



FACULTY OF SCIENCE

MEDICAL PHYSICS

Clinical Medical and Health Physics is an exciting and expanding field that applies our fundamental knowledge of physics to the prevention, diagnosis, and treatment of a variety of human conditions. The Medical Physics program at UWinnipeg is excellent preparation for Medical School and other advanced fields in medicine.

Ultrasound, Magnetic Resonance, Computed Tomography, Nuclear Medicine, X-rays, Radiation Therapy, are all branches of medical physics in which continued research is being conducted by a very large group of dedicated researchers consisting of highly qualified physicists, engineers, and radiologists.

Our professors' research spans a broad range of topics such as developing low field magnetic resonance imaging devices and techniques in hopes of lowering the costs of clinical MRI scans to employing the use of MRI and positron emission tomography (PET) in diagnosing disease. Students can participate in these research activities, and many find paid summer employment with the various research groups. The program at UWinnipeg leads to a **Bachelor of Science degree (4-year Honours)** and provides excellent preparation for entry into a graduate program, such as the two-year MSc program at the University of Manitoba through the Division of Medical Physics at CancerCare Manitoba. (Currently, the recommended training for medical physicists is a degree at the graduate level.)

Many graduates go on to become members of the Canadian College of Physicists in Medicine (CCPM) by passing written examinations. CCPM certification is becoming widely accepted in Canada and other countries and is often required at senior levels in medical physics.

Also, please see other related fact sheets: "Physics," "Pre-Engineering," and "Computational Physics."

SAMPLE CAREERS

Most medical physicists work in hospital diagnostic imaging departments, cancer treatment facilities, or hospital-based research establishments, while others work in universities, government, and industry. Here are a few examples of specific positions: clinical medical physicist; radiation safety officer for medical radioisotope facilities; radiotherapy physicist who helps design/construct radiotherapy treatment equipment or who researches the use of heat and lasers in cancer treatment. Most graduates go on to medical schools to become an MD or continue their medical physics training in graduate schools across Canada.

SAMPLE COURSES

Human Anatomy and Physiology: This course deals with the biological study of the human organism; microscopic and gross anatomy; cellular and general physiology, and human genetics.

Foundations of Physics: This calculus-based course provides students with a working knowledge of the basic concepts underlying modern physics.

Medical Imaging: This course is an introduction to medical imaging techniques, such as ultrasound, x-rays, CT scans, MRIs, and PET scans.

Medical Physics and Physiological Measurement: This course will introduce the core subject areas of Medical Physics, in particular the physics of physiology and of radiology.

MORE SAMPLE COURSES

- Scientific Computing
- Quantum Mechanics
- Radiation and the Environment
- Electricity and Magnetism
- Subatomic Physics
- Electrodynamics

SAMPLE FIRST YEAR

BIOL-1112(6) Human Anatomy and Physiology
STAT-1501(3) Elementary Biological Statistics I
MATH-1101(6) Introduction to Calculus
PHYS-1101(6) Foundations of Physics
RHET-1103(3) Academic Writing: Science, or any other section of Academic Writing (if required)
6-9 credit hours Humanities

NOTE: *This sample first year is representative of the courses you may take. For many of our programs, you may choose another set of courses and still be well on your way to a degree. Also, for most programs you do not have to take 30 credit hours (five full courses) in your first year.*

"I was fortunate to have the opportunity to explore medical physics research at The University of Winnipeg. The interdisciplinary nature of this branch of physics exposed me to advanced topics in electromagnetism, math and computer science, while also learning how technology such as MRI can improve our lives from a medical perspective. The excellent professors, and the breadth of their combined research experiences, meant I was always discovering new ideas and developing new skills outside of normal coursework."

*-Michael Honke (BSc Physics)
Software Developer at Ziva Dynamics | Physics Simulation and Graphics Developer*

HOW TO APPLY

For details on application requirements and deadlines, and to apply online, please visit:
uwinnipeg.ca/apply

For more information contact a student recruitment officer at welcome@uwinnipeg.ca or 204.786.9844. In any case where the University's

Academic Calendar and this fact sheet differ, the current Calendar takes precedence.

CONTACT US

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