

**Department of Applied Economics I**

**FACULTY OF TOURISM AND FINANCE**



**DEGREE IN FINANCE & ACCOUNTING**

(English language)

**STATISTICS I SYLLABUS**

ACADEMIC YEAR 2016-2017

## **BASIC FEATURES OF THE SUBJECT**

Qualification:	Degree in Finance and Accounting
Starting year of the degree	2009
Centre:	Faculty of Tourism and Finance
Subject	Statistics I
Subject code	16100015
Type of subject	Core
Academic year	2 <sup>nd</sup> year
Term	2 <sup>nd</sup> term
Group	Group 9 (Morning, English)
Credits	6
Number of hours	150
Area in charge	Quantitative methods for the Economy and Business (main area), Applied Economics
Department	Applied Economics I (Department in charge)
Postal address	Av. Ramon y Cajal, 1. 41005, Seville (Spain)
Email address	<a href="http://www.departamento.us.es/deconapli1/">http://www.departamento.us.es/deconapli1/</a>

## **TEACHING STAFF**

Gavilán Ruiz, José Manuel

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## **GOALS AND SCOPE**

### **Specific teaching objectives**

The main objective for the students is to attain a series of skills that can be used for the analysis of the essential features of a set of data in order to discover the most important and interesting aspects. To this end, students must possess general knowledge of the basic and practical procedures of statistical descriptive analysis in order to apply this kind of analysis and to deal with real problems they may have to face throughout their professional career.

## **COMPETENCE SKILLS**

### **General and transversal competence skills**

Capacity for analysis and synthesis (intensely trained)

### **Specific skills**

Knowledge and capacity required to apply elementary concepts of Statistics.

## **COURSE CONTENTS**

### **Short description of the contents (sections of the subject)**

#### **SECTION 1: INTRODUCTION**

#### **SECTION 2: ANALYSIS OF ONE CHARACTERISTIC**

#### **SECTION 3: ANALYSIS OF TWO CHARACTERISTICS**

#### **SECTION 4: INDEX NUMBERS**

#### **SECTION 5: INTRODUCTION TO PROBABILITY**

### **Detailed description of the contents**

#### **SECTION 1: INTRODUCTION**

##### **CHAPTER 1: ELEMENTARY CONCEPTS IN DESCRIPTIVE STATISTICS (2 hours)**

1. Statistics: goals and historical development.
2. Statistical data: different sources.
3. Statistics: concept and definition.
4. The statistical method. Population and sample.
5. Different kinds of characteristics. Scales of measurement

#### **SECTION 2: ANALYSIS OF ONE CHARACTERISTIC**

##### **CHAPTER 2: FREQUENCY DISTRIBUTIONS FOR ONE CHARACTERISTIC (6 hours)**

1. Frequency distributions of qualitative variables. Absolute, relative and cumulative frequencies. Graphic representations.
2. Frequency distributions of non-grouped quantitative variables. Absolute, relative and cumulative frequencies. Graphic representations.
3. Frequency distributions of grouped quantitative variables. Absolute, relative and cumulative frequencies. Representative points of the intervals, widths and range. Graphic representations.

##### **CHAPTER 3: MEASURES OF POSITION (6 hours)**

1. Data reduction and representative measures.
2. The mode: concept, interpretation and determination.
3. The median: concept, interpretation and determination.
4. The quantiles: concept, interpretation and determination.
5. The arithmetic mean: concept and interpretation. Main properties. Weighted arithmetic mean.
6. Other statistical means.

##### **CHAPTER 4: ANALYSIS OF VARIATION (5.5 hours)**

1. Concept of variation and its analysis.
2. Absolute variation measures. Range, variance and standard deviation.
3. Relative variation measures.

##### **CHAPTER 5: MEASURES OF SHAPE (4.5 hours)**

1. The skewness and its measure.

2. The kurtosis and its measure.

### **SECTION 3: ANALYSIS OF TWO CHARACTERISTICS**

#### **CHAPTER 6: FREQUENCY DISTRIBUTIONS (3 hours)**

1. Two-dimensional distributions of frequencies. Joint frequencies and correlation tables. Diagram of dispersion.
2. Marginal distributions. Conditioned distributions.
3. Statistical independence between two variables.

#### **CHAPTER 7: ANALYSIS OF THE CORRELATION BETWEEN TWO VARIABLES (3 hours)**

1. Concept of correlation. The covariance: meaning and main properties.
2. Pearson's correlation coefficient: meaning and properties.
3. Relationship between non-correlation and independence.

