. Because of this, students are allowed to compensate time for attendance in clinical workshops by exchanging with subsequent clinical rotation hours. Specifically, in the fall semester, students are allowed to reduce their rotation time on Thursdays by 1.5 hours if they attended the clinical workshop on the Wednesday prior. Students may not exchange the clinical workshop hour with any other scheduled hours or days.

Students may also seek additional clinical training provided by the Clinical Coordinator at any time during the program. Requests for additional clinical training should be directed to the Clinical Coordinator via e-mail with a description of specific needs.

Holidays and Weekends

Holidays and weekends are not considered normal program hours. Students are only allowed to come into their clinical assignment during these times if they are in need of make-up days or hours. Permission from the Program Director or Clinical Coordinator is required before a student attends their clinical assignments on holidays or weekend days.

Clinical Assignments Outside of Normal Program Hours

Students must obtain prior procedures permission from the Program Director or the Clinical Coordinator before performing clinical or work outside of normal program hours. Approval is only granted in necessary situations—i.e., for make-up hours/days or completion of clinical competencies.

Arrival Time for Clinical Rotations

Clinical start times represent the time in which students are expected to begin actively working in their assigned rotation. Students may need to arrive within 15 minutes ahead of their scheduled start time in order to prepare for their clinical rotation.

Reporting to Clinic Following Completion of Courses

For any normal program days in which class and clinic hours are both scheduled within the same day, it is expected that students will report to clinical assignments following completion of class. If students need to complete additional classwork during these times (i.e., make-up exams, research for project, etc.), special permission must be granted from the PD or CC to remain in the classroom.

Student Employment While Enrolled in NMT Program

Students may work while they are participating in the NMT Program, as long as work hours do not interfere with the scheduled hours in which required NMT Program activities take place. It is not permitted for students to arrive late or leave early for outside work purposes. Therefore, any employment outside of the NMT program must allow for adequate preparation and participation in required program activities.

Informing the Program Director of Employment

It is highly recommended that students who plan to be employed while enrolled in the NMT Program discuss their plans with the Program Director prior to matriculation in the program. This will help ensure the student is best positioned for successful time management while enrolled in the program.

Participation in Clinical Research Studies

Students are cautioned about volunteering for clinical research studies. Many of these studies require committed participation over time, often during normal program hours. Students are advised to not participate in these studies.

Working at VUMC or Other Hospitals/Clinics

Students with backgrounds in other imaging modalities (i.e., radiologic technology, CT, MRI or ultrasound) or in other clinical specialties (i.e., medical lab science, phlebotomy, etc.) may wish to seek employment at the medical center while enrolled in the NMT Program. This is permitted, so long as work hours do not interfere with required NMT Program hours and activities.

Working in Nuclear Medicine

Students may hold student technologist/assistant level positions within the field of nuclear medicine so long as work hours do not interfere with the NMT program schedule. Work hours and assignments are strictly independent from the Program, and students may not earn course credit, attendance hours, or clinical competencies while working. In addition to paid work hours, students cannot use volunteer positions within the field of nuclear medicine to earn course credit, attendance hours, or clinical competencies.

Clinical Rotation Assignments

The clinical experiences/training in the program consists of a series of overarching clinical rotation content areas. Every student rotates through a repeated sequence of scheduled clinical rotations. The rotations are established so that each student is assigned to a single independent work assignment supervised by a board-certified technologist, nuclear pharmacist, or a radiology registered nurse. VUMC staff typically rotate on a weekly basis. This enables a student to work with multiple preceptors over the course of their assigned rotation.

Students are given a detailed clinical rotation assignment schedule at the start of the program. Rotation experiences and student performances are monitored by the clinical supervisor at each institution as well as the Clinical Coordinator and Program Director. Rotation assignments may be modified as needed to address noted deficiencies of specific students. This is only done by express direction of the Program Director. Students may only move from their assigned rotation to another one, with permission from the Program Director or Clinical Coordinator, to perform a specific procedure and/or receive a clinical competency.

