

Code: 1423 Dairy Science and Technology**Degree:** 2nd cycle – Food Science and Engineering**Stream:** Food Processing**Curricular Year:** 1st**Semester Course:** 2nd**Credits:** 6 ECTS**Optional****Language:** Portuguese/English**Responsible:** António Pedro Louro Martins**Other lecturer(s):** Maria Isabel Nunes Januário**Web Site:** <http://www.isa.utl.pt/home/node/3865>**1. Contact hours:****Lectures 28 Lecture/Practicals 14 Praticals/Laboratory 28 Others 14 Total 84****2. Objectives:**

The course aims to update the basic knowledge acquired in the 1st Cycle, still providing advanced training in the science and technology of milk and dairy products, to enable the students to work in milk food based activities, and to access to advanced training levels.

3. Programme:

- The milk and dairy sector in Portugal; European and worldwide framing.
- Milk synthesis and influent factors for milk production and composition.
- Milk composition and properties – structure and stability, composition, milk components and physical properties.
- Milk microbiology – raw milk microbiology, sources of contamination, agents of milk and dairy products spoilage, starters.
- Milking and methods of milk preservation: raw milk quality and evaluation, law and regulation; milk collection, transport and reception; pre-treatments and its effects.
- Milk and dairy technology. Processing diagrams, processes, product characteristics and regulations: heat treated liquid milk, fermented milks, cream products, butter, cheese, concentrated and dried milks, and ice cream. By-products valorisation and protein products.
- Plant and equipment cleaning and disinfection.

4. Bibliography:**Main Bibliography**ALAIS, Ch. *Ciencia de la leche. Principios de técnica lechera*. Editorial Reverté, S.A.. Barcelona.SPREER, E. *Lactologia Industrial*. Ed. Acribia, S.A..VARNAM, A. H.; SUTHERLAND, J.P. *Milk and milk products. Technology, chemistry and microbiology*. Chapman & Hall, Ltd., London.WALSTRA, P.; GEURTS, T. J.; NOOMEN, A.; JELLEMA, A.; van BOEKEL, M. A. J. S. *Dairy technology. Principles of milk properties and processes*. Marcel Dekker, Inc., New York.**Other Bibliography**ECK, A.; GILLIS, J.-C (coord.) *Le fromage. De la science à l'assurance qualité*. Technique et Documentation, Diffusion Lavoisier, Paris.JEANTET, R.; ROIGNANT, M.; BRULÉ, G. *Génie des procédés appliqué à l'industrie laitière*. Éd. Tec & Doc, Lavoisier.LUQUET, F. M. (ed.) *Laits et produits laitiers. Vache. Brebis. Chèvre*. Vol. I, II e III. Technique et Documentation, Lavoisier, APRIA.MAHAUT, M.; JEANTET, R.; BRULÉ, G.; SCHUCK, P. *Les produits industriels laitiers*. Éd. Tec & Doc, Lavoisier.**5. Assessment:**

- Continuous assessment (min. 75% of attendance) - min. average classif. of 10/20 mark, obtained from final test mark (60% of final classif.) and from practicals and lab classes reports, as well as from 4 papers on milk products topics and their presentations and discussion (40% of final classif.).
- Final examination - on examination period; min. classif. of 10/20 mark.

6. Estimated Workload:

168	Hours
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7. Last Update:

19/7/2010
