

Bachelor of Science

Physics



ABOUT THE PROGRAM

Physics is concerned with the fundamental studies of the interaction of matter, from the sub-atomic to the astronomic. In the Physics program, you will study the basic building blocks of matter and how the four fundamental forces of nature explain the universe. You will use computer technology to investigate probes such as nuclear magnetic resonance, X-ray and nuclear scattering. The study of molecular, nuclear, and condensed matter physics, using principles of quantum mechanics and thermodynamics, is central in the physics curriculum at Guelph.

WHY CO-OP?

As a co-op student, you will gain relevant work experience, build professional networks, and develop essential interpersonal skills needed to succeed in the workplace; all while being paid and earning your university degree. Guelph's co-op program is unique due to the exceptional level of support provided, including an online preparatory course, a personal connection with a Co-op Co-ordinator to assist you during the employment process, and access to senior student mentors.

COURSE SEQUENCING

In the Physics co-op program, you will participate in five co-op work terms in addition to eight academic semesters throughout your five years at the University of Guelph. This sequencing is viewable below:

YEAR	FALL	WINTER	SUMMER
ONE	Academic	Academic	Off
TWO	Academic	Academic	Work
THREE	Academic	Work	Work
FOUR	Academic	Academic	Work
FIVE	Work	Academic	

Physics

SAMPLE JOBS

There is a diverse selection of jobs made available to Physics co-op students, in the academic, government, and private sectors within various industries. Students may conduct research, assist with product development or quality assurance, and may work in a laboratory, in the field, and/or in an office setting. Below are some examples of past Physics co-op positions.

Co-op Student in Component Life Technology

The student will be involved in concept development, design, and construction of an electrochemical cell to perform measurements on surfaces under two-phase conditions, using well understood aqueous environments. The student will also perform studies related to materials degradation of alloys in aqueous environments that are relevant to steam generators in nuclear power plants.

Student Researcher

The student will formulate mixtures of natural food colour compounds with phyto-glycogen nanoparticles using high-shear and high pressure homogenization, freeze-drying and spray drying. Other duties may include carrying out chemical analysis of colour degradation using UV-Vis spectroscopy and Dynamic Light Scattering, over long-time course experiments.

Research Assistant/Tutor

This is a twofold position requiring the student to 1) perform research duties under the direction of a scientist or engineer and 2) prepare, guide, and supervise high school students through 6 weeks of the project. Research/project areas vary each year and may include chemistry, physics, nuclear science and engineering, nanotechnology, computer science, biology, environmental science, and geology.

Additional Sample Jobs: Refinery Assistant, Space Data Specialist, Undergraduate Research Assistant, Summer Student in Applied Physics, and more.

SAMPLE EMPLOYERS*

- University of Guelph – Department of Physics, Department of Chemistry
- Canadian Nuclear Laboratories
- Mirexus Biotechnologies Inc
- Triumph

*This shows a sample of recent co-op employers, and employers will vary depending on employer recruitment needs. During a job search, students are encouraged to be actively engaged and are also supported in establishing and maintaining their own personal contacts.

SALARY INFORMATION Average Weekly Salary Range: \$525 - \$700*

*Salary ranges are shown as rates before deductions. Statistics are based on jobs held by co-op students in 2017/2018. These ranges may fluctuate on an annual basis in response to economic conditions.

ABILITIES & KNOWLEDGE ACQUIRED

- Competence in basic mechanics and electricity and magnetism, as well as wave theory, circuit theory, electronics, and optics
- Strong scientific programming and desktop computing expertise
- Experience working with electromagnetic theory, statistical physics, quantum mechanics, wave propagation and thermodynamics
- Exceptional laboratory and report-writing experience
- Excellent communication, teamwork, and problem solving skills