Clinical Performance and Evaluation

Students' clinical performance is evaluated in two primary ways:

- 1) Weekly evaluations from primary clinical preceptors (professionalism objectives)
- 2) Completion of proficiencies (clinical performance)

Conceptual clinical concepts may be assessed through clinical assignments as outlined in course syllabi.

The weekly clinical evaluations are averaged and serve as a course grade. A passing grade in the clinical rotations course is considered to be 75 or greater. Clinical performance that falls below this grade is subject to standard SAP disciplinary or probationary actions.

See Appendix A for a list of required clinical proficiency competencies and Appendix B for details on clinical evaluation metrics.

PROGRAM HANDBOOK APPENDICES

Appendix A

Clinical Competencies

**VUMC NUCLEAR MEDICINE TECHNOLOGY PROGRAM CLINICAL
COMPETENCY EVALUATION**

Co-assist is defined as active student participation aiding a certified preceptor in the full completion of a specified study. The amount of assistance is determined by the preceptor. Students are expected to perform as much of these studies as possible.

Students must demonstrate competency in all mandatory procedures and eight elective procedures within Phase 3. At least one elective *must* be from the gastrointestinal procedures list and two electives *must* be a SPECT.

Note: As new procedures are instituted in clinical practice; special approval may be granted to students who wish to complete unlisted procedures as an elective check-off. Prior approval must be given by the Program Director for such competencies.

Phase I					
Program Required Certification		Date Issued	Expiration Date		Verified By:
<i>CPR Certification Maintenance</i>					
Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Patient Care					
AIDET #1 • Retrieve patient from waiting room • Perform AIDET	X				
AIDET #2 • Retrieve patient from waiting room • Perform AIDET	X				
Patient Comfort #1 • Knee Wedge/Body Support • Blanket	X				
Patient Comfort #2 • Knee Wedge/Body Support • Blanket	X				
Assisted Patient Transfer (e.g., Slider Board, Mechanical Lift, Gait Belt)	X				
Omniceil Drug Removal – Training	X				
Nursing/Stress Testing – To be done at VUH Clinic for training – 3 practice sessions needed for checkoff					
ECG (lead placement and recognition of common dysrhythmias)	X				
Vital Signs - Manual Blood Pressure	X				
Vital Signs - Automatic Blood Pressure	X				
Vital Signs - Pulse	X				
Vital Signs – Respiration	X				
Vital Signs - Oxygen Monitoring	X				

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
NM Clinic Workflow					
Stock Supplies (VUH General NM Areas/Hot Lab)	X				
Stock Linens (VUH General NM Areas) - QC Rotation	X				
Maintain and Care for Patient Ancillary Equipment (e.g., Pump, Collection Bag, Oxygen Delivery) – Wall list that is checked during QC in the morning.	X				
Clinical Professionalism					
Answer the Phone in the Clinic – Must minimally state your name and the area you are in	X				
Make a Phone Call in the Clinic – Must minimally state your name and the area you are in	X				
Radioactive Dosage Handling					
Measure Dose in Dose Calibrator	X				
Immediate Use of Sterile Radiopharmaceuticals – Only Given by CC or Authorized Personnel	X				
Radiation Safety					
GM Survey Meter Operation: Battery Check & Constancy	X				
GM Survey Meter: Perform Daily Area Survey	X				
Radiation Waste Disposal Tag - fill out tag appropriately	X				
Radiation Waste Disposal – Bag	X				
Radiation Waste Disposal – Sharps	X				
Bioassay	X				
PET Operations					
Perform Blood Sugar Testing with Glucometer – Done in Patient Care Class	X				
Stock Supplies (PET Areas)	X				
Stock Linens (PET Areas)	X				
Mark patient on table for a WB Scan	X				
Mark patient on table for a Head-to-Midthigh	X				
Mark patient on table for a Head/Neck Scan	X				
Mark patient on table for a Brain Scan	X				
Mark patient on table for a Cardiac Scan	X				
Radiopharmacy Operations					
Sterile Gowning & Garbing	X				
Aseptic Technique	X				
Transporting Radiopharmaceuticals to In-House Clinics	X				
Survey and Clean Radiation Pigs	X				

