Code: 1716 **Fermentation Microbiology**
Degree: 2nd cycle – Food Science and Engineering
Stream: Food Processing
Curricular Year: 1st **Semester Course: 2nd**
Credits: 6 ECTS **Optional**
Language: Portuguese/English
Responsible: Manuel José de Carvalho Pimenta Malfeito Ferreira
Other lecturer(s): Maria Adélia da Silva Santos Ferreira
Web Site: http://www.isa.utl.pt/home/node/3861

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

2. Objectives:

- To know the different types of industrial microorganisms
- To understand culture media formulation
- To know the main fermenting products
- To identify the the parts of a bioreactor

3. Programme:

Fermentation processes
Biomass, enzymes and metabolites. Process components. Batch, continuous and fed-batch cultures.
Fermenting media
Formulation. Carbon and nitrogen sources. Oxygen requirements. Anti-foams.
Bioreactors
Functions. Design. Aeration and Agitation. Sterilization. Instrumentation and control.
Production of industrial statrters
Isolation, maintenance and development of microrganisms. Starter utilisation. Immobilization of biocatalysts: kinetics effects. Inactivation kinetics. Biocatalysis in non-conventional media (biphasic; organic; ionic liquids; supercritical fluids).

4. Bibliography:

Bibliografia Principal

Stanbury, P. and Whitaker, A. (1984). Principles of fermentation technology. Pergamon Press, Oxford. Cota BISA: Q03-222.

5. Assessment:

Work group to evaluate the quality of a given fermentation process. The grade will be given based on a written report and on an oral presentation.

6. Estimated Workload: 168 Hours

7. Last Update: 19/7/2010