Miami Dade College

## Course Description

**NMT1705C | Nuclear Medicine Pre-Clinical | 2.00 credits**

This nuclear medicine technology course prepares students to attend to patients, and evaluate data from patient records, make dose calculations, prepare radio-pharmaceuticals, perform in-vivo and in-vitro diagnostic studies, and perform quality control procedures. Prerequisite(s): BSC2085/L, BSC2086/L, CHM1033/L; Corequisite(s): NMT1002L, NMT1312C, NMT2613

**Course Competencies:**

**Competency 1:** The student will be able to observe Radiation safety procedures by:

1. Applying appropriate radiation safety theory for the use and storage of radionuclides
2. Observing the use of nuclear medicine instruments to detect and measure radiation
3. Witnessing the completion of quality control on gas-detecting instruments

**Competency 2:** The student will be able to demonstrate an understanding of nuclear instrumentation by:

1. Identifying equipment and instruments used in nuclear medicine

**Competency 3:** The student will be able to calculate various radio pharmacy equations, including generators, radiopharmaceutical kit preparation, and patient dose preparation by:

1. Utilizing scientific notation in performing algebraic operations
2. Performing radioactive dilution calculations
3. Defining the units of radioactivity, radiation exposure, radiation absorbed dose, and radiation dose equivalent
4. Performing calculations with logarithms and exponents using a calculator
5. Discussing numeric accuracy, significant digits, and rounding
6. Calculating quantities of radioactivity using the general form of the decay equation and decay factors
7. Using tables of decay factors to calculate remaining radioactivity
8. Calculating concentration volume and radioactivity for the patient doses
9. Computing the concentration of 99Mo in 99mTc
10. Computing effective half-life and biological half-life
11. Calculating intensity with half-value layers

**Competency 4:** The student will be able to discuss elements of patient and hospital safety by:

1. Listing the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) national patient safety goals
2. Discussing the JCAHO's role in enabling specific improvements in patient safety
3. Describing the physiological effects of electrical current
4. Describing strategies for the avoidance of electrical shock hazards
5. Discussing the conditions needed for fire to exist
6. Describing strategies for the avoidance of fires
7. Describing the different types of fire extinguishers
8. Describing the steps involved in using fire extinguishers
9. Discussing the general procedure for responding to a fire emergency

**Competency 5:** The student will be able to discuss elements of patient and hospital infection safety by:

1. Describing the process of cross-infection between patients and healthcare personnel

2. Describing infection control strategies that decrease host susceptibility, eliminate the source of pathogens, and interrupt routes of transmission
3. Discussing the processing of contaminated Nuclear Medicine Care equipment (e.g., cleaning, disinfection, sterilization)

**Competency 6:** The student will be able to conduct a patient interview and document patient history by:

1. Discussing the importance of patient interviews
2. Discussing the principles of conducting a patient interview
3. Discussing the techniques used in conducting a patient interview
4. Describing the format for the medical history
5. Discussing how the medical history is used for evaluating the patient's problem and in determining the preparation and application to Nuclear Medicine Exams related to the following organs or systems: cardiovascular, central nervous system, endocrine, genitourinary hepatobiliary, respiratory, skeletal, and soft tissue

**Learning Outcomes:**

- Communicate effectively using listening, speaking, reading, and writing skills
- Use quantitative analytical skills to evaluate and process numerical data
- Solve problems using critical and creative thinking and scientific reasoning
- Formulate strategies to locate, evaluate, and apply information
- Use computer and emerging technologies effectively