Teaching Guide				
Identifying Data				2022/23
Subject (*)	Statistics I		Code	611G02006
Study programme	Grao en Administración e Dirección de Empresas			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	First	Basic training	6
Language	SpanishGalicianEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Economía			
Coordinador	Sanchez Sellero, Maria del Carmen	E-mail	c.sanchez@udc.es	
Lecturers	Abad Itoiz, Nerea Garcia-Carro Peña, Beatriz Lado González, Eva Mª Martinez Filgueira, Xose Manuel Perez Lopez, Jose Benito Sánchez Gabarre, Mary Elena Sanchez Sellero, Maria del Carmen	E-mail	nerea.abad.itoiz@udc.es beatriz.garcia-carro@udc.es eva.lado@udc.es xose.martinez@udc.es benito.perez@udc.es c.sanchez@udc.es	
Web				
General description	In the first part of the subject, the aim is to learn and understand the basic concepts on Descriptive Statistics, Time Series and Index Numbers. In the second part, the objective is to learn and understand the essential concepts on Probability Calculus.			

Study programme competences / results	
Code	Study programme competences / results
A4	Elaborate advisory reports on specific situations of companies and markets
A6	Identify the relevant sources of economic information and to interpret the content.
A7	Understand economic institutions as a result and application of theoretical or formal representations which explain the evolution of the economy.
A8	Derive, based on from basic information, relevant data unrecognizable by non-professionals.
A10	Read and communicate in a professional environment at a basic level in more than one language, particularly in English
A11	To analyze the problems of the firm based on management technical tools and professional criteria
A12	Communicate fluently in their environment and work by teams
B1	CB1-The students must demonstrate knowledge and understanding in a field of study that part of the basis of general secondary education, although it is supported by advanced textbooks, and also includes some aspects that imply knowledge of the forefront of their field of study
B2	CB2 - The students can apply their knowledge to their work or vocation in a professional way and have competences typically demostrated by means of the elaboration and defense of arguments and solving problems within their area of work
B3	CB3- The students have the ability to gather and interpret relevant data (usually within their field of study) to issue evaluations that include reflection on relevant social, scientific or ethical
B4	CB4-Communicate information, ideas, problems and solutions to an audience both skilled and unskilled
B5	CB5-Develop skills needed to undertake further studies learning with a high degree of autonomy
B6	CG1-Perform duties of management, advice and evaluation in business organizations
B7	CG2-Know how to use the concepts and techniques used in the various functional areas of the company and understand the relationships between them and with the overall objectives of the organization
B10	CG5-Respect the fundamental and equal rights for men and women, promoting respect of human rights and the principles of equal opportunities, non-discrimination and universal accessibility for people with disabilities.
C1	Express correctly, both orally and in writing, in the official languages of the autonomous region

C4	To be trained for the exercise of citizenship open, educated, critical, committed, democratic, capable of analyzing reality and diagnose problems, formulate and implement knowledge-based solutions oriented to the common good
C5	Understand the importance of entrepreneurial culture and know the means and resources available to entrepreneurs
C6	Assess critically the knowledge, technology and information available to solve the problems and take valuable decisions
C7	Assume as professionals and citizens the importance of learning throughout life.
C8	Assess the importance of research, innovation and technological development in the economic and cultural progress of society.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Knowing and understanding the handling of basic techniques for Data Analysis and Descriptive Statistics.	A4 A6 A7 A8 A10	B6 B10	C1 C5 C6 C7 C8
Knowing and understanding the fundamentals on Data Analysis and Descriptive Statistics.	A4 A10 A11 A12	B1 B2	C1 C4 C5 C6 C7 C8
Knowing and understanding the fundamentals on Probability Calculus.	A4	B3 B4	C1 C4 C5 C6 C7 C8
Handling the basic concepts on Probability Calculus.	A4	B5 B7	C8

Contents	
Topic	Sub-topic
LESSON 1: ONE-DIMENSIONAL FREQUENCY DISTRIBUTIONS	1.1. Statistics: concept and contents 1.2. The statistical analysis 1.3. Frequency distribution: concept and graphs 1.4. Moments in one-dimensional distributions 1.5. Measures of central tendency and position 1.6. Measures of dispersion or variability 1.7. Measures of shape 1.8. Outliers: detection and effects
LESSON 2: TWO-DIMENSIONAL FREQUENCY DISTRIBUTIONS	2.1. Two-dimensional frequency distributions 2.2. Moments in two-dimensional distributions 2.3. Regression and correlation
LESSON 3: TIME SERIES	3.1. Time series: concept and graphs 3.2. Decomposition of a time series: components and scheme 3.3. Trend analysis 3.4. Seasonality analysis. Seasonally adjusted time series 3.5. Variation rates analysis in a time series context

