SHORT LEARNING PROGRAMME (SLP)

Faculty of Health Sciences, University of Johannesburg

FOOD FORENSICS, SAFETY AND COMPLIANCE

Become aspecialistin detecting, investigatingandpreventingfood contamination and fraud. Protect public health. Strengthen food systems. Build scarce-skills expertise.

PROGRAMME DURATION:

7weeks (Online)
Learn through simulated case scenarios, applying theory to realistic food contamination investigations and outbreak scenarios.

Certificate: Competency-based Certificate, HPCSA Accredited

TWO INTAKES FOR 2026:
1st Intake: 09 June – 16 August 2026
2nd Intake: 19 October – 01 December 2026

WHY THIS SLP?
Foodborne illnesses, contamination events, and food fraud are increasing globally. This cutting-edge programme empowers professionals to detect, analyse, and prevent food safety threats using forensic and analytical techniques. Gain the expertise needed to protect communities, ensure regulatory compliance, and drive high-quality food safety systems across South Africa and beyond.

WHAT YOU WILL LEARN

• Detect microbial, chemical& physical contaminants
• Investigate food safety incidents and outbreaks
• Apply forensic tools for food authenticity & fraud detection
• Understand analytical techniques (molecular, spectroscopic, chromatographic)
• Understand environmental & public-health determinants of food safety
• Apply statistical tools, QA/QC systems & compliance frameworks
• Strengthen ethical, professional & regulatory practice

BENEFITS

• Build scarce and in-demand skills in food forensics
• Strengthen employability in environmental health & food safety
• Learn through virtual case simulations & real-world scenarios
• Network with industry professionals & build communities of practice
• Contribute to reducing foodborne illnesses and improving public health

This SLP offers both educational and professional value by empowering participants to become competent, knowledgeable, and effective in food forensics and safety, while staying updated on emerging trends and technologies. Develop critical forensic skills to identify and analyse food safety risks, microbial and chemical contaminants, and food quality issues, boosting professional confidence and competence.

WHO SHOULD APPLY?

• Environmental HealthPractitioners (EHPs)
• SHEQ Officers & Managers
• Medical Scientists & Occupational Hygienists
• Public Health Practitioners
• Food Industry Professionals
• Students & Early-career professionals
• NGO workers, school feeding coordinators, and community food handlers

ENTRY REQUIREMENTS

AnySAQA-recognised HealthQualifications. i.e. national diploma, baccalaureus technologiae or bachelor's degree in Health.

Suitable candidates must be employed either as an Environmental Health Practitioner (EHP), Health and Safety Officer/ Safety, Health, Environment and Quality (SHEQ) Officer or Medical Scientist, Occupational Hygienist, Students, early-career professionals, Community-level stakeholders such as NGO workers, caregivers at childcare centres, school food scheme organisers, or informal market food handlers who wish to contribute to safe food practices and community education.

MAKE YOUR EXPERTISE COUNT

Advance safe,transparentandtrustworthy food systems.
Join the University of Johannesburg's pioneering SLP in Food Forensics, Safety & Compliance.

ADDITIONAL INFORMATION

Thepurposeof thisSLP is toprovide participants with essential knowledge and applied competencies required to identify, assess, and respond to food safety risks using forensic and analytical techniques. It is designed to strengthen the capacity of professionals in environmental health, public health, and food safety roles to detect contamination and investigate food-related incidents to enhance food quality and protect public health.

CONTENT SUMMARY

MODULE 1: FOUNDATIONS OF FOOD FORENSICS AND SAFETY

This module introduces students to the foundational principles of food forensics and its relevance in environmental and public health. It covers the identification and investigation of foodborne hazards through epidemiological and forensic research methods, including outbreak and exposure assessments. Students will explore food authentication and traceability techniques, such as food fingerprinting, to ensure product integrity and provenance. The module examines biological, chemical, and physical contaminants, their health risks, and approaches to risk assessment,

mitigation, and management. It also reviews key national and international food safety regulations (WHO, FDA, and South African standards) and the implementation of compliance and enforcement strategies to strengthen food safety systems and protect public health.

