NMT-Nuclear Medicine Tech Courses

Courses

NMT 304. Physics for Technologists. 8 Hours.
Mechanics, static and dynamic fluids, wave motion, heat, sound, electricity, magnetism, and light; fundamental concepts of physics with mathematical formulation to enhance problem-solving skills.
Prerequisites: MA 105 [Min Grade: C] or MA 106 [Min Grade: C]

NMT 320. Human Pathophysiology. 3 Hours.
Introduction to basic disease concepts, theories of disease causation and pathophysiologic disorders most frequently encountered in clinical practice.
Prerequisites: BY 115 [Min Grade: C] and BY 116 [Min Grade: C]

NMT 400. Intro to Clinical Nuclear Medicine Technology. 2 Hours.
Overview of professional organizations and nuclear medicine; hospital organization; medical terminology; medical records; introduction to other aspects of nuclear medicine technology including ethics concerning the hospital setting; writing assignments on professionalism and hospital ethics. Writing and Ethics and Civic Responsibility are significant components of this course.

NMT 401. Introduction to MRI Clinic. 2 Hours.
This course is designed to provide students with the practical aspect of Magnetic Resonance Imaging. The role of MRI technologists, patient management, MRI screening and safety procedures, quality assurance procedures and FDA guidelines will be discussed.
Prerequisites: NMT 424 [Min Grade: C] or NMT 417 [Min Grade: C]

NMT 404. Patient Care. 2 Hours.
Basic patient care theory and techniques including standard precautions, infection control, vital signs, venipuncture patient transfer techniques, immobilization techniques, aseptic and nonaseptic techniques, oxygen administration, and medical emergencies which are required for nuclear medicine students prior to entering clinical training.

NMT 405. Cross-Sectional Anatomy. 3 Hours.
Integration of the knowledge of gross anatomy with the identification and location of structures in cross-sectional images. Computer Tomography (CT), Magnetic Resonance (MR), and Diagnostic Ultrasound (US) images in various anatomical planes will be used to locate and identify anatomical structures.

NMT 410. Medical Radiation Physics. 4 Hours.
Qualitative and quantitative concepts of radiation physics pertaining to medical applications in nuclear medicine, radiology, and radiation therapy; atomic and nuclear structure, radioactive decay, properties of radiation; x-ray production; artificial production; photon interactions in matter and shielding attenuation processes.
Prerequisites: MA 105 [Min Grade: C] or MA 106 [Min Grade: C] or MA 125 [Min Grade: C] or MA 225 [Min Grade: C]

NMT 421. Instrumentation I. 3 Hours.
Theoretical and practical concepts in radiation detection instrumentation; calibration; maintenance standards; practical uses of gaseous detectors, scintillation detectors, and multichannel analyzers; quality assurance testing for nuclear medicine instrumentation including GM detectors, ionization chambers and scintillation detectors; gamma spectrometry of all commonly used nuclear medicine radionuclides. Principles of in vivo and in vitro counting and imaging using probe counters, well counters, and scintillation gamma cameras; scintillation gamma camera quality control; types of collimators used in nuclear medicine, their use and function.

NMT 421L. Instrumentation I Laboratory. 1 Hour.
Introduction to basic radiation and nuclear counting instrumentation. Utilizing proper calibration of the Multi-Channel Analyzer (MCA) and Geiger Muller (G-M) Counter. Determine the proper operating voltage, detector efficiency, window width, and amplifier gain and energy resolution of the MCA. Proper counting statistics and duel isotope counting labs will emphasize the importance of proper use of nuclear counting instrumentation.

NMT 422. Instrumentation II. 3 Hours.
Applies computer fundamentals to the acquisition and processing of nuclear medicine patient data. Quantitative planar studies as well as SPECT/PET image reconstruction, filtering, and attenuation correction are presented. Quality control of SPECT and PET camera system.
Prerequisites: NMT 421 [Min Grade: C]

NMT 423. Computed Tomography. 3 Hours.
Provides theoretical principles of Computed Tomography (CT) using the historical development of CT and the physical principles underlying CT scanning, CT Instrumentation, data acquisition, data processing and image quality.

