

Food Safety and Quality Management – Course Descriptions (Winter Semester)

Food Safety in Plant Raw Material Processing – 3 ECTS – Lectures, Exercises

Food Safety in Plant Raw Material Processing provides students with knowledge of safety issues associated with the production, handling, processing, and distribution of plant-derived food products. The course covers biological, chemical, and physical hazards that may occur in cereals, fruits, vegetables, oilseeds, and other plant raw materials. Students learn about contamination sources, including pesticides, mycotoxins, heavy metals, pathogenic microorganisms, and environmental pollutants. The course also introduces preventive measures, good agricultural and manufacturing practices, and relevant legal requirements related to plant-based food production. Emphasis is placed on hazard identification, contamination control, and ensuring the safety and quality of plant-derived food products throughout the food chain.

Teaching methods: lectures, case studies, group discussions, analysis of food safety incidents and practical exercises related to hazard identification and control.

Food Safety in Animal Raw Material Processing – 3 ECTS – Lectures, Exercises

Food Safety in Animal Raw Material Processing introduces students to the principles and practices required to ensure the safety of food products of animal origin. The course covers hazards associated with meat, milk, eggs, fish, and other animal-derived raw materials, including pathogenic microorganisms, veterinary drug residues, environmental contaminants, and physical hazards. Students learn about hygienic requirements, veterinary supervision, contamination prevention, and quality control measures applied during processing and storage. The course also addresses legal regulations and traceability systems used in the food industry. Emphasis is placed on protecting consumer health and maintaining the safety and quality of animal-based food products throughout the production chain.

Teaching methods: lectures, case studies, group discussions, analysis of food safety incidents and practical exercises related to hygiene requirements, hazard control and traceability systems.

General Food Technology – 6 ECTS – Lectures, Laboratories

General Food Technology provides students with comprehensive knowledge of food processing technologies used in the production of food products of plant and animal origin. The course covers the principles of unit operations and technological processes, including cleaning, sorting, grinding, mixing, heating, cooling, drying, fermentation, and packaging. Students learn how technological parameters influence product quality, safety, nutritional

value, and shelf life. Laboratory classes allow students to gain practical experience in selected food processing operations and quality assessment methods. Emphasis is placed on understanding technological processes, process optimization, and the production of safe, high-quality food products in accordance with current industry standards.

Teaching methods: lectures, laboratory experiments, technological process demonstrations, analysis of production processes, and practical exercises related to food processing and quality evaluation.

Food Safety Hazards – 4 ECTS – Lectures, Exercises

Food Safety Hazards introduces students to biological, chemical, and physical hazards that may occur at different stages of the food chain. The course covers sources of contamination, mechanisms of hazard occurrence, and methods used to prevent, monitor, and control food safety risks. Students learn about foodborne pathogens, allergens, mycotoxins, pesticide residues, veterinary drug residues, heavy metals, environmental contaminants, and foreign bodies in food. Particular attention is given to risk assessment principles, preventive measures, and legal requirements related to food safety management. Emphasis is placed on hazard identification, risk evaluation, and the application of preventive strategies to protect consumer health and ensure food safety from farm to fork.

Teaching methods: lectures, case studies, group discussions, analysis of food safety incidents, risk assessment exercises, and practical activities focused on hazard identification and control measures.

Food Biochemistry – 3 ECTS – Lectures, Laboratories

Food Biochemistry provides students with knowledge of the chemical composition and biochemical transformations of food constituents. The course covers the structure, properties, and functions of proteins, carbohydrates, lipids, enzymes, vitamins, and other bioactive compounds present in food. Students learn about metabolic processes, enzymatic reactions, and biochemical changes occurring during food processing, storage, and preservation. Laboratory classes enable students to perform selected analyses and evaluate biochemical properties of food products. Emphasis is placed on understanding the relationship between biochemical processes, food quality, nutritional value, and food safety.

Teaching methods: lectures, laboratory experiments, analytical exercises, interpretation of experimental results, and practical activities related to the biochemical evaluation of food products.

Food Quality Analysis and Evaluation – 4 ECTS – Lectures, Exercises, Laboratories

Food Quality Analysis and Evaluation provides students with knowledge and practical skills related to the assessment of food quality and compliance with quality requirements. The course covers physical, chemical, microbiological, and sensory methods used to evaluate food products and raw materials. Students learn how to select appropriate analytical

techniques, interpret laboratory results, and assess factors affecting food quality. Practical classes include selected laboratory analyses and sensory evaluation methods used in quality control systems. Emphasis is placed on quality assurance, consumer expectations, regulatory requirements, and the relationship between food quality and food safety.

Teaching methods: lectures, laboratory analyses, sensory evaluation exercises, interpretation of analytical data, case studies, and practical activities related to food quality assessment and quality control.

Food Allergens – 4 ECTS – Lectures, Laboratories

Food Allergens provides students with knowledge of allergenic substances present in food and their significance for consumer health and food safety. The course covers major food allergens, mechanisms of allergic reactions, allergen risk assessment, and methods for allergen detection and control. Students learn about allergen management systems, cross-contamination prevention, labeling requirements, and legal regulations related to allergen declaration. Laboratory classes introduce selected analytical methods used for allergen identification and monitoring in food products. Emphasis is placed on protecting sensitive consumers, ensuring regulatory compliance, and implementing effective allergen management strategies within the food industry.

Teaching methods: lectures, laboratory exercises, case studies, analysis of food allergen incidents, and practical activities related to allergen detection, labeling, and risk management.

Databases in Food Safety Modelling – 2 ECTS – Lectures, Exercises

Databases in Food Safety Modelling introduces students to the collection, organization, analysis, and application of food safety data for decision-making and risk assessment. The course covers the structure and use of databases related to food quality, food safety, contaminants, pathogens, and traceability systems. Students learn how to search, manage, interpret, and utilize data from selected national and international food safety databases. The course also presents the role of databases in predictive modelling, food safety monitoring, and risk management. Emphasis is placed on the effective use of digital information resources to support food safety assessment and control throughout the food chain.

Teaching methods: lectures, computer-based exercises, database searches, data analysis tasks, and practical activities involving the interpretation and application of food safety information.

Statistics – 1 ECTS – Lectures, Exercises

Statistics provides students with basic knowledge and skills in the collection, organization, analysis, and interpretation of numerical data used in food science and food safety studies. The course covers descriptive statistics, data presentation methods, measures of central

tendency and variability, and introductory statistical inference. Students learn how to perform simple statistical analyses, interpret results, and apply statistical methods to quality control, laboratory investigations, and food safety assessments. Emphasis is placed on the practical use of statistical tools in solving problems related to food production, quality evaluation, and scientific research.

Teaching methods: lectures, calculation exercises, data analysis tasks, interpretation of statistical results, and practical applications of statistical methods in food science and food safety