



Photo by: Guillaume Leblond



Photo by: Sara Athari



Photo by Jessica White

UNIVERSITY OF GUELPH – GRADUATE STUDIES

# Interested in Human, Animal or Ecosystem Health?

## GRADUATE PROGRAMS RELATED TO HEALTH

The University of Guelph has an outstanding reputation for excellence in the natural and physical sciences, especially as they are applied to human, animal or ecosystem health. Our faculty and facilities in these disciplines are amongst the best in the world, and provide excellent support for graduate student research. At Guelph, you can choose from a variety of graduate programs that will allow you to investigate issues across the full spectrum of human, animal and ecosystem health. We encourage you to learn more about our program options.

Human Sciences	Animal Sciences	Plant Science	Other Options
Animal Biosciences MSc, PhD	Animal Biosciences MSc, PhD	Environmental Sciences MSc, MES, PhD	Bioinformatics MSc, MBINF, PhD
Applied Nutrition MAN	Biomedical Sciences MSc, MBS, PhD	Integrative Biology MSc, PhD	Biophysics MSc, PhD
Biomedical Sciences MSc, MBS, PhD	Clinical Studies MSc, DVSc, GDip.	Molecular & Cellular Biology MSc, PhD	Business Administration MBA
Chemistry MSc, PhD	Environmental Sciences MSc, MES, PhD	Plant Agriculture MSc, PhD	Chemistry MSc, PhD
Computer Science MSc	Integrative Biology MSc, PhD	Toxicology* MA, MSc, PhD	Economics MA, PhD
Family Relations & Applied Nutrition MSc, PhD	Neuroscience* MSc, PhD		Environmental Sciences MSc, MES, PhD
Food, Agricultural & Resource Economics MSc, MFARE, PhD	Pathobiology MSc, PhD, DVSc, GDip.		Food Safety & Quality Assurance MSc, GDip.
Food Science MSc, PhD	Population Medicine MSc, PhD		Food Science MSc, PhD
Human Health & Nutritional Sciences MSc, PhD	Toxicology* MA, MSc, PhD		Geography MA, MSc, PhD
Molecular & Cellular Biology MSc, PhD			History MA, PhD
Neuroscience* MSc, PhD			International Development Studies* MA, MSc, PhD
Pathobiology MSc, PhD, GDip.			Landscape Architecture MLA
Population Medicine MSc, PhD			Management MA, PhD
Psychology MA, MSc, PhD			Marketing & Consumer Studies MSc
Public Health MPH, GDip.			Mathematics & Statistics MSc, PhD
Toxicology* MA, MSc, PhD			Philosophy MA, PhD
			Physics MSc, PhD
			Political Science MA, PhD
			Rural Planning & Development MSc (Planning), MPlan
			Sociology MA, PhD

\*Indicates a collaborative specialization that must be taken in conjunction with another program.

# Interested in Human, Animal or Ecosystem Health?

## Animal Biosciences MSc, PhD

Animal Biosciences studies all aspects of the production of livestock, poultry, fish and companion animals including: nutrition, genetics, physiology, behaviour and welfare. Students interested in animal health can learn how pain, discomfort and malaise are objectively assessed in animals, and how housing and other aspects of husbandry (e.g. diet) can either protect animals from health problems or instead put them at risk of disease. Students interested in human health can explore the areas of functional foods and novel and products for improved human health, as well as the use of animals as models for human health research.

## Applied Nutrition MAN

The Master's of Applied Nutrition, a Dietitians of Canada accredited program, provides eligible students entry into the dietetics profession as Registered Dietitians. Students complete graduate coursework, workplace experiences, as well as a significant research project to prepare for careers in agri-food and health.

## Bioinformatics MSc, MInf., PhD

Bioinformatics is a unique, interdisciplinary program that teaches the application of the latest computational and statistical techniques to biological data including: sequences (DNA, proteins), structures (DNA, RNA, proteins) and interactions (systems biology) to solve problems at the cutting edge of human, animal and ecosystem health. Students in this program will be guided by an interdepartmental supervisory team to extend their undergraduate expertise into a comprehensive bioinformatic education that emphasizes the application of informatics tools in modern biology.

