

# Bachelor of Science

## Biological & Medical Physics



### ABOUT THE PROGRAM

Biological and Medical Physics applies the concepts and methods of physics, chemistry, and mathematics to biological systems to learn about how living organisms work. You will study the physical properties of nerves, muscles, and biological transducers such as ears and eyes. You will also learn about the use of investigative probes, such as magnetic resonance imaging, electron microscopy and X-ray and nuclear scattering to examine biological systems. A focus on molecular biology of determination and cell differentiation, homeotic genes, oncogenes, genetic control of morphogenesis and pattern formation is central to the curriculum.

### 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 Coordinator to assist you during the employment process, and access to senior student mentors.

### COURSE SEQUENCING

In the Biological & Medical 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	

## SAMPLE JOBS

There is a diverse selection of jobs made available to Biological & Medical Physics Co-op students, in government, academia, and the private sector within various industries. You may conduct research, participate in literature searches, assist in data collection and analysis or may work in public health in a clinical setting. Students may work in a laboratory, a hospital, and/or in an office environment. Below are some examples of positions held by Biological & Medical Physics co-op students:

### Undergraduate Research Assistant

This project focuses on understanding the nature of the magnetic resonance signal from brain tissue. The student will learn how to program and collect data from a nuclear magnetic resonance spectrometer, and will gain experience with modeling tools like Python and data analysis tools like Matlab.

### Regulatory Affairs Intern

This position supports the team with daily regulatory affairs, quality assurance, and scientific activities. Duties include compiling regulatory submissions to Health Canada, conducting ingredient reviews for Health Canada compliance (Drugs, NHP's and Cosmetics), label and packaging reviews, researching and co-authoring articles for publication, file maintenance, office support, and conducting presentations on new science regulations.

### Research Assistant

This position involves formulating emulsions & serums with phyto-glycogen nanoparticles for development of anti-aging cosmetic applications and taking specialized images of faces & skin for long-term study on wrinkles in human volunteers.

Additional Sample Jobs: Quality Control Technician, Soil Physical Quality Assistant, Regulatory & Scientific Affairs Technician, and more.

## SAMPLE EMPLOYERS\*

- Various Hospitals
- University of Guelph - Department of Physics, Department of Chemistry
- RISE (Research Internships in Science & Engineering) in Germany
- Mirexus Biotechnologies Inc.

\*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

Students receive compensation from their employer for co-op work terms. The rate of pay will vary depending on a number of factors including the industry, the student's program of study, and work term level. For your reference, a **Co-operative Education Salary Guide** is available on our website, which provides hourly rates (averages and ranges) for each degree program.

## ABILITIES & KNOWLEDGE ACQUIRED

- A solid foundation in biology, physics, chemistry and mathematics
- Specialized knowledge in one of a number of biological areas of emphasis such as genetics, microbiology, or toxicology
- Proficiency in report and summary writing
- Well-developed analytical and laboratory skills
- Excellent communication, teamwork, and problem-solving abilities