MEDICAL PHYSICS (MP)

MP 4750. Diagnostic Imaging Physics. 3 Credit Hours.
Physics and image formation methods for conventional X-ray CT, nuclear medicine, and magnetic resonance and ultrasound imaging.

MP 4XXX. Medical Physics Elective. 1-21 Credit Hours.

MP 6011. Seminar in Medical Physics I. 1 Credit Hour.
Weekly 1-hour seminar on topics related to medical physics.

MP 6012. Seminar in Medical Physics II. 1 Credit Hour.
Weekly 1-hour seminar on topics related to medical physics.

MP 6101. Nuclear Medicine Physics. 3 Credit Hours.
Radioisotope production, radiopharmacy, planar gamma cameras, SPECT systems, PET systems, medical internal radiation dose (MIRD) method, nuclear medicine facilities and regulations.

MP 6201. Radiation Therapy Physics. 3 Credit Hours.
Clinical radiation oncology, phantom systems, radiation machines, photon beams, electron beams, brachythearpy, dose modeling and treatment planning.

MP 6203. Radiation Therapy Treatment Planning Laboratory. 1 Credit Hour.
Radiation therapy treatment planning course covering conventional radiation therapy treatment planning, monitor unit calculations, and advanced radiation treatment planning techniques.

MP 6204. Radiation Therapy Physics. 4 Credit Hours.
Measurement and calculation of absorbed dose, dose distributions, treatment planning, photon teletherapy, electron teletherapy, brachytherapy, clinical linear accelerators, quality assurance.

MP 6300. Radiological Anatomy. 1 Credit Hour.
A survey of the most clinically relevant anatomy as visualized by modern diagnostic imaging; plan radiographs, CT, MRI, and PET are emphasized.

MP 6401. Medical Health Physics. 3 Credit Hours.
Basics of medical health physics, Title 10, U.S. Code of Federal Regulations, Parts 19, 20 and 35, shielding for hospital radiation facilities.

MP 6402. Radiation Dosimetry. 2 Credit Hours.
Dosimetry of ionizing radiation: photons, neutrons, and charged particles; cavity theory; concept of exposure and absorbed dose; ion chambers and other types of integration dosimeters.

MP 6403. Applications of the Monte Carlo Method in Medical Physics. 3 Credit Hours.
Basic principles of the Monte Carlo method, Monte Carlo transport of photon and electron, various applications of the Monte Carlo method in medical physics.

MP 6405. Radiation Protection and Dosimetry. 3 Credit Hours.
Radiation dosimetry quantities, calculational and experimental methods for assessing the absorbed dose, effective dose assessment, committed effective dose assessment, radiation shielding methods.

MP 6406. Radiation Dosimetry & Protection. 4 Credit Hours.
Introduction to the calculation of radiation dose, dosimetry, and health physics.

MP 6407. Radiation Biology and Oncology. 3 Credit Hours.
Radiation lesions and repair, mechanisms of cell death, cell cycle effect, radiation sensitizers and protectors, tumor radiobiology, relative sensitivities of human tissues, and radiation carcinogenesis.

MP 6756. Radiation Physics. 3 Credit Hours.
Characteristics of atomic and nuclear radiation, transition probabilities, radioactivity abd isotopes, cross sections, electromagnetic radiation, neutrons, and charges particle interaction with matter. Crosslisted with NRE 6756 and HP 6756.

MP 6757. Radiation Detection. 3 Credit Hours.
Introduction to the theory and application of radiation detectors, measurement methods, signal processing, and data analysis. Crosslisted with HP 6757 and NRE 6757.

MP 6759. Radiation Shielding Principles and Analysis. 3 Credit Hours.
Principles of Radiation Shielding; Design of Shields; Computational Methods for Analysis of Shielding; Emphasis on Monte Carlo Simulation as a Shielding Tool.

MP 6XXX. Medical Physics Elective. 1-21 Credit Hours.

MP 7000. Master's Thesis. 1-21 Credit Hours.

MP 8011. Seminar in Medical Physics I. 1 Credit Hour.
Weekly one hour seminars on topics related to medical physics.

MP 8012. Seminar in Medical Physics II. 1 Credit Hour.
Weekly one hour seminar on topics related to medical physics.

MP 8014. Seminars in Medical Physics. 2 Credit Hours.
Seminars involving current research projects presented by graduate students, faculty, and invited speakers.

MP 8104. Clinical Rotations in Medical Physics. 3 Credit Hours.
Four hundred supervised contact hours of clinical internship in diagnostic imaging, nuclear medicine, and radiation oncology at the affiliated clinical facilities.

MP 8801. Special Topics. 1 Credit Hour.
Special topics offerings of current interest in medical physics not included in regular courses.

MP 8802. Special Topics. 2 Credit Hours.
Special topics offerings of current interest in medial physics not included in regular offerings.

MP 8803. Special Topics. 3 Credit Hours.
Special topics of current interest in medical physics not included in regular offerings.

MP 8804. Special Topics. 4 Credit Hours.
Special topics offerings of current interest in medical physics mot included in regular courses.

MP 8805. Special Topics. 5 Credit Hours.
Special topics offerings of current interest in medical physics not included in regular courses.

MP 8806. Special Topics. 6 Credit Hours.
Special topics offerings of current interest in medical physics not included in regular courses.

MP 8901. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest in medical physics.

MP 8902. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest in medical physics.

MP 8903. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest in medical physics.

MP 8904. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest in medical physics.

MP 8905. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigations of problems of current interest in medical physics.

MP 8906. Special Problems. 1-21 Credit Hours.
Individual studies and/or experimental investigation of problems of current interest in medical physics.

MP 9000. Doctoral Thesis. 1-21 Credit Hours.