



Master of Science

FOOD SCIENCE AND INNOVATION

The Food Science and Innovation MSc commences with a 15 credit Critical Reading, Writing and Literature Research module, followed by eight 15 credit units, finishing with a 15 credit Methodological Approaches to Research and 30 credit Professional Project.

Core units:

Food
Processing

Food
Composition
and Analysis

Food
Microbiology

Food Safety
and Quality
Management

Fundamental
Nutrition

Future Food
Sustainability

Innovation in
New Product
Development

Molecular
Nutrition and
Biochemistry

Critical Reading, Writing and Literature Research

This unit develops critical thinking, reflective writing and other study skills, including analysis and referencing, to study at Masters level and in particular to introduce students to research skills needed to successfully produce a literature review as well as unit essays. You will pick a topic area, perhaps related to the dissertation that you might intend to study to further research and apply the tools learned in the sessions.

Food Processing

This unit will explore the key principles that govern individual unit operations and how these operations can be combined to build effective food production chains. The unit content reflects current and emerging trends within food production, focusing students on the principles of food processing and preservation, and concepts in food engineering. Using model data from demonstrations of food processing equipment and/or from case studies, students will critically evaluate the design and expected performance of proposed processing chains.

Food Composition and Analysis

Students will learn the theory behind food analysis, and understand how the chemical composition of foods determines their flavour, texture, nutritional value and safety. Students will explore the influence of chemical profile on the characteristics and quality of foods, and how these can be modified by food processing. Students will interpret model data from analysis of food samples taken from across the food chain, to make informed decisions about product quality and safety.

Food Microbiology

This unit focuses on microbiological food hazards and their control, and the importance of microorganisms in food safety and quality. The unit assessment strategy aligns with activities typical to quality control / quality assurance through the generation of technical reports following microbiological examination of food samples.

Food Safety and Quality Management

This unit focuses upon the activities typical to quality control / quality assurance and quality management, through the application of case studies to critically assess quality management systems for product safety and quality.

Fundamental Nutrition

This unit provides students with core knowledge of dietary sources of energy, nutrients and bioactive constituents of food, nutrient deficiencies and excesses in the human diet. It also considers the impact on the development of disease across the lifespan. Students will develop comprehensive understanding of nutrients and non-nutrient bioactive compounds. Dietary recommendations and analysis programmes will be discussed in relation to the improvement of population health and the nutritional adequacy of a variety of diets.

Future Food Sustainability

This unit will explore the risks, challenges and opportunities for food security, and innovative technologies and solutions that can increase productivity and reduce environmental impact. Adapting to a sustainable food system is one of the most compelling challenges facing society in the 21st

century. This unit considers the interconnectivity between population growth, changing dietary habits, growing health concerns, planetary boundaries, environmental impacts and climate change that continue to place a strain on food availability. Engaging consumers in food policy is increasingly important in the change process, to improve nutrition and ultimately making the food system more resource-efficient, secure and transparent. Addressing sustainability through new technologies, new modes of food production and consumption, and a holistic approach to product innovation can generate new opportunities for unique, ethical and trusted food products. Delivering a safe, secure and resilient food supply is central to world agreements (e.g. Sustainable Development Goals and the COP21) and possible country, company and individual responses.

Innovation in New Product Development

This unit will develop critical understanding of the integration between food science, marketing, and strategic management theory for managing the innovation of new food products. New product development is vital to the economic success of the food industry and hence a strategic focus for successful companies. The unit will examine in detail the key stages in the research, creation, design, development, and marketing of new products. Industry linked case studies will enable students to understand the managerial and entrepreneurial aspects of an innovative NPDP process within the food and drink sector.

Molecular Nutrition and Biochemistry

This unit is aimed at developing students' knowledge of the role of nutrients within the human body by exploring molecular and biochemical pathways in which macro and micronutrients are metabolised. Unit content will explore the role of diet in the development of disease and of the needs and goals of industrialised food formulation and production in meeting human nutritional requirements. The unit also develops students' ability to present complex scientific knowledge visually and verbally to lay and scientific audiences.

Methodological Approaches to Research

This unit develops critical thinking, reflective writing and other study skills to study at Masters level and in particular to introduce students to general research methods needed to successfully develop a dissertation proposal or research brief. You will pick a topic area, perhaps related to the dissertation that you might intend to study, to further research and apply the tools learned in the sessions.

Professional Project

This unit provides students with a chance to conduct a research project on their chosen area of study. It is envisaged students will choose a professional area they enjoy to investigate in-depth. The unit expects students to bring together and employ all the skills they have learnt via previous online modules. Indicative content includes key research concepts, critical literature review, research methods, case studies, policy recommendations. Students will be able to undertake either a desk-bound project using secondary data or a 'live' empirical project, using their own workplace or carrying out fieldwork.