



FACULTY OF SCIENCE

PHYSICS

Physics is crucial to understanding the world around us, the world inside us, and the world beyond us. Physics challenges our imaginations and leads to great discoveries that, in turn, bring life-changing technologies. Futureproof your career with a degree in Physics!

Science begins with Physics. Physics encompasses the study of the universe from the largest galaxies to the smallest (subatomic!) particles. Physics challenges our imaginations and leads to great discoveries. Physicists also work to solve some of the greatest challenges of our times by finding ways to cure cancer, heal joints, or develop solutions for sustainable energy (www.aps.org/careers/advice/why-study-physics).

UWinnipeg has an internationally recognized Physics Department, which offers an excellent learning atmosphere, fostered by small class sizes and individual attention from professors, with the unique opportunity to perform cutting edge research as an undergrad. The curriculum combines foundational theoretical and experimental/hands-on lab instruction with new cutting-edge topical courses, such as physical computing, quantum computing, and medical imaging.

Our professors' research spans a broad range of topics – from digital agriculture and robotics to subatomic physics (especially neutron and neutrino particles) and material science to the use of magnetic resonance imaging (MRI) in diagnosing disease, to the inner workings of black holes, higher-dimensional cosmology, superstrings, and quantum gravity. Students often participate in these research activities, and many find paid summer employment with the various research groups.

UWinnipeg offers a 3-year or 4-year **Bachelor of Science degree** in a variety of specialized streams: Pre-Engineering, Honours, Applied Physics, Chemical Physics, Computational Physics, Medical Physics, and Mathematical Physics. Physics can be used as a teachable subject in our Education program. **Also see related fact sheets: “Pre-Engineering”, “Medical Physics”, and “Computational Physics.”**

SAMPLE CAREERS

Real-world skills come from studying physics. Physicists are problem solvers. Their analytical skills make them versatile and adaptable, so physicists often work interesting jobs in interesting places. You can find physicists in industrial and government labs, on college campuses, in the astronaut corps, and consulting for the special effects in TV shows and movies. In addition, many physics grads work for engineering or consulting firms, at newspapers and magazines, in government, for non-profits, in data science and app development roles, and even on Wall Street — places where their ability to think analytically is a great asset.

Our graduates are hired by places such as: JCA Technologies, Farmers Edge, Pluto Ventures, Ubisoft, Nvidia, Blue Origin, Boeing, 3M, Price Industries, and Cubresa Inc, in roles ranging from computational fluid dynamics analyst to aerospace engineer to data scientist. Many of our students continue research activities

in some of the top graduate schools in North America, such as Cornell, the University of British Columbia, McGill, Waterloo, McMaster, and the University of Toronto.

SAMPLE COURSES

Astronomy is a non-mathematical course that gives students a general introduction to the ideas and processes of science as well as the formation and evolution of the universe.

Scientific Computing with Python is a second-year course where students learn how to create Python data analysis programs with data visualization and publication quality figures.

MORE SAMPLE COURSES

- The Study of Time
- The Physics of Music
- The Study of Time
- Physical Computing
- Introduction to General Relativity
- Subatomic Physics

SAMPLE FIRST YEAR

PHYS-1101(6) Foundations of Physics or PHYS-1301(6) Introductory Physics
MATH-1103 (3) Introduction to Calculus I AND MATH-1104(3) Introduction to Calculus II
RHET-1103(3) Academic Writing: Science, or any other section of Academic Writing (if required)
MATH-1201(3) Linear Algebra I

12 credit hours Humanities or other General University requirements

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 like everything about the physics department. The professors are incredibly talented, friendly, and helpful with advice for those trying to figure out what to do after graduation. As well, undergraduate students have many opportunities to do research.”

Allison Kolly, BSc (Honours),
who has completed an MSc in Atmospheric & Oceanic Sciences from 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**. However, some courses do not require these prerequisites, such as Introductory Physics, Astronomy, Cosmology, Scientific Computing.

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.

CONTACT US

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