

- **Lectures**

1. Origin and mode of transmission of infectious diseases foodborne (total 11 hours)

[Acquisition of: a) basic epidemiology of zoonoses transmitted with food b) methods to control hazards c) principles and foundations of the rules of food hygiene]

Topics and specific content

- 1) Chain of food production and food contamination by agents of zoonoses
 - a) Epidemiological aspects and hazards in primary production, in the preparation and processing products intended for human consumption (3 hours).
 - b) Methods for monitoring and surveillance on primary production (3 hours)
- 2) Methods of food production and control of hazards.
 - a) Fundamentals of processing methods, food production and control of hazards (4 hours)
 - b) European and national legislation on the hygienic production and processing of food of animal origin (1 hour)

2. Surveillance and monitoring of foodborne illness (total of 2 hours)

Topics and specific content

- 1) Epidemiological surveillance and notification systems (2 hours)
 - a) Passive and active surveillance.
 - b) Surveillance based on clinical findings and the results of laboratory.
 - c) Legislation relating to notification requirements

3. Virulence and pathogenesis, clinical aspects and epidemic of major foodborne illnesses caused by biological organisms. (Total 12 hours)

[Topics and skills acquired: a) ability to characterize the organisms that cause food borne illness; b) ability to recognize the factors that influence the proliferation, survival and death]

Topics and specific content

- 1) Faecal contaminants
 - a) Salmonellosis (2 hours)
 - b) Food-borne infections from Escherichia coli (2 hours)
 - c) Foodborne infections caused by Campylobacter (1 hour)
 - d) Poisoning by Yersinia enterocolitica (0.5 hours)
- 2) Microorganisms from land or adapted to processing environments
 - a) Clostridium botulinum intoxication (1 hour)
 - b) Poisoning by Clostridium perfringens (1 hour)
 - c) Poisoning and poisoning by Bacillus cereus (0.5 hours)
- 3) Microorganisms of human origin
 - a) Infections from hepatitis virus, norovirus and rotavirus (1 hour)
 - b) Food poisoning caused by Staphylococcus aureus (1 hour)
- 4) Micro-organisms of the marine environment
 - a) Infections from bacteria of the genus Vibrio (1 hour)
 - b) Food poisoning from algal biotoxins (1 hour)

4. Alterations of microbial origin and physical principles of food preservation (total 10 hours)

[Topics and skills acquired: a) knowledge of the principles of conservation; b) knowledge of the causes of alteration of a biological nature; c) toxic effects resulting from changes in microbial]

Topics and specific content

- 1) Change in the characteristics of the components of food: fermentation, proteolysis, lipolysis and degradation of non-protein nitrogen compounds
 - a) Acidification of foods through the use of natural and artificial starter. Degradation of foods for attack of carbohydrates (1 hour)
 - b) Maturation of meat, maturation and aging. Cheese ripening. Degradation of nitrogenous compounds and phenomena spoilage. Formation of biogenic amines and risks to consumers (2 hours)
- 2) Biological and chemical indicators of food spoilage (2 hours)
 - a) Spoilage microorganisms, indicators of alteration and definition of the shelf-life of food
- 3) Methods of food preservation
 - a) Refrigeration and freezing. Technical rooms (1 hour)
 - b) Dehydration and aging (1 hour)
 - c) Heat treatments: pasteurization, sterilization and UHT processing (2 hours)
 - d) Use of additives preservatives and stabilizers (1 hour)

5. Self-control and HACCP (tot.6 hours)

[Topics and skills acquired: a) fundamentals of hygiene of the place of production; b) ability to plan and manage the production of safe food by applying the HACCP system; c) ability to define process objectives appropriate to achieve the objectives of food security]

Topics and specific content

- 1) Principles of hygiene at food production (3 hours)
 - a) Methods and procedures for cleaning and sanitizing facilities and equipment.
 - b) Evaluation of the hygienic conditions through checklists and indicators of process hygiene.
 - c) Pest Control.
- 2) Good manufacturing practice (1 hour)
 - a) Staff training and tools to prevent contamination
- 3) The HACCP system (2 hours)
 - a) Hazard analysis and evaluation of the effectiveness of control methods.
 - b) Definition of monitoring methods and critical limits.
 - c) Procedures and methods of recording.
 - d) Verification and validation of the application of the HACCP plan

- **Tutorials**

6. Epidemiological investigations in the course of outbreaks of foodborne illness (total 4 hours)

[Acquisition of: a) ability to identify and define an outbreak of foodborne illness, b) analysis tools to identify the source of an outbreak, c) ability to develop an analytical report and manage risk]

Topics and specific content

- 1) Cohort studies and case-control (4 hours)
 - a) Case definition associated with an outbreak.
 - b) Confirmation criteria (clinical, epidemic, laboratory).
 - c) Statistical indicators of disease incidence and exposure

7. Food sampling (total 2 hours)

[Acquisition of: a) ability to apply and interpret the results of a sampling plan for food, b) knowledge of microbiological criteria laid out by current standards]

- 1) Principles of sampling and definition of the quality of a batch (1 hour)
 - a) Lot definition.
 - b) Sampling for variables and attributes. Sampling plans two-and three classes
- 2) Counting Methods of micro-organisms and microbiological criteria for foods. Criteria of sensitivity and specificity of the methods for the microbiological examination of foods (1 hour)

8. self-control in slaughterhouses (Tot 1 hour)

[Acquisition of: a) ability to assess the conformity of the production facilities to the requirements of the regulations]

- 1) Audits in the slaughterhouses (1 hour)
 - a) Methods of self-evaluation
 - b) Structural and infrastructural slaughterhouses.
 - c) Hazard management through work planning and management of environmental hygiene. Checklists.