

Code: 1795 Food Chemistry**Degree:** 2nd cycle – Gastronomical Sciences**Curricular Year:** 1st**Credits:** 4 ECTS**Semester Course:** 1st**Compulsory****Language:** Portuguese/English**Responsible:** Ana Maria Ferreira da Costa Lourenço**Other lecturer(s):** -**Web Site:** <http://www.isa.utl.pt/home/node/4326>**1. Contact hours:****Lectures 21 Lecture/Practicals 14 Praticals 14 Others 7 Total 56****2. Objectives:**

Acquisition of basic knowledge about the chemical structures of components of food and basic chemical processes related to the processing and stability of food.

Training in experimental laboratory work related to food chemistry, determination of properties and analysis of the behavior of several food components during food processing.

3. Programme:

Basic concepts of organic chemistry – bonds and structure, structure representation, functional groups, properties, isomerism, types of reactions.

Carbohydrates - structure and properties of monosaccharides, oligosaccharides and polysaccharides. Occurrence and functions in food and its behavior during food processing.

Proteins - general characteristics and functions. Amino-acids - structure and properties, the peptide bond. Description of protein structure and forces that stabilize it. Occurrence and functions in food and its behavior during food processing.

Lipids - general characteristics and classification. Oils and fats: structure and properties. Essential fatty acids. Polar lipids and their role as emulsifiers.

Vitamins - characteristics, structure and properties of a set of vitamins. Occurrence and functions in food and its behavior during food processing.

The color in food - key molecules and their behavior during food processing.

Teaching method includes:

- lectures, using the data show;
- problem-solving sessions, which encourage students to solve problems and train the interpretation of experimental results based on the concepts and information introduced in the lectures;
- laboratory sessions where students have the opportunity to perform experiments which apply the knowledge given in the lectures;
- use of a website with study materials and contact by email.

4. Bibliography:**Main Bibliography**

- Bettelheim, F. A., March, J., Introduction to Organic & Biochemistry, Saunders College Publishing, 1990
- Snyder, C. H., The Extraordinary Chemistry of Ordinary Things, John Wiley & Sons, 1995
- Coulgate, T., Food: The chemistry of it's components, Royal Society of Chemistry, 2009
- Belitz, H.D., Grosch, W., Schieberle, P., Food chemistry. Springer, 2004
- Fennema, O. R., Food chemistry, Marcel Dekker, Inc, 1985
- Coenders, A., The chemistry of cooking, Parthenon Publishing, 1992
- Barham, P., The science of cooking. Springer-Verlag, 2000
- Lister, T., Blumenthal, H., Kitchen chemistry. Royal Society of Chemistry, 2005

5. Assessment:

Theoretical evaluation (75%)

Individual written closed-book tests, classified from 0 to 20.

Practical assessment (25%)

Continuous assessment during the semester.

Submission of lab reports.

6. Estimated Workload:

112	Hours
-----	-------

7. Last Update:

3/1/2011