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
VUAH General NM Camera Operations - All checkoffs in this section will be given by the Clinical Coordinator					
Camera: MG					
Table Motion •Move table in/out completely •Move table at normal/accelerated Speed	X				
Lateral Table Motion •Move table laterally (left and right) •End in center (0 degrees)	X				
Vertical Table Motion •Move table up completely •Move table down completely	X				
Camera Head Motion - Independently •Move head 1 in and out completely •Move head 2 in and out completely	X				
Camera Head Motion - Parallel •Move head 1 and 2 in completely •Move head 1 and 2 out completely	X				
Set up a Bone Scan •Put patient information into computer •Move patient to start position	X				
Camera Head Positioning •Set in Anterior/Posterior	X				
Camera Head Positioning •Set in Laterals	X				
Camera Head Positioning •Set in LAO/RPO	X				
Camera Head Positioning •Set in LPO/RAO	X				
Unload Bed •Manually •Automatic	X				
Camera: Infinia					
Change Collimators	X				
Set Camera Heads in L-Mode	X				
Camera Head Positioning •Set in Posterior Obliques	X				
Camera Head Positioning •Set in Anterior Obliques	X				
Set Camera Heads in H-Mode	X				
Camera Head Positioning •Set in Anterior/Posterior	X				
Camera Head Positioning •Set in Laterals	X				
Camera Head Positioning •Set in LAO/RPO	X				
Camera Head Positioning •Set in LPO/RAO	X				
Set up a Bone Scan •Put patient information into computer •Move patient to start position	X				
Bring camera heads in and out completely - using fast setting	X				

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Camera: Infinia Continued					
Bring camera heads in and out - using slow Setting	X				
Unload Bed – Automatically	X				
Camera: Discovery 670					
Change Collimators	X				
Set Camera Heads in L-Mode	X				
Camera Head Positioning •Set in Posterior Obliques	X				
Camera Head Positioning •Set in Anterior Obliques	X				
Set Camera Heads in H-Mode	X				
Camera Head Positioning •Set in Anterior/Posterior	X				
Camera Head Positioning •Set in Laterals	X				
Camera Head Positioning •Set in LAO/RPO	X				
Camera Head Positioning •Set in LPO/RAO	X				
Set up a Bone Scan •Put patient information into computer •Move patient to start position	X				
Bring Camera Heads In and Out Completely – Using Fast Setting	X				
Bring Camera Heads In and Out – Using Slow Setting	X				
Unload Bed – Automatically	X				
IV Proficiency					
Successful IV Start on Practice Arm – <i>Only given by CC and must have this checkoff to do the following peripheral IV competencies.</i>	X				
Use a Stopcock Effectively – <i>Includes hooking it up to tubing, turning off to dose, and opening lines when appropriate</i>	X				
Peripheral IV					
Setup of Injection Area - Only Given by CC •Sterilizing space •Selecting and organizing supplies	X				
Successful Peripheral IV Start •20 G	X				
Successful Peripheral IV Start •22 G	X				
Clean-up of Injection Area •Proper handling/disposal •Sterilizing space	X				

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Butterfly Needle					
Setup of Injection Area - Only Given by CC <ul style="list-style-type: none"> •Sterilizing space •Selecting and organizing supplies 	X				
Successful Butterfly Needle Start <ul style="list-style-type: none"> •23 G 	X				
Successful Butterfly Needle Start <ul style="list-style-type: none"> •25 G 	X				
Clean-up of Injection Area <ul style="list-style-type: none"> •Proper handling/disposal •Sterilizing space 	X				

