



FACULTY OF SCIENCE

RADIATION HEALTH AND SAFETY

This program, offered through the Physics Department, provides students with both the theoretical and practical skill sets to maintain current radiation safety standards in the energy, security and health sectors.

It is anticipated that Canada, along with many other nations, will soon face a critical shortage of appropriately trained people in this area. The goal of this 3-year Bachelor of Science program is to ensure that Canada is able to meet the expected staffing needs for this key safety related profession. The program has been verified as satisfying general requirements to enable a student to write exams leading to certification in Radiation Protection, which is done through the Canadian Radiation Protection Association.

Also, please see other related fact sheets on “Physics” and “Medical Physics.”

SAMPLE CAREERS

Health and radiation physicists work in many areas, including research, industry, education, environmental protection, and enforcement of government regulations. Health physicists investigate the basic principles by which radiation interacts with matter and living systems. Applied health physicists draw upon their technical knowledge and varied experience to advise and make recommendations regarding methods and equipment for use in radiation work. Health physicists working in education develop and instruct training programs for future health physicists. Those involved in regulatory enforcement must have knowledge and experience concerning all types of radiation hazards in order to establish guidelines for adequate radiation control.

SAMPLE COURSES

Radiation and the Environment: This course provides an overview of radiation in the environment and its effects on materials and living systems. Topics will include x-rays, ultraviolet, visible, infrared, microwave and radio-frequency emissions, acoustical and ultrasonic radiation, and alpha, beta and gamma radiation from radioactive sources.

Radiation Biology: This course deals with the fundamentals of radiation biology and focuses on the effects of radiation at a cellular and molecular level. This course will be given through CancerCare Manitoba.

Radiation Protection & Health Physics: This course reviews the fundamental concepts that are used to minimize risk when working with sources of ionizing radiation, with emphasis on the application of these concepts to radiation therapy. This course will be given through CancerCare Manitoba.

MORE SAMPLE COURSES

- Scientific Computing
- Electricity and Magnetism
- Mathematical Physics
- Quantum Mechanics
- Thermal Physics
- Medical Imaging
- Physics of Radiation Therapy
- Numeric & Symbolic Computing

SAMPLE FIRST YEAR

BIOL-1112/6: Human Anatomy and Physiology

STAT-1501/3: Elementary Biological Statistics I

MATH-1101/6: Introduction to Calculus OR equivalent (MATH-1103/3 AND MATH-1104/3)

PHYS-1101/6: Foundations of Physics I

RHET-1103/3 Academic Writing: Science, or any other section of Academic Writing (if required)

6 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.*

"Doing research in physics as an undergraduate student has given me the opportunity to learn more about the topics that really interested me. Thanks to my time in the department I got to work with some great people and develop as a scientist."

Gabriel Chernitsky, BSc (Honours); currently working on a Master's degree at McGill University

REQUIRED HIGH SCHOOL COURSES

In addition to meeting The University of Winnipeg's general admission requirements, you must have **Physics 40S and Pre-Calculus Mathematics 40S or Applied Mathematics 40S**. However, interested and motivated students without these prerequisites are also encouraged to contact the department.

HOW TO APPLY

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

Students should contact the education branch of CancerCare Manitoba to see how entry into required CancerCare Manitoba courses will be restricted according to the available training laboratory spaces at CancerCare Manitoba.

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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