



FOOD HYGIENE, SAFETY AND RISK ASSESSMENT
COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
DEPARTMENT	FOOD SCIENCE AND NUTRITION		
COURSE LEVEL	Undergraduate		
COURSE CODE	ME713	SEMESTER	7 th
COURSE TITLE	FOOD HYGIENE, SAFETY AND RISK ASSESSMENT Course Coordinator: M. KAKAGIANNI		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	ECTS
		Lectures	3
		Laboratory-exercises	3
COURSE TYPE Background, General Knowledge, Scientific Area, Skill Development	Scientific Area, specialized background		
PREREQUISITES:	General Microbiology Food Microbiology Food Engineering Food Preservation and Packaging Quality Control and Food Safety-Quality Management Systems		
LANGUAGE OF TEACHING AND EXAMINATIONS:	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES		
URL	https://food.uth.gr/ugieinh-kai-asfaleia/		

TEACHING RESULTS

Teaching Results
The course "Food Hygiene, Safety and Risk Assessment" is a specialized scientific-background course and aims to train students in the basic principles of food hygiene and food safety, hazard identification and management, and introductory risk analysis and risk assessment. It covers the distinction between microbiological safety and microbiological quality, biological, chemical and physical food hazards, pathogenic microorganisms, mycotoxins, biotoxins, allergens, chemical contaminants, residues, heavy metals, dioxins, food-contact materials and foreign bodies. The course also examines contamination and cross-contamination, the basic rules of good hygiene and good manufacturing practice, prerequisite programmes, HACCP principles, control measures and critical control points, as well as the basic concepts of risk analysis, namely risk assessment, risk management and risk communication. The theoretical teaching is supported by laboratory and computer-based exercises, with emphasis on data interpretation, the use of predictive tools and the solution of food-safety problems. Upon successful completion of the course, students will be able to: • Define and relate the concepts of food quality, hygiene and safety. • Distinguish microbiological safety from microbiological quality in foods. • Identify the main biological, chemical and physical hazards associated with foods. • Describe the main sources of contamination and mechanisms of cross-contamination in the food industry.



- Explain the role of good hygiene practice, prerequisite programmes and good manufacturing practice in the implementation of food safety management systems.
- Describe the principles of HACCP and identify control measures, critical control points and basic documentation requirements.
- Interpret basic data from foodborne diseases and outbreaks and relate findings to possible hazards and food vehicles.
- Use basic computational tools for predicting microbial behaviour and evaluate simple scenarios of growth, survival or inactivation of pathogens.
- Participate in teamwork related to risk assessment, risk management and risk communication.
- Propose documented preventive or corrective measures to reduce hazards to acceptable levels.
- Understand the interdisciplinary approach required for food safety and its links with microbiology, food technology, preservation, legislation and quality management.

General Skills

- Application of knowledge in practice
- Search, analysis and synthesis of data and information using the necessary technologies
- Decision-making
- Autonomous work
- Teamwork
- Work in an interdisciplinary environment
- Work in an international environment
- Critical thinking and self-reflection
- Problem-solving skills
- Promotion of free, creative and inductive thinking