Phase II

Required: 63 Mandatory Optional: 11 Elective

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
NM Quality Control – To be done during the NM QC Rotation					
Planar gamma camera: Uniformity – Extrinsic	X				
CT: Fast Calibration	X				
CT: Water Phantom Uniformity, Resolution, and CT Number	X				
Dose Calibrator: Constancy	X				
Uptake Probe: Energy Calibration	X				
Nursing – Must show competency in each of the following					
ECG (lead placement and recognition of common dysrhythmias)	X				
Vital Signs - Manual Blood Pressure	X				
Vital Signs - Automatic Blood Pressure	X				
Vital Signs – Pulse	X				
Vital Signs – Respiration	X				
Vital Signs - Oxygen Monitoring	X				
NM Cardiac Procedures - Each Cardiac Clinical Site Has Imaging and Pharmaceutical Stress Testing Competencies					
Cardiology Imaging and Stress Lab Components					
VUH Cardiology – Student is expected to spend time in NM Generals and with Stress Nurses to see entire Cardiac Procedure					
Myocardial Perfusion SPECT (Rest & Stress) Imaging	X				
Stress Testing - Pharmaceutical (Observation/Training) – Need 3 sessions before granting checkoff	X				
Stress Testing – Exercise (Observation/Training)	X				
VHVI Cardiology					
Myocardial Perfusion SPECT (Rest & Stress) Imaging	X				
Stress Testing - Pharmaceutical (Observation/Training) – Need 3 sessions before granting checkoff	X				
Stress Testing – Exercise (Observation/Training)	X				
VA Cardiology					
Myocardial Perfusion SPECT (Rest & Stress) Imaging	X				
Stress Testing - Pharmaceutical (Observation/Training) – Need 3 sessions before granting checkoff	X				
Stress Testing – Exercise (Observation/Training)	X				
General Cardiology Study					
Gated Blood Pool Study (RVG/RNV/MUGA)		X			
Tagged Red Blood Cell – In Vitro (Ultratag Kit)		X			
Tagged Red Blood Cell – In Vivo (VA)		X			

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
NM General Procedures					
Skeletal: Whole Body Bone Scan #1	X				
Skeletal: Whole Body Bone Scan #2	X				
Skeletal: Planar/Static #1	X				
Skeletal: Planar/Static #2	X				
Skeletal: 3-Phase (Flow and Blood Pool Only)		X			
Respiratory: Perfusion	X				
Respiratory: Quantification Processing	X				
Gastrointestinal: Gastric Emptying	X				
Gastrointestinal: Hepatobiliary (HIDA)	X				
Gastrointestinal: CCK Administration (Setup and Start) – Co-Assist	X				
Tumor/Antibody: Lymphoscintigraphy (Injection Only)	X				
NM Therapy Procedures					
Can be done on a NM or Radiopharmacy Rotation – Set up Lutathera and Pluvicto with Therapy Technologist					
Neuroendocrine Tumor Therapy – Lutathera – Co-Assist	X				
Prostate Cancer Therapy – Pluvicto – Co-Assist	X				
Therapeutic Procedure: Thyroid Ablation (High Dose) - Observation- <i>Competency is granted by the CC after completion of Thyroid Therapy Report</i>	X				
Therapy Patient Release: Radiation Safety and Homegoing Instructions (Observation)	X				
Bioassay Following administration of an Iodine Radiopharmaceutical -- Must appropriately document	X				
PET Quality Control					
PET Daily QA (Blank Scan)	X				
CT: Daily QA - Water Phantom	X				
Singles (Weekly)	X				
SUV (Quantitation) Phantom (Weekly) - Co-Assist		X			
PET Procedures					
Oncology #1	X				
Oncology #2		X			
Dotatate	X				
Infection		X			
PSMA		X			
Cerianna		X			
Cardiac (Rest & Stress) – Observation/Training	X				
Brain – Observation/Training	X				
Radiation Safety					
GM Survey Meter: Perform Daily Area Survey	X				
Well Counter: Perform Weekly Wipe Test in NM/PET	X				
Use of Lead Syringe Shield for Injection	X				

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Radiopharmacy					
Quality Control					
Kit QC: Cardiolite	X				
Kit QC: Myoview	X				
Kit QC: MDP	X				
Kit QC: Mebrofenin	X				
Kit QC: DTPA	X				
Kit QC: MAA	X				
Kit QC: Sulfur Colloid	X				
Kit QC: Mag-3	X				
Automated Well Counter: Daily Constancy, Energy, Chi-Square	X				
Single Well Counter: Daily Constancy Test	X				
Single Well Counter: Weekly Auto Cal (Gain & Energy)	X				
RAM Packages					
RAM Packages: Receiving	X				
RAM Packages: Shipping <i>Note: This is done weekly when shipping the generator</i>	X				
Radiation Surveys					
GM Survey Meter: Perform Daily Area Survey in Radiopharmacy	X				
Automated Well Counter: Perform Weekly Wipe Test in Radiopharmacy	X				
Single Well Counter: Package Check-in Wipes	X				
Patient Studies					
Prepare Gastric Emptying Meal	X				
Clean Gastric Emptying Area (to include washing pans, bowls, utensils)	X				
GFR (Co-Assist)		X			
Plasma Volume (Co-Assist)		X			

