Ph. D. Program in Physics with Concentration in Medical Physics

- [www.physics.utoledo.edu](http://www.physics.utoledo.edu)
- [www.utoledo.edu/med/depts/radther](http://www.utoledo.edu/med/depts/radther)

**Degrees offered:** Ph. D. with concentration in medical physics offered jointly with the Departments of Radiation Oncology, and Radiology (College of Medicine, Health Sciences Campus), accredited by CAMPEP: Commission on Accreditation of Medical Physics Educational Programs.

**Faculty:** 20 physics and astronomy, 5 radiation oncology and radiology faculty (effective Fall 2010)

**Medical physics-related course offerings:** Current Issues in Biological Physics and Medical Physics, Modern Physics Laboratory, Accelerator Physics (Main Campus, MC); Radiation Detection and Measurement, Physics of Radiation Therapy, Radiation Biology, Radiation Protection and Regulation, Radiation Physics I and II, Radiation Dosimetry I and II, Survey of Clinical Radiation Oncology, Anatomical Structure and Function, Brachytherapy, Practical Measurements, etc. (Health Sciences Campus, HSC)

**Relevant campus research facilities:** heavy ion accelerator, negative ion accelerator; two Beowulf computer clusters, Internet 2, routine access to Ohio Supercomputer Center (MC); high-energy dual- and triple-photon linear accelerators; dosimetry and quality control test equipment, Wellhoffer computerized beam scanning system, array of ion chambers and electrometers for dosimetric measurements, test phantoms, multichannel analyzer scintillation detectors, autogamma and liquid scintillation counters, diode and thermoluminescent dosimetry systems, chronic film & MOSFET dosimetry systems (HSC)

**Research areas**

- **Medical physics — radiation oncology (HSC):** Radiation beam modeling with Monte Carlo simulation techniques, optimization in IMRT delivered external beam radiotherapy, stereotactic radiosurgery, intra-operative radiation therapy, and three-dimensional dosimetric analysis, quantitative bremsstrahlung SPECT imaging for beta-emitting radiopharmaceuticals (Parsai); Monte Carlo simulation and modeling in both external beam and in Brachytherapy (Shvydka); Hyperbaric medicine (Feldmeier).

- **Medical physics — diagnostic radiology (HSC):** Tomosynthesis imaging techniques in mammography, perfusion techniques for functional MRI and BOLD functional MRI, MR proton spectroscopy, diagnostic imaging system performance testing (Dennis)

- **Biological physics (MC):** DNA structure and bonding to cancer drugs, phase transition in hyaluronic acid (Lee)

- **Applied accelerator-based physics (MC):** Applications to radiation therapy (Kvale)

**Application Information**

Undergraduate GPA ≥ 2.7. Provide official transcript and 3 letters of recommendation. GRE General required, GRE Physics subject test strongly encouraged. **Deadline:** Complete applications for fall admission should be received by Jan. 15 for consideration in the first round. **International students:** TOEFL iBT ≥ 80 (iBT strongly preferred, speaking ≥ 22 preferred). **Admission to medical physics program:** acceptance by medical physics faculty and satisfactory performance in first year of graduate study in P&A.

**Assistantships** include tuition waiver and academic year stipend of $17,000; available on a competitive basis for Fall 2012.

For more information and to apply: [www.physics.utoledo.edu](http://www.physics.utoledo.edu)

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