CONTENT

LECTURES

1. Introduction to food hygiene and food safety. Basic concepts and definitions: quality, hygiene, safety, hazard, risk, exposure and risk characterization.
2. Microbiological safety and microbiological quality of foods. Hygiene, spoilage and safety indicators.
3. Legislative and regulatory framework for food hygiene: Codex Alimentarius, White Paper, European hygiene regulations and basic requirements for food businesses.
4. Good Hygiene Practice and Good Manufacturing Practice. Prerequisite programmes, hygienic infrastructure, personal hygiene, cleaning and disinfection.
5. Biological food hazards: pathogenic bacteria, viruses, parasites, fungi, foodborne diseases and outbreaks.
6. Chemical food hazards: mycotoxins, biotoxins, allergens, agricultural and veterinary drug residues, heavy metals, dioxins, process contaminants and migration from packaging materials.
7. Physical hazards and foreign bodies. Sources of contamination and cross-contamination during production, processing, storage and distribution of foods.
8. Factors affecting growth, survival and inactivation of pathogenic microorganisms. Hurdle technology and application of preventive control measures.
9. Introduction to food safety management systems. Basic HACCP principles and their relationship with prerequisite programmes.
10. Hazard analysis and determination of control measures. Critical control points, critical limits, monitoring, corrective actions, verification and documentation.
11. Risk analysis: risk assessment, risk management and risk communication. Basic concepts of qualitative and quantitative risk assessment.
12. Quality control in food safety: basic analytical methods, sampling, interpretation of results and compliance with safety criteria.
13. Modern approaches in food safety: use of data, predictive tools, traceability and decision-support approaches.

LABORATORY/COMPUTER-BASED EXERCISES

1. Identification of hazards and sources of contamination in food case studies.
2. Application of basic principles of good hygiene practice and evaluation of prerequisite programmes.
3. Analysis of simple HACCP scenarios: identification of hazards, control measures, critical points and corrective actions.
4. Interpretation of microbiological testing results in relation to safety and hygiene criteria.
5. Use of databases and predictive tools, such as ComBase, Pathogen Modeling Program and Food Spoilage and Safety Predictor, to estimate microbial growth/survival in foods.
6. Computer-based exercises on shelf life and temperature-abuse scenarios using growth parameters of pathogenic or spoilage microorganisms.



7. Analysis of cooling/heating scenarios and assessment of the risk of pathogen survival or growth.
8. Case studies of foodborne outbreaks: interpretation of epidemiological and microbiological data.
9. Introduction to qualitative and semi-quantitative risk assessment.
10. Short decision-making exercises for the selection of preventive, control and risk-communication measures.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD.	Face-to-face lectures in the auditorium/classroom and laboratory or computer-based exercises in an appropriate laboratory/computer room.		
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use of ICT in teaching, laboratory/computer-based training and communication with students. Use of digital teaching material, bibliographic sources, databases, spreadsheets and online/software tools for predicting microbial behaviour and supporting risk assessment, such as ComBase, Pathogen Modeling Program and Food Spoilage and Safety Predictor. Course material, exercises, announcements and assessment criteria are posted on the Department e-class platform. Communication takes place through e-class and e-mail.		
TEACHING STRUCTURE	Activity Semester		Workload
	Lectures		39
	Laboratory/computer-based exercises		39
	Study and preparation of exercises/case studies		45
	Independent study and preparation for the final examination		27
	Course Total: (25 hours of workload per credit unit)		150
EVALUATION OF STUDENTS	Assessment language: Greek. 1. Final written theory examination (70% of the final grade), including multiple-choice questions, short-answer questions, critical-thinking/development questions and short case studies requiring data analysis or justified decision-making. 2. Assessment of laboratory/computer-based exercises (30% of the final grade), through a laboratory examination and/or short applied problem-solving tasks related to the course exercises. Feedback during laboratory/computer-based exercises supports formative assessment. Assessment criteria, weighting factors and successful completion requirements are announced at the beginning of the semester and posted on e-class.		

BIBLIOGRAPHY

-Suggested Bibliography:

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- HACCP - THE QUALITY APPROACH, Evangelos Evmorfopoulos, 1st Edition, 2020, Publications: EMBRYO COMMERCIAL PUBLISHING MANAGEMENT SOLE ENTITY IKE
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- FOOD SAFETY AND QUALITY, Nikolaos Andritsos, Edition 1, 2021, Publications: EMBRYO COMMERCIAL PUBLISHING ADMINISTRATIVE SOLE REPRESENTATIVE IKE
- Safety and toxicity in our agro-food chain, Dimitra Chouchula, Sflomos Konstantinos, 1st Edition, 2020, Publications: TSOTRAS AN ATHANASIOS
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