Phase III					
Required: 58 Mandatory and 8 Electives					
Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Radiation Safety					
Therapy Room Decontamination (Co-Assist) – <i>This must be scheduled through Radiation Safety</i>	X				
Bioassay Following Thyroid Therapy Administration - <i>Must properly fill out all documents/books required at VUAH</i>	X				
NM Quality Control - All QC for this rotation will be done with the designated staff or the Clinical Coordinator					
Planar Gamma Camera: Resolution/Linearity (Bars)	X				
SPECT Gamma Camera: Center of Rotation	X				
SPECT Gamma Camera: Image Quality Phantom (Jaszczak Phantom)	X				
Dose Calibrator: Linearity – To be done with Medical Physics Team	X				
Dose Calibrator: Accuracy – To be done with Medical Physics Team	X				
Uptake Probe: Chi Square	X				
NM Cardiology Procedures					
Cardiology Imaging and Stress Lab Components					
VUH Cardiology – Student is expected to spend time in NM Generals and with Stress Nurses to see entire Cardiac Procedure					
Myocardial Perfusion SPECT (Rest & Stress) Imaging	X				
Stress Testing - Pharmaceutical	X				
Stress Testing – Exercise	X				
VHVI Cardiology					
Myocardial Perfusion SPECT (Rest & Stress) Imaging	X				
Stress Testing - Pharmaceutical	X				
Stress Testing – Exercise	X				
VA Cardiology					
Myocardial Perfusion SPECT (Rest & Stress) Imaging	X				
Stress Testing - Pharmaceutical	X				
Stress Testing – Exercise	X				
General Cardiology Study					
Gated Blood Pool Study (RVG/RNV/MUGA)	X				
Tagged Red Blood Cell – In Vitro (Ultratag Kit)	X				
Tagged Red Blood Cell – In Vivo (VA)	X				
NM General Procedures					
Skeletal					
3-Phase Bone Scan (Flow and Blood Pool Only)	X				
Bone SPECT		X			

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Endocrine/Exocrine					
Thyroid Uptake (full 2-day study)	X				
Thyroid Scan	X				
Parathyroid Scan	X				
Parathyroid SPECT		X			
Gastrointestinal - <i>At least one elective must be from the GI Section</i>					
Hepatobiliary (HIDA)	X				
CCK Administration and Imaging (for HIDA)	X				
Morphine Imaging (for HIDA)	X				
Tag Red Blood Cell Kit	X				
GI Bleed		X			
Gastroesophageal Reflux		X			
Meckel's Diverticulum		X			
Liver/Spleen		X			
Damaged RBC Spleen		X			
Hemangioma		X			
Abscess and Infection					
Gallium		X			
WBC Imaging		X			
Cardiac Amyloid					
Pyrophosphate (PYP)	X				
Genitourinary					
Renal Function (Dynamic Perfusion) with Lasix	X				
Renal Cortical Imaging (DMSA)	X				
Renal SPECT		X			
Cystogram		X			
Central Nervous System					
Brain SPECT - DaTScan	X				
Brain SPECT – Interictal/Ictal		X			
Flow and Planar Imaging (Brain Death)		X			
Cisternogram or CSF Leak		X			
Shunt Patency		X			
Tumor and Antibody					
I-123 Nal Dosing (Co-Assist)	X				
I-123 MIBG Dosing (Co-Assist)	X				
Tumor Whole Body Imaging (<i>I-131 Post Therapy, I-123 Whole Body, I-123 MIBG</i>)	X				
Tumor SPECT		X			
Lymphoscintigraphy (with Imaging)		X			
Lymphangiogram (edema studies)		X			
MAA Mapping - Planar and Liver SPECT		X			
Lung					
Ventilation Lung Scan – <i>Due to limited availability, this may be simulated with the Clinical Coordinator.</i>	X				

