



**Coleman College of Health Sciences
Practicum III - Nuclear Medicine Technology
NMTT 2167**

Semester with Course Reference Number (CRN)	NMTT 2167 (CRN – 15331) SUMMER 2014 (Coleman 8Week)
Instructor contact information (phone number and email address)	Rene Hyder – (713) 718-7355 or rene.hyder@hccs.edu Vikki Davis Littleton – (713) 718-7398 or vikki.davislittleton@hccs.edu Pam Alderman – (972-860-4281) Pamela.alderman@hccs.edu
Office Location and Hours	Office Hours: Hyder: Tuesday 8:00 – 8:30, Friday 9:00 – 12:00 Littleton: Monday 1:00 – 4:00 Alderman: Office: Brookhaven College Building X3022E Monday 7:00a – 8:00a, 4:30p – 5:30p; Wednesday 7:00a – 9:00am;
Course Location/Times	Assigned Clinical Rotation in the Dallas/ Ft.Worth Area Tuesday, Thursday 8:00 – 4:30 Friday 8:00a – 12:10p Clinical/ Web Enhanced
Course Semester Credit Hours (SCH) (lecture, lab) If applicable	Credit Hours 1.00 Lecture Hours Laboratory Hours External Hours 10.00
Total Course Contact Hours	160.00
Continuing Education Units (CEU): if applicable	N/A
Course Length (number of weeks)	8 weeks

Type of Instruction	Practicum
Course Description:	Practical, general workplace training supported by an individualized learning plan developed by the employer, college, and student.
Course Prerequisite(s)	PREREQUISITE(S): <ul style="list-style-type: none"> • NMTT 1267 FREQUENT REQUISITES <ul style="list-style-type: none"> • College Level Writing • Departmental approval • Admission to the Program • College Level Reading • College Level Mathematics
Academic Discipline/ CTE Program Learning Outcomes	<ol style="list-style-type: none"> 1. Prepare and administer radiopharmaceuticals. 2. Correlate nuclear medicine procedures with normal anatomy/physiology and abnormal pathology. 3. Utilize proper methods of patient care. 4. Demonstrate radiation safety techniques to minimize radiation exposure. 5. Perform quality control procedures. 6. Competently perform imaging and non-imaging nuclear medicine procedures.
Course Student Learning Outcomes (SLO): 4 to 7	<ol style="list-style-type: none"> 1. Apply the theory, concepts and skills involving specialized materials. 2. Apply the theory, concepts and skills involving tools and equipment. 3. Apply the theory, concepts and skills involving procedures. 4. Demonstrate legal and ethical behavior and safety practices.
Learning Objectives (Numbering system should be linked to SLO – e.g., 1.1, 1.2, 1.3, etc.)	<p>Apply the theory, concepts and skills involving specialized materials.</p> <ol style="list-style-type: none"> 1. Accurately administer radiopharmaceuticals by the correct route of administration. <p>Apply the theory, concepts and skills involving tools and equipment.</p> <ol style="list-style-type: none"> 1. Perform quality control procedures on cameras and dose calibrators. <p>Apply the theory, concepts and skills involving procedures.</p> <ol style="list-style-type: none"> 1. Perform routine and non-routine diagnostic procedures available at the assigned clinical site. <p>Demonstrate legal and ethical behavior and safety practices.</p> <ol style="list-style-type: none"> 1. Document studies completed and radiopharmaceutical used as required by state regulatory requirements and program guidelines.
SCANS and/or Core Curriculum Competencies: If applicable	<p>SCANS</p> <p>Apply the theory, concepts and skills involving specialized materials.</p> <p>Apply the theory, concepts and skills involving tools and equipment.</p> <p>Apply the theory, concepts and skills involving procedures.</p> <p>Demonstrate legal and ethical behavior and safety practices.</p>
Instructional Methods	<p>Web-enhanced (49% or less)</p> <p>Face to Face</p>
Student Assignments	<p>Apply the theory, concepts and skills involving specialized materials.</p> <p>Various assigned readings from textbooks, peer-rev</p>

Lab Exercises
Apply the theory, concepts and skills involving tools and equipment.
 Various assigned readings from textbooks, peer-rev
 Lab Exercises
Apply the theory, concepts and skills involving procedures.
 Various assigned readings from textbooks, peer-rev
 Lab Exercises
Demonstrate legal and ethical behavior and safety practices.
 Various assigned readings from textbooks, peer-rev
 Lab Exercises

