

FOOD SAFETY, FOOD SECURITY SPECIALIZATION COURSE

6 Month Comprehensive Virtual Course

A structured professional pathway for nutrition students, graduates and professionals who want to understand both food safety and food security from foundational concepts to advanced professional application. The course integrates food microbiology, hazard control, hygiene, sanitation, HACCP, quality systems, food security assessment, food systems, regulation, research, surveillance, program development and professional practice.

Who This Course Is For

Nutrition students, nutrition graduates and professionals who want to work in food safety, food service, food manufacturing, public health, food security, community programs, NGOs, research, quality systems, regulatory support or food related professional projects.

Course Approach

The course begins with food systems, food microbiology and the foundations of food security, then progresses into hazard identification, hygiene, sanitation, HACCP, food safety management systems, food security assessment, regulation, outbreak investigation, research, monitoring and professional project development.

Food Safety and Food Security

Food safety focuses on whether food is safe to produce, store, transport, prepare and consume. Food security focuses on whether individuals and populations have reliable access to sufficient, safe, nutritious and appropriate food.

Overall Aim

To develop professionals who can identify food safety hazards, understand preventive control systems, assess food insecurity, interpret food system problems, conduct structured research and contribute responsibly across industry, public health and community settings.



COURSE ROADMAP

Month	Primary Development Area	What the Participant Should Gain
Month 1	Foundations of Food Safety, Food Microbiology and Food Security	Understand how food moves through the food system, how contamination occurs and what determines whether populations have access to adequate food.
Month 2	Food Hazards, Hygiene, Sanitation and Preventive Control	Learn how biological, chemical, physical and allergen hazards are identified, prevented and controlled.
Month 3	HACCP, Food Safety Management Systems and Industry Control	Learn structured food safety systems, documentation, traceability, recall procedures, auditing and preventive control.
Month 4	Food Security, Food Systems and Community Assessment	Learn how food insecurity develops, how it is assessed and how nutrition, poverty, supply chains, affordability and environment interact.
Month 5	Regulation, Surveillance, Research and Food Safety Investigation	Learn food regulation, inspection, outbreak investigation, sampling, survey methodology, data interpretation and professional reporting.
Month 6	Professional Practice, Program Development and Food Sector Projects	Apply food safety and food security skills in industry, food service, NGOs, public health, research and responsible food related projects.



MONTH 1: FOUNDATIONS OF FOOD SAFETY, FOOD MICROBIOLOGY AND FOOD SECURITY

Theme: Before controlling a food problem, understand how food moves from production to consumption.

Purpose: To give participants the scientific and systems based foundation required to understand food contamination, foodborne illness, food quality and food insecurity.

Week	Focus	Learning Content	Practical Application
1	Understanding Food Safety and Food Security	Difference between food safety, food quality, food hygiene and food security. Farm to fork concept. Food production, processing, storage, distribution, retail, food service and household consumption. Professional roles in food safety and food security.	Participants map the complete journey of a food product and identify where safety and access problems may occur.
2	Introduction to Food Microbiology	Bacteria, viruses, parasites, fungi, spores and microbial growth. Factors affecting microbial growth including temperature, moisture, pH, oxygen and time. Beneficial and harmful microorganisms.	Participants analyze different food storage scenarios and identify conditions that may increase microbial growth.
3	Foodborne Illness and Contamination	Foodborne infection, intoxication and toxin mediated illness. Routes of contamination. High risk foods. Vulnerable populations. Cross contamination. Food handler contribution to contamination.	Participants investigate a fictional foodborne illness scenario and identify possible contamination routes.
4	Foundations of Food Security	Food availability, access, utilization and stability. Hunger, undernutrition, food insecurity, affordability, poverty, household resources, culture, infrastructure and food environments.	Participants analyze why food may be physically available in a community while some households remain food insecure.

Development Outcome: Participants should understand that safe food is not automatically accessible food, and accessible food is not automatically safe or nutritionally adequate.



MONTH 2: FOOD HAZARDS, HYGIENE, SANITATION AND PREVENTIVE CONTROL

Theme: Food safety begins before contamination happens.

Purpose: To teach participants how food hazards are identified, prevented and controlled across food production and food service environments.

Week	Focus	Learning Content	Practical Application
5	Biological, Chemical and Physical Hazards	Pathogenic microorganisms, natural toxins, pesticide residues, cleaning chemicals, heavy metals, foreign objects, packaging related hazards and other potential contaminants.	Participants classify hazards found in different food production scenarios and identify appropriate preventive measures.
6	Food Allergens and Cross Contact	Major allergen concepts, allergen management, cross contact, labeling, storage, cleaning and communication within food service and production environments.	Participants conduct a simulated allergen risk assessment for a food preparation facility.
7	Personal Hygiene, Cleaning and Sanitation	Hand hygiene, employee health, protective clothing, cleaning, sanitizing, equipment hygiene, food contact surfaces, pest control, waste management and water safety.	Participants develop a cleaning and sanitation schedule for a fictional kitchen or production area.
8	Time, Temperature and Storage Control	Cooking, cooling, reheating, chilling, freezing, thawing, temperature monitoring, storage hierarchy, stock rotation, receiving and cold chain principles.	Participants identify failures in a food storage and temperature control scenario and propose corrective actions.