Procedure	Mandatory	Elective	Patient/Performed (P) or Simulated (S)	Date Completed	Verified By:
Therapeutic Procedures – Students may not administer therapeutic doses					
Thyroid Therapy: Ablation (> 33 mCi) - Co-Assist	X				
Thyroid Therapy: Hyperparathyroidism or Ablation (<33 mCi) - Co-Assist		X			
Palliative Bone Therapy – Xofigo - Co-Assist		X			
Neuroendocrine Tumor Therapy – Lutathera - Co-Assist	X				
Prostate Cancer Therapy – Pluvicto Co- Assist	X				
PET Quality Control					
SUV (Quantitation) Phantom - Co-Assist	X				
Normalization		X			
Quantitation Calibration		X			
ACR Image Quality Phantom		X			
PET Procedures					
Oncology	X				
Infection	X				
PSMA	X				
Brain	X				
Cardiac (Rest and Stress)	X				
Breast - Cerianna		X			
Cardiac Viability		X			
Cardiac Sarcoidosis		X			
Radiopharmacy					
Clean Room					
Clean Room Cleaning & Disinfection	X				
Elute Generator / Mo-99 Check	X				
Draw Unit Doses	X				
Kit Prep: Cardiolite	X				
Kit Prep: Myoview	X				
Kit Prep: MDP	X				
Kit Prep: Mebrofenin	X				
Kit Prep: DTPA	X				
Kit Prep: MAA	X				
Kit Prep: Mag-3	X				
Kit Prep: Sulfur Colloid	X				
Patient Care					
GFR (Co-Assist)	X				
Plasma Volume		X			
Urea Breath Test		X			
WBC Study		X			

