MASTER OF SCIENCE NUTRITION AND FOOD BIOSCIENCES

Overview

Summary

- Degree offered: Master of Science (MSc)
- Registration status option: Full-time
- Language of instruction: English
- Program option (expected duration of the program):

  with thesis (6 full-time terms; 24 consecutive months)

- Academic units: Faculty of Health Sciences (https://health.uottawa.ca/), School of Nutrition Sciences (https://www.uottawa.ca/faculty-health-sciences/nutrition/)

Program Description

The Master of Science Nutrition and Food Biosciences focuses on developing advanced research competencies to address current challenges in the areas of Nutrition and Food Biosciences in Canada and globally. The scope of this fundamental and applied sciences program covers the continuum from food processing to health and wellness. This interdisciplinary program offers advanced education in three main areas of expertise (clinical and public health nutrition, food sciences and cellular and molecular nutrition), which allow students to investigate the role of nutrition and food in promoting health and preventing and treating nutrition related illness. Students will gain a comprehensive understanding of the chemical composition and physical characteristics of foods, which determine their nutritive value and sensory properties. The cellular and molecular mechanisms underlying the metabolic responses to different foods and diets and be able to communicate the importance of good nutrition for maintaining health and managing diet-related diseases will be studied. This program addresses the continuum of research from food formulation to metabolism, focusing on the intersection between healthy food and healthier lives.

Main Areas of Research

Members of the School of Nutrition Sciences are involved in three main research fields:

- Clinical and Public Health Nutrition,
- Food Sciences,
- Cellular and Molecular Nutrition.

Fees and Funding

- Program fees:

  The estimated amount for university fees (https://www.uottawa.ca/university-fees/) associated with this program are available under the section Finance your studies (http://www.uottawa.ca/graduate-studies/programs-admission/finance-studies/).

  International students enrolled in a French-language program of study may be eligible for a differential tuition fee exemption (https://www.uottawa.ca/university-fees/differential-tuition-fee-exemption/).

- To learn about possibilities for financing your graduate studies, consult the Awards and financial support (https://www.uottawa.ca/graduate-studies/students/awards/) section.

Notes

- Programs are governed by the academic regulations (http://www.uottawa.ca/graduate-studies/students/general-regulations/) in effect for graduate studies.
- In accordance with the University of Ottawa regulation, students have the right to complete their assignments, examinations, research papers, and theses in French or in English.

Program Contact Information

Academic Office, Faculty of Health Sciences (https://health.uottawa.ca/)
125 University Private, Room 242
Ottawa, Ontario, Canada
K1N 6N5

Email: healthsc@uOttawa.ca (healthsc@uottawa.ca)

Facebook | Faculty of Health Sciences (https://www.facebook.com/uOttawaHealthSc/)

Admission Requirements

For the most accurate and up to date information on application deadlines, language tests and other admission requirements, please visit the specific requirements (https://www.uottawa.ca/graduate-studies/programs-admission/apply/specific-requirements/) webpage.

To be eligible, candidate must:

- Hold a bachelor's degree (or equivalent) in food science, nutrition science, health sciences, biology, biochemistry, microbiology, biomedical science or related disciplines with a minimum average of 70% (B) calculated according to the University of Ottawa guidelines.

  Note: International candidates must check the admission equivalencies (https://www.uottawa.ca/graduate-studies/int-equivalencies/) for the diploma they received in their country of origin.

- Demonstrate high academic achievement as shown by official academic transcript, academic reference forms, and other supporting documentation.
- Have written confirmation from at least one faculty member willing to supervise your research and thesis.

  We recommend that you contact potential thesis supervisors as soon as possible.

- Provide a statement of interest and curriculum vitae.
- Arrange for two academic reference forms to be completed and submitted to support your application.

Language Requirements

Understand and fluently speak the language of instruction (English).

Produce your written work or thesis in French or in English.

Provide proof of proficiency in the language of instruction, if first language is not English.

Note: Candidates are responsible for any fees associated with the language tests.

Notes

- The admission requirements listed above are minimum requirements and do not guarantee admission to the program.
- Admissions are governed by the academic regulations (http://www.uottawa.ca/graduate-studies/students/general-regulations/) in effect for graduate studies.

