



Universitat de Lleida

GUIA DOCENT  
**DESIGN AND ANALYSIS OF  
EXPERIMENTS**

Coordinació: VOLTAS VELASCO, JORDI

Any acadèmic 2017-18

## Informació general de l'assignatura

<b>Denominació</b>	DESIGN AND ANALYSIS OF EXPERIMENTS			
<b>Codi</b>	11370			
<b>Semestre d'impartició</b>	ANUAL AVALUACIÓ CONTINUADA			
<b>Caràcter</b>	<b>Grau/Màster</b>	<b>Curs</b>	<b>Caràcter</b>	<b>Modalitat</b>
	Màster Universitari Erasmus Mundus en Gestió Forestal i de Recursos Naturals al Mediterrani (MEDfOR)	1	OPTATIVA	Presencial
<b>Nombre de crèdits ECTS</b>	5			
<b>Grups</b>	1GG			
<b>Crèdits teòrics</b>	2			
<b>Crèdits pràctics</b>	2			
<b>Coordinació</b>	VOLTAS VELASCO, JORDI			
<b>Departament/s</b>	PRODUCCIO VEGETAL I CIENCIA FORESTAL			
<b>Distribució càrrega docent entre la classe presencial i el treball autònom de l'estudiant</b>	50% - 50 %			
<b>Informació important sobre tractament de dades</b>	Consulteu <a href="#">aquest enllaç</a> per a més informació.			
<b>Idioma/es d'impartició</b>	English			
<b>Distribució de crèdits</b>	<ol style="list-style-type: none"> <li>1. Basic experimental design in Forestry (1.8 ECTS)</li> <li>2. Checking the assumptions: homogeneity, normality and independence (0.8 ECTS)</li> <li>3. Linear regression models (1 ECTS)</li> <li>4. General linear models (1.4 ECTS)</li> </ol>			
<b>Horari de tutoria/lloc</b>	<p>previous appointment or Mon 10 am - 11 am</p> <p>previous appointment or right after the classes</p>			

Professor/a (s/es)	Adreça electrònica professor/a (s/es)	Crèdits impartits pel professorat	Horari de tutoria/lloc
ROMAGOSA CLARIANA, IGNACIO	iromagosa@pvcf.udl.cat	2,5	
VOLTAS VELASCO, JORDI	javoltas@pvcf.udl.cat	,9	
DE MIGUEL MAGAÑA, SERGIO	sergio.demiguel@pvcf.udl.cat	1,6	

## Objectius acadèmics de l'assignatura

To learn basic concepts of inferential statistics useful in design and analysis of experiments in forestry. To become familiar with a number of widely used experimental designs in relation to the objectives of the study. To understand the application of General Linear Models (GLM) in forestry, including fixed and mixed models. To provide an overview of a number of analytical methods based on the application of GLM theory (analysis of variance and covariance, regression) and of alternative designs and analyses of particular interest in forestry.

## Continguts fonamentals de l'assignatura

- 1 Basic Experimental Design in Forestry
  - 1.1 The principles of Experimental Design
  - 1.2 Completely Randomized and Randomized Block Designs
  - 1.3 Factorial Treatment Structure
  - 1.4 Mean Comparisons Tests and Contrasts
  - 1.5 Integrated examples
- 2 Checking the assumptions
  - 2.1 Homogeneity of variance
  - 2.2 Normality and independence of the residuals
  - 2.3 Outliers
  - 2.4 Transformations
  - 2.5 Integrated examples
- 3 Linear regression models
  - 3.1 Simple Linear Regression
  - 3.2 Polynomial Regressions
  - 3.3 Analysis of Covariance
  - 3.4 Integrated examples
- 4 General Linear Models
  - 4.1 Models with factorial and nested treatments
  - 4.2 Random and Fixed Treatment Factors
  - 4.3 Introduction to Linear Mixed Models
  - 4.4 Split-Plot and Other Stratified Designs

## Eixos metodològics de l'assignatura

**Homework:** Homework will be assigned in a weekly basis and will be due the following week. The homework count for 50% of the grade. Please see the homework policy below.

**Homework policy:** Homework solutions must be the result of your own work. This will improve your performance in the exams. You may use:

- Textbooks, course handouts and notes from lectures
- Discussion with the instructors
- Voluntary, mutual and cooperative discussion with other students in the class.

Homework will be posted in Campus Virtual. It will be usually available weekly and the instructor will warn every time a new homework is assigned. It will be due and handed exactly one week after the assignment.

**Exams:** There will be one midterm exam worth 20% and a final exam worth 30%. Please see the exam policy below.

**Exam policy:** Your exam solutions must be your own work. The final exam is cumulative. Acceptable resources are:

- JMP statistical software
- Handouts and class notes