

Chim/10: fundamental didactic activity

Academic year: 2016-2017

Faculty: Department of Biosciences, Biotechnologies and Biopharmaceutics

Study course: **Food Chemistry**

Study plans/Curricula: 3-year Degree in Biohealth Sciences

Type: fundamental didactic activity with final examination

Total Credits: 4

Didactic Methods: frontal lessons

Didactic Period: first semester (October-January)

Exam type: oral examination

Professor in charge: Francesco Longobardi

Training objectives

Description of properties and function of components in food: carbohydrates, proteins, lipids, water, colours, aroma compounds, vitamins and minerals. Toxins, heavy metals. Chemical preservatives, food preservation. Laws and regulations. Chemical composition, quality, and chemical analyses of important foods: olive oil, meat/fish, bread, milk, cereals, wine.

Prerequisites

Students taking this course have to have knowledge in chemistry.

Course programme

PROGRAMME:

Lectures: (32 h)

Food Chemistry: Food Quality, Contaminants of Food, Adulteration of Food, Tasks of Food Chemistry.

Main classes of substances in food: water, aminoacids, peptides and proteins, enzymes, lipids, carbohydrates, additives and flavorings, aromatics, flavor enhancers, sugar substitutes and sweeteners, coloranti, preservatives vitamins, mineral salts, contaminants.

Trace elements pesticides, polycyclic aromatic hydrocarbons (PAH), nitrosamines, bacterial toxins, mycotoxins.

Major classes of Food olive oil, cereals, milk and dairy products, meat and fish, water wine.

Methods for the Analysis of Food sample pre-treatment methods, chromatographic methods, atomic and molecular spectroscopy, mass Spectrometry: innovative

methods: Introduction to nuclear magnetic resonance spectroscopy and isotopic methods

Reference Texts

J. McMurry: Fondamenti di chimica organica, Zanichelli, Bologna, 2003.

Sono disponibili molti altri testi di livello analogo.

P. Cabras, A. Martelli: Chimica degli alimenti, Piccin, Padova, 2004.

T. P. Coultate: La chimica degli alimenti, Zanichelli, Bologna, 2005.

H.-D. Belitz, W. Grosch: Food Chemistry, Springer, Berlin, 1999.

R. S. Singhal, P. R. Kulkarni, D. V. Rege: Handbook of Indices of Food Quality and Authenticity, Woodhead Publishing Ltd., Cambridge, 1997

H. Egan, R. S. Kirk, R. Sawyer: Pearson's Chemical Analysis of Foods, 8th Ed., Churchill Livingstone, Edinburgh, 1981

F. Tateo: Analisi dei prodotti alimentari, Chiriotti, Pinerolo, 1978