

# MEDICAL PHYSICS (MPHY)

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## **MPHY 400 Interactions of Radiation with Matter (3 Credit Hours)**

Introductions of radiation with matter and provides the foundation for future courses in imaging and therapy. Topics covered include: exponential attenuation, x-ray production, interactions of radiation with matter, radioactive decay, atomic and nuclear structure, charged particle equilibrium, cavity theory, dosimetry, ionization chambers and other measurement devices.

### *Outcomes:*

Students will understand how x-rays are produced, basic interactions of photons and electrons in matter, cavity theory, ionization chambers and other devices

## **MPHY 402 Image-Based Anatomy and Physiology (3 Credit Hours)**

*Pre-requisites:* Graduate standing in the MPHY program or permission of instructor

This course will cover all the expected basic elements of human anatomy and medical physiology with a particular emphasis on the radiographic anatomy of relevance to medical physicists.

## **MPHY 404 Physics and Mathematics of Medical Imaging I (3 Credit Hours)**

*Pre-requisites:* Enrollment in MPHY 400

The fundamental physics and mathematics related to image creation are the primary focus of this course. Specific topics related to imaging include: linear algebra, Fourier analysis, sampling theory, random variables and stochastic processes, image formation, biokinetics and compartmental analysis. Graduate standing in the MPHY program or permission of instructor.

## **MPHY 410 Medical Physics Seminar (1 Credit Hour)**

*Pre-requisites:* Graduate standing in the MPHY program or permission of instructor

Held once per week, seminars are required for all graduate students in Medical Physics so as to introduce them to the research actively being pursued by the program's faculty and senior graduate students.