## Biomedical Sciences MSc, MBS, PhD

Research in the Department of Biomedical Sciences utilizes cell lines and tissues from animals and humans as well as animal models to understand topics such as, biomechanics, cancer biology, endocrinology, neuroscience, pharmacology, toxicology, and reproductive biotechnology that impact animal and human physiology and health.

## Biophysics MSc, PhD

Biophysics is a unique interdisciplinary program that seeks to further our understanding of biological processes through the application of the concepts and techniques of the physical sciences. Biophysics research spans the entire breadth of the life sciences spectrum including: Structural Biology, Biochemistry, Molecular Biology, Biological Chemistry, Microbiology, Bioinformatics and Biomechanics.

## Business Administration MBA

Guelph's MBA is offered in three fields of specialization: Sustainable Commerce, Food and Agribusiness, and Hospitality and Tourism. Learn, collaborate and grow from industry experts at the University of Guelph. Explore topics in policy and economics, marketing and strategy. Offered online, you'll be able to complete your MBA without interrupting your career.

## Chemistry MSc, PhD

Graduate opportunities in human sciences span several areas. Research projects exist in Drug Design and Delivery, Vaccine Development, Carbohydrate Chemistry and Toxicology.

## Clinical Studies MSc, PhD, DVSc

The Department of Clinical Studies provides graduate-level training/residency and research in areas related to clinical veterinary medicine including surgery, internal medicine, cardiology, neurology, nutrition, radiology, oncology, anesthesiology, ophthalmology and emergency and critical care medicine. We are dedicated to the health and well-being of companion animals (dogs and cats as well as exotic species), performance animals (horses) and food-producing animals. We offer advanced clinical training for DVM graduates leading to board certification in the specialties mentioned above.

## Computer Science MSc

Research in the School of Computer Science is in the area of Public Health, which focuses on methods for early detection of disease outbreaks and on modeling of disease spread through a population.

## Economics MA, PhD

Health economics investigates issues related to the efficiency and effectiveness of health care delivery systems. Students in the PhD and MA in Economics programs can choose to study a variety of health economics topics, including comparative systems of health-care delivery, and the financial and risk incentives and trade-offs faced by individuals in their willingness to pay for or undertake certain health services.

## Engineering MEng, MAsC, PhD, GDip.

Engineers take science, and use it to design and produce health care systems and devices. These include diagnostics, plant based industrial products, and injury prevention machinery in the workplace.

## Environmental Sciences MSc, MES, PhD

In the School of Environmental Sciences (SES) we teach, study, and conduct research, in the life and physical sciences to address critical environmental issues and processes related to the lithosphere, atmosphere, hydrosphere, and biosphere. SES provides and fosters academic excellence in a diverse suite of undergraduate and graduate programs focused on the comprehensive study of biotic and abiotic interactions and environmental issues in natural and managed ecosystems.

## Family Relations & Applied Nutrition MSc, PhD

Students in Applied Human Nutrition conduct research using nutrition, epidemiological and social science methodologies. Research in this area encompasses the continuum of the life cycle in diverse settings, including: public health departments, community agencies, clinical settings, and long-term and acute care facilities. Students in Family Relations and Human Development conduct research and take courses on a range of topics including: child and adolescent development, family relationships, human sexuality, adult development and aging, as well as physical and mental health. The program includes applied coursework options and opportunities to develop qualitative and quantitative research skills.

## Food Agricultural & Resource Economics MSc, MFARE, PhD

Students in the Food, Agricultural and Resource Economics program undertake research that examines the food-diet-health nexus. Drawing on economic theory and social science methods, this research aims to understand the nature and economics of food choice in the context of improving human health and how food choice affects long-term human health outcomes, such as, the prevalence of obesity.

