Code: 1448 **Nutrition, Food Contamination and Toxicology**
Degree: 2nd cycle – Food Science and Engineering
Stream: Food Quality and Safety
Curricular Year: 1st **Semester Course: 1st**
Credits: 6 ECTS **Compulsory**
Language: Portuguese/English
Responsible: Teresa de Jesus da Silva Matos
Other lecturer(s): Maria José Antão Pais de Almeida Cerejeira and Maria Luísa Louro Martins
Web Site: http://www.isa.utl.pt/home/node/3836

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

2. Objectives:

To explore the knowledge related to nutrition, digestion and metabolism. Acquisition of skills: nutritional evaluation, body mass index determination, diets review and nutritional labelling. Study of nutritional disorders and consequences.
To study toxic substances naturally present in the food product (chemical nature, toxic effect and assess pathways). Toxicology evaluation and risk management of pesticides regarding the final consumer. Effect of food preparation on pesticides residues.

3. Programme:

Food Toxicology
Natural and hazard contamination. Chemical and biological contamination of food. Food components and food toxins. Toxic constituents of plant and animal origin. Toxins from microorganisms, mycotoxins. Toxic effects of specific food toxicants. Toxicity of trace elements, metals and other contaminants in food products. Food Allergens. Food Additives. Toxicants produced during food processing.
Pesticides. Safe use in food production. Dissipation and persistence of pesticide residues. Pesticide toxicology. Metabolism pathways.
Maximum Residue Levels permitted in food and Pre-Harvest safe time.
Pesticide residues and human health impact. Monitoring. Pesticide residue in food and water. Pesticide Risk assessment and management to the consumer. Legislative scope.
Nutrition
Nutrition *versus* dieting. Digestive physiology. Nutrients absorption. Metabolism.
Dietary reference intakes. Nutritional evaluation and body mass index. Technical evaluation of food intake. Food illness and nutritional disorders. Energy balance. Nutritional labeling. Food formulation.
Legislation and legal scope.

4. Bibliography:

Main Bibliography

Felix D'Mello, J.P., Duffus, C., Duffus, J.H. Toxic Substances in crop plants. The Royal Society of Chemistry, 1991.
Hamilton, D. & Crossley, S. (2004) – *Pesticide residues in food and drinking water: Human exposure and risks*. Wiley Series in Agrochemicals & Plant Protection, 363p.
Brooks, G. T. & Roberts, T. R., (1999) - *Pesticide Chemistry and Bioscience*. The food-environment challenge, Royal Society of Chemistry, 438p.
Hayes, W.J. & Laws, E.R. (1991) – *Handbook of pesticide toxicology*, Vols. I, II, III. Academic Press, England.
Dietary Reference Intakes, 2005. Institute of Medicine of the National Academies Press, Washington, D. C., USA.

Other Bibliography

Frankenberger, W.T Jr. Environmental Chemistry of Arsenic. Marcel Dekker. Inc. 2002
Soares, M. C. Segurança Alimentar-Perigos biológicos e químicos. Publicações Ciência e Vida Lda.
Lidon, F., Silvestre, M. M. Industrias Alimentares. Aditivos e Tecnologia. Escolar Editora. 2007
Passmore, R., Eastwood, M.A., 1986. Human Nutrition and Dietetics. Churchill Livingstone, UK,8th Edition.
Gonçalves Ferreira, F. A. 1994. Nutrição Humana . Fundação Calouste Gulbenkian

Bender, D.A., Bender, A. E., 1997. Nutrition reference hand book. Oxford University Press.
Gibney, M. J.; Vorster, H.H. & Kok, F. J. 2002. Introducción a la Nutrición Humana. Editorial ACRIBIA, Zaragoza, Espanha.

5. Assessment:

Three seminars, one poster session; several tests and one short exam or a global final exam. Minimum score: 10/20 scale

6. Estimated Workload:	168	Hours
7. Last Update:	19/7/2010	