



Master of Science in the field of
**FOOD SAFETY
AND TOXICOLOGY**

Addressing risks of food toxicology in broad dimensions

2024-25 (September 2024 intake)

IS THE PROGRAMME FOR YOU

Why this Programme

Established by the School of Biological Sciences in 2009, the MSc in the field of Food Safety and Toxicology programme:

- provides comprehensive training on a multi-disciplinary field involving general toxicology, food toxicology, regulatory toxicology, and food safety management
- emphasises on basic knowledge and practical skills in recognition and evaluation of human exposure to potentially hazardous chemicals and pathogens in our living environment and via intake of food
- makes particular reference to food safety evaluation and regulation

World-class Rankings of HKU

Quacquarelli Symonds (QS)

 **#26** World Rankings 2024
#4 Asia Rankings 2023

Times Higher Education (THE)

 **#31** World Rankings 2023
#4 Asia Rankings 2023

Top-notch Scientists in the Faculty

Clarivate Analytics' Essential Science Indicators
18% of our professoriate staff
(average over the past decade)
are classified Top 1% scholars

What the Programme Covers

- ◇ First multi-disciplinary postgraduate Toxicology programme of its kind in Hong Kong designed to address specifically on food safety
- ◇ Focuses on general principles of toxicology, chemical and microbial hazards in food, toxicity evaluation, exposure assessment, risk assessment and management
- ◇ Taught by a teaching team with considerable experience in the fields of policy development, law enforcement, and research and consultancy for industry and government
- ◇ Internationally renowned visiting lecturers to give lectures and workshops

What the Programme Covers



Tuition fees

Composition fee: HK\$180,000[#] (subject to approval)
Students are required to pay Caution Money (HK\$350, refundable on graduation subject to no claims being made) and Graduation Fee (HK\$350)



Programme duration

Full-time: 1 year



Study load

Credits: 69 credits
Learning hours: 1,600 -1,800 hours (including 360 hours for project and contact hours of 276-414 hours)



Class schedule

- Each 9-credit course is an intensive workshop offered over 2 weeks, consisting of about 36-54 contact hours, each class will last for 3 hours and will be held between Monday to Saturday
- Preceded by preparatory study of carefully-selected distance-learning material and followed by consolidation and assessment, each course is self-contained and is individually assessed



Medium of Instruction

English



Assessment

- Written work forms an integral part of the programme
- Most courses in the programme are assessed by examination and by coursework
- The project report will be assessed by examiners and participation in the seminars at which students present their work is one of the requirements for the completion of this component of the degree curriculum

[#]Fee shall generally be payable in 2 instalments over 1 year

Host

School of Biological Sciences

The School was founded in 2007 following the merger of the Departments of Zoology, Botany, and Ecology & Biodiversity. Through a range of approaches from molecular, chemical and microbiological techniques to food-web analyses, we are committed to undertaking research on food safety and health of the highest standard that will be read, cited and applied by colleagues internationally.

Study in food security is an innovative programme that entails scientific and social approach in food toxicology and management, allowing students to relate global challenges in industry, society and government levels.

Network

The programme offers students the opportunity to communicate and form a network with guest lecturers who are world-class leaders in the field of Toxicology.

Transferable skills

- ◇ Communicate ideas effectively both orally and in writing
- ◇ Analyse and appraise the relevant literature in a critical manner
- ◇ Utilise appropriate numerical and statistical problem-solving skills
- ◇ Utilise information technology resources (information retrieval)
- ◇ Work independently and as part of a team
- ◇ Manage time and resources to complete all aspects of the programme

Career development

- ◇ Researcher in food toxicology and related fields
- ◇ Regulator (risk assessor/manager) in food safety authorities
- ◇ QA/QC manager in food industries



Where will this Programme Lead You



Students are expected to have basic knowledge in physiology, biochemistry, chemistry or molecular biology for understanding the topics covered in the programme



The programme is intended for those with relevant experience in the food, chemical, pharmaceutical and public health sectors, including but not limited to:

- ◇ supervisory positions in the aforementioned industries or consultancy
- ◇ environmental, food and health officers, technical officers in local/national regulatory authorities
- ◇ officers in diagnostic or analytical laboratories
- ◇ graduates who completed relevant undergraduate degrees, looking for career opportunities in the aforementioned industries/government agencies

