



Faculty of Business Economics

UPCT



## **Course unit description:**

### **Business Statistics I**

**Degree/s:** Degree in Business Administration and Management

**Year:** 2016/17

## 1. Subject data

<b>Name</b>	Business Statistics I				
<b>Subject area</b>	Statistics				
<b>Module</b>	Quantitative Methods for Business				
<b>Code</b>	510101004				
<b>Degree programme</b>	Degree in Business Administration and Management				
<b>Curriculum</b>	2016				
<b>Centre</b>	Faculty of Business Economics				
<b>Type</b>	Mandatory				
<b>Length of subject</b>	Annual	<b>Term</b>	1	<b>Course</b>	1st
<b>Language</b>	English				
<b>ECTS</b>	7,5	<b>Hours / ECTS</b>	25	<b>Total workload (hours)</b>	187,5

## 2. Lecturer data

<b>Lecturer in charge</b>	Manuel Ruiz Marín		
<b>Department</b>	Quantitative and Computer Methods		
<b>Knowledge area</b>	Quantitative Methods for Business		
<b>Office location</b>	Third floor, office 319		
<b>Telephone</b>	968 325901	<b>Fax</b>	968 325745
<b>email</b>	<a href="mailto:manuel.ruiz@upct.es">manuel.ruiz@upct.es</a>		
<b>URL / WEB</b>	<a href="http://metodos.upct.es">http://metodos.upct.es</a>		
<b>Office hours</b>	Published on “Aula Virtual” and on bulletin board		
<b>Location</b>	Office 319		

<b>Qualification/Degree</b>	Mathematics Sciences
<b>Academic rank at UPCT</b>	Professor
<b>Year of admission in UPCT</b>	2010
<b>Number of five-year periods (<i>quinquenios</i>) if applicable</b>	3
<b>Research lines (if applicable)</b>	Time series analysis, analysis of spatial processes, non-parametric statistics dynamical systems and algebra
<b>Number of six-year periods (<i>sexenios</i>) if applicable</b>	2
<b>Professional experience (if applicable)</b>	
<b>Other topics of interest</b>	

<b>Lecturer in charge</b>	José Antonio García Córdoba		
<b>Department</b>	Quantitative and Computer Methods		
<b>Knowledge area</b>	Quantitative Methods for Business		
<b>Office location</b>	Third floor, office 315		
<b>Telephone</b>	968 325492	<b>Fax</b>	968 325745
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<b>URL / WEB</b>	<a href="http://metodos.upct.es">http://metodos.upct.es</a>		
<b>Office hours</b>	Published on “Aula Virtual” and on bulletin board		
<b>Location</b>	Office 315		

<b>Qualification/Degree</b>	Mathematics Sciences
<b>Academic rank at UPCT</b>	Professor
<b>Year of admission in UPCT</b>	1999
<b>Number of five-year periods (<i>quinquenios</i>) if applicable</b>	0
<b>Research lines (if applicable)</b>	Health economics
<b>Number of six-year periods (<i>sexenios</i>) if applicable</b>	0
<b>Professional experience (if applicable)</b>	
<b>Other topics of interest</b>	

### 3. Subject description

#### 3.1. General description

The course Business Statistics I aims to provide the student with tools for analyzing economic type data with a very practical application in different areas of a firm, facilitating the decision-making process therein. This course will mark a positive distinction between future college graduates and other traditional business administrators.

#### 3.2. How the subject contributes to a professional career

Business Statistics I is a very practical course which teaches the technical principles of descriptive analysis at an introductory level. Thus, at the end of the course, the student must be able to establish adequate measurements for the economic variables, relate such variables, determine their evolution, carefully weigh data, adequately represent the data and make predictions about the evolution of certain magnitudes.

The course Business Statistics I is an annual course that is offered during the first year of the degree program in business administration and management.

#### 3.3. Relationship with other subjects in the programme

It is recommended that the student successfully pass the course Mathematics I.

#### 3.4. Incompatibilities defined in the programme

None.

#### 3.5. Recommendations to do the subject

Unlike other courses, in order to adequately follow the subject matter of this course, some previous knowledge of math is required, which the student should have likely acquired during the previous stages of his/her education.

Thus, the student should be at ease with performing elementary mathematical operations  $+$ ,  $-$ ,  $\times$ ,  $\div$ , elementary powers, using parentheses, brackets, etc., as well as usual mathematical notation.

The student should also know how to solve systems of equations and matrix calculations.

For these reasons, it is recommended that the student successfully pass the course Mathematics I and the leveling seminars in Mathematics proposed by the Department of Quantitative and Computer Methods.

#### 3.6. Special provisions

As set forth in article 6 of the *Reglamento de las Pruebas de Evaluación de los Títulos Oficiales de Grado de la UPCT* the corresponding vice-rector may establish special adaptations in methodology and the development of lessons for students who suffer from a disability or some limitation, in order to enable them continued studies.

