RADIATION TECHNOLOGY/NUCLEAR MEDICINE (RTNM)

Courses

RTNM 351. Principles of Nuclear Medicine I. 4 Units.
Covers the historical developments that led to the field of nuclear medicine. Describes the structure of the atom and the factors that make an atom radioactive. Reviews the laws of physics; periodic chart of the elements; and the trilinear chart of the nuclides, radioactive decay, radionuclide production, and quality control of radiopharmaceuticals.

RTNM 351L. Principles of Nuclear Medicine I Laboratory. 1 Unit.
A laboratory course that emphasizes the material presented in RTNM 351. Structure of the atom, radioactive decay, radionuclide production.

RTNM 352. Principles of Nuclear Medicine II. 4 Units.
Includes the model of the atom, as well as electromagnetic and particle radiation. Lists the types of radioactive decay, along with the radiation interactions with matter. Defines terms that are specific to radioactive decay and performs calculations used in nuclear medicine for pre- and postcalibration of radionuclides.

RTNM 352L. Principles of Nuclear Medicine II Laboratory. 1 Unit.
A laboratory course that emphasizes the material presented in RTNM 352. Electromagnetic and particle radiations, radioactive decay interactions, and calculations.

RTNM 353. Nuclear Medicine Procedures I. 2 Units.
Covers the nuclear medicine procedures used to image, diagnose, and treat disease with radiopharmaceuticals. Teaches students which radionuclides are used to image the various organs in the body—such as the endocrine system, cardiovascular system, respiratory system, and skeletal system. As part of utilizing radiation in patient care, teaches the technologist how to prepare the patient for the scan, the route of administration of the radiopharmaceutical, and the method of localization for organ imaging. Provides a basic understanding of radiopharmacy and quality control of radiopharmaceuticals.

RTNM 353L. Nuclear Medicine Procedures Laboratory. 1 Unit.
A laboratory course that emphasizes the material presented in RTNM 353.

RTNM 354. Nuclear Medicine Procedures II. 2 Units.
Covers the nuclear medicine procedures used to image, diagnose, and treat disease with radiopharmaceuticals. Teaches students which radionuclides are used to image the various organs in the body—such as the endocrine system, cardiovascular system, respiratory system, and skeletal system. As part of utilizing radiation in patient care, teaches the technologist how to prepare the patient for the scan, the route of administration of the radiopharmaceutical, and the method of localization for organ imaging. Provides a basic understanding of radiopharmacy and quality control of radiopharmaceuticals.

RTNM 354L. Nuclear Medicine Procedures II Laboratory. 1 Unit.
A laboratory course that emphasizes the material presented in RTNM 354.

RTNM 355. PET/CT. 2 Units.
Covers the radionuclides, radiopharmaceuticals, and contrast agents used for PET/CT imaging. Topics include: localization, indications, method of administration, standard dose range, quality control, contraindications, patient history, patient preparation, equipment, technical considerations.

RTNM 356. Positron Emission Tomography. 2 Units.
Student learns the fundamental physics, instrumentation, and radionuclide requirements of positron emission tomography (PET).

RTNM 357. Instrumentation I. 4 Units.
Covers the auger/gamma scintillation camera, collimators and crystals used in nuclear medicine. Topics include: photomultiplier tubes, pulse height analyzer, resolution, count rate, field uniformity, Geiger-Mueller counter, ionization chambers, sodium iodide well counter, dose calibrator, image acquisition, matrix size, and filters.

RTNM 357L. Instrumentation I Laboratory. 1 Unit.
A laboratory course that emphasizes material presented in RTNM 357. Gamma camera components, dose calibrator, ionization chambers, and sodium iodide well counter.

RTNM 358. Instrumentation II. 4 Units.
Covers quality control of gamma cameras and dose calibrators. Topics include: data acquisition of single-photon emission computed tomography, image filtering, field uniformity assessment and correlation, X and Y gain calibration, and positron emission tomography.

RTNM 358L. Instrumentation II Laboratory. 1 Unit.
A laboratory course that emphasizes material presented in RTNM 358. Gamma camera quality control protocols, SPECT and CT images, and data acquisition.

RTNM 361. Radiopharmacy I. 3 Units.
Covers nuclear stability and decay, radionuclide production, radioactive decay, radionuclide generator systems, radionuclides, quality control, and legal requirements.

RTNM 362. Radiopharmacy II. 3 Units.
Covers the standard dose ranges, radioactive isotopes, decay tables, distribution, preparing kits, adverse reactions, and new radiopharmaceuticals.

RTNM 363. Nuclear Cardiology. 3 Units.
Covers the principles and clinical application of cardiac imaging. Topics include: patient preparation, radiopharmaceutical, localization of radiopharmaceutical, standard dose range, pharmaceutical stress protocol, exercise stress protocol, clinical applications of myocardial perfusion imaging, and image interpretation.

RTNM 364. Nuclear Medicine Statistics. 3 Units.
Covers the percent error or percent difference, counting rate determination, effects of background on counts, counting rates, standard deviation, and propagation of error.

RTNM 366. Medical Informatics. 1 Unit.
Covers information technology systems used in the health care setting. Reviews the importance of accurate documentation. Discusses the relevance of checking patient history and laboratory results using electronic medical/health record systems.

RTNM 421. Comprehensive Review of Nuclear Medicine I. 3 Units.
Reviews physics, instrumentation, procedures, imaging, and radiopharmaceutical theories in preparation for national registries.

RTNM 422. Comprehensive Review of Nuclear Medicine II. 3 Units.
Surveys selected topics in nuclear medicine. Procedure summaries, projects, literature reviews.
RTNM 430. Clinical Affiliation Introduction. 1 Unit.
Introduces a series of six consecutive courses—RTNM 431-436—completed during the program. Provides student with clinical experience one day a week during Winter Quarter working with staff technologists and physicians performing the functions expected of a nuclear medicine technologist and the nuclear medicine procedures involved in patient care.

RTNM 431. Clinical Affiliation I. 2 Units.
Second in a series of seven consecutive courses (RTNM 430-436) completed during the program. Provides students with clinical experience working with staff technologists and physicians, performing the functions expected of a nuclear medicine technologist and the nuclear medicine procedures involved in patient care. Clinical assignments two days per week, eight hours per day. Specific days vary each quarter.

RTNM 432. Clinical Affiliation II. 3 Units.
Student works eight hours per day, four days per week—specific days vary with the quarter.

RTNM 433. Clinical Affiliation III. 3 Units.
Student works eight hours per day, four days per week—specific days varying with the quarter.

RTNM 434. Clinical Affiliation IV. 3 Units.
Student works eight hours per day, four days per week—specific days varying with the quarter.

RTNM 435. Clinical Affiliation V. 4 Units.
Student works eight hours per day, four days per week—specific days varying with the quarter.

RTNM 436. Clinical Affiliation VI. 4 Units.
Student works eight hours per day, four days per week—specific days varying with the quarter.