## Food Safety & Quality Assurance MSc, GDip.

A Food Scientist requires a broad range of expertise encompassing biochemistry, food analysis, nutrition, sensory, product development, food, law, management, epidemiology and microbiology. The Food Safety and Quality Assurance program (MSc or GDip) provides experience and knowledge in all the aforementioned areas through a combination of class and distant education formats. Upon graduation, students can follow career paths in industry, academia or government.

## Food Science MSc, PhD

Within the discipline of Food Science, researchers identify and characterize health promoting food components and investigate ways to reformulate and restructure foods to preserve and increase their nutritive value. Research is also undertaken to develop technologies to detect, prevent and remove hazardous agents in foods. Research in Food Science is especially rewarding as students directly contribute to human health and well-being.

## Geography MA, MSc, PhD

Geography brings a distinctive perspective to human and ecosystem health. Graduate students study ecosystem processes, global change, and social processes that influence human health. Links between social and environmental systems are a fundamental concern of Geography.

## History MA, PhD

History represents a unique way of understanding human, animal, and ecological health. Historians at the University of Guelph are working to understand how disease and health are affected by decisions made by people, and how those decisions serve to constrain or expand future options for public policy and personal choice. Students in the Tri-University program will find many interdisciplinary opportunities to pursue studies leading to a historical understanding of culture, medicine, and health.

## Human Health & Nutritional Sciences MSc, PhD

Graduate programs in Human Health & Nutritional Sciences offer advanced courses and research opportunities in the broad areas of nutrition and nutraceutical sciences, general and exercise physiology, as well as biomechanics. The focus is on the individual and how lifestyle (nutrition and exercise) and genetics affect human health.

## Integrative Biology MSc, PhD

Integrative Biology emphasizes Ecology, Evolution and Animal Physiology. Faculty have broad interests ranging from genes to whole organism studies, from cells to

ecosystems. Research involves a wide range of organisms including microbes, fungi, plants and animals. There is a strong aquatic theme with research on both marine and freshwater systems.

### **International Development Studies\* MA, MSc, PhD**

The collaborative International Development Studies (IDS) Master's and Doctoral programs permit students to combine development studies with training in a selected academic discipline. Added to the Master's (MA, MSc, MEng) or Doctoral transcripts is the designation "International Development Studies", which provides disciplinary specialization required for Doctoral studies and academic careers.

### **Landscape Architecture MLA**

Landscape Architecture is concerned with designing for human, animal and ecosystem health, with particular regard to biodiversity, ecological function and therapeutic landscapes.

### **Management MA, PhD**

The MA Management emphasizes evidence-based decision making. The PhD in Management is a thesis-based program aimed at people who wish to develop a long range research program in a topic of interest offered through the College of Business and Economics at the University of Guelph. The health dimension can be studied in the context of business leadership in the healthcare industry, or new ways of advertising and delivering patient-demanded healthcare.

### **Marketing & Consumer Studies MSc**

Marketing and Consumer Studies aims to understand marketing strategy and consumer behaviour in ways that help businesses, governments and other key stakeholders craft products and policies that satisfy consumers' wants, needs, and well-being. Our thesis program allows a student to gain experience and research skills in a variety of traditional and emerging areas (e.g. ethics and social responsibility, the prevention and control of harmful consumer behaviours).

### **Mathematics & Statistics MSc, PhD**

The Department of Mathematics and Statistics offers MSc and PhD degrees that present the opportunity to specialize in a variety of areas. A number of faculty within the department are working in biomathematics and biostatistics, with applications in areas such as clinical trials, the study of diseases, the modelling of ecological systems and food safety. Students have the opportunity to pursue a thesis (MSc or PhD) or a major research paper (MSc).