Program Requirements
Master's with Thesis

Students must meet the following requirements:

Compulsory courses [1]		
NUT 5101	Research and Communications in Nutrition and Food Biosciences	1.5 Units
NUT 5102	Knowledge Translation and Transfer for Nutrition and Food Biosciences	1.5 Units
1 course unit from Clinical and Public Health Nutrition [2]		1 Unit
NUT 5111	Nutritional Epidemiology: Methods and Applications	
NUT 5112	Social Nutrition and Vulnerable Populations	
NUT 5113	Advances in Clinical Nutrition	
NUT 5114	Impact of Nutrition in Health and Disease	
NUT 5115	Indigenous Nutrition and Food Culture	
1 course unit from Food Sciences [2]		1 Unit
NUT 5121	Food Composition	
NUT 5122	Dependence of Food Properties on Structural Organization of Biomaterials	
NUT 5123	Bioaccessibility of Bioactive Components	
NUT 5124	Bioavailability of Bioactive Components	
1 course unit from Cellular and Molecular Nutrition [2]		1 Unit
NUT 5131	Nutrition and Intestinal Health	
NUT 5132	Composition and Function of Microbiome	
NUT 5133	Nutrition and Neuroscience	
NUT 5134	Food Function and Chronic Disease	
Thesis Proposal		
NUT 6997	Research Proposal	
Thesis		
THM 7999	Master's Thesis [3,4]	

Note(s)

1

The school may require additional courses, depending on your backgrounds.

2

The list of specialized modules being offered in each field in any given year will be indicated on the program website. You are allowed to take 3 optional course units in another discipline with approval of the Department and the assistant director at graduate studies.

3

Presentation and defense of a thesis based on original research carried out under the direct supervision of a faculty member of the School.

4

You are responsible for fulfilling all the thesis requirements.

Minimum Requirements

The passing grade in all courses is C+.

Two failures in courses (either 1-unit module or 1.5 units course) or the thesis proposal, or two unsatisfactory research progress reports will result in withdrawal from the program.

Research
Research Fields & Facilities

Located in the heart of Canada's capital, a few steps away from Parliament Hill, the University of Ottawa is among Canada's top 10 research universities.

uOttawa focuses research strengths and efforts in four Strategic Areas of Research:

- Creating a sustainable environment
- Advancing just societies
- Shaping the digital world
- Enabling lifelong health and wellness

With cutting-edge research, our graduate students, researchers and educators strongly influence national and international priorities.

Research at the Faculty of Health Sciences

Research at the Faculty involves many important aspects of health, including women's health, health in the elderly, health needs of francophones in a minority context, Aboriginal health, physical activity and health, multiple interventions in population health, palliative care, rehabilitation and functional autonomy, health and technology, and evidence based practice.

The Faculty of Health Sciences is involved in the following Research Centres and Institutes:

- LIFE Research Institute
- Music and Health Research Institute
- Centre for Research on Health and Nursing
- Interdisciplinary Centre for Black Health

The Faculty of Health Sciences has strong collaborations with the region's hospital-affiliated research institutes:

- The Ottawa Hospital Research Institute
- The Children's Hospital of Eastern Ontario Research Institute
- The Bruyère Research Institute
- The Royal's Institute of Mental Health Research
- L'Institut du Savoir Montfort
- University of Ottawa Heart Institute

For more information, refer to the list of faculty members and their research fields on **Uniweb**.

IMPORTANT: Candidates and students looking for professors to supervise their thesis or research project can also consult the website of the faculty or department **(**https://www.uottawa.ca/study/graduate-studies/academic-unit-contact-information/**) of their program of choice. Uniweb does not list all professors authorized to supervise research projects at the University of Ottawa.**

Courses

NUT 5101 Research and Communications in Nutrition and Food Biosciences (1.5 unit)
Building skills in critical evaluation of the scientific literature in nutrition and food biosciences. Demonstrating effective communication of scientific information. Preparation and delivery of one oral presentation and one poster. Online modules introduce concepts for identifying and defining research questions, experimental design, qualitative and quantitative research methods, statistics models and data interpretation.
Course Component: Seminar

