DIAGNOSTIC MEDICAL IMAGING NUCLEAR MEDICINE

DMIN 1100
**Basics of Nuclear Medicine**
3 Credit Hours
History and evolution of Nuclear Medicine as an imaging modality. Radionuclide identification, radionuclide energies and half-lives, and commonly used radiopharmaceuticals for Diagnostic Nuclear Medicine procedures. Introduction to Diagnostic Nuclear Medicine procedures. Patient handling techniques and nursing and laboratory procedures relating to Nuclear Medicine. Introduction to professional medical ethics, legal issues and patient rights. Quality assurance procedures for the radiation protection of Nuclear Medicine personnel. Prerequisite: Admission to the Nuclear Medicine Technology program or consent of instructor. (3 lecture hours)

DMIN 1101
**Physics & Instrumentation Nuclear Medicine**
6 Credit Hours
Principles of atomic structure, nomenclature and radiation. Introduction to radionuclides, physics of radiation (particulate and non-particulate), natural and artificial radiation, calculations of radioactive decay, exponential equations, calculation of radiation dosimetry, half-life equations, radionuclide production, radiopharmaceutical dose determinations, radiation interactions with matter, radiation protection and safety methodology, radiation shielding formulation and counting statistics. Basic aspects in imaging and non-imaging radiation detection instrumentation including: scintillation detectors, planar, SPECT (single photon emission computerized tomography), PET (positron emission tomography), multichannel analyzers, quality assurance testing for Nuclear Medicine instrumentation including G-M detectors, ionization chambers and scintillation detectors. Prerequisite: Admission to the Nuclear Medicine Technology program or consent of instructor. (4 lecture hours, 4 lab hours)

DMIN 1102
**Nuclear Medicine Radiopharmacy**
6 Credit Hours
Nuclear Medicine radiopharmacy including: production of radionuclides, radiopharmaceutical chemistry, radiopharmaceuticals and methods of radiolabeling, characteristics of specific radiopharmaceuticals, biorouting and physiological mechanisms of tracer uptake, pharmacokinetics, radiation units, specific activity, concentration determination, dose calculations, methods of dispensing, quality assurance of radiopharmaceuticals, and universal precautions. Specialized clinical radiopharmaceuticals include: monoclonal antibodies, peptides, receptors, Positron Emission Tomography, therapy, and current research. Radiopharmacy design, management and record keeping, radiation safety and Nuclear Regulatory Commission (NRC) and Illinois Emergency Management Agency (IEMA) radiopharmacy rules and regulations. Prerequisite: Admission to Nuclear Medicine Technology program and Diagnostic Medical Imaging Nuclear Medicine 1100, Diagnostic Medical Imaging Nuclear Medicine 1101, and Diagnostic Medical Imaging Nuclear Medicine 1111 or equivalent or consent of instructor. (4 lecture hours, 4 lab hours)

DMIN 1103
**Radiation Biology & Safety Bridge**
2 Credit Hours
Topics in radiation biology will include qualitative and quantitative effects on the human body following exposure to various types of ionizing radiation, and the potential harmful effects and the benefits of the medical uses of radiation. Procedures for personnel and environmental monitoring, emergency management, decontamination, and proper methods of receiving, storing and disposing of radioactive materials. Basic concepts of radiation safety for personnel, patients and the environment. Prerequisite: Admission to Nuclear Medicine Technology program or consent of instructor. (2 lecture hours, 1 lab hour)

DMIN 1111
**Clinical Nuclear Medicine I**
3 Credit Hours
First in a three-course sequence of supervised clinical instruction in Nuclear Medicine Technology. Comprehensive study of imaging and non-imaging techniques, instrumentation quality control, patient care, radiopharmacy, computer analysis and quality assurance. Students are expected to demonstrate competency according to defined objectives at prospective clinical affiliates. Prerequisite: Admission to the Nuclear Medicine Technology program or consent of instructor.

