TECHNICAL SHEET OF THE SUBJECT

Data of the subject

Subject name	Business Statistics
Subject code	E000005832
Mainprogram	Bachelor's Degree in Business Administration and Management
Involved programs	Grado en Administración y Dirección de Empresas (E-2) [Segundo Curso] Grado en Administración y Dirección de Empresas y Grado en Derecho (E-3) [Segundo Curso] Grado en Administración y Dirección de Empresas y Grado en Derecho (E-3 16) [Tercer Curso] Grado en Administración y Dirección de Empresas con Mención en Internacional (E-4) [Segundo Curso] Grado en Administración y Dirección de Empresas y Grado en Relaciones Internacionales (E-6) [Segundo Curso] Grado en Administración y Dirección de Empresas y Grado en Relaciones Internacionales (E-6) [Tercer Curso] Grado en Administración y Dirección de Empresas (E-2) - Bilingüe en inglés [Segundo Curso]
Level	Reglada Grado Europeo
Quarter	Semestral
Credits	6,0 ECTS
Type	Obligatoria (Grado)
Department	Departamento de Métodos Cuantitativos
Coordinator	Francisco Borrás Palá
Office hours	pedir cita (fborras@icade.comillas.edu)

Teacher Information

Teacher

Name	Antonio Rúa Vieites
Department	Departamento de Métodos Cuantitativos
Office	Alberto Aguilera 23 [OD-419]
EMail	rvieites@icade.comillas.edu

Teacher

Name	Cristina Lozano Colomer
Department	Departamento de Métodos Cuantitativos
Office	Alberto Aguilera 23 [CD-433]
EMail	clozano@icade.comillas.edu

Teacher

Name	José María Ortiz Lozano
Department	Universidad Pontificia Comillas
Office	Alberto Aguilera 23 Cantoblanco Ext. 2535
EMail	jmortiz@comillas.edu
Phone	6104

Teacher

Name	María Lourdes Fernández Rodríguez
Department	Departamento de Métodos Cuantitativos
Office	Alberto Aguilera 23 [Decanato (3ª planta)]
EMail	lourdesf@icade.comillas.edu
Phone	2283

Teacher

Name	Francisco Borrás Palá
Department	Departamento de Métodos Cuantitativos
Office	Alberto Aguilera 23 [CD-427]
EMail	fborras@icade.comillas.edu

Teacher

Name	Carlos Álvarez Fernández
Department	Departamento de Métodos Cuantitativos
Office	Alberto Aguilera 23
EMail	calvarez@icade.comillas.edu
Phone	

Teacher

Name	Lucía Barcos Redín
Department	Departamento de Gestión Empresarial
Office	Alberto Aguilera 23 [C-429]
EMail	lbarcos@icade.comillas.edu
Phone	2282

Teacher

Name	Tomás Curto González
Department	Departamento de Métodos Cuantitativos

Office	Alberto Aguilera 23 [CD-435]
EMail	tcurto@icade.comillas.edu

SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject
Contribution to the professional profile of the degree
Subject of instrumental character that allows to know the elements that take part in the business decision making in uncertainty environment, providing tools for: Summarize the statistical information and obtain measures of it Measure the uncertainty of random phenomena Analyze the behavior of random variables Produce generalizations from sample information It is, on the other hand, a basic tool for its use in other matters: Quantitative Models for the Economy and Business, Fundamentals of Finance, Corporate Finance, Market Research, etc. ..., in which knowledge of reality and Decision-making on issues addressed in them are based on the knowledge of situations and events characterized by uncertainty.
Prerequisites
Knowledge of mathematical analysis of one and several variables.