The student who, because of their circumstances, may require special measures of this kind should inform the teacher at the beginning of the semester.

Likewise, foreign students who may have difficulty with the language should notify the teacher.

## 4. Competences and learning outcomes

### 4.1. Basic curricular competences related to the subject

Que los estudiantes tengan la capacidad de reunir e interpretar datos relevantes (normalmente dentro de su área de estudio) para emitir juicios que incluyan una reflexión sobre temas relevantes de índole social, científica o ética.

### 4.2. General curricular competences related to the subject

Aplicar los métodos matemático-estadísticos y las tecnologías de la información y la comunicación para el tratamiento, valoración, y previsión de la información económico-empresarial.

### 4.3. Specific curricular competences related to the subject

Describir razonadamente y con apoyo de técnicas estadísticas, el comportamiento de datos cualitativos y cuantitativos.

### 4.4. Transversal curricular competences related to the subject

Utilizar con solvencia los recursos de información (nivel 1).

### 4.5. Subject learning outcomes

1. Knowledge of the different basic techniques for performing a descriptive analysis of data.
2. Ability to collect, organize and analyze data from a descriptive point of view.
3. Ability to make decisions based on an analysis of the information.
4. Ability to work in a group, both on specific issues of the subject as well as on multidisciplinary issues.
5. Ability to communicate the results and to draw up descriptive and quantitative types of technical reports.

## 5. Contents

### 5.1. Curricular contents related to the subject

Statistical distributions. Frequency distributions. Two-dimensional distributions. Regression and correlation. Index numbers and rates of change. Time series. Probability.

### 5.2. Theory syllabus (teaching modules and units)

Tema 1: Distribuciones estadísticas de un carácter.  
Tema 2: Características de una distribución de frecuencias.  
Tema 3: Distribuciones bidimensionales.  
Tema 4: Regresión y correlación  
Tema 5: Números índices y tasas de variación.  
Tema 6: Análisis clásico de series temporales.  
Tema 7: Probabilidad.

### 5.3. Practice syllabus (name and description of every practical)

1. Construction of distributions of frequency and their graphical representation on a spreadsheet. Solving problems.
2. Calculation of the main descriptive measurements using a spreadsheet. Solving related problems.
3. Construction of index numbers (simple and complex), rates of change, impact and involvement using a spreadsheet. Solving related problems.
4. Construction of two-dimensional distributions and calculation of covariance using a spreadsheet. Solving related problems.
5. Descriptive analysis of time series. Calculation of trend and seasonal variation rates using a spreadsheet. Solving related problems.
6. Solving problems related to the calculation of probabilities.

### Risk prevention

Promoting the continuous improvement of working and study conditions of the entire university community is one the basic principles and goals of the Universidad Politécnica de Cartagena.

Such commitment to prevention and the responsibilities arising from it concern all realms of the university: governing bodies, management team, teaching and research staff, administrative and service staff and students.

The UPCT Service of Occupational Hazards (*Servicio de Prevención de Riesgos Laborales de la UPCT*) has published a "Risk Prevention Manual for new students" (*Manual de acogida al estudiante en materia de prevención de riesgos*), which may be downloaded from the e-learning platform ("Aula Virtual"), with instructions and recommendations on how to act properly, from the point of view of prevention (safety, ergonomics, etc.), when developing any type of activity at the University. You will also find recommendations on how to proceed in an emergency or if an incident occurs.

Particularly when carrying out training practices in laboratories, workshops or field work, you must follow all your teacher's instructions, because he/she is the person responsible for your safety and health during practice performance. Feel free to ask any questions you may have and do not put your safety or that of your classmates at risk.

### 5.4. Theory syllabus in english (teaching modules and units)

Topic 1: Statistical distributions of a character.  
Topic 2: Characteristics of a distribution of frequencies.  
Topic 3: Two-dimensional distributions.  
Topic 4: Regression and correlation.  
Topic 5: Index numbers and rates of change.  
Topic 6: Classic time series analysis.  
Topic 7: Probability.

### **5.5. Detailed description of learning goals for every teaching module**

Topic 1, 2, 3: Learn how represent, describe and summarize information about data.  
Topic 4: Learn how to set mathematical relationship between two variables.  
Topic 5: Learn how to measure the combined fluctuations in a group related variables.  
Topic 6: The main aims are: (a) to find a model which provides a good description of the main features of the data, and (b) given the model and the data, to forecast and/or control the future evolution of the process.  
Topic 7: Students will learn what probability is, different ways to express probability numerically, and how to solve problems based on probability.



