

**Water and Food-borne microbiological diseases and dietary habits in human population****Subject Name:**

Water and Food-borne microbiological diseases and dietary habits in human population

**Course Type:**

Lectures/case studies with personal work

**Outline:**

Foodborne illness (also called "foodborne disease," "foodborne infection," or "food poisoning") is a worldwide common public health problem. Microbiological foodborne illness are resulting from the food spoilage or from the contamination of water and food by pathogenic bacteria, viruses, or parasites, as well as from the presence of harmful chemicals and natural toxins produced by bacteria and filamentous fungi. These different diseases have many different symptoms, so there is no one "syndrome" that is foodborne illness. However, the microbe or toxin enters the body through the gastrointestinal tract, which constitutes the starting point of the disease.

Through examples chosen within the main microorganisms responsible for foodborne illness, such as waterborne virus (Hepatitis A, Norovirus), foodborne bacteria (*Salmonella*, *Campylobacter*, *Listeria*, *E. coli*, *Clostridium*) and parasites (*Toxoplasma*, *Amoeba*, *Cryptosporidia*, *Microsporidia*, *Taenia*), this course aims to present the life cycles, the natural reservoir and mode of transmission of these microorganisms, along with the physiopathology of the disease. Another aspect will deal with the major mycotoxins possibly present in food and beverage (Aflatoxin, Ochratoxin, Trichothecenes), emerging toxins (Enniatin, Beauvericin, Moniliformin) and their fungal producers. Information will be provided on acute and chronic toxicity, detection and quantification of toxin contamination, and European Union norms.

**Semester Schedule and Credit:**

| <u>Subject</u>   | <u>Year</u> | <u>Semester</u> | <u>Day/Period</u> | <u>Credit</u> |
|--|-------------|-----------------|-------------------|---------------|
| Water and Food-borne microbiological diseases and dietary habits in human population | 2           | Fall            |                   | 3             |

**Location:**

University of Bordeaux (UB)

**Instructor Information:**

Prof T. Noël, Prof A. Blanchard, Prof V. Dubois, Associated Prof G. Barroso, Associated Prof I. Accoceberry, Associated Prof L. Beven, Associated Prof K. Dementhon, Associated Prof L. Rivière.

**General Instructional Objective (GIO):**

- During this course student will learn about:
- Genetic diversity and molecular organization of viruses, prokaryotic and eukaryotic microorganisms

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- Ecological niche and reservoir of food-contaminating microorganisms
- The process of water and food contamination and how to prevent it
- The main physiopathological disorders, their consequences on health and available treatments
- The more recent techniques to assess risk, detect and identify microorganisms and toxins, and determine the conformity with authorized safety levels.

**Specific Behavioral Objectives (SBO):**

- Having a global view of how to identify and manage the risk of foodborne disease
- To be able to collect, organize and present any scientific information dealing with foodborne disease
- Knowing the specific epidemiology of foodborne diseases according to the country of food production and processing

**Course Overview/ Schedule:**

- 1) Lectures by specialists
- 2) Analysis of published scientific data
- 3) Case studies retrieved from the media.

**Homework:**

- At home, students will have to prepare oral presentation about deep analysis of scientific publications or case studies. They will have to present as a conference to other students.

**Grading Method and Criteria:**

Students will be evaluated on their ability to answer the questions raised from a scientific paper or a case study by a written exam (3 h).

Oral presentation will also be evaluated, with a particular focus on the scientific knowledge and presentation skills (quality of visual support, pedagogic skills).

**Textbook/ Referenced Materials:** None

**Notes:** None