NUT 5102 Knowledge Translation and Transfer for Nutrition and Food Biosciences (1.5 unit)
Lectures, tutorials and group discussions designed to provide advanced training in translation and transfer of scientific knowledge appropriate for different audiences. Preparation and presentation of communication tools for communicating food and nutrition information to the public. Introduction to basic professional skills related to academic integrity, scientific writing, as well as professional conduct and etiquette.
Course Component: Seminar

NUT 5105 Current Challenges in Food Safety and Nutrition (3 units)
Development of critical analysis and strategic thinking skills by analyzing current literature and other resources to explore a variety of challenges encountered in the food industry. Scientific evidence and regulatory questions surrounding topics such as genetically modified foods, food allergens, nutritional quality of the food supply (e.g., trans fat, sodium, sugars). Emerging issues include minimization of antimicrobial resistance, implications of microbiome research on food regulation, climate change and other global impacts on the food supply chain and safety of nanotechnology. Concepts of emotional intelligence, stress management and interpersonal relationships to build food safety culture within the workplace.
Course Component: Lecture

NUT 5106 Fundamentals of Food Risk Analysis (3 units)
Regulatory and voluntary tools used to manage risk in the food industry. Conduct food risk assessment using case studies. Strategies to minimize risk of cases of microbial, chemical and allergen contamination including the application of a decision-making framework for identifying, assessing, and managing health risks. Best practices and novel risk communication tools in the development of a risk management and communication plan. Examination of international food risk analysis activities.
Course Component: Lecture

NUT 5107 Fundamentals of Public Health Policy Development (3 units)
Roles of Canadian federal, provincial, territorial and local departments and agencies with regard to formulation, implementation and enforcement of regulations. Responsibilities of policy-makers, researchers, management and elected officials in policy development and communication. Tools used in scientific evidence-based policy-making. Analysis of complex scientific reports including meta-analyses and surveillance data reports to evaluate the validity and degree of certainty of the evidence supporting scientific and epidemiological questions. Using social research tools, to assess the impact of public health policies on stakeholders and consumers.
Course Component: Lecture

NUT 5108 Research and Seminars (3 units)
Develop awareness of current food and nutrition topics which involve government policy and regulatory interventions to address issues for public health. Learn and use appropriate methods and approaches to research, gather, interpret and contextualize the evidence in support of a topic of interest. Explore and effectively disseminate how evidence-based food and nutrition policies/regulations can address issues for public health. Best practices learned in the previous NUT courses will be used to guide policy/regulatory recommendations. Project findings will be presented to fellow students, professors and guest evaluators. A component on career planning with a focus on soft skills such as communication and emotional intelligence will be used to prepare participants for their experimental learning internship.
Course Component: Lecture
Prerequisite: 6 university course units from NUT 5105, NUT 5106, NUT 5107.

NUT 5109 Experiential Learning Internship Placement (3 units)
Apply knowledge gained in the classroom in a real-life work environment through the completion of a project or work package during a paid or unpaid internship consisting of a minimum of 135 hours conducted over a period of up to 12 weeks. Submit a report at the end of the placement describing how the required competencies were acquired through the internship activities. Recruitment in a federal government department, a provincial government department, an appropriate non-government organization, a food company or other suitable environment through a competitive process.
Course Component: Work Term
Prerequisites: NUT 5105, NUT 5106, NUT 5107, NUT 5108. Students receive a grade of S (satisfactory) or NS (non-satisfactory).

NUT 5110 Applied Food Policy and Regulation Analysis (3 units)
The applied analysis is an in-depth development and critical analysis of relevant and current issues facing food policy-makers. The topic of the applied analysis is approved by the supervisor and the Assistant Director of Graduate Studies and Research. The applied analysis consists of an extensive paper reflecting intensive research and rigour in the subject matter relevant to the interdisciplinary, field of food policy and regulatory affairs and encompassing the fields of nutrition, microbiology, law, social sciences, and consumer behaviour. The final paper is assessed by the supervisor and an evaluator.
Course Component: Research
Prerequisites: NUT 5105, NUT 5106, NUT 5107, NUT 5108. Students receive a grade of S (satisfactory) or NS (non-satisfactory).