### **Molecular & Cellular Biology MSc, PhD**

Researchers in Molecular & Cellular Biology pursue interdisciplinary, fundamental and applied research involving diverse biological systems (plants, humans and other animals, prokaryotic and eukaryotic microbes). Experimental systems extend from molecules to whole organisms; our studies are based in biochemistry, cell biology, microbiology, molecular biology and genetics. Departmental interests include: biochemical toxicology, virology, bacterial toxins, protein structure and interactions, and cell stress responses. We study human and animal diseases including cardiac failure, intestinal, lung and urinary tract infections, central nervous system

degeneration in multiple sclerosis and Parkinson's Disease, and cancer progression. Plant science topics include: physiology, development, environmental stress responses, cellular interactions and signalling, and disease resistance.

### **Neuroscience\* MA, MSc, PhD**

The collaborative Neuroscience program permits students to combine Neuroscience studies with training in selected academic disciplines. Participating departments include: Biomedical Science, Psychology, Clinical Studies, Human Health & Nutritional Sciences, Integrative Biology, Molecular and Cellular Biology, and Animal Biosciences.

### **Pathobiology MSc, PhD, GDip., DVSc**

A diverse range of graduate programs, ranging from bench-top to patient and field work, involving animals, humans, the interface between them, and the environment, await graduate students in the department of pathobiology. Our programs offer the opportunity to work with experts in infectious diseases, immunology, clinical and anatomic pathology, cancer biology, pathogenesis, molecular epidemiology, environmental and ecosystem health, wildlife diseases, and antimicrobial resistance.

### **Plant Agriculture MSc, PhD**

Students in the Department of Plant Agriculture engage in the genetics, physiology and production of ornamental, and new and traditional horticultural and field crops. Through basic and applied projects, individuals can explore ways of minimizing the impact of agriculture on the environment, as well as the development of plants with enhanced human health benefits.

### **Philosophy MA, PhD**

The Philosophy Department teaches courses that are directly related to health studies, such as: philosophy of the environment, philosophy of medicine, philosophy of science, philosophy of biology/ecology, and philosophy of law. These courses will provide the student with a detailed conceptual perspective on health sciences and health issues.

### **Physics MSc, PhD**

The problem-solving skills and interdisciplinary approach of a Physicist are ideally suited to tackle challenging health issues at a quantitative level. At Guelph there is a strong tradition of collaboration with the biological sciences through the Biophysics interdisciplinary program. Relevant research areas in the department include: Medical Physics, where toxic trace elements in the body are studied in context of occupational health, studies of protein structure and function, bacterial physics and biomaterials derived from bacteria, biological self-assembly, and the emerging field of Nanoscience, which will open up new directions for health research.

### **Political Science MA, PhD**

The Department of Political Science offers MA and PhD degrees, with both programs including a specialization in the study of Public Policy and Governance. Several faculty members involved in this stream are active researchers in health politics. Students may pursue a thesis (MA or PhD) or major research paper (MA) in this area.

### **Population Medicine MSc, PhD**

Researchers in the Department of Population Medicine are at the forefront in protecting public health by ensuring

food safety and controlling zoonoses, and protecting animal health and productivity by prevention and control of diseases in animal populations.

### **Psychology MA, MSc, PhD**

The faculty in the Department of Psychology have research interests that cover a variety of different research areas, a number of which are related to health. These include: women's health issues, stress, aging and health as it relates to factors such as volunteerism and exercise, addiction, suicide and non-suicidal self-injury, pain and pain relief, injury prevention, factors related to collision risk when driving (medications age-related medical disorders that affect vision, attention, and memory), as well as psychological disorders associated with adverse health outcomes, such as eating disorders and depression.

### **Public Health MPH, GDip.**

This 5-semester professional degree with concentrations in Epidemiology, Environmental Public Health, Infectious Diseases, Zoonotic Foodborne and Waterborne Diseases and Public Health Policy and Administration will prepare students for careers that address the present and future needs of Public Health. Graduates of this program will emerge as influential leaders at the local, national, and international level, committed to improving quality of life by protecting and promoting community health, and by anticipating and preventing the spread of disease from both a policy and a science perspective. A summer practicum placement complements classroom learning.

