



**SHKU**  
**Science**

FACULTY OF SCIENCE  
THE UNIVERSITY OF HONG KONG  
香港大學理學院

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

*Addressing risks of food toxicology in broad dimensions*

**Apply now for entry in September 2022**



SCIENCE CREATES KNOWLEDGE



# 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)

**QS WORLD UNIVERSITY RANKINGS** **#22** World Rankings 2021  
**#4** Asia Rankings 2021

Times Higher Education (THE)

**THE WORLD UNIVERSITY RANKINGS** **#30** World Rankings 2022  
**#4** Asia Rankings 2021

Top-notch Scientists in the Faculty

Clarivate Analytics' Essential Science Indicators 2020

**16.5%** of our professoriate staff are the world's 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



### Tuition fees

**Composition fee: HK\$140,000<sup>#</sup>** (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

<sup>#</sup>Fee shall generally be payable in 2 instalments over 1 year for full-time

## 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

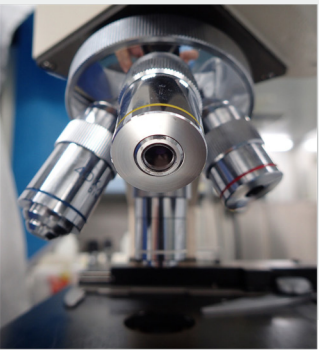
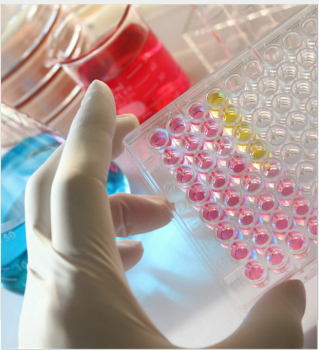
The programme offers students the opportunity to communicate and form a network with guest lecturers who are world-class leaders in the field of Toxicology.

### 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

What the Programme Covers



IS THE PROGRAMME FOR YOU

WHAT YOU WILL LEARN

Who should Take this Programme



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

Vivian Wai Wan CHOI  
Class of 2021



“HKU’s MSc in Food Safety and Toxicology is an intriguing programme. With an initial interest in nutrition, this programme instills novel ideas into my understanding on health-related issues by broadening my horizons on toxicology through academic discussions with scholars and government officials around the globe. Sincerest gratitude should be expressed towards all HKU Food and Nutritional Science faculty members and the MSc programme manager. Their valuable academic and career advice are my sources of inspiration to realise my full potential. My current success in entering the field of regulatory toxicology would not be achieved without their patient guidance, unwavering support and encouragement.”



Sharon Shiu Nam TANG  
Class of 2021

“This programme is the best in teaching principles and the invaluable role of toxicology in food safety. It suits people like me who seek a more practical ground of science as career choice. The final project was also a great opportunity for me to gain valuable research experience and understood the nano-risk in food industry. A shame I cannot be divided in half to conduct another project, which involves developing HACCP/ISO22000 in a real food factory. Overall, it was a joyful and fruitful ride. I met great people, friends and a good partner, as well as many companies waiting for new FSTX graduates. I hope the last line may get your attention.”

Programme Structure

Design of curriculum (full-time)	
Year	1 Year (69 credits)
Course	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.

