MEDICAL PHYSICS (MED PHYS)

MED PHYS/PHYSICS 265 – INTRODUCTION TO MEDICAL PHYSICS
2 credits.

A general interest survey that introduces the principles and applications of medical physics. Topics include biomechanics, energy usage and temperature regulation, pressure, sound and hearing, ultrasound, electricity in the body, optics and the eye, ionizing radiation in diagnosis and therapy, radiobiology, and nuclear medicine.
Requisites: PHYSICS 104, 202, 208, or 248
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS/H ONCOL 410 – RADIOBIOLOGY
2-3 credits.

Effects of ionizing radiations of living cells and organisms, including physical, chemical, and physiological bases of radiation cytotoxicity, mutagenicity, and carcinogenesis; lecture and lab.
Requisites: Graduate/professional standing or (PHYSICS 202 or 208 and ZOOLOGY/BIOLOGY/BOTANY 152 or 153)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS/B M E/H ONCOL/PHYSICS 501 – RADIATION PHYSICS AND DOSIMETRY
3 credits.

Interactions and energy deposition by ionizing radiation in matter; concepts, quantities and units in radiological physics; principles and methods of radiation dosimetry.
Requisites: (PHYSICS 323, 449 and MATH 320) or graduate/professional standing or declared in Medical Physics VISP
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/N E 506 – MONTE CARLO RADIATION TRANSPORT
3 credits.

Use of Monte Carlo technique for applications in nuclear engineering and medical physics. Major theory of Monte Carlo neutral particle transport is discussed. Standard Monte Carlo transport software is used for exercises and projects. Major emphasis is on analysis of real-world problems.
Requisites: N E 305 and (N E 405, N E 408, PHYSICS/B M E/H ONCOL/MED PHYS 501 or N E/MED PHYS 569) or graduate/professional standing
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS 510 – FUNDAMENTALS OF CELLULAR, MOLECULAR, AND RADIATION BIOLOGY
3 credits.

Cellular, molecular, and radiation biology principles and their common application in medical physics.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/B M E 530 – MEDICAL IMAGING SYSTEMS
3 credits.

2D Fourier image representation, sampling, and image filtering with applications in medical imaging. Principles of operation, impulse responses, signal-to-noise, resolution and design tradeoffs in projection radiography, tomography, nuclear medicine, ultrasound, and magnetic resonance imaging.
Requisites: Graduate/professional standing or (E C E 330 or MED PHYS/B M E 573)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2023

MED PHYS/B M E 535 – INTRODUCTION TO ENERGY-TISSUE INTERACTIONS
3 credits.

Explore physical interactions between thermal, electromagnetic and acoustic energies and biological tissues with emphasis on therapeutic medical applications.
Requisites: PHYSICS 202, 208, 248, or PHYSICS/MED PHYS 265, or graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/I SY E 559 — PATIENT SAFETY AND ERROR REDUCTION IN HEALTHCARE
2 credits.

Techniques for evaluating and reducing risks in medical procedures, including probabilistic risk assessment methods, failure mode and effects analysis, human factors analysis, and quality management. Discussions of patient safety standards, recommendations from agencies, and continual quality improvement.
Requisites: Consent of instructor
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

MED PHYS 563 — RADIONUCLIDES IN MEDICINE AND BIOLOGY
2-3 credits.

Physical principles of radioisotopes used in medicine and biology and operation of related equipment; lecture and lab.
Requisites: MATH 234 and (PHYSICS 241 or 249) or graduate/professional standing
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

MED PHYS/B M E 566 — PHYSICS OF RADIOTHERAPY
3 credits.

Ionizing radiation use in radiation therapy to cause controlled biological effects in cancer patients. Physics of the interaction of the various radiation modalities with body-equivalent materials, and physical aspects of clinical applications.
Requisites: PHYSICS/B M E/H ONCOL/MED PHYS 501
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS/B M E 567 — THE PHYSICS OF DIAGNOSTIC RADIOLOGY
4 credits.

