

Nuclear Medicine Technology

Contact Persons: *Dr. Angela Macci Bires, M.P.M. ARRT*

*RT(N), CNMT, Director of Nuclear Medicine
Technology Program, Assistant Professor*

*Donna L. Mason, BS RT(N), CNMT,
Academic Clinical Coordinator of Nuclear Medicine
Technology Program*

Requirements for Nuclear Medicine Technology

Concentration Bachelor of Science Degree

Upon completion of the Nuclear Medicine program, students will be able to:

1. Work in nuclear medicine department in a hospital, out-patient facility or mobile (traveling) unit.
2. Easily train and work in a PET (Positron Emission Tomography), radiopharmacy or secure a sales position.
3. Supervise or teach nuclear medicine in a hospital, university program or clinical facility.
4. Take classes that would allow the student to be eligible to enter medical, dental or chiropractic school.
5. Enable students to advance to a masters degree



Students will be given a handbook which defines rules, regulations and standards for the student's continued progression in the major. In addition to completing the core curriculum requirements, outlined on pp. 14-15 of this catalog, the Nuclear Medicine Technology major must complete the following courses and must maintain a GPA of 2.5 in all science and other cognate courses and an overall GPA of 2.3 to enter the clinical practicum.

BIO 109, 121	General Biology and Lab	(3 and 1 crs)
BIO 127, 128	Anatomy and Physiology I & Lab	(3 and 1 crs)
BIO 129	Anatomy and Physiology II	(3 crs)
BIO 242	Cardiopulmonary Physiology	(3 crs)
CHE 110	Chemistry	(4 crs)
CHE 121	Chemistry Lab	(1 cr)
CLS 121	Introduction to Hospital Science	(2 crs)
CLS 234	Pathophysiology	(3 crs)
CLS 311A	Introduction to Pharmacology	(1 cr)
CLS 312	Emergency Life Support Technique	(3 crs)
CLS 320	Management Techniques for the Health Sciences	(2 crs)
CLS 330	Principles of Instruction	(2 crs)
NME 130	Radiation Safety and Licensure	(2 crs)
NME 213	Equipment and Statistics	(2 crs)
NME 216	Radiation Biology	(2 crs)
NME 220	Nuclear and Radiation Physics	(3 crs)
NME 320	Radiopharmacy	(2 crs)
NME 320 A	Radiopharmacy Lab	(1 cr)
NME 332	Lab Skills for Nuclear Medicine	(2 crs)
NME 346	NM Comp. Technology	(2 crs)
NME 340	Special Topics for Nuclear Medicine Technology	(3 crs)
NME 420	Registry Review for Nuclear Medicine Technology	(1 cr)
PHY 130	Physics for Allied Health	(3 crs)
Clinical Practicum including:		
NME 362 A	Instrumentation and Quality Control I	(2 crs)
NME 362 B	Instrumentation and Quality Control II	(1 cr)
NME 363	Clinical Radiopharmacy	(3 crs)
NME 365	In Vivo Studies I	(3 crs)
NME 367	Nuclear Cardiology I	(2 crs)
NME 368	Nuclear Cardiology II	(2 crs)
NME 464	In Vivo Studies II	(3 crs)
NME 465	In Vivo Studies III	(3 crs)
NME 466	In Vivo Studies IV	(3 crs)
NME 467	Clinical Computer Applications	(2 crs)
NME 468	Departmental Administration	(1 cr)
NME 469	In Vitro Studies	(3 crs)

Course Descriptions

NME 130 Radiation Safety and Licensure (2 crs)

Procedures for calculating dosages and maintaining safety precautions. Regulations and restrictions necessary for compliance for the use and handling of radionuclides. Use of dosimeters, personnel monitors, the ALARA concept, techniques to minimize absorbed doses and techniques to measure radiation contamination and techniques of decontamination.

NME 213 Equipment and Statistics (2 crs)

Understanding the theory and operation of circuitry for nuclear medicine instrumentation. Applications of statistics to imaging and counting procedures. Prerequisites: NME 220.

NME 216 Radiation Biology (2 crs)

The effect of radioisotopes on the tissue and organs; practical applications of radioisotope tracers for diagnostic purposes. Prerequisites: BIO 115, BIO 121.

NME 220 Nuclear Radiation Physics (3 crs)

This course will develop the student's understanding of the physics of nuclear medicine as it is applied daily by the technologist. The student will also develop an understanding of the presented concepts as they relate to instrumentation, quality control, imaging techniques and radiation doses.

NME 320 Radiopharmacy (2 crs)

Detailed course which deals with the production of radionuclides, the use of generators, formulation of radiopharm, performance of quality control procedures and operation of equipment. This includes biochemical and physiological properties of radiopharm, mechanism of localization and biorouting.

NME 320(A) Radiopharmacy Lab (1 cr)

Lab directed class which will encompass practical applications of a radiopharmacy lab. Prerequisite: NME 320.

NME 332 Laboratory Skills for Nuclear Medicine (2 crs)

Introduction to protocols, techniques and positioning used in the nuclear medicine laboratory; includes radiopharm, preparation, equipment calibration and quality control.

