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Physics & Astronomy

BSc | www.yorku.ca/science/physics

Admission Requirements

- ENG4U, MHF4U, SPH4U, MCV4U
- **Recommended:** SCH4U
- **Minimum admission average:** high 70s – mid 80s

Program Overview

York's Physics and Astronomy program offers rigorous but flexible program options, offering four-year Honours BSc or three-year Bachelor BSc degree studies. The program offers students the option of pursuing studies in three different streams:

- **Physics**
- **Applied Physics**
- **Astronomy & Astrophysics**

Studying Physics or Astronomy at York will propel you into a challenging and exciting learning atmosphere. At York you will work with committed and innovative teachers to learn physics in a wide variety of ways. You will boost your critical thinking skills and learn to analyze and solve complex problems. You will conduct hands-on experiments in York's well-equipped teaching laboratories. All majors will have a chance to trap and study atoms in a capstone course. Astronomy & Astrophysics majors often will use the Allan I. Carswell Observatory, featuring a new 1-meter telescope (the largest on any Canadian university campus).

All Physics and Astronomy program options at York will develop your analytical skills, relying heavily on applied mathematics and constructing and testing theoretical models in directed experiments. The programs also emphasize scientific report writing and presentation skills as an essential component of research and professional work in Physics and Astronomy. In addition, you may have opportunities to acquire work experience conducting research in a for-credit individual research course with a York professor through our new course EXPLORE: Experiential Learning Opportunity through Research and Exchange, or through the Natural Sciences and Engineering Research Council of Canada's (NSERC) summer program.

First Year Courses:

- Physics
- Chemistry
- Computer Programming (Python)
- Calculus & Linear Algebra
- Fundamentals of Astronomy*

Second Year Courses:

- Classical Mechanics
- Electricity and Magnetism
- Relativity and Modern Physics
- Optics and Spectra
- Galaxies and the Universe*
- Experimental Methods & Data Analysis
- Multivariate & Vector Calculus
- Differential Equations
- Intermediate Programming

Upper Year Options:

- Relativity & Modern Physics
- Experiments in Modern Physics
- Electromagnetics
- Statistical & Thermal Physics
- Astronomical Techniques*
- Quantum Mechanics
- Methods in Theoretical Physics
- Techniques in Laser Physics
- Atom Trapping
- Elementary Particle Physics
- Stars & Nebulae*
- Cosmology*

***Only required for Astronomy majors**

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Physics & Astronomy (BSc) | www.yorku.ca/science/physics

Experiential Education

The Faculty of Science provides a rich diversity of opportunities for undergraduate students to engage in Experiential Education. The Internship Program provides students in this program with the opportunity to integrate their classroom learning with hands-on, paid, work experiences related to their field of study. Internship students will begin their work term(s) after their third year of classroom study and can take part in 4, 8, 12, or 16 months of work before returning to school to complete their studies.

Here are just a few of the companies you could have the opportunity to work for:

- Iristel
- York Regional Police
- Ontario Power Generation
- Optech
- Celestica
- TRIUMF

Visit yorku.ca/science/students/experiential-education/ for more information.

Possible Career Pathways

The four-year Physics programs (offering specializations in Physics, Applied Physics, or Astronomy & Astrophysics) are designed to prepare graduates for careers in research, high-tech industries, or graduate study in the physical sciences. The three-year BSc programs offer a less intensive program of study while still providing a solid Physics education, for example for students interested in moving into industry. Both programs offer excellent foundations for graduates who aim to qualify for entrance into professional graduate programs, including medicine. Physics majors achieve some of the highest average scores on the MCAT exam for medical school.

Your training in Physics at York will open doors to a wide range of career options:

- Astrophysicist
- Systems Analyst
- Medical Physicist
- Data Scientist
- Laboratory Technician
- Geophysicist
- Science Educator
- Meteorologist
- Cosmologist
- Research Scientist
- Environmental Physicist
- Professor
- Postgraduate Studies/Academic Career
- Computer Programmer

Get In Touch

Domestic Students:
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International Students:
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"As a Physics & Astronomy student, I was part of a supportive community of students and faculty. The department connected me to research and work opportunities at York and beyond, stimulating my research interests. Professors and upper-year students were excellent mentors who enriched my university experience and paved the way for my pursuit of a master's in physics."

- Coral, Physics & Astronomy Alumni