**Student
 Assessment(s)**

Apply the theory, concepts and skills involving specialized materials.
 Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
 Various assigned readings from textbooks
Apply the theory, concepts and skills involving tools and equipment.
 Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
 Various assigned readings from textbooks
Apply the theory, concepts and skills involving procedures.
 Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
 Various assigned readings from textbooks
Demonstrate legal and ethical behavior and safety practices.
 Quizzes/Tests which may include: definitions, matching, multiple choice, true/false, short answer, brief essay
 Various assigned readings from textbooks

**Instructor's
 Requirements**

**OBJECTIVE FOR NUCLEAR MEDICINE
 PRACTICUM III - NMTT 2167**

I. RADIOPHARMACEUTICAL ADMINISTRATION

The student should be able to administer radiopharmaceuticals by the correct route of administration

- A. Injections: Standard IV, IV w/butterfly, w/catheter and existing line
- B. Oral dosing
- C. Intramuscular Injection of Vitamin B-12, where available
- D. Intrathecal & Intraperitoneal, observe the physician

II. QUALITY CONTROL OF INSTRUMENTATION

The student should be able to:

- A. Perform camera flood field uniformity and resolution .
- B. Perform constancy, accuracy and linearity test on dose calibrators
- C. Perform SPECT COR determination on SPECT gamma camera
- D. Demonstrate calibration of counting equipment such as: external probes, well counters, and radiation detection devices.
- E. Perform standard deviation and/or chi-square test on counting devices
- F. Perform SPECT phantom testing

III. ADVANCED IMAGE PROCESSING

The student should be able to:

- A. Discuss and perform setting of intensity, photopeak, information density, window settings and time constant
- B. Determine current computer applications in nuclear medicine as they relate specific studies
- C. Perform data processing on dynamic and SPECT studies

IV. NUCLEAR CARDIOLOGY

The student should be able to:

- A. Discuss indications for performing cardiac studies
- B. Discuss patient preparation and radiopharmaceuticals used for the various types of cardiac studies
- C. Demonstrate knowledge of electrocardiogram tracings
- D. Perform the various types of nuclear cardiology studies:
 - 1. Myocardial Perfusion studies with F-18-FDG & Rb-82-Cl
 - 2. First Pass Cardiac Angiography
 - 3. Myocardial Perfusion Planar, SPECT and Gated SPECT
 - 4. Multi-Gated Wall Motion Studies with Tc-99m-RBC
- E. Discuss the methods of labeling red blood cells

V. PET/CT

The student should be able to:

- A. Discuss indications for performing PET/CT studies for oncology, and Brain
- B. Discuss the patient preparation and radiopharmaceutical dosage used for the various types of tumors/cancers and brain studies
- C. Demonstrate proficiency in evaluating the various quality assurance parameters evaluated on a PET and CT scanner
- D. Perform whole body, total body and head and neck PET/CT studies

VI. INDEPENDENT PERFORMANCE OF ROUTINE IMAGING STUDIES

The student will be able to perform the following routine and non-routine diagnostic procedures to provide data for the detection or evaluation of various pathologic conditions using knowledge of patient preparation and procedures with at least 80% proficiency, using checklist evaluation forms. The number of studies to be evaluated is based on the routine studies for the assigned clinical facility and the studies identified on the student's accounting form as done independently or supervised more than four times. The list may include the following:

- A. Gastrointestinal studies
- B. Bone imaging
- C. Thyroid function and morphology studies
- D. Lung perfusion and ventilation studies
- E. Genitourinary function and morphology studies
- F. Tumor imaging
- G. Abscess/infection studies
- H. Cardiac studies
- I. Other imaging procedures considered to be routine at the assigned affiliate

***ALL PERFORMANCE OBJECTIVES TO MEET APPROVAL OF CLINICAL INSTRUCTOR AND/OR CLINICAL COORDINATOR**

The student will be given a copy of the studies done routinely and periodically at their assigned clinical facility. They will be expected to be evaluated as being competent in the majority of the routine studies, some of the infrequent studies and all routine quality assurance testing as listed on the totals sheet in their student handbook.