NUCLEAR MEDICINE TECHNOLOGY - Recommended Course Sequence

	Freshman	Sophomore	Junior	Senior				
FALL	BIO 128	3	PHY 130	3	CLS 234	3	NME 368	2
	ENG 105/110	3	CHE 110	4	NME 213	2	NME 464	3
	HIS 110	3	CHE 121	1	NME 320	2	NME 465	3
	BIO 127	1	RST 106/107	3	NME 346	2	NME 466	3
	FYS 101	1	PHI 105	3	CLS 312	3	NME 467	2
	MOL XXX	3	SSC	3	NME 130	2	NME 420	1
	CLS 121	2			CLS 311A	1	NME469	3
Semester total	16		17	CLS 330*	2			
SPRING	BIO 129	3	NME 220	3	CLS 320*	2	FAS 105	3
	HIS 120	3	BIO 242	3	NME 320A	1	LIT 250	3
	MAT 108	3	RST 200**	3	NME 340	3	SSC XXX	3
	MOL XXX	3	PHI 205	3	NME 332	2	RST 305 or PHI 305	3
	LIT 120	3	BIO 121	1	NME 365	3		
			BIO 109	3	NME 362A	2		
					NME 216	2		
Semester total	15		16	NME 362B	1			
SUMMER				NME				
	Semester total			NME 363	3			
				NME 367	2			
			NME 468	1				
					6			
	Semester total							
	Total Credits	31	33		39		29	132

* Offered Spring or Fall Semester. Check master schedule.

** RST 305 will not fulfill upper level theology

*** MOL (101 and 102, 102 and 111) or SPA 106 or SPA 111 or FRE 111.



NME 340 Special Topics for Nuclear Medicine Technology (3 crs)

Introduction to nuclear medicine procedures and techniques involved in the general care and treatment of patients. Includes medical ethics, mathematics, a review of instrumentation and specific case studies.

NME 346 Nuclear Medicine Computer Technology (2 crs)

Provide the student with mock studies that will enable the student to develop processing skills prior to clinical work.

NME 362A Instrumentation and Quality Control I (2 crs) (didactic)

Understanding, trouble shooting, appropriate quality control and operations with nuclear medicine equipment. Equipment to include: Gamma camera(s), uptake probe, radiation detectors, well counts and other devices. Prerequisite: Completion of pre-practicum courses.

NME 362B Instrumentation and Quality Control II (1 cr) (clinical practicum)

This course exposes the student to a clinical environment where the applied theory of instrumentation and quality control will be utilized.

NME 363 Clinical Radiopharmacy (2 crs)

Preparation and measurement of radiopharmaceuticals, quality control, logging and receiving of materials, and the coordination of all aspects of a radiopharmacy. Prerequisite: Completion of pre-practicum courses.

NME 365 In Vivo Studies I (3 crs)

Understanding the basic functions and applications of imaging equipment in nuclear medicine. Performing IV injection and associating radiopharmaceutical localization. Prerequisite: Completion of pre-practicum courses.

NME 367 Nuclear Cardiology I (2 crs)

Diagnostic cardiac evaluation utilizing both camera and computer, e.g., Thallium-201, 1st pass, gated wall motion, shunt and other procedures as software becomes available. Prerequisite: Completion of pre-practicum.

NME 368 Advanced Nuclear Cardiology II (2 crs)

NME 420 Registry Review for N.M.T. (1 cr)

Comprehensive review of all aspects of nuclear medicine technology in preparation for certification exams.

NME 464 In Vivo Studies II (3 crs)

An extension of In Vivo I, reviewing all departmental procedures and performing basic applications. To include static and dynamic imaging. Prerequisite: Completion of pre-practicum courses.

NME 465 In Vivo Studies III (3 crs)

An extension of In Vivo I and II. Concentration on whole body techniques and computer enhancement, e.g., Gallium 67, Skeletal and I 131 whole body imaging. Prerequisite: Completion of pre-practicum courses.

NME 466 In Vivo Studies IV (3 crs)

An extension of In Vivo I, II and III. Further development in imaging procedures with cyclotron products, Phase III drugs and new procedures. Therapy will also be included, e.g., P 32 and I 131. Prerequisite: Completion of pre-practicum courses.

NME 467 Clinical Computer Applications (2 crs)

Programming of software and its correlation to hardware, for computer system use with nuclear medicine procedures. Prerequisite: Completion of pre-practicum courses.

NME 468 Department Administration (1 cr)

Experience in understanding the role that the technologist has in the overall operation of the clinical department. Radiation safety manual to be developed, written and submitted. Prerequisite: Completion of pre-practicum courses.

NME 469 In Vitro Studies (3 crs)

Experience and understanding of In Vitro studies including theory, practice, instrumentation and evaluation. Prerequisite: Completion of pre-practicum courses.

NME 470 Advanced Clinical Experience (1-3 crs)

Elective course in a specialized clinical area, directed by a technologist, therapist or physician, and resulting in a summary paper. (Cooperative Education credits are an acceptable substitute.) Prerequisite: Completion of clinical practicum.