

## SUBJECT TEACHING GUIDE

### G265 - STATISTICS AND OPTIMIZATION

Degree in Computer Systems Engineering  
First Degree in Computer Systems Engineering

Academic year 2023-2024

#### 1. IDENTIFYING DATA

Degree	Degree in Computer Systems Engineering First Degree in Computer Systems Engineering			Type and Year	Core. Year 1 Core. Year 1
Faculty	Faculty of Sciences				
Discipline	Subject Area: Mathematical Foundations of Computer Science Basic Training Module				
Course unit title and code	G265 - STATISTICS AND OPTIMIZATION				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web	<a href="https://moodle.unican.es/course/view.php?id=12111">https://moodle.unican.es/course/view.php?id=12111</a>				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. MATEMATICAS, ESTADISTICA Y COMPUTACION
Name of lecturer	ALICIA NIETO REYES
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Other lecturers	ARACELI TUERO DIAZ

#### 3.1 LEARNING OUTCOMES

- Use statistical data analysis software
- Analyze data through descriptive statistics
- Recognize real problems where probability distributions can be applied
- Apply hypothesis testing
- Learn basic optimization techniques
- Use statistical and optimization software

#### 4. OBJECTIVES

Learn to use statistics and optimization software
Learn the basics of descriptive statistics
Know the most common probability distributions
Know and understand discrete and continuous probability spaces
Know the statistical inference methods: parameter estimation and hypothesis testing
Learn and apply some optimization methods

#### 6. COURSE ORGANIZATION

CONTENTS	
1	Descriptive Statistics
2	Probability
3	Probability distributions
4	Confidence Intervals and hypothesis testing
5	Regression and correlation
6	Introduction to optimization
7	Methods and applications
8	Optimization algorithms

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Final Exam	Laboratory evaluation	Yes	Yes	60,00
Exam	Laboratory evaluation	No	Yes	40,00
TOTAL				100,00
Observations				
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Observations for part-time students				
Part time students can choose single a exam evaluation. Otherwise they will be evaluated as the other students.				

#### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

##### BASIC

•"Probability and Statistics with R". M. D. Ugarte, A. F. Militino y A. T. Arnholt. CRC Press. 2008.