Hear from our graduates

Sijue WANG
Class of 2022



The MSc in Food and Safety programme is a programme that suits students with diverse interests. It does not matter if you are a food science scholar who is determined to enter academia or a practical technician seeking further training in the food toxicology industry, this is a programme worth joining. Better yet, if you are someone undecided like me who would love to join purely out of the interests of the food science and nutrition, this programme is tailor-made for you. The course design is extremely helpful for determining your career path and you would get tremendous help from the faculty whenever you seek for guidance. The training offered is intense but with ingenious design — it challenges you but will not burn you out. I truly feel blessed to have chosen this programme as the final stop of my education journey. Without the help I got from this programme I would not be able to gather my passion for the field and pay it forward.



Jackie Jiabin WANG
Class of 2022



The FTSX programme is comprehensive and covers aspects of food safety, risk management and principles of toxicology. The professors of this programme are famous scholars or experts in the food science field, and they are kind to help students and passionate about sharing their practical experiences. In the capstone project, students can choose whether to participate in food science research or a practical food safety inspection project, helping them visualise their career path selection. The programme lays a solid foundation in food safety and toxicology, helping students who seek to develop a food safety career as a government officer or industry professional realise their potential.



Design of curriculum (full-time)	
Year	1 Year (69 credits)
Course	
Core Courses	FSTX7001 Principles of toxicology I (9 credits)
	FSTX7002 Principles of toxicology II (9 credits)
	FSTX7003 Toxicity tests and hazards evaluation methods (9 credits)
	FSTX7004 Regulatory toxicology: risk assessment, risk management and communication (12 credits)
	FSTX8005 Chemical and microbial hazards in food (9 credits)
	FSTX8006 Food safety management (9 credits)
	FSTX8007 Project (12 credits)

Remarks:
The programme structure will be reviewed from time to time and is subject to change.

FSTX7001 Principles of toxicology I

This course focuses on the basic principles, mechanisms and common methods underpinning the science of toxicology. Selected target organ systems are studied for understanding how representative chemicals damage and impair their ability to function. Students will develop a fundamental understanding of how chemicals may exert toxic effects and gain insight into the importance of organ-specific toxicity.

FSTX7002 Principles of toxicology II

This course is a continuity of Principles of toxicology I. Selected toxicants and disease processes are studied with respect to their source of exposure and mechanisms of effects, and the understanding of their basic pathways and common mechanisms respectively. Selected fields are also presented to give students insight into the applications of toxicology and its relationship with other fields.

FSTX7003 Toxicity tests and hazards evaluation methods

This course equips students to investigate the effect of chemical and microbial toxins and environmental pollutants on living systems with a state-of-the-art methodology. Topics include exposure estimate, animal tests for acute toxicity, short-term and long-term toxicity, for mutagenicity, genotoxicity and carcinogenicity, reproductive toxicity, teratogenicity, developmental toxicity and delayed neurotoxicity. Major focus is on the fundamental principles underpinning each test method including the test rationale, protocol design, limitations and data interpretation.



FSTX7004 Regulatory toxicology: risk assessment, risk management and communication

This course provides students with an intensive training to develop the necessary practical skills to measure and model the extent to which human populations come into contact with toxic agents in the environment and foods, to conduct risk assessments, to set safe levels of chemical exposure in foods, and to implement effective risk management in protecting human health and the environment.



FSTX8005 Chemical and microbial hazards in food

This module will introduce the chemical and microbial hazards in food and their effects on human health. Special reference is made to heavy metals, pesticides, food additives, persistent organic pollutants and natural food contaminants of current public concern. An emphasis will also be placed on understanding the actual impact of food and waterborne pathogens, their epidemiology and factors contributing to the increase in their incidence. Determination of exposure pathways and linking food hazards to human health is the primary focus.