Development Outcome: Participants should be able to identify the specific hazard, understand how it enters the food system and select an appropriate preventive control.



MONTH 3: HACCP, FOOD SAFETY MANAGEMENT SYSTEMS AND INDUSTRY CONTROL

Theme: Food safety should be managed through a system, not through guesswork.

Purpose: To introduce participants to structured food safety management systems used within professional food production and food service environments.

Week	Focus	Learning Content	Practical Application
9	Prerequisite Programs	Good Hygiene Practices, Good Manufacturing Practices, sanitation programs, supplier control, pest control, water quality, employee training, maintenance and basic documentation.	Participants create a prerequisite program checklist for a selected food business.
10	Introduction to HACCP	Hazard analysis, critical control points, critical limits, monitoring, corrective action, verification and documentation. Understanding why HACCP is preventive rather than reactive.	Participants build a simplified HACCP flow for one selected food product.
11	Traceability, Recall and Incident Management	Batch identification, supplier records, product tracking, complaints, withdrawal, recall, crisis communication and documentation.	Participants conduct a simulated product recall and identify what information must be available to trace the affected product.
12	Food Safety Management Systems and Auditing	Structure of food safety management systems. Documentation control. Internal audits. Corrective and preventive actions. Nonconformities. Continuous improvement. Introduction to internationally used food safety management frameworks.	Participants conduct a mock food safety audit and prepare a basic corrective action report.

Development Outcome: Participants should understand the professional sequence of hazard identification, control, monitoring, corrective action, verification and documentation.

MONTH 4: FOOD SECURITY, FOOD SYSTEMS AND COMMUNITY ASSESSMENT

Theme: Food insecurity is rarely caused by only one factor.

Purpose: To develop the ability to understand food insecurity at household, community and population level.

Week	Focus	Learning Content	Practical Application
13	Understanding the Food System	Agricultural production, processing, transport, wholesale, retail, markets, household purchasing and consumption. Food prices, infrastructure, import dependence and market availability.	Participants map the food system for one commonly consumed food and identify where access or availability may be disrupted.
14	Food Security Assessment	Household food access, dietary diversity, coping strategies, food expenditure, affordability, market access, demographic information and vulnerable population assessment.	Participants design a basic food security assessment framework for a selected community.
15	Food Insecurity, Nutrition and Vulnerability	Relationship between poverty, food insecurity, undernutrition, micronutrient deficiencies, obesity and noncommunicable disease. Maternal and child vulnerability. Older adults. Displaced populations and low income households.	Participants analyze a household case and identify how economic and social conditions influence nutrition outcomes.
16	Food Loss, Waste, Sustainability and Resilience	Food loss across production and supply chains. Household food waste. Storage losses. Climate related disruptions. Sustainable food systems. Local food systems. Resilience and emergency preparedness.	Participants develop a practical food loss or food waste reduction intervention for a selected setting.

Development Outcome: Participants should be able to assess whether food is available, affordable, accessible, safe, nutritionally useful and likely to remain available over time.



MONTH 5: REGULATION, SURVEILLANCE, RESEARCH AND FOOD SAFETY INVESTIGATION

Theme: Professional food safety and food security decisions must be supported by evidence and documentation.

Purpose: To teach participants how food systems are monitored, investigated and studied professionally.

Week	Focus	Learning Content	Practical Application
17	Food Regulation, Standards and Labeling	Purpose of food law. Regulatory authorities. Food standards. Ingredient declarations. Allergen information. Nutrition labeling. Date marking. Food claims. Responsibilities of food businesses. Market specific regulatory differences.	Participants conduct a simulated food label compliance review.
18	Food Inspection and Outbreak Investigation	Inspection principles. Environmental assessment. Complaint investigation. Food history. Case identification. Exposure assessment. Traceback. Possible source identification and corrective action.	Participants investigate a simulated foodborne outbreak and prepare a basic investigation summary.
19	Food Safety and Food Security Research	Research questions. Observational studies. Cross sectional studies. Surveys. Laboratory related research concepts. Community research. Qualitative interviews. Mixed methods. Sampling, variables, bias, validity, reliability and ethics.	Participants develop a research question related to either food safety or food security and select an appropriate methodology.
20	Survey Design, Data and Scientific Reporting	Questionnaire development. Food safety knowledge attitude and practice surveys. Household food security surveys. Data collection. Coding. Basic descriptive statistics. Interpretation. Report writing. Research proposal structure and scientific article structure.	Participants develop either a food safety survey, food security survey or structured research proposal and prepare a short professional report.

Development Outcome: Participants should know how to collect evidence, investigate a food related problem and document findings in a structured professional format.