NUT 5111 Nutritional Epidemiology: Methods and Applications (1 unit)
Acquisition of essential critical evaluation skills to understand common study designs and methodologies in nutritional epidemiology. Examination of commonly used approaches and tools for measuring dietary intake patterns. Translation of research findings into food and nutrition policies, considering diverse population contexts to address public health goals effectively.
Course Component: Lecture

NUT 5112 Social Nutrition and Vulnerable Populations (1 unit)
A multidisciplinary approach to study nutritional status of vulnerable groups. Strategies and policies to improve food security, food procurement and diet quality.
Course Component: Lecture

NUT 5113 Advances in Clinical Nutrition (1 unit)
Approaches to nutritional assessment and care strategies for nutritional support for healthy individuals, as well as those with acute and chronic diseases and conditions. Methods used to assess nutritional status and metabolic disturbances associated with disease development.
Course Component: Lecture

NUT 5114 Impact of Nutrition in Health and Disease (1 unit)
Role of food and nutrition in determining health and wellness at the individual and population levels. Strategies for preventing and managing diet related diseases.
Course Component: Lecture

NUT 5115 Indigenous Nutrition and Food Culture (1 unit)
Overview of traditional and current dietary patterns among Indigenous Canadians. Impact of settlers' interventions on traditional food sources, food culture and food security. Implications of the increasing prevalence a Western diet on the health of Indigenous communities.
Course Component: Lecture

NUT 5121 Food Composition (1 unit)
Molecular, supramolecular and bulk properties of macronutrients and their influence on structural complexity on their functional roles in food products. Structure, properties, stability and nutritional value of micronutrients and bioactive components. Methods of data analysis.
Course Component: Lecture

NUT 5122 Dependence of Food Properties on Structural Organization of Biomaterials (1 unit)
Study of food microstructure in relation to texture, taste, mouthfeel, digestibility, nutrient bioavailability and stability. Microstructural changes during processing of food materials. Physics of microscopy, dynamic light scattering and rheology. Principles of sensory evaluation.
Course Component: Lecture

NUT 5123 Bioaccessibility of Bioactive Components (1 unit)
Occurrence, types, chemical structures and processing of bioactive components in foods. Food matrix effect on accessibility of bioactive components, and their applications in food production. Mechanistic basis of in vitro models and methods.
Course Component: Lecture

NUT 5124 Bioavailability of Bioactive Components (1 unit)
Influence of bioavailability of bioactive components of food and nutritional supplements on nutritional quality. Cell culture and in vivo models. Advantages and drawbacks of various models for studying nutritional and bioactive properties of food.
Course Component: Lecture

NUT 5131 Nutrition and Intestinal Health (1 unit)
Theory and methodological approaches to study physiological processes involved in maintaining gastrointestinal integrity and function. Modulation of the intestinal microenvironment, digestion, nutrient absorption, permeability, motility, and immune response by food-derived metabolites.
Course Component: Lecture

NUT 5132 Composition and Function of Microbiome (1 unit)
Role of microbiota, a highly complex mixture of microbial organisms, in host nutrition, metabolism, and physiology. Application of in vivo and in vitro models in microbial modulation and metabolism studies. Methodologies for structural and functional characterization of genomics, epigenomics, proteomics, metabolomics and related omics studies.
Course Component: Lecture

NUT 5133 Nutrition and Neuroscience (1 unit)
Bidirectional routes of communication between the gastrointestinal tract and the central nervous system with a specific focus on how the gut microbiota regulates the interactive pathways. Factors influencing the gut-brain axis, their effects on the body and the brain, and resulting impacts on physical and mental health.
Course Component: Lecture

NUT 5134 Food Function and Chronic Disease (1 unit)
Etiology, treatment strategies, and research approaches to study diet related diseases. Role of foods and food-derived metabolites in disease prevention and treatment by studying underlining molecular mechanisms at the cellular and metabolic levels.
Course Component: Lecture

NUT 5940 Étude dirigée en nutrition et biosciences alimentaires / Directed Study in Nutrition and Food Biosciences (1 crédit / 1 unit)
Étude indépendante sur un sujet pour répondre à une exigence académique particulière d'un étudiant. / Independent study on a topic to meet a particular educational requirement of a student.
Volet / Course Component: Recherche / Research
Permission de la direction adjointe aux études supérieures est requise. / Permission of the Director of Graduate Studies is required.

NUT 6997 Proposition de recherche / Research Proposal
Volet / Course Component: Recherche / Research