NMT 424. Physics/Instrumentation of Nuclear Magnetic Resonance. 3 Hours.
Fundamental physical principle of nuclear magnetic resonance, including structure of atom, concept of resonance, Larmor frequency, gyromagnetic ratio, T1 and T2 and methods of generating magnetic fields; theory of operation of NMR spectrometers and imagers, including function of basic components, effects of linear gradients, signal processing, slice definition and image reconstruction.

NMT 425. First Aid & Healthcare Provider CPR and AED. 1 Hour.
Knowledge and skills needed to perform basic first aid and CPR procedures for adult, child and infant victims according to the American Heart Association (AHA) Standards.

NMT 431. Nuclear Medicine Procedures I. 4 Hours.
Study of the utilization of nuclear medicine procedures and the nuclear medicine technologist’s responsibilities in completing a procedure involving the skeletal, respiratory, endocrine, gastrointestinal and genitourinary systems. Anatomy and relevant concepts in physiology are reviewed and applied to each procedure. Common pathologies demonstrated with each procedure are also discussed.
Prerequisites: BY 115 [Min Grade: C] and BY 116 [Min Grade: C]

NMT 432. Nuclear Medicine Procedures II. 4 Hours.
Instruction of various nuclear medicine procedures and the nuclear medicine technologist’s responsibilities for completing a procedure involving nuclear cardiology, oncology, central nervous and hematopoietic systems and applications of position emission tomography. Anatomy and relevant concepts in physiology are reviewed and applied to each procedure. Common pathologies demonstrated with each procedure and the basics of three and twelve lead ECGs.
Prerequisites: NMT 431 [Min Grade: C]
Discussed.
Technologist as patient educator. Therapeutic communication skills, technologist-hospital professional relationship and the role of the technologist as a patient educator. This course explores the nature of the patient-technologist relationships, NMT 451. Communication Skills. 1 Hour.

Management program.
Basic knowledge of appropriate rules, regulations and work practices governing the use of radioactive materials in the medical setting to include ethical dilemmas and ethical decision making models and their application to clinical practice; legal principles and their application to healthcare; issues concerning professional liability, informed consent, and malpractice.

NMT 460. Radiochemistry and Radiopharmacy. 2 Hours.
Introduction to fundamentals of radiopharmacy including radionuclide generator design and operation, labeling and quality control of Tc-99m labeled compounds, unit dose preparation and a review of federal regulations pertinent to radionuclides and radiopharmaceuticals; radiopharmaceutical design, IND process and the basic concepts of internal radiation dosimetry.

NMT 461. Radiopharmacy and Pharmacology Laboratory. 1 Hour.
Utilizing the fundamentals of radiopharmacy including radionuclide generator design and operation, labeling and quality control of Tc-99m labeled compounds, unit dose preparation, and a review of federal regulations pertinent to radionuclides and radiopharmaceuticals along with the radiopharmaceutical design and the IND process and basic concepts of internal radiation dosimetry.

NMT 491. Clinical Practice I. 5 Hours.
Directed clinical practice: in vivo procedures; instrumentation quality control; radiopharmacy; applied radiation safety procedures.

NMT 492. Clinical Practice II. 7 Hours.
Directed clinical practice: in vivo procedures; instrumentation quality control; radiopharmacy; applied radiation safety procedures.

NMT 493. Clinical Practice III. 4-10 Hours.
Directed clinical practice: in vivo procedures; instrumentation quality control; radiopharmacy; applied radiation safety procedures.

NMT 494. CT Clinical Practice. 12 Hours.
Clinical application of the nuclear medicine program concepts with opportunity to observe, work, and train to become certified in CT; performance evaluated through clinical experiences, final evaluation, and a self-assessment.

NMT 495. MRI Clinical Practice. 12 Hours.
Clinical application of the nuclear medicine program concepts with opportunity to observe, work, and train to become certified in MRI; performance evaluated through clinical experiences, final evaluation, and a self-assessment.

NMT 499. Correlative Imaging. 3 Hours.
Capstone course encompassing all aspects of the nuclear medicine technology program to investigate and analyze the multifaceted nature of disease diagnosis and treatment in the United States, current trends in healthcare costs and payment methods, and healthcare disparities associated with these imaging tests. This course consists of the three aspects of the University Quality Enhancement Plan including Ethics and Civic Responsibility, Writing and Quantitative Literacy.