Programme Highlights

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

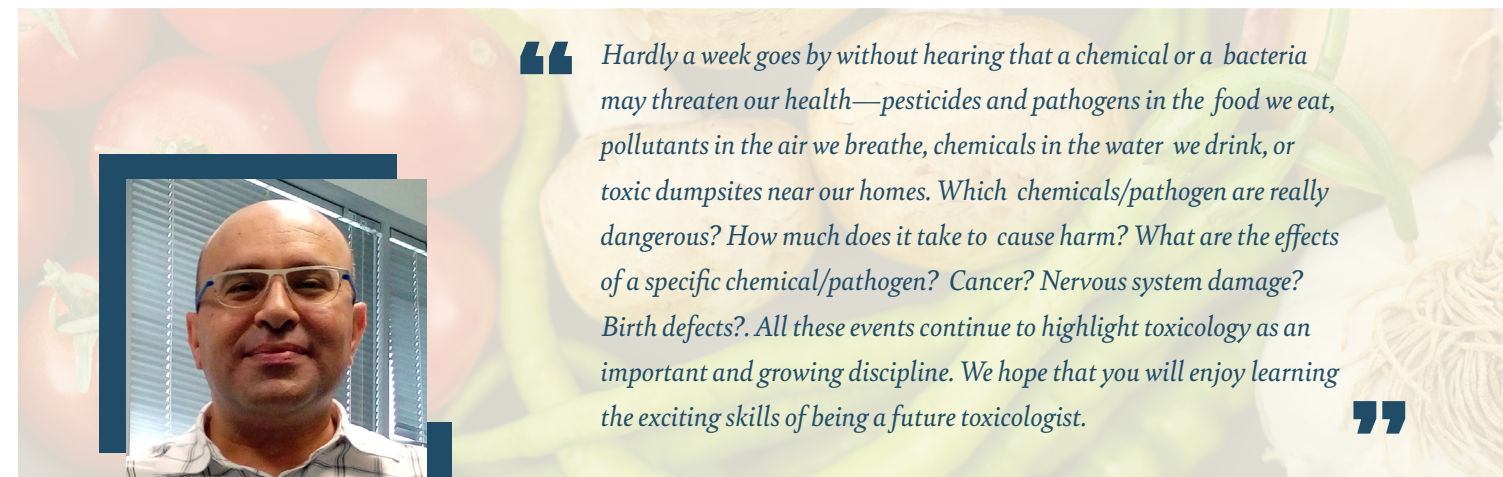
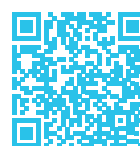
All students are required to undertake or to attend training (up to 6 months) in one of the following areas:

- ◇ 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

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>



## 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.

## Programme Manager

**Dr Stephanie W Y MA**

BSc, MSc HK; PhD Br Col

Dr Ma has extensive experiences in conducting research in chemical toxicology, in toxicological evaluation and safety assessment of chemicals to human health, and in policy development for the control and management of toxic chemicals. She served as an Advisor to various international food safety organisations including the Joint Meeting of Pesticide Residues and the International Programme on Chemical Safety, WHO. Dr Ma was a Research Scientist at the National Research Council of Canada, a Senior Toxicologist at Health Canada, a Senior Environmental Protection Officer of the Environmental Protection Department and a Senior Food Toxicologist of the Centre for Food Safety, Food and Environmental Hygiene Department in the HKSAR Government.

## Course Coordinator

**Professor C Y MA**

BSc, MSc HK; MSc, PhD Br Col

Professor Ma has extensive experiences in conducting applied research in food science and technology. He was a Senior Research Scientist at the Food Research Institute, Agriculture Canada; a Consultant to many food companies in North America and Hong Kong; and a Professor of Food and Nutritional Science in the School of Biological Sciences, HKU. Professor Ma served as the chairman of the HKSAR Expert Committee on Food Safety for six years and a member of many government consultative bodies including the Food and Environmental Hygiene Advisory Council and the Midwife Council. He was also a panel member on Promoting Testing and Certification Services in Food Trade, a member of the Task Force on Food Safety Management System, and a Standard Board Advisor to the Hong Kong Organic Resource Centre.



## 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 Hannu MYKKANEN**

*University of Eastern Finland, Finland*

**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*

## Admissions

### Requirements

- ◇ A Bachelor's degree with Honours 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

### How to apply

Application opens in **late December 2021**

Deadline for local and non-local applicants: **12 noon, April 29, 2022 (GMT +8)**

### Online application



[admissions.hku.hk/tpg/](https://admissions.hku.hk/tpg/)

### Programme details



[bit.ly/2YuHqnM](https://bit.ly/2YuHqnM)

### Support for students



[www.cedars.hku.hk/](https://www.cedars.hku.hk/)

## Further Information

### Enquiries

#### School of Biological Sciences

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#### Programme Director

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#### Programme Manager

Dr Stephanie W Y MA

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