



UNIVERSITY OF NICOSIA

ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

Course Code PHAR-440	Course Title Food Chemistry/Χημεία Τροφίμων	Credits (ECTS) 3
Department Life & Health Sciences	Semester Fall	Prerequisites PHAR-150, 151
Type of Course Elective	Field Pharmacy	Language of Instruction Greek/English
Level of Course 1 st Cycle	Year of Study 4 th year	Lecturer Zoi Konsoula
Mode of Delivery face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The course is intended to give students an overview of the chemical and physical properties of the major and minor food components and their changes during processing, handling and storage.

The course will cover water, carbohydrates, protein, lipids, minerals, vitamins and enzymes. In addition, color, flavor, and additives will be discussed. There will be an emphasis on the applied aspects of food chemistry with the help of real-world examples, and lab experiments.

The course will also be emphasised on the food –drug interactions and incompatibilities.

Learning Outcomes:

1. Describe the structure and function of the chemical constituents of food.
2. Explain the important chemical and biochemical reactions that occur during the storage and processing of important classes of food products.
3. Describe the technologies used in the genetic modification of living organisms and explain the applications of the technologies to food production.
4. Evaluate how the conditions of storage and handling of food substances affect food qualities and select chemical parameters useful for the evaluation of these qualities.
5. Search for and evaluate information about food quality and technology from the literature

Course Contents:

Chemical components

A. Water: moisture content: water activity and food spoilage

B. Carbohydrates: classification, properties and functions in food systems

<p>C. Lipids: types, structure and function in food systems</p> <p>D. Proteins: amino acid composition, structure, classification and nutrition value</p> <p>E. Vitamins and Minerals</p> <p>Enzyme and Enzyme reactions</p> <p>A. Mechanism and kinetics of enzyme reactions</p> <p>B. Endogenous enzymes and enzyme reaction leading to food quality alteration</p> <p>C. Postharvest metabolism in fruit and vegetables</p> <p>D. Post-Mortem changes in meat and fish</p> <p>Nonenzymatic reactions in food</p> <p>A. Oxidation: mechanism of autoxidation, prooxidants and antioxidants</p> <p>B. Maillard reaction: reaction mechanism and products</p> <p>C. Caramelization</p> <p>Food Additives</p> <p>A. Acids, bases and buffering salts</p> <p>B. Preservatives and antioxidants</p> <p>C. Flavouring and sweeteners</p> <p>D. Food colorants</p> <p>E. Structure and appearance control agents</p> <p>F. Nanoparticles in food</p> <p>Genetically Modified Food</p> <p>A. Gene modification technologies</p> <p>i. Recombinant DNA technique</p> <p>ii. Polymerase chain reaction</p> <p>iii. Others tools of biotechnology</p> <p>B. Applications in food plants and animals modification</p> <p>Relation of food science to the pharmaceutical sciences.</p> <p><i>Exercise 1:</i> Determination of water - humidity in food;</p> <p><i>Exercise 2:</i> Determination of acidity and unsaturation in oils;</p> <p><i>Exercises 3-4:</i> Determination of proteins in food (meat, wheat);</p> <p><i>Exercise 5:</i> Determination of sugars and reducing carbohydrates.</p>

Learning Activities and Teaching Methods:

Lectures, class discussion, assignments, laboratory

Assessment Methods:

Course work, final exam

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Δ. Μπόσκου	Χημεία Τροφίμων	Εκδόσεις Γαρταγάνη, Θεσσαλονίκη		
H.D. Belitz, W.	Food Chemistry	Εκδόσεις		

Grosch, P. Schieberle	Μετάφραση στα Ελληνικά: Μ. Παπαγεωργίου, Α.Ι. Βάρναλη, Επιστ. Επιμέλεια Σ.Ν. Ραφαηλίδης	Τζιόλα, Θεσσαλονίκη		
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