Competencies - Objectives			
Competences			
GENERALES			
CG01	Capacidad de análisis y síntesis		
	RA1	Analiza la información identificando sus elementos más significativos	
	RA2	Realiza la abstracción y simplificación necesaria para modelizar estadísticamente el problema real planteado	
	RA3	Integra el análisis gráfico, verbal y los datos cuantitativos y cualitativos para definir el modelo estadístico apropiado al problema	
CG08	Conocimientos de informática relativos al ámbito de estudio		
	RA1	Conoce y emplea de forma suficiente herramientas informáticas de uso común para el análisis estadístico	
ESPECÍFICAS			
CE10	Capacidad para tratar, sintetizar y analizar la información. Conociendo los fenómenos aleatorios y los procesos de inferencia estadística		

RA1	Conoce, diferencia y emplea los conceptos estadísticos para el análisis de la información- Identificación de variables, codificación y presentación sistemática de los datos
RA2	Deduce información estadística relevante de un conjunto de datos
RA3	Analiza e interpreta correctamente las relaciones entre distintas variables
RA4	Comprende y aplica correctamente los conceptos fundamentales de la teoría de la probabilidad
RA5	Comprende el concepto de variable aleatoria, discreta o continua, y elabora correctamente su distribución de probabilidad.
RA6	Conoce la distribución de probabilidad conjunta de dos variables, analizando correctamente las relaciones de asociación y/o dependencia entre ellas
RA7	Conoce distintos tipos de muestreo. Determina correctamente probabilidades en el caso de Muestro Aleatorio Simple
RA8	Reconoce y diferencia la aplicación de distintos métodos de estimación y contrastación, adecuados al tipo de información disponible y a los objetivos pretendidos.
RA9	Aplica correctamente los métodos de inferencia a situaciones reales sencillas, tomando decisiones oportunas e interpretándolas correctamente

THEMATIC BLOCKS AND CONTENTS

Contents - Thematic Blocks
PART 1: DATA DESCRIPTION

Topic 1: Statistics and data analysis in the era of big data

1.1 Big Data

1.2 Application examples

Topic 2: Graphical and numerical description of frequency distributions

2.1 Classification of variables and data.

2.2 Data organization: frequency tables and graphs

2.3 Numerical summary of the data: measures of central tendency and position, measures of dispersion, measures of form, measures of concentration.

2.4 Analysis of the dependence between two variables

2.5 Weighted mean and geometric mean

PART 2: PROBABILITY THEORY

Topic 3: Probability

3.1 Random phenomena and events

3.2 Concept of probability and conceptions of probability

3.3 Probability rules

3.4 Rectification of the probability of an event. Bayes theorem

Topic 4: Random Variables

4.1 Random Variable

4.2 Discrete random variable. Some discrete variable models

4.3 Continuous random variable. Some models of continuous variable

PART 3: STATISTICAL INFERENCE

Topic 5: Introduction to inference and simple random sampling

5.1 Descriptive statistics and inferential statistics

5.2 Basics of inference

5.3 Simplified random sampling

5.4 Distribution of statistics

Topic 6: Parameter estimation

6.1 Estimator and estimated value. Point estimation and interval estimation

6.2 Methods for obtaining point estimators

6.3 Properties of point estimators: insesgo, efficiency, consistency

6.4 Basic concepts in confidence intervals: confidence, breadth, margin of error

6.5 Some confidence intervals

6.5 Determination of the required sample size at confidence intervals

TEACHING METHODOLOGY

General methodological aspects of the subject

In-class Methodology: Activities

Keynote presentation of the general framework of each topic deepening the key concepts Realization and discussion of examples of practical application to deepen the concepts Basic introduction to the use of computer applications for statistical data processing Performing small online elementary level tests to review the concepts developed in each master class. Immediately after, they will be corrected in class to provide students with information about their learning Performing exercises and / or case studies in class Resolution of doubts of online practices, in order to provide information about their learning Two or three intermediate tests of the basic blocks of the subject Completion of the final exam of the subject	CG01, CG08, CE10

Non-Presential Methodology: Activities

Study and deepening of concepts Practical application of computer tools presented in class Consultation of specific questions in individual or group tutoring Online practice They will be more complex tests than online class tests. Some of them will require the application of computer applications for statistical data processing Performing exercises and / or case studies outside of class Final exam preparation	CG01, CG08, CE10

SUMMARY STUDENT WORKING HOURS

CLASSROOM HOURS		
Lecciones de carácter expositivo	Ejercicios y resolución de casos y de problemas	
40.00	50.00	
NON-PRESENTIAL HOURS		
Ejercicios y resolución de casos y de problemas	Estudio individual y/o en grupo y lectura organizada	Trabajos monográficos y de investigación, individuales o colectivos
30.00	30.00	30.00
		ECTS CREDITS: 6,0 (180,00 hours)