MONTH 6: PROFESSIONAL PRACTICE, PROGRAM DEVELOPMENT AND FOOD SECTOR PROJECTS

Theme: Turn food safety and food security knowledge into professional work.

Purpose: To help participants understand how these skills are applied across industry, public health, food service, community programs and independent professional projects.

Week	Focus	Learning Content	Practical Application
21	Careers in Food Safety and Food Security	Food manufacturing, quality assurance, quality control, food service, regulatory support, inspection, public health, NGOs, humanitarian nutrition, community programs, research, food policy and sustainability.	Participants map professional career pathways and identify competencies required for their preferred area.
22	Institutional and Commercial Food Safety	Restaurants, hospitals, schools, catering, food factories, retail environments and central kitchens. Food safety plans, staff training, monitoring systems and documentation.	Participants develop a food safety management plan for a selected institutional or commercial food service setting.
23	Food Security Program Development	Needs assessment, target population, objectives, food assistance, nutrition sensitive programs, community engagement, market support, education, monitoring, evaluation and sustainability.	Participants design a community food security intervention based on an identified population need.
24	Professional Project and Responsible Food Business Development	Food business concept, food safety requirements, supplier systems, traceability, training, documentation, responsible labeling, consumer communication, sustainability and professional project presentation.	Participants present either a complete food safety system, food security program, research project or responsible food business concept.

Development Outcome: Participants should finish with a clear understanding of how food safety and food security skills translate into professional roles, systems and projects.

FINAL COURSE PORTFOLIO

Portfolio Component	Final Output
Food System Map	A complete farm to fork flow for a selected food product.
Hazard Assessment	Identification and classification of biological, chemical, physical and allergen hazards.
Hygiene and Sanitation Plan	A structured cleaning, sanitation and hygiene system for a selected setting.
HACCP Exercise	A simplified hazard analysis and critical control plan for a food product or process.
Traceability System	A basic supplier, batch and product tracking framework.
Recall Exercise	A simulated product withdrawal and recall process.
Food Safety Audit	An audit checklist and corrective action report.
Food Security Assessment	A structured household or community food security assessment.
Food Security Survey	A questionnaire for assessing access, affordability, dietary diversity or food related vulnerability.
Research Proposal	A food safety or food security research question with an appropriate methodology.
Data and Reporting Exercise	Basic interpretation and professional reporting of collected information.
Food Safety Program	A complete food safety management concept for a food business or institution.
Food Security Intervention	A community or population level program addressing a defined food access or vulnerability problem.
Professional Career Map	A defined pathway within food safety, food industry, public health, food security, research or regulation.
Final Professional Project	A food safety system, food security program, research project or responsible food business concept.

EXPECTED COURSE TRANSFORMATION

At Entry	At Completion
Food safety means keeping food clean.	I understand food hazards, contamination pathways and preventive control systems.
Food poisoning happens because food goes bad.	I understand microbial, chemical, physical and allergen hazards and how foodborne illness can occur.
I have heard of HACCP but do not understand it.	I understand how hazard analysis, critical controls, monitoring and corrective actions fit into a food safety system.
Food security means having enough food.	I understand availability, accessibility, utilization, stability and the wider social and economic determinants of food security.
I do not know how food safety is monitored professionally.	I understand inspections, documentation, traceability, recalls and audit systems.
I do not know how to assess food insecurity.	I can structure a household or community food security assessment.
I do not know how research fits into food safety.	I can develop surveys, research questions and basic methodologies for food safety and food security studies.
Food waste is mainly a household issue.	I understand food loss and waste across production, distribution, retail and household systems.
I want to work in the food sector but do not know where I fit.	I understand professional roles across food manufacturing, quality, public health, regulation, food service, NGOs, research and food security.
I want to start a food related project but do not know what systems are required.	I understand how safety, quality, traceability, compliance, sustainability and consumer responsibility must be built into a food project.

FINAL LEARNING PATHWAY

Stage	Learning Progression
Stage 1	Understand food systems and the relationship between food safety and food security.
Stage 2	Understand food microbiology and foodborne illness.
Stage 3	Identify biological, chemical, physical and allergen hazards.
Stage 4	Develop hygiene, sanitation, storage and temperature control systems.
Stage 5	Understand prerequisite programs and HACCP.
Stage 6	Build traceability, recall, audit and documentation systems.
Stage 7	Assess food security at household and community level.
Stage 8	Understand food systems, food loss, waste, sustainability and resilience.
Stage 9	Understand food regulation, inspection and outbreak investigation.
Stage 10	Design surveys and basic food safety or food security research.
Stage 11	Develop and evaluate food safety or food security programs.
Stage 12	Build a professional food sector project or responsible food business concept.

COURSE PHILOSOPHY

This course is designed to help participants understand food safety and food security as connected professional fields rather than isolated topics. The goal is to develop the ability to identify hazards, prevent contamination, understand food access and vulnerability, work with structured food safety systems, collect and interpret evidence, and contribute responsibly to food industry, public health, community and research projects.