Code: 1335 **Food Biochemistry and Microbiology**
Degree: 2nd cycle – Food Science and Engineering; Viticulture and Oenology
Curricular Year: 1st **Semester Course: 1st**
Credits: 6 ECTS **Compulsory** (Food Science and Engineering)
Language: Portuguese/English **Optional** (Viticulture and Oenology)
Responsible: Maria Luísa Louro Martins
Other lecturer(s): Manuel José de Carvalho Pimenta Malfeito Ferreira, Cristina Maria Moniz Simões Oliveira, Maria Adélia da Silva Santos Ferreira and Virgílio Borges Loureiro
Web Site: http://www.isa.utl.pt/home/node/3830

1. Contact hours:
Lectures 48 **Lecture/Practicals** 6 **Pratical/Laboratory** 16 **Others** 14 **Total** 84

2. Objectives:

Knowledge acquisition about chemical and biochemical compounds in food and influence in physic and chemical properties of foods. Evaluation of changes induced by food processing, food degradation and consequent effect on food quality. Biochemical changes in animal and vegetable products.
Microbial Ecology. Microbiology of the main food groups. Food Microbial Quality. Risk analysis. Biochemical and Microbiological Indicators. Critical analysis.

3. Programme:

Food Biochemistry
Chemical and biochemical compounds in food.
Small molecules and macromolecules. Influence in food properties: nutritional value and antioxidant system, sensorial, technological and functional properties.
Changes in food components.
Chemical, biochemical and enzymatic changes of food components: amino acids, proteins, lipids, sugars, pigments, vitamins and mineral content.
Changes related to technological process
Animal and vegetable products. Biochemical changes in meat products, fish products, vegetable products
Food Microbiology
Foodborne Microbial Pathogens. Most important pathogenic bacteria. Toxinfections caused by fungi and other eucaryotes. Food borne viruses. Other agents: prions.
Microbial spoilage. Microbial Ecology. Microbiology of the main food groups: milk and dairy, meat, fish and vegetals. The hurdle effect and modern strategies of food stability. Preservatives.
Food Microbial Quality. Good manufacturing practices in food chain (agriculture, cattle, processing, distribution, consumer). Risk analysis: evaluation, management and communication; precaution principle. Chemical, Biochemical and Microbiological Indicators. Quality management systems (HACCP). Principles of legislation and institutional organization.

4. Bibliography:

Main Bibliography

Owen R. Fennema Food chemistry 1994 Editor: Academic Press, New York (US)
Belitz, H.D. / Grosch, W. Food chemistry 1987 Editor: Springer Verlag, Heidelberg (DE)
Adams, M. R. e Moss, M. D. (1995) - Food Microbiology. The Royal Society of Chemistry, Cambridge.
Mossel, D.A. e Garcia, B.M. (1985) - Microbiologia de los Alimentos. Editorial Acríbia. Zaragoza.
Hayes S, P.R., 1985 - Food Microbiology and Hygiene. Elsevier Applied Science Publishers. London New York.

Other Bibliography

Deman, J.M. Principles of food chemistry. 1999 Editor: An Aspen Publication
Coultate, T.P. Food. The chemistry of its components 1996 RSC Paperbacks Editor: RSC-Royal Society of Chemistry Cambridge (GB)
Harrigan, W. F., 1998 – Laboratory Methods in Food Microbiology. Third Edition. Academic Press.

5. Assessment:

End-of-module examinations and a final examination for students that have not reached a final classification of 10. Components of each module assessment includes homework, laboratory report, oral and written seminar presentation and realization of in-class quizzes.

6. Estimated Workload:	168	Hours
7. Last Update:	15/7/2010	