

<b>Theoretical training (Lectures) 41 hours</b>			
<b>Topics and skills acquired</b>	<b>Subjects</b>	<b>Specific contents</b>	<b>Hours</b>
<b>Food nutrients (10 hrs)</b> acquisition of: a. correct terminology to define the nutrients and understanding their reactivity; b. ability to assess the polarity of a molecule	Introduction	Learning agreement. Definition of food. Definition of alteration and adulteration. Purposes of the chemical analysis of foods	2
	Water	Water in food. Chemical and physical characteristics. Water solvent activities. Characteristics of solutions. Water activity.	2
	Lipids	Lipids in food. Classification. Chemical structure of triglycerides. Fatty acids: physical properties. Components of the unsaponifiable fraction.	2
	Carbohydrates	Carbohydrates in food. Structure and chemical properties.	2
	Proteins	Proteins in food. Amino acids. Protein structures. Functional properties.	2
<b>Chemical changes in nutrients (8 hrs)</b> acquisition of: c. ability to identify the factors influencing the chemical changes in food	Lipids	Lipid alterations: lipolysis, ketone rancidity, peroxidation.	5
	Carbohydrates Proteins	Protein alterations: denaturation, changes in the amino acids side chain. Biogenic amines. Maillard reaction.	3
<b>Composition and analysis of food of animal origin (6 hrs)</b> acquisition of: d. ability to apply the knowledge gained to food of animal origin e. the issues due to the presence of unwanted chemicals	Milk and dairy products	Chemical composition and analytical methods	2
	Meat	Chemical composition and analytical methods	2
	Seafood	Chemical composition and analytical methods	2
<b>Analytical methods (17 hrs)</b> acquisition of: f. to put the requirements asked to the analytical laboratory in a proper way; g. ability to evaluate an analytical result	Validation	Phases of the food chemical analysis. Analytical method: sources of error, validation	4
	Sample preparation	Extraction methods of the analyte from the matrix	3
	Instrumental methods	Spectroscopy. Chromatography. Methods for analyte quantification.	10
<b>Supervised practical training (Laboratory and desk based work) 7hrs</b>			
acquisition of: h. ability to observe the characteristics of biomolecules; i. ability to understand the choice of an analytical method; j. the ability to understand the main analytical steps k. to communicate assumptions to fellow and tutor	Structures of biomolecules	Molecular models of fatty acids and carbohydrates and case study	3
	Analysis	Practical application of analytical methods of analysis and laboratory management	4