#### **CHAPTER 8: LINEAR REGRESSION (8 hours)**

1. Concept of regression and its analysis.
2. Linear least-squares regression. Parameters of the model.
3. Goodness of fit. Residual variance and coefficient of determination.
4. Relationship between the two lines of regression. Linear regression in the case of non correlation and in the case of total correlation.
5. Rates of variation. Absolute and relative rates of variation. Elasticity and forecasting.

### **SECTION 4: INDEX NUMBERS**

#### **CHAPTER 9: INDEX NUMBERS (12 hours)**

1. Concept of index number. Simple index numbers. Properties.
2. Aggregate index numbers. Formulations based on weighted arithmetic means. Properties. Repercussion and participation.
3. Aggregate index number of value, prices and quantities
4. Formulations for the index numbers of prices and quantities: Laspeyres and Paasche. Properties.
5. Use of price indexes for deflation. Chained index numbers.
6. The CPI index number in Spain.

### **SECTION 5: INTRODUCTION TO PROBABILITY**

#### **CHAPTER 10: PROBABILITY (10 hours)**

1. Deterministic and random phenomena. Results and sample space.
2. Historical development of probability.
3. Concept of event. Operations with events.
4. Axiomatic definition of probability: derived consequences.
5. Conditioned probability. Independent events.
6. Law of total probability and Bayes's theorem.

## TEACHING ACTIVITIES

Number of attendance hours: 60

Number of non-attendance hours: 0

### **Methodology for teaching and learning**

The contents of the subject will be explained in attendance sessions of theory and practice. All the sessions will take place in the Computer Room II using a spreadsheet. Every new part will start by introducing the required theory which will be followed by carrying out a certain number of practical exercises in order to clarify and consolidate the contents. The students will also have to work on their own and solve some additional exercises proposed in class by the teacher in their own individual study time. This theoretical and practical process should be completed by attending to tutorial sessions at the established time where the students can improve their level of understanding and solve any doubts they may have in relation with the subject.

It is highly advisable for the students to follow and study the subject according to the explanations given in class. Nevertheless, they can also make use of the recommended reading material shown in the bibliography as well as of additional material provided by the teacher.

### **Skills to be developed**

As previously mentioned.

### **Individual study**

Number of attendance hours: 0

Number of non attendance hours: 90

### **Teaching and learning methodology**

The students must study and prepare the subject with the help of all the material provided.

## BIBLIOGRAPHY AND OTHER TEACHING RESOURCES

### **In Spanish**

#### ***Curso práctico de Estadística Económica.***

Martín-Pliego, F.J.  
AC, 1990.

#### ***Curso de estadística descriptiva: Teoría y Práctica.***

Fernández, C. y Fuentes, F.  
Ariel, 1995.

#### ***Estadística descriptiva.***

Tomeo, V. y Uña, I.  
Garceta, 2009.

#### ***Introducción a la Estadística Económica y Empresarial. Teoría y Práctica.***

Martín-Pliego, F.J. 3ª.  
Thomson, 2009.  
***Estadística Económica y Empresarial: Teoría y Ejercicios.***  
Uriel, E. y Muñiz, M.  
AC, 1993.

***Estadística.***  
Spiegel, M.R. y Stephens, L. J. 2ª Edición.  
Mc Graw Hill, 2005.

***Estadística Aplicada: Economía y Ciencias Sociales.***  
Escuder, R. y Murgui, J. S.  
Tirant lo Blanch, 1995.

***Manual de Estadística: Descriptiva.***  
Martín-Guzmán, P., Toledo, I., López Ortega, F. J. y Bellido, N.  
Thomson, 2006.

***Introducción a la estadística para economía.***  
Casas, J. M., y Santos, J. 2ª Edición.  
Centro de Estudios Ramón Areces, 2002.

***Fundamentos de probabilidad.***  
Martín-Pliego, F.J. y Ruiz-Maya, L. 2ª Edición.  
Thomson, 2006.

***Problemas de probabilidad.***  
Martín-Pliego, F.J., Montero, J.M. y Ruiz-Maya, L.  
2ª Edición.  
Thomson, 2006.

***Cálculo de Probabilidades y Estadística.***  
Rojo, J.L., Guijarro, M.M., Sanz, J.A. y Fernández-Abascal, H.  
Ariel, 1994.

***Problemas de probabilidades y estadística.***  
Cuadras, C.M.  
EUB, 2000.

***Lecciones de cálculo de probabilidades: Curso teórico-práctico.***  
Uña, I., Tomeo, V. y San Martín, J.  
Thomson, D.L. 2003.