Physics of x-ray diagnostic procedures and equipment, radiation safety, general imaging considerations; lecture and lab.
Requisites: MATH 234 and (PHYSICS 241 or 249) or graduate/professional standing
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2018

MED PHYS/B M E 568 — MAGNETIC RESONANCE IMAGING (MRI)
2 credits.

Core course covering the physics associated with magnetic resonance imaging emphasizing techniques employed in medical diagnostic imaging. Major MRI topics include: physics of MR, pulse sequences, hardware, imaging techniques, artifacts, and clinical applications. At the completion of this course, students should have an understanding of the technical and scientific details of modern magnetic resonance imaging and its use in diagnosing disease. Graduate students who have not taken MATH 222 and PHYSICS 202 at UW-Madison must have the equivalent coursework in order to be successful in this course.
Requisites: Graduate/professional standing or (MATH 222 and PHYSICS 202, 208, 241, 244, 248 or 249)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2022

MED PHYS/N E 569 — HEALTH PHYSICS AND BIOLOGICAL EFFECTS
3-4 credits.

Physical and biological aspects of the use of ionizing radiation in industrial and academic institutions; physical principles underlying shielding instrumentation, waste disposal; biological effects of low levels of ionizing radiation.
Requisites: MATH 234 and (PHYSICS 241 or 249), graduate/professional standing, or declared in Medical Physics VISP
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/B M E 573 — MATHEMATICAL METHODS IN MEDICAL PHYSICS
3 credits.

Mathematical fundamentals required for medical physics and biomedical applications, including signal analysis and mathematical optimization.
Requisites: (MATH 234 and 319), (MATH 234 and 320), or MATH 376 and (PHYSICS 202 or 208), graduate/professional standing, or declared in Medical Physics VISP
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/B M E 574 — DATA SCIENCE IN MEDICAL PHYSICS
3 credits.

Concepts and principles of statistics and machine learning for medical physics-related research problems. Topics covered include probability and independence, discrete and continuous random variables and statistical distributions, random sampling and central limit theorem, inference for means, variances, proportions, moment generating functions, maximum likelihood, hypothesis testing, ANOVA, linear regression, correlation and basic design of experiments with application to quality assurance, reliability, and reproducibility.
Requisites: (PHYSICS/B M E/H ONCOL/MED PHYS 501 and B M E/MED PHYS 573) or (STAT/MATH 309 or 431) or graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS/B M E 575 — DIAGNOSTIC ULTRASOUND IMAGING
2 credits.

Propagation of ultrasonic waves in biological tissues; principles of ultrasonic measuring and imaging instrumentation; design and use of currently available tools for performance evaluation of diagnostic instrumentation; biological effects of ultrasound.
Requisites: Graduate/professional standing or (MATH 234, 319, or 320 and PHYSICS 202 or 208)
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2019

MED PHYS/B M E 578 — NON-IONIZING DIAGNOSTIC IMAGING
4 credits.

Covers the physics associated with magnetic resonance imaging and diagnostic ultrasound emphasizing techniques employed in medical diagnostic imaging. Major MRI topics include: physics of MR, pulse sequences, hardware, imaging techniques, artifacts, and spectroscopic localization. Ultrasound based topics covered include: propagation of ultrasonic waves in biological tissues, principles of ultrasonic measuring and imaging instrumentation, design and use of currently available tools for performance evaluation of diagnostic instrumentation, and biological effects of ultrasound. Gain an understanding of the technical and scientific details of modern non-ionizing medical magnetic resonance and ultrasound devices and their use in diagnosing disease.
Requisites: MATH 234, (MATH 319 or 320) and (PHYSICS 202, 208, 241 or 248), or graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS/B M E 580 — THE PHYSICS OF MEDICAL IMAGING WITH IONIZING RADIATION
4 credits.