## 6. Teaching method

6.1. Teaching method			
Teaching activity	Teaching techniques	Student workload	Hours
Theory classes	Presentation type of class taught using the lecture method and the case method, answering questions raised by the students.	<u>In-class</u> : Taking notes, asking questions	50
		<u>Self-study</u> :	
Practical classes and problems	Problems are raised and solved, and class participation by the students is strengthened through group and cooperative learning using the case method. Learning to use the basic tools of general software (spreadsheets) for descriptive analysis of data	<u>In-class</u> : Active participation, problems solving, asking questions	25
		<u>Self-study</u> :	
Student self-work (study, collaborative and group project)	Motivation and guidance of a project to be completed in a group. Guiding the students to understand how to prepare quantitative reports and present them publicly. Study of the subject.	<u>In-class</u> :	
		<u>Self-study</u> : Presentation and exhibition of the project consisting of a descriptive data analysis obtained from a public database or collected by conducting a survey	104,5
Evaluation	Global exam. Partial Tests. Grading of the content and presentation of the group project.	<u>In-class</u> : Attendance at formal review and presentation of a group project.	4
		<u>Self-study</u> :	
Tutorials	Answering any questions about theory, solving problems and group project.	<u>In-class</u> : Asking questions during the tutorial hours	4
		<u>Self-study</u> :	
		<u>In-class</u> :	
		<u>Self-study</u> :	
		<u>In-class</u> :	
		<u>Self-study</u> :	
		<u>In-class</u> :	
		<u>Self-study</u> :	
		<u>In-class</u> :	
		<u>Self-study</u> :	
			187,5

## 6.2. Learning outcomes (4.5) / teaching activities (6.1)

[illegible]

## 7. Assessment method

### 7.1 Assessment method

Assesment activity	Type		Assessment methods and criteria	Percentage (%)	Assessed learning outcomes (4.5)
	Summative	Formative			
Written or oral exams	X		5 multiple choice tests (10 questions) and a global exam on a practical case.	Between 75% and 80%	1,2,3,5
Participation and involvement in the teaching-learning process	X		Participation and contributions using the case method will be assessed.	Up to 20%	1,4,5
Evaluation of projects and reports					
Project defence presentation	X		Skills assessment in the presentation and preparation of group work.	Up to 20%	1,4,5
<p>The group project will be guided and overseen by the professor, who will give instructions beforehand regarding when and how the projects are to be presented. The professor will also set out certain minimum requirements that the group projects must also meet.</p> <p>Global exam in extraordinary calls will count 100 %</p> <p>Written or oral exams: an examination on a case and type test exams will be made with various issues related to the theoretical contents taught. The characteristics of the exam, as well as the date, time and location will be indicated on the official announcement. Global exam will represent up to 80% of the course grade</p> <p>Group project: Students who turn in and present the group project may earn a maximum of 20% of the final grade for the course depending on the quality of the work, clarity and quality of the presentation, and if done in a foreign language (preferably in English).</p>					

As set forth in article 5.4 of the *Reglamento de las pruebas de evaluación de los títulos oficiales de grado y de máster con atribuciones profesionales (UPCT)*, students in the special circumstances listed in the article 5.4 are entitled to a comprehensive assessment test, upon justified request which must be granted by the Department. This does not exempt them from carrying out compulsory tasks included in the teacher's guide of the subject (official syllabus).

### 7.2. Control and monitoring methods (optional)

The tests (exams, classroom participation, solving practical cases, etc.) enable detecting possible gaps and make it possible to consolidate the most important concepts of the course.

## 8. Bibliography and resources

### 8.1. Basic bibliography

- José A. García, Fernando López, M<sup>a</sup> Ángeles Palacios, Manuel Ruiz Marín. Introducción a la estadística para la Empresa, Horacio Escarabajal Editores. 2000.
- MARTIN GUZMAN, M.P; MARTIN PLIEGO, F.J. Curso básico de estadística económica. 3<sup>a</sup> ED. Madrid: AC, 1991.
- James, G., Witten, D., Hastie, T., Tibshirani, R. An Introduction to Statistical Learning

### 8.2. Supplementary bibliography

- CASAS SÁNCHEZ, J. M., y otros: Ejercicios de estadística descriptiva y probabilidad para economía y administración de empresas, Pirámide, 2006.
- ERNESTO CASA ARUTA, 200 problemas de estadística descriptiva, Ed: Vicens-Vives, 1994.
- FERNÁNDEZ CUESTA, C; FUENTES GARCÍA, F. Curso de estadística descriptiva. Barcelona: Ariel, 1995. 524 p. ISBN 84-344-2104-6

### 8.3. On-line resources and others

- <http://ocw.bib.upct.es/>
- <http://www.carm.es/econet/>
- <http://www.ine.es>
- <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/>
- <http://www.lacaixa.comunicacions.com/se/index.php?idioma=esp>