FSTX8006 Food safety management

Good manufacturing practice (GMP) has a significant impact on the daily operation of a food processing facility. This course will focus on issues arising from GMP and aspects of the physical design of a food processing facility which impact the safety of workers and products. In food supply chain, traceability is the ability to follow the movement of a food product through the stages of production, processing, and distribution, and is a crucial component of the food safety management system. As a core quality management tool in the food industry, the relevance, impact and use of ISO 22000 and Hazard Analysis Critical Control Point in manufacturing and catering will be discussed.



FSTX8007 Project

All students are required to undertake or to attend training (up to 4 months) in one of the following areas:

- ◇ Academic institutions, to carry out basic research project using the most advanced techniques in molecular biology, analytical chemistry and biomedical sciences
- ◇ Food, chemical and pharmaceutical industries, to overlook industry procedures on ensuring that the emerging/newly developed food and chemical products meet regulatory standards and requirements and are safe for consumers; their potential health implications
- ◇ Government agencies, to gain knowledge on the procedures implemented by the local/national authorities in formulating science-based policies, laws and regulations to ensure the safe production and use of food and chemicals
- ◇ Students will have the opportunity to conduct their research component (own cost) at collaborative overseas universities (e.g., Finland, Sweden and Canada).

Each student shall make a formal presentation on the subject of his/ her training during the final semester of the programme.

More course information at:

<https://www.scifac.hku.hk/prospective/tpg/FSTX>



“ Hardly a week goes by without hearing that a chemical or a bacteria may threaten our health—pesticides and pathogens in the food we eat, pollutants in the air we breathe, chemicals in the water we drink, or toxic dumpsites near our homes. Which chemicals/pathogen are really dangerous? How much does it take to cause harm? What are the effects of a specific chemical/pathogen? Cancer? Nervous system damage? Birth defects?. All these events continue to highlight toxicology as an important and growing discipline. We hope that you will enjoy learning the exciting skills of being a future toxicologist. ”



Programme Director

Dr Hani S EL-NEZAMI

BSc ALEXU; MAppSc, PhD RMIT

Dr El-Nezami was the recipient of the prestigious Academy of Finland Fellowship, for his research excellence in investigating human exposure and dietary approaches to counteract the health hazards associated with exposure to food toxins. He holds an adjunct Professor post at the University of Turku, Finland, and Misr University for Science and Technology, Egypt. He is the Assistant Coordinator of consortium funded by the European Union aiming at the modernisation of Traditional Chinese Medicine, an active member of the Finnish Society of Toxicology and the American Society of Microbiology, and also the consultant for several firms in Finland and Egypt.

Overseas Guest Lecturers

Professor David KITTS

University of British Columbia, Canada

Professor Risto JUVONEN

University of Eastern Finland, Finland

Professor Roger COULOMBE

Utah State University, USA

Professor Janna RYSÄ

University of Eastern Finland, Finland

Professor Wolfgang KNEIFEL

University of Natural Resources and Life Sciences, Austria

Dr Peter CHAN

Health Canada, Canada

Professor Hannu RAUNIO

University of Eastern Finland, Finland

Dr Paul TURNER

University of Maryland, USA

Professor Stephen FORSYTHE

Nottingham Trent University, UK

Professor Harri ALENIUS

Institute of Environmental Medicine, Karolinska Institutet, Sweden

Dr Jenni KORHONEN

University of Eastern Finland, Finland

Professor Kenneth KORACH

National Institute of Health (NIH/NIEH), USA

Dr Chiranjeev DASH

Georgetown University, USA

Dr Kyly C WHITFIELD

Mount Saint Vincent University, Canada

Professor Seppo AURIOLA

University of Eastern Finland, Finland



Admissions

Requirements

- ◇ A Bachelor's degree in Science
- ◇ Preference will be given to those who possess a Bachelor's degree in physiology, biochemistry, biotechnology, food science, chemistry, biological sciences, clinical laboratory science, environmental sciences, pharmacology or other related disciplines
- ◇ Fulfil the University Entrance Requirements

How to apply

Application deadline: **12:00 noon (GMT +8), April 30, 2024**

Online application:
admissions.hku.hk/tpg/



Expected degree conferment will take place in

November / December 2025 (Winter Congregation)

Further Information

Programme details
bit.ly/2YuHqnM



Support for students
www.cedars.hku.hk/



Enquiries

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