### **Rural Planning & Development MSc (Planning), MPlan**

Graduates of Rural Planning & Development research and manage rural health programs in rural Ontario, in aboriginal communities and in the international rural development context. Active research programs take place on the monitoring and evaluation of community health promotion programs, healthy communities, role of physical activity in community health and the impact of poor health on rural community development.

### **Sociology MA, PhD**

Sociology seeks to understand and change our social world. The Department of Sociology and Anthropology offers MA and PhD degrees in Sociology. Different areas of specializations offer opportunities to conduct research and analysis on a broad range of topics related to policy and social change. A number of faculty are actively involved in research on the social and sociological dimensions of human health issues.

### **Toxicology\* MSc, PhD**

The MSc and PhD in the Collaborative Toxicology program permit students to combine Toxicology studies with training in selected academic disciplines. Participating departments include: Animal Biosciences, Biomedical Sciences, Chemistry, Integrative Biology, Environmental Science, Human Health & Nutritional Sciences, Mathematics & Statistics, Molecular and Cellular Biology, Pathobiology, and Psychology. Added to the Master's or Doctoral departmental degree is the designation, "Toxicology". The degrees provide extra training and flexibility for an expanding job market.



## About Us [www.uoguelph.ca/graduatestudies](http://www.uoguelph.ca/graduatestudies)

The University of Guelph is one of Canada's most research-intensive institutions and is at the forefront of learner-centred education. Founded in 1964, Guelph strives to be Canada's leader in creating, communicating and applying knowledge to improve the social, cultural and economic quality of life of people in Canada and around the world.

With over 90 graduate program options, students have access to programs ranging from the natural and physical sciences to Engineering, Social Sciences, Humanities, Business, Art, Agriculture and Veterinary Science. Students may also choose to explore our collaborative and interdepartmental programs to tailor their graduate education to their academic interests.

Graduate studies at the University of Guelph are supported by internationally renowned faculty who are engaged in leading-edge research and practice. Students will have the opportunity to work closely with faculty members who are committed to the development of their students and will empower them to think critically, explore new realms of knowledge, and apply what they have learned, in order to develop the skills they need to be competitive in their discipline.

We invite you to explore graduate opportunities at the University of Guelph and hope you become part of the Guelph family during this exciting time here at the University!

### Graduate Studies Preview Day – Saturday, October 22<sup>nd</sup>, 2016

Join us for Graduate Studies Preview Day between 10:00am – 1:00pm and meet with faculty, staff and current graduate students in your program of interest.

Sign up for a reminder email online at:

[www.uoguelph.ca/graduatestudies](http://www.uoguelph.ca/graduatestudies)

### Campus Tours

Learn more about what the University of Guelph has to offer by visiting us. We offer campus tours Mon-Fri at 10:00am and 1:30pm and Saturday at 1:30pm. Please visit: [admission.uoguelph.ca/tours](http://admission.uoguelph.ca/tours) to reserve your spot with the date and time you would like to visit and we will arrange your tour.

### Meet our Graduate Faculty & Graduate Students

Interested in learning more about the research interests of faculty members and what our graduate students have to say about the University of Guelph? Visit us online at:

[www.uoguelph.ca/graduatestudies](http://www.uoguelph.ca/graduatestudies)

### Looking for an Advisor?

Check out the department website and contact the faculty members you are interested in working with directly. They are interested in knowing more about what research you want to do, why you want to work with them and if you have applied to or received any scholarships.

## Contact Us

Thank you for taking the time to research the University of Guelph. If you have any questions please do not hesitate to contact us.

### University of Guelph

50 Stone Road East,  
Guelph, Ontario, Canada N1G 2W1  
519-824-4120 ext. 56833

[www.uoguelph.ca/graduatestudies](http://www.uoguelph.ca/graduatestudies)

Have questions? Email our office: [gradapps@uoguelph.ca](mailto:gradapps@uoguelph.ca)