Program/Discipline Requirements: If applicable

It is the responsibility of the student to maintain records of their progress in a practicum on two types of forms. The first is an Accounting Form which is filled out by the student and signed by the clinical instructor or supervising technologist. This form is used to account for every procedure performed by a student during his/her rotation in a hospital. These forms must be turned in to the Clinical Coordinator weekly. The second form is a Physician's Participation form used during Reading Sessions. This form is to be signed and dated by the reading physician.

There must be at least three cases on the form to be considered complete, with on more than one normal. You should also not have more than two forms completed on any one day unless it is requested by the reading physician. Six reading sessions are required for this semester. All forms must be turned in by the day of mid-term and final evaluations. If accounting forms are not turned in weekly, 4 points per week for each week of missing forms will be deducted from the mid-term or final exam, depending on the time of the semester. Forms are due on Monday morning at the beginning of class.

Class Attendance

Any student who accumulates more than 12.5% or 20 hours in a clinic will be administratively withdrawn from the course without notification. All of the time missed will count off in grading. Make-up days are only allowed if the student has to appear in court, has a severe personal illness, accident, or death in the immediate family (parent, child, brother, sister, spouse, or grandparent). In the event any of these occur, the student must call and speak personally with the instructor @ 713-718-7398 or the clinical coordinator @ 713-718-7355 on the day the absent occurs. The student must also call the clinical supervisor at the clinic and report the absence. The student must provide documented evidence of the reason for missing the clinic class, i.e.: a doctor's statement in the case of personal illness, the student's name and date on the court's documentation, an accident report in the case of an accident or an obituary or funeral program in the case of death in the immediate family. This documentation must be provided prior to scheduling a date for the clinic make-up day. Once the paperwork has been accepted the instructor will contact the clinic and coordinate with the clinic supervisor an available time for make-up. If the student does not attend the scheduled make-up day no other accommodations will be made. If the student has missed over 12.5% of the class they will be administratively withdrawn from the class. If the student has missed less than 12.5% of the class the points will be deducted from the grade.

If a student is absent from clinic and does not call, *not e-mail*, the clinical supervisor and Rene or Vikki, 5 points will be deducted from the final exam grade for each occurrence. There will be no make-up examinations.

This course does include a final examination. The final examination must be taken on the day and time designated by the instructor unless there is a severe personal illness, accident, or death in the immediate family (parent, child, brother, sister, spouse, or grandparent). In the event any of these occur, the student must call and speak personally with the instructor @ 713-718-7398 or the clinical coordinator @ 713-718-7355 on the day of the examination. The student must provide documented evidence of the reason for missing the examination, i.e.: a doctor's statement in the case of personal illness, an accident report in the case of an accident or an obituary or funeral program in the case of death in the immediate family. This documentation must be provided prior to taking a make-up exam. The make-up final must be taken within seven (7) working days from the original test date or at the discretion of the instructor. In the case of severe injury or long term illness, the student will be given an "I" for incomplete until the final examination is taken, if they have not exceeded four absences. An "I" will automatically turn into an "F" if the student does not take the examination by the end of the following term (excluding Summer), see the student handbook.

If notification is not given, the student will be given a zero for the final examination grade and the final grade will be calculated as described below.

THERE WILL BE NO MAKE-UP EXAMINATIONS GIVEN FOR THIS COURSE.

If any student is absent from a quiz, they will be given a zero. If they are absent from the midterm exam, the percentage value of that test will be added to the final exam percentage. **IF A STUDENT IS ABSENT ON THE DAY AND TIME OF THE FINAL, THEY WILL BE GIVEN A "ZERO" FOR THE EXAM GRADE!**

This course does include a final examination.

HCC Grading Scale

A = 100- 90	4 points per semester hour
B = 89 - 80:	3 points per semester hour
C = 79 - 70:	2 points per semester hour
D = 69 - 60:	1 point per semester hour
59 and below = F	0 points per semester hour
IP (In Progress)	0 points per semester hour

W(Withdrawn)	0 points per semester hour
I (Incomplete)	0 points per semester hour
AUD (Audit)	0 points per semester hour

IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses. To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA.

For Health Science programs, see the Program/Discipline Requirements section for specific grading requirements.

Instructor Grading Criteria

Course Grading System

Final grades will be submitted in terms of A, B, C, or F.

