Code: 1750 **Food Chemistry and Biochemistry**
Degree: 1st cycle – Food Science and Engineering
Curricular Year: 2nd **Semester Course: 1st**
Credits: 6 ECTS **Compulsory**
Language: Portuguese/English
Responsible: Raúl Filipe Xisto Bruno de Sousa
Other lecturer(s): Maria Luísa Louro Martins
Web Site: http://www.isa.utl.pt/home/node/4040

1. Contact hours:
Lectures 28 **Praticals/Laboratory** 42 **Others** 14 **Total** 84

2. Objectives:

To know the components of food products based on its properties, particularly on the structure, composition and functionality.
Characterize foods depending on their chemical composition and biochemistry.

3. Programme:

Water in food. Function and occurrence. Water activity.
Amino acids, peptides and proteins. Properties of amino acids, peptides and proteins. Function and occurrence in foods. Plant protein and animal protein. Enzymes and enzymes used in food industry. Changes of amino acids, peptides and proteins and its consequences.
Carbohydrates. Properties of carbohydrates. Function and occurrence. Changes that occur during processing. Non-enzymatic browning reactions. Maillard reactions.
Fats and other lipids. Properties of lipids. Function and occurrence. Edible fats and oils. Changes in the composition and its consequences.
Vitamins and mineral salts. Vitamins: Functions and occurrence. Water soluble vitamins and fat soluble. Stability and degradation of vitamins. Mineral salts: Functions and occurrence in foods.
Coloured components of foods. Compounds that contribute to colour, natural pigments. Properties, functions and occurrence. Main reactions of degradation and changes.
Food additives, flavour and aroma in food.
Additives: function, main kinds (vitamins, amino acids, minerals, aromatic substances, activators of flavour, sugar substitutes, dyes, bases, antioxidants), additives and food safety.
"Flavour and aroma: Importance, compounds that contribute to the flavour and aroma, control in processed foods, interactions with other constituents.
Natural toxicants in food. Antinutritional factors. Endogenous toxins.

4. Bibliography:

Main Bibliography

Food. The chemistry of its components. Coultate, T.P. 1996.Ed. RSC-R.Soc. Chem. Cambridge
Química de los Alimentos. Belitz, H.D. / Grosch, W. 1997. Ed. Acribia
Principles of food chemistry. Deman, J.M. 1999. Editor: An Aspen Publication
Química de alimentos. Ribeiro, E.P., Seravalli, E. A. G. 2004. Ed. Edgard Blücher Lda.
Entender a Bioquímica. Luis S. Campos, 2002. Escolar Editora

Other Bibliography

Water activity. theory and applications to food. 1987.Rockland, L.B. / Beuchat, L.R.
Ed. Marcel Dekker, N. Y.
Food Proteins – Properties & Characterization. 1996. Shuryo Nakai (Ed.). John Wiley & Sons Ltd
Glycoscience. 2001. B. Fraser-Reid, K. Tatsuta, J. Thiem (Editors). Springer
Starch: Advances in Structure and Function. 2002. T. L. Barsby , A. M. Donald, P. J. Frazier (Eds.) Royal Society of Chemistry
Natural toxicants in food - Sheffield Food Technology. Watson, D. (ed.) 1998 Ed. CRC Press, Sheffield

5. Assessment:

This course will use a continuous evaluation system. The evaluation consists on group oral presentations (in 3 element group) and individual questionnaires.

$$\text{Final classification} = (0{,}50 \times O) + (0{,}40 \times Q) + (0{,}10 \times P)$$

where O - oral presentations, Q - individual short questionnaire, P – classroom attendance. The

student that achieves a final mark of at least 9,5 (out of 20) will be approved.

6. Estimated Workload:	168	Hours
7. Last Update:	12/7/2010	