***Curso de estadística descriptiva.***  
Calot, G. 5ª Edición.  
Paraninfo 1988.

***Estadística descriptiva y cálculo de probabilidades.***  
Castillo, I. y Guijarro, M.

Pearson, 2006.

***Estadística descriptiva para economía y administración de empresas: Cuestiones tipo test y ejercicios con Microsoft Excel.***

Arnaldos, F., Díaz, M.T., Faura, U. y Molera, L.  
Thomson, D.L. 2003.

***Elementos básicos de estadística económica y empresarial.***

Montiel, A.M., Rius, F. y Barón, F.J.  
Prentice Hall, 1996.

***Fundamentos de Estadística: Estadística descriptiva y modelos probabilísticos para la inferencia.***

Durá, J.M. y López, J.M.  
Ariel, 1988.

***Métodos estadísticos aplicados a la economía.***

Escuder, R.  
Ariel, 1987.

***Cálculo de probabilidades***

Uña, I., San Martín, J. y Tomeo V.  
Garceta, 2009.

***Conceptos básicos de Estadística para las Ciencias Sociales***

Cáceres Hernández, J. J. 2ª Edición.  
Delta, 2010.

**In English**

***Probability and Statistics for Finance***

Rachev S.T., Höchstötter M., Fabozzi F.J. and Focardi S.M.  
John Wiley & Sons, 2010

***Statistics for Business and Economics***

Anderson, D.R., Sweeney, D.J. and Williams, T.A.  
Cengage Learning, International Edition, 2011

***Managerial Statistics***

Keller, G.  
Cengage Learning, International Edition, 2009

***Statistics for Business and Economics***

Newbold P.  
Prentice Hall, 1995

***A course in Business Statistics***

Shannon P., Groebner D., Fry P. and Smith K.  
Prentice Hall, 2001

***Elementary Statistics***

Weiss N.A.

### **Other teaching resources**

Material will be left in the copy shop of the Faculty and on the web platform.

## **EVALUATION METHODOLOGY AND CRITERIA FOR THE FINAL MARKS**

### **Evaluation methodology**

It is possible to pass this subject through continuous assessment or through a final exam. With regard to the continuous assessment, a minimum of 80% attendance is required. After finishing each part of the subject, there will be a partial exam with the same structure as the final exam. The final mark will be an average of the marks obtained in each partial exam.

Once the course has finished, a final exam will take place. The exam will be announced well in advanced.

The exam will be in accordance with the following structure:

- a) It will be written and marked between zero and ten, rounded to the nearest decimal place.
- b) The exam will have two separate parts which will also be marked between zero and ten with only one decimal place.

The first part will consist of a series of about twenty theoretical questions which will focus on concepts and methods. Students will have to choose among four offered answers for every question, whereby only one will be correct. In this first part, the students must bear in mind that a wrong answer can be penalized by up to -0.33 points, whereas a correct answer will provide 1 point and any unanswered questions will not be taken into account either positively or negatively. The mark for this part will be calculated by translating the total sum of the points into a mark between zero and ten. To pass the exam, a minimum of 3 points is required in this part.

The second part will be essentially practical and will consist of several exercises in order to assess the students' ability for solving problems and their level of familiarity with the contents of the subject. A minimum of 3 points is also required in this part, and the final mark of the exam will be calculated as a weighted arithmetic mean of both parts where the weights will be 40% for the first part and 60% for the second.

- c) The students are allowed to use a spreadsheet in the two parts of the exam.

Once the marks of the subject are published, a period of time will be given for consultation, revision or appeal against these marks. After this period, the marks will be considered as definitive.

The mark of the exam can be improved and complemented by other elements which may be agreed by the teachers of the subject, such as active participation in the class, assignments or projects carried out individually or in groups. The minimum mark required in order to pass the subject is 5.



## **DATES AND LOCATIONS FOR THE EXAMS**

3<sup>rd</sup> official call

Date: 15/12/2016 (the time and location will be made known more than 10 days in advance)

1<sup>st</sup> official call

Date: 05/06/2017 (the time and location will be made known more than 10 days in advance)

2<sup>nd</sup> official call

Date: 15/09/2016 (the time and location will be made known more than 10 days in advance).

## **APPEAL AND EVALUATION BOARD**

Felipe Rafael Cáceres Carrasco (president),

Francisco Begines Begines (secretary) and

Francisco Javier Gamero Rojas.

1<sup>st</sup> deputy member: Cristobal Chamizo Guerra.

2<sup>nd</sup> deputy member: M<sup>a</sup> del Pilar Moreno Pacheco.

3<sup>rd</sup> deputy member: Antonio Pajares Ruiz.