Concepts and principles on the physics of medical imaging systems that form images using high energy photons are presented. Such systems are divided into two categories: (1) those based on the transmission of x-rays through the human body, including radiography, mammography, fluoroscopy, and computed tomography (CT), and (2) those based on the emission of gamma rays or annihilation radiation following radioactive decay of an internal radiolabeled molecule, including the gamma camera, single photon emission tomography (SPECT), and positron emission tomography (PET) and PET hybrid imaging systems. Emphasis is placed on understanding how physics, system design, and imaging technique determine image performance metrics such as contrast, signal-to-noise ratio, and spatial resolution. Clinical applications and radiation safety concepts are detailed for the different types of imaging systems.
Requisites: PHYSICS/B M E/H ONCOL/MED PHYS 501 and MED PHYS/B M E 573
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS 581 — LABORATORY FOR MEDICAL IMAGING WITH IONIZING RADIATION
1 credit.

Presents concepts and principles on the physics of medical radiographic imaging systems, based on the transmission of x-rays. Emphasis is placed on understanding the operation of imaging equipment and how it is used in clinical applications. Evaluation of imaging systems, optimization of their use and design and the solution of image quality problems is investigated.
Requisites: B M E/MED PHYS 580
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/PHYSICS 588 — RADIATION PRODUCTION AND DETECTION
4 credits.

Fundamental physics of ionizing radiation production and detection applied to medical science. Topics: scintillator/semiconductor detectors, ionizing radiation detectors, charged and neutral particles for external beam radiotherapy, production of radionuclides with cyclotron and linear accelerators for diagnostic and therapeutic applications, radiochemistry, and X-ray tube physics.
Requisites: PHYSICS/B M E/H ONCOL/MED PHYS 501
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS/B M E/PHMCOL-M/PHYSICS/RADIOL 619 – MICROSCOPY OF LIFE
3 credits.

Survey of state of the art microscopic, cellular and molecular imaging techniques, beginning with subcellular microscopy and finishing with whole animal imaging.
Requisites: PHYSICS 104, 202, 208, or 248 or PHYSICS/MED PHYS 265
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/NTP 651 – METHODS FOR NEUROIMAGING RESEARCH
3 credits.

Provides a practical foundation for neuroimaging research studies with statistical image analysis. Specific imaging methods include functional BOLD MRI, structural MRI morphometry, and diffusion tensor imaging. Lectures and associated in-class computer exercises will cover the physics and methods of image acquisition, steps and tools for image analyses, the basis for statistical image analyses and interpretation of the results.
Requisites: Graduate/professional standing or (PHYSICS 104, 202 or 208)
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS 662 – RAD LAB - DIAGNOSTIC RADIOLOGICAL PHYSICS
1 credit.

Provides hands on experience using and testing radiographic, fluoroscopic and mammographic x-ray systems. Imaging requirements, image quality, and radiation dose aspects of each modality are covered, along with practical methods for evaluating the performance of clinical units.
Requisites: MED PHYS/B M E 580 or declared in Medical Physics VISP
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS 663 – RAD LAB - NUCLEAR MEDICINE PHYSICS
1 credit.

Provides an introduction to the technical skills required in nuclear medicine physics. This includes laboratory rotations in basic radiopharmaceutical production and quality control, basic operation and quality control testing on PET and SPECT scanners, time series image analysis of radiotracer studies and nuclear medicine dosimetry and radiation safety training. Gain a firsthand understanding of the professional duties performed by a nuclear medicine medical physicist.
Requisites: MED PHYS/B M E 580 or declared in Medical Physics VISP
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS 664 – RAD LAB - HEALTH PHYSICS
1 credit.

Uses project-based learning (PBL) as a powerful teaching method to address common challenges and solutions addressed by medical health physicists. Each semester, students work on a different project that addresses concepts that are important in the current health physics environment.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

MED PHYS 665 – RAD LAB - CT, MRI, AND DSA PHYSICS
1 credit.