MODULE 2: ENVIRONMENTAL AND PUBLIC HEALTH ASPECTS OF FOOD SAFETY

This module explores how environmental determinants influence food safety and public health. It examines the effects of climate change, pollution, and agricultural practices, including pesticide use, antibiotic residues, and poor waste management, on food contamination and food security. Students will learn how to communicate food safety risks effectively, promote community awareness, and support evidence-based public health responses through epidemiological and forensic research methods. The module also introduces cutting-edge innovations in food safety, highlighting the use of artificial intelligence, digital surveillance, and 4IR technologies in monitoring, predicting, and managing foodborne risks. Finally, it addresses emerging global challenges and policy strategies shaping the future of food safety and food forensics.

MODULE 3: DETECTING FOOD CONTAMINANTS AND ADULTERATION

This module focuses on analytical methods and forensic techniques used to detect and identify contaminants and fraud in food products. Students will gain practical knowledge of laboratory and field-based methods for detecting physical, chemical, and biological contaminants, including advanced analytical tools and confirmatory testing procedures. The module further explores techniques for identifying food adulteration and fraud, emphasising authenticity verification, ingredient tracing, and the detection of counterfeit or mislabelled food products. Through applied case examples, learners will develop a strong foundation in food forensic science, essential for maintaining food integrity, protecting public health, and ensuring regulatory compliance.

MODULE4: FOOD FORENSICS CASES

This module explores toxicological and forensic aspects of foodborne hazards, focusing on the identification, investigation, and management of both intentional and unintentional food contamination events. Students will study major categories of food poisoning agents, including allergens, agrochemicals, biological pathogens, GMOs, radionuclides, and nano or novel foods, and their associated health impacts. Each topic is reinforced through simulated case investigations, allowing learners to apply forensic and analytical reasoning to real-world scenarios. The module also examines food additives and improvement agents, assessing their safety, regulatory oversight, and misuse in food adulteration. Through hands-on simulation and critical analysis, students will develop the skills to detect, assess, and respond effectively to complex food safety incidents.

MODULE 5: ANALYTICAL TECHNIQUES IN FOOD FORENSICS

This module provides an in-depth exploration of advanced analytical and instrumental techniques used in food forensic investigations. Students will gain both theoretical knowledge and hands-on experience in applying molecular biology methods, spectroscopic, microscopic, and chromatographic techniques for the detection and characterisation of food contaminants. The module also covers hyphenated and electromigration-driven techniques, thermal and electrochemical analyses, biosensor technologies, and flow cytometry to identify and quantify adulterants, pathogens, and chemical residues in food. Emphasis is placed on laboratory application, data interpretation, and quality assurance in analytical procedures. Through integrated laboratory sessions, students will develop technical proficiency in modern food forensic tools, preparing them to conduct high-precision analyses essential for ensuring food integrity, safety, and compliance with regulatory standards.

MODULE 6: STATISTICAL ANALYSIS AND QUALITY CONTROL

This module focuses on the application of statistical and quality management principles in food forensics and safety. Students will learn to apply multivariate statistical analysis and chemometric techniques to interpret complex datasets, identify patterns, and verify food authenticity. The module emphasises quality assurance (QA) and quality control (QC) frameworks within food

production systems, highlighting regulatory standards and performance monitoring tools that ensure consistency and compliance. Learners will also explore the implementation of safety protocols across different stages of the food supply chain, from production to distribution, emphasising traceability and contamination prevention. Through practical examples and industry-based scenarios, students will gain the analytical, technical, and managerial skills required to uphold product integrity and consumer trust in modern food systems.

MODULE7:ETHICALANDPROFESSIONALRESPONSIBILITIES IN FOOD SAFETY

This module emphasises the ethical, professional, and practical dimensions of food safety practice. Students will examine ethical considerations in food production and safety enforcement, including integrity, transparency, consumer protection, and accountability. The module focuses on developing professional competencies required of food safety experts and inspectors, such as critical thinking, decision-making, and communication skills, within regulatory and enforcement contexts. Through real-world case studies and hands-on simulations, learners will explore scenarios involving ethical dilemmas, contamination detection, and crisis response. By the end of the module, students will be equipped to uphold ethical standards, exercise professional judgment, and apply forensic and investigative principles to promote food safety, regulatory compliance, and public trust.

Learning Outcomes

• Contextualise and apply the foundational principles of food forensics and safety.
• Conduct health risk assessments related to food contaminants and enumerate, mitigate and manage these risks.
• Detect, analyse and interpret food contaminants and adulteration.
• Investigate and respond to food safety incidents and disasters.
• Demonstrate an understanding of epidemiological and forensic research methodologies.
• Develop ethical and professional competencies in food forensics and safety enforcement.