



Course Syllabus

Course Code	Course Title	ECTS Credits
IMPH-440	Food and Nutritional Supplements Chemistry/ Χημεία Τροφίμων και Συμπληρωμάτων Διατροφής	4
Prerequisites	Department	Semester
IMPH-150, IMPH-151	Health Sciences	Fall/Spring
Type of Course	Field	Language of Instruction
Elective	Pharmacy	Greek/English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Dr Maria Savva	4 th
Mode of Delivery	Work Placement	Corequisites
Face-to-Face	N/A	N/A

Course Objectives:

The main objectives of the course are 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
- cover water, carbohydrates, protein, lipids, minerals, vitamins and enzymes. In addition, color, flavor, and additives will be discussed. The student will also be informed about genetically modified foods, biological/organic foods, allergens. There will be an emphasis on the applied aspects of food chemistry with the help of real-world examples
- emphasise on the food–drug interactions and incompatibilities
- cover nutritional supplements, their purpose and proper use, differences of nutritional supplements from drugs

Learning Outcomes:

After completion of the course students are expected to be able to:

- Describe the structure and function of the chemical constituents of food
- Explain the important chemical and biochemical reactions that occur during the storage and processing of important classes of food products

- Describe the technologies used in the genetic modification of living organisms and explain the applications of the technologies to food production
- Understand the categories of additives in foods.
- Understand food labeling legislation (allergens, biological/ organic)
- Understand how the conditions of storage and handling of food substances affect food quality
- Understand systems of preventive hygiene and food safety (HACCP-Hazard Analysis and Critical Control Points)
- Understand what are the food supplements, the legislation of food supplements, their importance and proper use and their difference from drugs
- Locate for and interpret information about food/supplement quality and technology from the literature

Course Content:

Chemical components

- A. Water: moisture content: water activity and food spoilage
- B. Carbohydrates: classification, properties and functions in food systems
- C. Lipids: types, structure and function in food systems
- D. Proteins: amino acid composition, structure, classification and nutrition value
- E. Vitamins and Minerals

Enzyme and Enzyme reactions

- A. Mechanism and kinetics of enzyme reactions
- B. Endogenous enzymes and enzyme reaction leading to food quality alteration
- C. Postharvest metabolism in fruit and vegetables
- D. Post-Mortem changes in meat and fish

Non-enzymatic reactions in food

- A. Oxidation: mechanism of autoxidation, prooxidants and antioxidants
- B. Maillard reaction: reaction mechanism and products
- C. Caramelization

Food Additives

- A. Acids, bases and buffering salts
- B. Preservatives and antioxidants
- C. Flavouring and sweeteners
- D. Food colorants
- E. Structure and appearance of control agents
- F. Nanoparticles in food

Genetically Modified Food

- A. Gene modification technologies
 - i. Recombinant DNA technique
 - ii. Polymerase chain reaction

- iii. Other tools of biotechnology
- B. Applications of modifications in food plants and animals
 - i. Relation of food science to the pharmaceutical sciences
 - ii. What are food supplements.
 - iii. Difference of food supplements from drugs
 - iv. Food supplements such as vitamins, minerals, antioxidants, omega lipids etc (structure, importance, use, problems)
 - v. Food labeling (Legislation - allergens, nutrition/health claims).
 - vi. Food selection criteria. Preventive food Safety System (HACCP).
 - vii. Food Processing and Packaging

Learning Activities and Teaching Methods:

Lectures, class discussion

Assessment Methods:

Final exam, Midterm exam

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Χημεία Τροφίμων	Δ. Μπόσκου	Εκδόσεις Γαρταγάνη, Θεσσαλονίκη	2004	9789607013224
Food Chemistry Μετάφραση στα Ελληνικά: Μ. Παπαγεωργίου, Α.Ι. Βάρναλη, Επιστ. Επιμέλεια Σ.Ν. Ραφαηλίδης	H.D. Belitz, W. Grosch, P. Schieberle	Εκδόσεις Τζιόλα, Θεσσαλονίκη	2012	

Understanding Food Science and Technology	Peter S. Murano	WADSWORTH CENGAGE Learning	2003	0538451084
Processing Effects on Safety and Quality of Foods	Enrique Ortega-Rivas	CRC Press	2010	139781420061123
Συμπληρώματα Διατροφής	Μανουσακης Γεωργιος		2008	978-960-930525-9
Λειτουργικές ιδιότητες νερού, πρωτεϊνών, σακχάρων λιπιδίων και φυσικών χρωστικών(επίδραση στην ποιότητα και τη θρεπτική αξία των τροφίμων	Ευστράτιος Κυρανάς	Εκδόσεις Τζιόλα	2011	978-960-418-369-2