90-100	A
80-89	B
75-79	C
Below 75	F

The final grade will be determined by average described:

Clinical evaluations by Clinical Supervisor	45%
---	-----

[Evaluations must include proficiency checklist on all positioning done independently or supervised more than five times. The student will be able to perform routine and non-routine diagnostic procedures to provide data for the detection or evaluation of various pathologic conditions using knowledge of patient preparation and procedures with at least 80% proficiency, using checklist evaluation forms. The student must successfully complete the minimum number of procedures for their assigned facility, as verified by proficiency check-off forms. Minimum being defined as 75% of the procedures on the facility's list and those performed independently or more than 4 times as supervised. The majority of the proficiency check-off must be for studies, not just quality assurance and injections. If the student does not complete 75% of this minimum number of studies with at least an 80% proficiency he or she will be given an "F" for the course. If a student only completes 75-80% of the proficiencies, the student will receive a "C" for the course. Above 80% the grade will be averaged as shown here.

Clinical evaluations and examinations by the Clinical Coordinator.....	25%
--	-----

Accounting Forms.....	5%
Quizzes.....	6%
Mid-Term/Final Exam.....	14%

Attendance..... 20%

The point deduction will be as follows:

- 1 day missed = - 5% from your total grade
- 2 days missed = -10% from your total grade
- 3 days missed = -15% from your total grade
- 4 days missed = -20% from your total grade

Reading Sessions----- 10%

Records Maintained By The Student In Each Practicum

It is the responsibility of the student to maintain records of their progress in a practicum on three types of forms. The first is an Accounting Form which is filled out by the student and signed by the clinical instructor or supervising technologist. This form is used to account for every procedure performed by a student during his/her rotation in a hospital. These forms must be turned in to the Clinical Coordinator weekly. If accounting forms are not turned in weekly, **4** points per week for each week of missing forms will be deducted from the mid-term or final exam, depending on the time of the semester. Forms are due each **Monday at 9am**. Accounting forms are only checked in on Monday.

The second form is a Physician's Participation form used during Reading Sessions. This form is to be signed and dated by the reading physician. There must be at least three cases on the form to be considered complete, with on more than two normal studies. You should also not have **more than two forms completed on any one day** unless it is requested by the reading physician. **Six reading sessions** are required for this semester. These forms must be turned in bi-weekly. All forms must be turned in by the day of mid-term and final evaluations.

The third form is a timesheet. Students must sign in and out each day. The timesheet must remain at the clinical facility. If a student is sent home because of no patients or other administrative reasons, the student should sign out for the correct time but the clinical supervisor must initial the time.

Cell Phone: Cell phone must **not ring** in the clinical site. A cell phone may be in the possession of the student; but the student cannot answer the phone

in the department or text. The student may obtain permission to leave the department, if the call is an emergency, to answer the call in an area where phones are permitted. A student may **NOT** text in the department. Violation of these policies may result in removal from a clinical site and possibly dismissal from the program.

Radiation Dosimetry Badges:

Each student is expected to return their radiation dosimetry badges at the beginning of each month. If a student loses a badge, the following penalties will be imposed: First loss = 5 points off the final exam and must complete paperwork with program RSO; Second loss = 10 points off final grade, must complete paperwork and must donate 4 hours of clerical work to the program office

Instructional Materials

The students are to refer to the clinical procedures at the assigned clinical facility and the program student handbook. The student will be tested over assignments and other relevant information given to them by the instructor of record and the clinical supervisor

Nuclear Medicine Technology Student Handbook
Nuclear Medicine and PET Technology and Techniques, 5th Edition Mosby, 2007, Christian, Bernier, Langan
Nuclear Medicine Procedure Manual, Klingensmith, Eshima, Goddard, Wick Publishing, Inc., 2009-2011

HCC Policy Statement:

Access Student Services Policies on their Web site: <http://hccs.edu/student-rights>

EGLS3 -- Evaluation for Greater Learning Student Survey System

At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time near the end of the term, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professors and department chairs for continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.

Distance Education and /or Continuing Education Policies

Access DE Policies on Web site: http://de.hccs.edu/Distance_Ed/DE_Home/faculty_resources/PDFs/DE_Syllabus.pdf

Access CE <http://hccs.edu/CE-student-guidelines>

**Policies on Web
site:**