DMIN 1840
**Independent Study**
1 to 4 Credit Hours
Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Admission to the Nuclear Medicine Technology program and consent of instructor is required. (1 to 4 lecture hours)

DMIN 2200
**Nuclear Medicine Procedures II**
4 Credit Hours
Applied anatomy and physiology of cardiovascular, skeletal, genitourinary, gastrointestinal, respiratory and endocrine systems. Diagnostic imaging techniques, radiopharmaceutical agents, indications and limitations of nuclear medicine procedures, normal and abnormal pathology, dosimetry. Computer acquisition and processing techniques. Case study critiques, journal review and case study presentations. Prerequisite: Admission to the Nuclear Medicine Technology program and Diagnostic Medical Imaging Nuclear Medicine 1100 and Diagnostic Medical Imaging Nuclear Medicine 1103 or consent of instructor. Admission to program is required. (3 lecture hours, 2 lab hours)

DMIN 2202
**Nuclear Medicine Procedures III**
4 Credit Hours
Applied anatomy and physiology of the central nervous, immune, lymphatic, hematopoietic, exocrine, gastrointestinal systems. Non-imaging tests including Schilling's, Helicobacter pylori and blood volume determination. Advanced topics in nuclear cardiology, tumor imaging, neurology, radiopharmaceutical imaging, radioimmunotherapy and miscellaneous procedures. Diagnostic imaging techniques, radiopharmaceutical agents, indications and limitations of nuclear medicine procedures, normal and abnormal pathology, dosimetry. Computer acquisition and processing techniques. Case study critiques, journal review and case study presentations. Prerequisite: Admission to the Nuclear Medicine Technology program and Diagnostic Medical Imaging Nuclear
Students will be provided with a review of anatomy and pathology in Computed Tomography (CT) imaging planes. The characteristic appearance of each anatomical structure as it appears on CT images with pathologic and trauma processes is also covered. Prerequisite: Admission to the Computed Tomography Program is required or consent of instructor. (3 lecture hours)

DMIN 2501
CT Principles & Patient Care
3 Credit Hours
Students are introduced to principles, procedures, and patient care specific to Computed Tomography (CT). Pediatric patient care and routine and emergency procedures are described. CT images are reviewed for quality, positioning, and illustration of anatomy. Prerequisite: Admission to the Computed Tomography Program is required or consent of instructor. (3 lecture hours)

DMIN 2502
Physics and Instrumentation for Ct
3 Credit Hours
Students are provided with the physics and instrumentation principles specific to Computed Tomography (CT). CT image processing and display methods as well as patient factors affecting image quality are identified. Prerequisite: Diagnostic Medical Imaging Nuclear Medicine 2501 with a grade of C or better, or equivalent. Admission to the Computed Tomography Program is required or consent of instructor. (2 lecture hours, 2 lab hours)

DMIN 2503
Radiation SafetyQuality Mgmt. for CT
3 Credit Hours
Students will be introduced to necessary principles of radiation safety and quality management specific to Computed Tomography (CT). Radiation health and safety requirements of federal and state regulatory agencies, accreditation agencies, and health care organizations are described. Prerequisite: Diagnostic Medical Imaging Nuclear Medicine 2501 with a grade of C or better, or equivalent. Admission to the Computed Tomography Program is required or consent of instructor. (2 lecture hours, 2 lab hours)

DMIN 2511
Clinical Applications of CT I
3 Credit Hours
Students attend clinical rotations to connect theory with practice and performance of Computed Tomography (CT) procedures emphasizing proper patient care. Prerequisite: Admission to the Computed Tomography Program is required or consent of instructor. (6 lab hours)

DMIN 2512
Clinical Applications of CT II
3 Credit Hours
Students complete clinical applications connecting theory with practice through the performance of advanced CT procedures. Prerequisite: Diagnostic Medical Imaging Nuclear Medicine 2511 with a grade of C or better, or equivalent. (6 lab hours)

DMIN 2860
Internship (Career & Technical Ed)
1 to 4 Credit Hours
Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

DMIN 2865  
*Internship Advanced (Career & Tech Ed)*

1 to 4 Credit Hours

Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.