



Admission Requirements

Physics and Astronomy (BSc)

Prerequisite Requirements for BSc:

- ENG4U, MHF4U, MCV4U, SPH4U
- Recommended: SCH4U

Expected minimum admission average:
high 70s – mid 80s

<p>If you major in Physics and Astronomy your courses in first year will probably be:</p> <ul style="list-style-type: none"> • Physics • Astronomy (Astronomy and Astrophysics stream) • Chemistry • Calculus • Linear Algebra • Computer Programming • General Education Course 	<p>In second year you will specialize in one of the following areas:</p>	
<p>Career options for Physics and Astronomy majors include:</p> <ul style="list-style-type: none"> • Astrophysicist • Medical Physicist • Cosmologist • Technician • Meteorologist • Aerospace Engineer • Professor • Applied Research • Computer Programmer • Acoustical Physics • Geophysicist • Environmental Physicist 	<p style="text-align: center;">Astronomy</p> <hr style="width: 20%; margin: auto;"/> <ul style="list-style-type: none"> • Classical Mechanics • Electricity and Magnetism • Relativity and Modern Physics • Optics and Spectra • Galaxies and the Universe • Experimental Physics with Data Analysis • Applied Multivariate and Vector Calculus 	<p style="text-align: center;">Physics</p> <hr style="width: 20%; margin: auto;"/> <ul style="list-style-type: none"> • Classical Mechanics • Electricity and Magnetism • Relativity and Modern Physics • Optics and Spectra • Computational Methods for Physicists and Engineers • Experimental Physics with Data Analysis • Applied Multivariate and Vector Calculus

Why study Physics and Astronomy at York University?

Studying Physics and Astronomy at York propels you into a challenging and exciting learning atmosphere at one of Canada's leading Physics and Astronomy departments. At York you will have a unique opportunity to work with committed and innovative teachers to learn physics and actively test theoretical models in York's well-equipped experimental laboratories. Studying Physics and Astronomy at York prepares you to master a full range of physics concepts and applications and to tackle scientific and technological problems at a high level in research and industry.

Physics is the most fundamental of science disciplines. It is also the most exact science. Using the language of mathematics, Physics equips us to create a complete model of the natural world at scales ranging from the astronomical to the atomic, quantum, nuclear, and particle levels. Combining mathematical modelling with a strong experimental physics component in an intensive research environment enables students at York to explore Physics on all scales and develop valuable problem-solving skills which prepare graduates for high-level research and professional careers.

Technology Internship Program

Qualified Physics and Astronomy students have the opportunity to participate in the innovative Technology Internship Program, which provides paid work experience. These internships take place between third and fourth year and range from four to sixteen months. Unlike a 4-month co-op placement, the internship is designed to allow you to participate in more significant projects in the workplace. Assistance is provided in placing students in internships after the completion of third year. York's internships provide valuable professional experience, enabling our graduates to move more easily into exciting careers.

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

- Sanofi Pasteur
- Health Gene Corporation
- Parks Canada
- City of Toronto
- Grande Prairie Regional College

Visit [/science.yorku.ca/current-students/ee/](http://science.yorku.ca/current-students/ee/) for more information

Program Overview

York's Physics and Astronomy program offers rigorous but flexible program options, offering four-year Honours B.Sc. or three-year Bachelor B.Sc. degree studies. Interested students may pursue Double Major programs combining Physics with other studies (for example, in Applied Mathematics, Chemistry, Computer Science, or Biology), or Major/Minor programs combining a Major or a Minor in Physics with another program in Science & Engineering or another Faculty at York. The four-year Physics programs (offering specializations in Physics, Applied Physics, or Astronomy) are designed to prepare graduates for careers in research and industry, while the three-year B.Sc. program offers a less intensive program of study while still providing a solid Physics education for graduates who hope to qualify for entrance into professional graduate programs, including medicine. All Physics program options at York develop students' analytical skills, relying heavily on applied mathematics and constructing and testing theoretical models in directed experiments. The Physics program at York also emphasizes scientific report writing and presentation skills as an essential component of research and professional work in Physics.



Research Excellence in Physics and Astronomy at York University

Research excellence is at the heart of our Physics and Astronomy department. Professor Wendy Taylor's work provides one example of some exciting research currently being done at York. For over two thousand years, humans have wondered what the world is made of and how it behaves. Particle physicists have established that the universe is composed of fundamental particles called quarks and leptons which interact with one another through four fundamental forces - the strong force, the weak force, electromagnetism and gravity. However, this simplified view of the natural world is incomplete. Particle physicists continue to search for new forms of matter, new forces of interaction, and a complete understanding of physical laws.

As Canada Research Chair in Experimental Particle Physics, Dr. Taylor studies the b quark. The mass and lifespan of the b quark (the second heaviest quark) make it an excellent tool for probing the subatomic interactions between matter and forces. Dr. Taylor is conducting this research as a member of an international collaboration which is engaged in the collection and study of proton-antiproton collision data at the Fermi National Accelerator Laboratory in Chicago (Fermilab). In addition to her studies of the b quark, Dr. Taylor helps design data collection electronics for this international project. Her inquiry promises important contributions to the advancement of the understanding of the laws of nature at their most fundamental level.

Dr. Taylor is a member of the ATLAS experiment at the Large Hadron Collider (particle accelerator), that began operation in 2008 at the CERN Laboratory in Geneva, Switzerland. Dr. Taylor's contributions will ensure York continues to be at the forefront of scientific discovery in this important field both nationally and internationally.

Facilities and Opportunities at York University and Beyond

Physics and Astronomy students at York enjoy access to dedicated professors and a teaching and learning environment of the highest quality, including resources like symbolic computing environments and a growing list of web-based tutorials. Departmental awards and scholarships reward high-achieving students, and graduating students routinely win external grants which support them in diverse areas of graduate research and study. Interested undergraduate Physics students have the opportunity to participate in world-class research projects led by our faculty members in fields as diverse as atomic and molecular physics, laser physics, elementary particle and subatomic physics, and astronomy/astrophysics. Our well-equipped laboratories offer supervised and independent work using lasers, computer-interfaced instruments, and other technological equipment and enable Physics students to directly test theoretical models as a routine component of their Physics education. Physics students at York also encounter well-developed Physics research groups in areas like experimental high energy (particle) physics and experimental laser physics, as well as the Centre for Research in Earth and Space Science (CRESS), in which they may interact with graduate students and faculty researchers. Student life is further enhanced by the York Physics Society and the Student Ombuds Service, both of which offer peer support.