UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Chimica degli Alimenti

2425-1-F0601Q129

Aims

The course aims to provide in-depth knowledge on the chemical composition of food (macronutrients, micronutrients, and non-nutrient substances), with particular attention to the health and nutraceutical aspects of food constituents. The course will address, from a chemical perspective, the transformations of foods and their components undergo during processing techniques. Additionally, the main analytical methods for determining food constituents or contaminants will be covered. By the end of the course, students will have acquired specific skills that will enable them to understand the difference between foods and nutrients, how the latter influence various transformation processes, and the main food analysis techniques. At the end of the course, students will acquire the knowledge and understanding of the fundamental principles of food chemistry and the analytical techniques applicable to the food sector. They will develop the ability to assess food quality based on compositional data and any phenomena of alteration and adulteration.

Contents

The course in Food Chemistry aims to deepen the understanding of the composition, transformation, and determination of the main constituents of food.

Detailed program

Introduction to Food Chemistry.
Constituents of food: chemical aspects related to macronutrients, micronutrients, and non-nutritional components.
Chemistry of proteins, lipids, and carbohydrates, vitamins, mineral. Organoleptic characteristics.
Additives, preservatives, colorants, and food contaminants.
Chemical transformation of food components and food preservation.

Methods of analysis of the main components and/or contaminants in food.
Particular emphasis will be given to case studies on food groups and their derivatives, such as milk, oil, beer, wine, and cereals.

Prerequisites

For a better understanding of the contents and to achieve the objectives of the course, students must have general knowledge of inorganic chemistry, organic chemistry, and biochemistry.

Teaching form

Approximately 70% of the course will be conducted in face-to-face lecture mode, while 30% are in interactive mode.

- 13 classes of 2 hours conducted in face-to-face lecture mode
- 4 classes of 2 hours conducted remotely in face-to-face lecture mode
- 1 laboratory/exercise session of 4 hours conducted in interactive mode in face-to-face setting
- 1 integrative activity of 4 hours aimed at engaging students interactively

Textbook and teaching resource

The slides of course and any additional material will be made available through the e-learning website.

Textbook
L. Mannina, M. Daglia, A. Ritieni “La chimica e gli alimenti. Nutrienti e aspetti nutraceutici” - (Zanichelli)
Cappelli P., Vannucchi V. “Chimica degli alimenti” - (Zanichelli)
P. Cabras, A. Martelli “Chimica degli Alimenti” - (Piccin)

Semester

First semester

Assessment method

The knowledge acquired during the course will be assessed through an oral exam. The exam aims to verify and confirm the student's ability to connect the chemistry of food with their nutritional and health implications. The exam will allow the student to demonstrate their ability to critically analysis and discussion of the course content and to develop logical connections between them. The ability to present information using scientifically appropriate language will be consideredmfor the evaluation.

Office hours

By scheduling an appointment via email to the instructor.

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | RESPONSIBLE CONSUMPTION AND PRODUCTION