EVALUATION AND CRITERIA

Evaluation activities	Evaluation criteria	Weight
FINAL EXAM: A final exam of the subject will be carried out (common to the corresponding groups), whose content is the entire program.	Priority will be given to the understanding of the concepts and their application in practical cases, over mere numerical calculation. VERY IMPORTANT: The exam must have a grade of at least 5 out of 10 to pass the subject.	55 %
CONTINUOUS EVALUATION TESTS: Tests will be carried out after finishing each thematic block (or part of it). There will be 2 or 3 in the semester	Priority will be given to the understanding of the concepts and their application in practical cases, over mere numerical calculation. In the case of not being able to perform any test for any circumstance, it will not be allowed to recover it at another time. If the reason for not doing it is not sufficiently justified, your rating will be "0".	20 %
ACTIVE STUDENT PARTICIPATION IN CLASS: To evaluate it, exercises / case studies and online learning games will be carried out (some of them can be collaborative),	Priority will be given to the understanding of the concepts and their application in practical cases, over numerical calculation.	10 %
GROUP WORK OUTSIDE THE CLASSROOM: Practical work in pairs, with the objective of statistical treatment of real data	All work **not done** will be scored with "0".	15 %

Ratings

ORDINARY AND EXTRAORDINARY CALL:

For the evaluation of both calls, the same rating system will be followed (same weights as previously shown). Underlines the philosophy that continued work is part of the learning of the subject.

The exam must have a grade of at least 5 out of 10 to pass the subject in both calls.

EXCHANGE STUDENTS (OUT) AND REST OF CALLS:

The final grade will be 100% the grade of the exam, unless they agree with the teacher to perform the class tests. In that case the grade will be the best between these 2 options:

100% exam

70% exam-30% class tests)

WORK PLAN AND SCHEDULE

Activities	Date of realization	Delivery date
Delivery practical work proposal	2nd week	In the 2nd week of the semester on the date determined by the teacher of each group
Test topics 1 and 2	At the end of items 1 and 2	
Final delivery practical work	3rd week to 6th week	In the 7th week of the semester on the date determined by the teacher of each group
Test topics 3 and 4	At the end of topics 3 and 4	
Test topics 5 and 6 (it will be done or not depending on the decision of the teacher of each group)	At the end of topics 5 and 6	

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography

- *Estadística Empresarial en 101 ejemplos (volumen I).* **Borrás Palá, F.; Martínez de Ibarrtea Zorita, C; Escobar Torres, L.S.,** Edit EV Services
- *Estadística Empresarial en 101 ejemplos (volumen II).* **Borrás Palá, F.; Martínez de Ibarrtea Zorita, C; Escobar Torres, L.S.,** Edit EV Services
- *Estadística para administración y Economía.8ª edición (castellano)* **.Newbold,P; Carlson,W.L.;Thorne, B..** Edit.Pearson Prentice Hall

- *Statistics for Business and Economics.8ª Edition (English)*. **Newbold,P; Carlson,W.L.;Thorne, B..** Edit.Pearson Prentice Hall
- *Estadística: Problemas resueltos*. **Peralta, M.J; Rua Vieites, A.; Redondo Palomo, R.; del Campo Campos, C.** Editorial Pirámide (2007**)**

Complementary Bibliography

- *Introducción a la estadística económica y empresarial (teoría y práctica)*. **Martín Pliego, J.** Editorial Thomson.(2004)
- *Fundamentos de Probabilidad*. 2ª edición **Martín Pliego, J., Ruiz Maya, L**. Editorial Thomson. (2006)
- *Fundamentos de Inferencia Estadística*. 3ª edición **Martín Pliego, J., Ruiz Maya, L**. Editorial Thomson (2004).
- *Inferencia Estadística*. **Casas Sánchez, J.M**. Editorial Centro de Estudios Ramón Areces (1997)
- *Ejercicios de inferencia estadística y muestreo para economía y administración de empresas*. **Casas Sánchez, J.M; García Pérez, C; Rivera Galicia, L; Zamora Sanz, A** (2006). Edit. Pirámide