Provides hands on experience using and testing computerized tomography (CT), magnetic resonance imaging (MRI), and digital subtraction angiography (DSA) systems. Image quality, MRI and radiation safety, accreditation, and regulatory compliance issues with these modalities are also covered.
Requisites: B M E/MED PHYS 580 and 578 or declared in Medical Physics VISP
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS 666 – RAD LAB - MEDICAL ULTRASOUND PHYSICS
1 credit.

Introduces concepts and methodology for measuring acoustic properties of materials and for operating and performing physics tests of state of the art clinical ultrasound scanners. Set up and operate a laboratory apparatus employing single element ultrasound transducers. This is followed by hands on experiments that challenge students to explain physical and engineering characteristics of clinical scanners, details of operator controls, features of Doppler and color flow modes, and resolution limitations. Practical scanning exercises provide familiarity with selected applications of clinical ultrasound equipment, both for diagnosis and for guiding interventions. Routine quality assurance tests done by medical physicists are also performed.
Requisites: MED PHYS/B M E 578 or declared in Medical Physics VISP
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS 671 – SELECTED TOPICS IN MEDICAL PHYSICS
1-4 credits.

In-depth examination of current and newly discovered modalities and/or phenomenons in medical physics. Critical reading of literature, hands-on lab work and exploration of medical issues related to discoveries will be included.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2024

MED PHYS 679 – RADIATION PHYSICS METROLOGY
3 credits.

Metrology, the science of measurement, is a critical component of medical physics. Topics covered: measurement statistics, determination of uncertainty, characteristics of ionization chambers, electrometers and other ionizing radiation measurement devices. Effects of instrumentation on clinical measurements.
Requisites: PHYSICS/B M E/H ONCOL/MED PHYS 501
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS 699 – INDEPENDENT READING OR RESEARCH
1-3 credits.

Provides opportunities for graduate students to gain experience using the scientific method to address specific scientific problems. This includes selection of a research topic, performing literature reviews to evaluate peer-reviewed and other publications, developing a research design, identifying possible pitfalls, and performing and reporting on experiments performed. Communication of the research findings within and outside the university is encouraged.
Requisites: Consent of instructor
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2024

MED PHYS 701 – ETHICS AND THE RESPONSIBLE CONDUCT OF RESEARCH AND PRACTICE OF MEDICAL PHYSICS
1 credit.

Addresses the concepts of ethics in the daily practice of medical physics and other scientific disciplines and provide tools for identifying resources. Special emphasis will be placed in how these principles have to be applied to ensure the confidentiality of the patients, the safety of the research subjects (human and animals), differentiation between ethical and legal issues, as well as the understanding of the principles that deal with authorships, intellectual property in the academic- and industry- based environment.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/PEDIAT 705 – WOMEN AND LEADERSHIP: SCIENCE, HEALTH AND ENGINEERING
2 credits.

Multiple professional and scientific groups have identified the underrepresentation and lack of advancement of women in academia as a national workforce problem. Review evolving perspectives of leadership and how unconscious assumptions about the behaviors and traits of men, women, and leaders impede women's advancement. Emphasizes the implications for women in the fields of science, health and engineering and explore the potential impact on the advancement of knowledge and improvements in health. Provides the opportunity to apply evidence-based perspectives using experiential methods.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/B M E 710 – ADVANCES IN MEDICAL MAGNETIC RESONANCE
3 credits.

Addresses the theory and applications of magnetic resonance (MR) in medicine, by providing the necessary theoretical background to understand advanced MR techniques including magnetic resonance imaging (MRI).
Requisites: MED PHYS/B M E 568 or 578
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/B M I/COMP SCI/E C E 722 – COMPUTATIONAL OPTICS AND IMAGING
3 credits.

