Code: 1374 **Statistics and Experimental Design**

Degree: 2nd cycle – Agriculture; Food Science and Engineering; Forestry and Natural Resources; Animal Production Engineering; Viticulture and Oenology

Curricular Year: 1st **Semester Course: 1st**

Credits: 6 ECTS **Compulsory**

Language: Portuguese/English

Responsible: Jorge Filipe Campinos Landerset Cadima

Other lecturer(s): Fernanda Maria dos Reis Torroaes Valente

Web Site: http://www.isa.utl.pt/home/node/3779

1. Contact hours:

Lectures 35 **Praticals/Laboratory** 35 **Others** 14 **Total** 84

2. Objectives:

This course seeks to further the students' basic training in Statistics, with particular emphasis on the study of the Linear Model (Linear Regression and the Analyses of Variance and Covariance), as well as of fundamental non-parametric methods. The students should acquire knowledge on the subjects, both from a theoretically and a practical point of view. The applications are trained with statistical software.

3. Programme:

Linear Model: The Linear Model as an integrated approach to Linear approach to Linear Regression and the Analyses of Variance and Covariance. Simple and Multiple Linear Regression as both descriptive and inferential methods; variants of linear regression. Basic notions of experimental design. Fixed effects Analysis of Variance: the one-way and two-way models, with and without interactions; nested models. The comparison of related linear regressions as an example of Analysis of Covariances.

Non-parametric methods: non-parametric methods based on a single sample or on two (independent or paired) samples and non-parametric versions of ANOVA.

4. Bibliography:

Main Bibliography

Neter, Kutner, Nachtsheim e Wasserman (1996) Applied Linear Statistical Models, IRWIN.
Neter, Kutner, Nachtsheim e Wasserman (1996) Applied Linear Regression Models, IRWIN.
Maindonald e Braun (2003) Data Analysis and Graphics Using R, Cambridge University Press.
Draper e Smith (1981) Applied Regression Analysis, John Wiley & Sons.
Basics on Algebra, Mathematical Analysis and Statistics (e.g. see bibliography of the correspondent courses of 1st cycles at ISA).

5. Assessment:

Exam

6. Estimated Workload: 168 Hours

7. Last Update: 14/7/2010