Appendix B

Clinical Evaluation

NMT Student Clinical Evaluation Criteria: Professional Objectives

Objective	1 - Unacceptable	2 - Weak	3 - Average	4 – Very Good	5 - Mastery
Availability & Punctuality	Consistently late; Never calls; Leaves work area; Does not attend to patient.	Consistently late; Sometimes calls; Sometimes wanders from assigned area	On time to site; Notifies preceptor of whereabouts afterward	On time to site; Calls when late; Notifies preceptor as to whereabouts ahead of time	Ready to work at start time; Always notifies as to whereabouts
Interpersonal Communication Skills	No communication with staff or patients; Initiates minimal conversation with patients/staff; uncomfortable explaining portions of the procedure; Indifferent towards others.	Minimal communication with staff or patients; Initiates conversation with patient/staff but the technologist leads most of the conversation; Quiet or reserved.	Good communication with staff and patients; Initiates conversation with patient/staff with guidance from technologist; Pleasant and courteous.	Great communication with staff and patients; Initiates conversation with patients/staff with minimal guidance from technologist; Pleasant and respectful.	Outstanding communication with staff and patients; Initiates conversation with patient/staff with no guidance; Acts as a healthcare professional in all situations.
Dependability	Is not reliable; Puts forth minimum effort.	Is not reliable; Puts forth moderate effort	Often reliable; Must be frequently reminded by preceptor	Usually reliable; Must sometimes be reminded by preceptor	Always reliable; Does not have to be reminded
Initiative	Requires complete guidance; does not seek additional responsibilities; No motivation	Moderate to extensive guidance; Often must be directed; Minimal motivation	Moderate guidance; Somewhat engages with preceptor; moderately motivated	Minimal guidance; Always productive; Engages with preceptor with productive questions; highly motivated	Requires no guidance; always productive; engages all staff by asking questions; Highly motivated
Critical Thinking	Cannot make decisions when faced with problems or responsibilities.	Requires assistance when adapting procedures.	Usually handles challenging situations well; minimal assistance is needed.	Makes decisions well in challenging situations; minimal or no assistance is needed.	Completely independent; Organized and educated thought process with clinical accuracy
Attitude & Reaction to Constructive Criticism	Poor attitude; Difficult to work with or disrespectful; Blames others; Resents constructive criticism.	Passive; Does not respond to constructive criticism and usually does not adapt.	Good attitude; Accepts constructive criticism and adapts.	Excellent attitude; Accepts and learns from constructive criticism.	Outstanding attitude; seeks constructive criticism; demonstrates continued desire to learn.
Self Confidence	Lacks self-confidence; Complete doubt; Avoids work; is not self-reliant.	Needs frequent reassurance and encouragement; Extensive doubt; is not self-reliant.	Moderate doubt/lack of confidence; Somewhat self-reliant	Minimal doubt/lack of confidence; Comfortable with different situations.	Minimal to no doubt; Great confidence; Self-reliant
Patient Care	Needs to be reminded when and how to care for patients; unable to interact as a healthcare professional	Provides adequate care; Uncomfortable interacting as a healthcare professional.	Provides good care; Steps in to help with difficult patients with technologist guidance.	Provides great care; Treats patients with dignity and respect; Little guidance from technologist	Outstanding care; Cares for patient without technologist guidance
Applied Math Skills	No understanding of basic math concepts; unable to perform calculations	Poor understanding of basic math concepts; Unable to perform calculations without assistance.	General understanding of math concepts; Can work through calculations with guidance.	Great understanding of clinic calculations; little assistance needed.	Excellent math skills; Can complete calculations independently
Ability to Follow Instruction & Retention	Lacks concentration; Easily distracted from task; No retention from day-to-day.	Needs to be more focused; Eventually catches on after repeated instruction.	Often focused on tasks; Occasionally needs additional instructions.	Focused on tasks; Quick to learn and retain with minimal additional instruction	Completely focused on tasks; Learn and retain without additional instruction
Use & Care of Equipment	Constantly needs assistance with equipment; mistreats equipment.	Needs frequent help or reminders with equipment.	Competent understanding of equipment; occasionally needs help.	Great understanding of equipment; quick learner with minimal assistance	Excellent understanding of equipment; zero assistance needed
Quantity of Work/Speed	Cannot complete procedures	Completes procedures extremely slowly even with help.	Completes most procedures on time with frequent help by preceptor.	Performs procedures in a timely manner with minimal assistance.	Consistently performs procedures in a timely fashion without assistance.
Quality of Work	Confused about procedures; Makes numerous mistakes; Often must repeat.	Makes mistakes; Unsure about next steps; Requires assistance.	Minimal mistakes, but requires assistance with next steps	Produces high quality work with minimal assistance	Excellent work and technique; Produces high quality studies/work.

Clinical Evaluation Rubric Assessment Levels and Instructions:

Preceptors should refer to this detailed description of clinical professional objectives when evaluating NMT students' clinical performance. Ratings should be recorded weekly utilizing either a paper card or electronic survey by the preceptor who primarily worked with the student. Comments are helpful and should be recorded on the evaluation.

Preceptors should assign ratings based on the students' current level of experience. For example, during the first set of rotations, a students' quality of work will naturally be less than it is during their final rotations. Preceptors should adapt their expectations based on what "average" performance and behavior is of students at each level.

Scale	Rating	Definitions
5 (Pass)	Mastery	<ul style="list-style-type: none">• Reserved for exemplary set of skills that yield a particularly sophisticated approach to handling the situation or task.• Extremely effective performance which is significantly above criteria for successful completion of the task.
4 (Pass)	Very Good	<ul style="list-style-type: none">• More than adequate for effective performance.• Generally exceeds criteria relative to quality and quantity of behavior required for successful completion of the task.
3 (Pass)	Average	<ul style="list-style-type: none">• Adequate for effective performance.• Meets criteria relative to quality and quantity of behavior required for successful completion of the task.
2 (Fail)	Weak	<ul style="list-style-type: none">• Insufficient for performance requirements.• Generally does not meet criteria relative to quality and quantity of behavior required for successful completion of the task.• Some deficiencies.
1 (Fail)	Unacceptable	<ul style="list-style-type: none">• Significantly below criteria required for successful job performance.• Few or no criteria met with many deficiencies.