

**Code: 1571 Enological Engineering****Degree:** 2<sup>nd</sup> cycle – Viticulture and Oenology**Curricular Year:** 1<sup>st</sup>**Semester Course:** 2<sup>nd</sup>**Credits:** 6 ECTS**Compulsory****Responsible:** Olga Maria Carrasqueira Laureano**Other lecture(s):** Elizabeth da Costa Neves Fernandes d'Almeida Duarte and Maria Suzana Leitão Ferreira Dias Vicente**Web Site:** <http://www.isa.utl.pt/home/node/3909>**1. Contact hours:****Lectures 28 Lecture/Practicals 42 Others 14 Total 84****2. Objectives:**

Understanding of principles and fundamentals of main unit operations used in the wine industry.  
Winery design and environmental impact management.

**3. Programme:**

Balance of Mass and Energy  
Unit Operations (pressing, filtration...) and Cycles Refrigeration  
Management of Water and Wastewater Treatment  
Winery design and environmental impact

**4. Bibliography:****Main Bibliography**

C. J. Geankoplis (1993) - "*Transport Processes and Unit Operations*" 3rdEd. Prentice-Hall.  
Claude Flanzy (1998) - "*Enologie. Fondements scientifiques et technologiques*", Tec & Doc, Londres, NY, Paris  
D.R.Heldman & D.B.Lund( 1992) - "*Handbook of Food Engineering*", Dekker, New York  
R. P. Vine, E. M. Herkness T. Browning & C. Wagner (1997) - "*Winemaking from grape growing to marketplace*", Chapman & Hall, New York.

**5. Assessment:**

Written examination and discussion of a preliminary winery design

**6. Estimated Workload:**

168	Hours
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**7. Last Update:**

15/7/2010
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