Computational imaging includes all imaging methods that produce images as a result of computation on collected signals. Learn the tools to design new computational imaging methods to solve specific imaging problems. Provides an understanding of the physics of light propagation and measurement, and the computational tools to model it, including wave propagation, ray tracing, the radon transform, and linear algebra using matrix and integral operators and the computational tools to reconstruct an image, including linear inverse problems, neural networks, convex optimization, and filtered back-projection. Covers a variety of example computational imaging techniques and their applications including coded apertures, structured illumination, digital holography, computed tomography, imaging through scattering media, compressed sensing, and non-line-of-sight imaging.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No

MED PHYS/B M E/CHEM 750 – BIOLOGICAL OPTICAL MICROSCOPY
3 credits.

Covers several aspects of state-of-the-art biological and biophysical imaging with an emphasis on instrumentation, beginning with an overview of geometrical optics and optical and fluorescence microscopy. The bulk of the course will focus on advanced imaging techniques including nonlinear optical processes (multi-photon excitation, second harmonic generation, and stimulated Raman processes) and emerging super-resolution methods. Special emphasis will be given to current imaging literature and experimental design. Knowledge of physics-based optics [such as PHYSICS 202] strongly recommended.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2021

MED PHYS 770 – ADVANCED BRACHYTHERAPY PHYSICS
3 credits.

The use of radioactive sources for radiotherapy including: materials used, source construction dosimetry theory and practical application, dosimetric systems, localization and reconstruction. Covers low dose rate, high dose rate and permanently placed applications.
Requisites: MED PHYS/B M E 566
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2024

MED PHYS 772 – ADVANCED RADIATION TREATMENT PLANNING
3 credits.

Physics of clinical, computer-based radiotherapy planning is taught. Topics include dose algorithms, measurement data, commissioning, contouring and volume definition, beam placement, modifiers and apertures and plan evaluation. Forward based and inverse planning (including IMRT optimization) are taught.
Requisites: MED PHYS/B M E 566 and graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2022

MED PHYS 775 – ADVANCED ULTRASOUND PHYSICS
3 credits.

Foundations of acoustic wave equations, diffraction phenomena and acoustic beam formation, models for acoustic scattering from discrete structures and inhomogeneous continua, speckle statistics including speckle correlation, applications of these topics in medical imaging.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2013

MED PHYS 777 – PRINCIPLES OF X-RAY COMPUTED TOMOGRAPHY
3 credits.

Understand the basic principles of x-ray computed tomography (CT), and how to think when a technical problem arises in CT. Accomplished through a review of the history of CT developments and key components of CT systems, lectures on various CT reconstruction algorithms, image quality, and radiation dose, origin and correction methods of various CT artifacts.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS/B M E/E C E 778 – MACHINE LEARNING IN ULTRASOUND IMAGING
3 credits.

Concepts and machine learning techniques for ultrasound beamforming for image formation and reconstruction to image analysis and interpretation will be presented. Key machine learning and deep learning concepts applied to beamforming, compressed sampling, speckle reduction, segmentation, photoacoustics, and elasticity imaging will be evaluated utilizing current peer-reviewed publications.
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2023

MED PHYS 780 – PHARMACOKINETIC MODELING IN BIOMEDICAL IMAGING
2 credits.

Concepts and techniques of pharmacokinetic modeling will be presented in the context of biomedical imaging. Examine applications in various specialties, e.g. neurology and oncology, using different imaging tools, e.g. positron emission tomography (PET) and magnetic resonance imaging (MRI).
Requisites: Graduate/professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2020

MED PHYS 900 – JOURNAL CLUB AND SEMINAR
1 credit.

Provides medical physics graduate students with the opportunity to critically evaluate and report on published research and/or research seminar presentations by speakers, from both within the university and from the larger scientific community.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2024

MED PHYS 990 – RESEARCH
1-12 credits.

Provides graduate students with mentorship to support their development of independent research goals and methods needed to address specific scientific problems that will result in a comprehensive dissertation.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2024