

Code: 1718 Industrial and Food Microbiology**Degree:** 1st cycle – Food Science and Engineering**Curricular Year:** 2nd**Semester Course:** 1st**Credits:** 6 ECTS**Compulsory****Language:** Portuguese/English**Prerequisites:** Cell Biology and Microbiology**Responsible:** Virgílio Borges Loureiro**Other lecturer(s):** Maria Adélia da Silva Santos Ferreira and Manuel José de Carvalho Pimenta Malfeito Ferreira**Web Site:** <http://www.isa.utl.pt/home/node/4037>**1. Contact hours:****Lectures 28 Praticals/Laboratory 42 Others 14 Total 84****2. Objectives:**

- To introduce the fundamental principles of food safety and preservation;
- To study the ecological basis of control of microbial populations and the general principles of food microbiological quality;
- To discuss the fundamentals of hygiene in food industry;
- To study the fundamentals of food microbiological analysis and perspectives of its evolution;
- To familiarize the students with the procedures of working rules and of analytical stringency in a food microbiology laboratory;
- To interpret the analytical results and evaluate the microbiological quality of foods.

3. Programme:

- I. Program background and historical perspective.
- II. The microorganisms as agents of food poisoning: bacteria, mycotoxins, viruses, protozoa, algae, mycoplasmas and prions.
- III. The microorganisms as agents of food spoilage: factors affecting the survival and activity of microbial associations causing spoilage; microbiology of the primary food commodities; introduction of mathematical modelling of food spoilage.
- IV. Food microbiological analysis: classical and rapid methods of detection; quantification and identification of microorganisms and their metabolites.
- V. Microbial quality of foods: general principles; microbiological, chemical and physical indicators of food quality; food microbiological criteria.
- VI. Hygiene in food industry: code of recommended practices; general principles of sanitation; cleaning and disinfection programs; control of sanitation efficiency.
- VII. Food safety and risk analysis: retrospective and prospective analysis; general principles of Hazard Analysis and Critical Control Points (HACCP).

4. Bibliography:**Main Bibliography**

- Jay, J.M. (1996) - Modern Food Microbiology, 5th Edition. Food Science Texts.
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 Acribia. Zaragoza.
Hayes S, P.R., 1985 - Food Microbiology and Hygiene. Elsevier Applied Science Publishers. London New York.

Other Bibliography

- Déak, T. and Beauchat, L. – 1996 – Handbook of Food Spoilage Yeasts. CRC Press.
Harrigan, W. F., 1998 – Laboratory Methods in Food Microbiology. Third Edition. Academic Press.
Pierson, M.D. and Stern, N.J. (Eds.) - Foodborne Microorganism and Their Toxins: Developing Methodology. Marcel Dekker, Inc. New York and Basel
Ray, B., 1996 – Fundamental Food Microbiology. CRC Press.
Samson, R. A., Hocking, A. D., Pitt, J. I. And King, A. D., - 1992 – Modern Methods in Food Mycology.. Developments in Food Science, n° 31. Elsevier

5. Assessment:

Frequency: presence in 75% of all classes.

Continuous evaluation: short tests during the course.

Final Exam: over all topics.

The grade is an average of the final exam (80%) and of the tests (20%).

6. Estimated Workload:

168

 Hours

7. Last Update:

24/1/2011
