

# Ph. D. Program in Medical Physics and Graduate Study in Biological Physics at

The University of Toledo

Main Campus (MC),  
Health Sciences Campus (HSC)

([www.physics.utoledo.edu](http://www.physics.utoledo.edu),  
[hsc.utoledo.edu/depts/radther/](http://hsc.utoledo.edu/depts/radther/))



**Degrees offered:** M. S., M. S. E., Ph. D. in physics; concentrations in astronomy/astrophysics and in materials science; joint M. S. program with Electrical Engineering and Computer Science; Ph. D. concentration in medical physics offered jointly with Dept. of Radiation Oncology

**Faculty:** 24 physics and astronomy effective fall 2008; 4 radiation oncology and radiology

**Medical physics-related course offerings:** Current Issues in Biological Physics and Medical Physics, Modern Physics Laboratory, Accelerator Physics (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. (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, test phantoms, multichannel analyzer scintillation detectors, autogamma and liquid scintillation counters, diode and thermoluminescent dosimetry systems, chromic film & MOSFET dosimetry systems (HSC)

## Research areas

**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)

**Medical physics — radiation oncology (HSC):** Hyperbarric medicine (Feldmeier); treatment of gastrointestinal cancer (Dobelbower); 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 and quantitative bremsstrahlung SPECT imaging for  $\beta$ -emitting radiopharmaceuticals (Parsai)

**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)

## Administrative

**For admission:** Undergraduate GPA 2.7 or better; competitive. Provide official transcript and 3 letters of recommendation. GRE General required, Physics subject test encouraged. *Deadline:* Completed applications for fall should be at the Graduate School by 15 January in order to be considered in the first round. *International students:* TOEFL  $\geq$  213 or equivalent. *Admission to medical physics program:* acceptance by medical physics faculty and satisfactory performance in first year of graduate study

**Assistantships:** Stipend is competitive. Tuition is waived. For more information and to apply: [www.physics.utoledo.edu](http://www.physics.utoledo.edu)  
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5 May 2008