Food Science: MSc, PhD

The Department of Food Science provides state of the art knowledge translation focused on developing sustainable, safe and innovative foods aimed at improving human health. Research done in Food Science focuses on interdisciplinary studies spanning chemistry, biology, microbiology, natural product chemistry, nanoscience, physics and nutritional science.

uoguelph.ca/foodscience

PROGRAM

We offer a Master's program and a Doctoral program. Master's students complete a thesis based Master of Science (MSc) over the period of approximately six semesters. The PhD program requires the successful completion of a qualifying exam and the completion and defense of a research-based thesis.

RESEARCH FIELDS

- Food Microbiology
- Food Chemistry
- Food Processing

ADMISSION REQUIREMENTS

Applicants require an Honours BSc in Food Science, Chemistry, Biology, Microbiology, Physics, or other related degree. A minimum average of 73% for the last four semesters completed prior to entry is required.

As part of the application package, applicants are required to secure a faculty advisor to supervise their program.

Application Deadline:
Ongoing

Entry: Fall, Winter, Spring

Food science at the University of Guelph currently ranks 4th globally according to Center for World University Rankings (CWUR), publisher of the largest academic ranking of universities worldwide.

FACULTY AND FACILITIES

Currently 12 faculty train more than 100 graduate students in the department. Our facilities include individual laboratories, teaching laboratories, a core laboratory (focuses on analytical chromatography), a state-of the art dairy processing plant, an experimental kitchen, a newly renovated food processing facility (GFIC) and a level II biosafety facility. The department houses extensive research equipment including: one of three TIM-1 simulated digestive tracks currently housed in Canada, microscopes (atomic force, confocal, polarized, fluorescence, Raman), rheometers (controlled strain and stress), spectrophotometers (UV/VIS, fluorescence, FT-IR, CD), calorimeters (differential, micro cal), PCR detection systems, X-ray diffractometer, etc.

ARE YOU INTERESTED IN:

- Food Safety
- Sensory Science
- Biochemistry and Microbiology
- Engineering
- Bacteriology
- Organic Chemistry
- Food Chemistry

CAREER OPPORTUNITIES:

- Food Safety
- Product Development
- Quality Assurance
- Research and Development

CONTACT INFORMATION

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UNIVERSITY OF GUELPH

DEPARTMENT OF FOOD SCIENCE FACULTY

Maria Corradini: Maria's research focuses on developing non-invasive methods based on luminescent food natural compounds to report on a food's quality, stability, and safety. This can facilitate real-time monitoring of these attributes in an efficient and simple manner.

Lisa Duizer: Lisa's research investigates food preference of older adults and focuses on dysphagia and malnutrition in this subset of the population.

Hrvoje Fabek: Hrvoje's research focuses on understanding how the composition and physicochemical properties of foods influence human health outcomes. By integrating food chemistry, food microstructure and nutritional physiology, his work examines how processing, formulation, and matrix effects alter digestion, nutrient bioavailability, and metabolic responses. A key objective of Hrvoje's research is to generate robust scientific data for the design of functional foods and to inform evidence-based food regulations and nutrition policies.

Lawrence Goodrige: Larry's research focuses on food safety with expertise in developing diagnostic tools and application of bacteriophages for pathogen control. He also has expertise in microbial mapping of pathogens within the environment and food processing plants. Larry holds the Leung Family Professorship directed towards improving the microbiological safety of fresh produce and other foods.

Linda Horianopoulos: Linda's research focuses on the diversity, biology, and genetics of yeasts. Yeast has a traditionally important role in food production (brewing and baking), however, there are many yeast species which are poorly characterized and may have overlooked potential in food production or waste valorization. Linda aims to (1) characterize the genetic mechanisms which drive these differences using genomics and computational approaches and (2) manipulate yeast strains for enhanced bioproduction using targeted genetic modifications.

Iris Joye: Iris' research interests are predominantly directed towards the role of cereal proteins in cereal processing and how their functionality can be manipulated by flour pre-processing, chemical and enzymatic additives.

Biniam Kebede: Bini's research focuses on obtaining a mechanistic and quantitative understanding of how the (micro)structure and composition of food systems can be engineered to optimize flavour, texture, nutrient digestion, and bioaccessibility. His team investigates innovative food structuring and processing technologies within boundaries of environmental sustainability. By leveraging advanced imaging, omics, and computational and AI techniques, Bini's team gains mechanistic insights and develops quantitative/predictive models to create the next generation of healthy, flavourful, and sustainable foods.

Gisèle LaPointe: Gisèle's research aims towards understanding how food components modulate the metabolic activities of microbiota in food and human microbial ecosystems.
Her goal is to improve the quality and functionality of food, with a special focus on milk and dairy products.

Loong-Tak Lim: Loong-Tak's research focuses on research topics related to food packaging, electrospinning/electrospraying, encapsulation, biopolymer film/coating, and coffee technology.

Alejandro Marangoni: Alex's work concentrates on the physical properties of foods, particularly fat crystallization and structure.

Alice Marciniak: Alice's research focuses on understanding the interactions between food proteins during processing to better control the mechanisms involved during the transformation, from dairy sources into functional, nutritional, high-value products and ingredients.

Daniel Onwude: Daniel's research advances food processing and preservation to reduce food loss and waste, and support nutritious and sustainable diets. He combines data-driven and physics-based digital food twins with biomimetic food designs to study how and why food quality changes from production to digestion. His work links production, processing and consumption conditions to nutrition, bioavailability, and environmental impact, enabling online predictive tools for personalised nutrition and sustainable food systems.

Michael Rogers: Michael's research examines sugar- and lipid-derived molecules that can be modified and analyzed for molecular nuances that drive their self-assembly into complex gels. He also researches the impacts of food processing on the chemistry of food materials and, ultimately, on the body's interaction with and absorption of nutrients from them.

Paul Spagnuolo: Paul's research examines both the fundamental and translational impact of nutraceuticals. Primarily focusing on understanding the basic cell and molecular mechanisms by which nutraceuticals impart their anti-cancer activity, his research also looks to characterize their pre-clinical efficacy.

Keith Warriner: Keith's research revolves around food safety and food microbiology, allowing him to work closely with industry and apply his research findings in a practical way. A recent example of applied research conducted by Keith and his team involved developing and implementing decontamination solutions for candy apples, whose market had sank after a listeria outbreak in 2014.