LESSON 4: INDEX NUMBERS	4.1. Introduction 4.2. Composite indexes 4.3. Application of index numbers 4.4. Main indexes in the Spanish economy
LESSON 5: INTRODUCTION TO PROBABILITY CALCULUS	5.1. Deterministic phenomena and random phenomena 5.2. Probability: definition and postulates 5.3. Conditional probability. Independence of events 5.4. Probability theorems
LESSON 6: ONE-DIMENSIONAL RANDOM VARIABLE	6.1. One-dimensional random variable 6.2. Discrete random variables: probability distribution function and cumulative probability distribution 6.3. Continuous random variables: density functions and cumulative distribution 6.4. Characteristics of one-dimensional random variables
LESSON 7: RANDOM VARIABLES: MAIN DISTRIBUTIONS	7.1. Bernoulli distribution 7.2. Binomial distribution 7.3. Poisson distribution 7.4. Uniform distribution 7.5. Normal distribution 7.6. Distributions derived from the Normal distribution
LESSON 8: CONVERGENCE AND CENTRAL LIMIT THEOREM	8.1. Convergence in probability 8.2. Convergence in distribution 8.3. Central Limit Theorem

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Introductory activities	B5 C6 C7 C8	1	0	1
Guest lecture / keynote speech	A4 A7 A11 B1 B4 B7 C1 C5	17	34	51
Workshop	A6 A10 A11 A12 B2 B3 B5 B6 B10 C1 C4 C5 C6	17	42.5	59.5
ICT practicals	A8 A10 A11 C4 C8	8	16	24
Objective test	A4 A6 A12 B2 B3 B5 B7 C1 C6	2	6	8
Personalized attention		6.5	0	6.5
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Introductory activities	It consists of introducing the subject and presenting the activities that the students must develop, as well as the criteria with which they will be evaluated.
Guest lecture / keynote speech	Each keynote session consists of the lecturers' oral exposition of concepts and methods, together with the active participation of the students. The presentation is complemented with the use of audiovisual media and includes examples and exercises that make it possible to highlight the limitations and possibilities of the methods exposed.
Workshop	Each workshop is an interactive session in which applications, exercises and problems are developed; they allow the students to understand the theoretical foundations of the subject and learn to value, from a critical point of view, the results obtained.

ICT practicals	These are interactive sessions dedicated to learning the appropriate computer tools to carry out empirical applications of the methods presented in the theoretical sessions. They will be developed in a virtual manner. They will be either individual or in groups.
Objective test	It is a written test to evaluate the degree of learning.

Personalized attention	
Methodologies	**Description**
Workshop ICT practicals Objective test	It is the time the lecturer takes in order to address and solve questions coming from the students, either individually or in small groups. The tutorials (official hours) will be carried out in person or in a virtual manner. The Small Group Tutorials will also be carried out in person or virtually; the dates will be communicated well in advance and will take place between weeks 7 and 11.

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Workshop	A6 A10 A11 A12 B2 B3 B5 B6 B10 C1 C4 C5 C6	By means of this activity, the students should solve and hand-in the tests, problems, exercises and questions proposed, in the manner that will be explained in the first days of class. A given percentage of the 30% involved in this workshop activity will correspond to ICT practicals.	30
Objective test	A4 A6 A12 B2 B3 B5 B7 C1 C6	The objective test for assessing the learning process combines conceptual and reasoning questions with practical or applied ones. Two tests will be developed; they correspond to the two main parts of the subject: Descriptive Statistics and Probability Calculus.	70

Assessment comments

The objective tests (assessment tests) are considered essential in the evaluation system; for this reason, it will be necessary to obtain at least a 30% of
the total mark in each one of them (that is, 3 points out of 10) so as to compute
with the remaining evaluation activities.
The first assessment exam will be considered as "passed"
conditioned to obtaining a mark equal or higher than 3 points. If this first exam
is "passed", in the final (official) exam it will only be necessary
to do the second assessment exam, which also requires a minimum mark (that is, 3 points). The second assessment exam takes place the very same day of the first opportunity exam (May/June) for all the students.
Those students who have not reached the minimum mark in the two objective tests (assessment tests) but get a mark higher than 5 points in the global
count of the evaluation will not have passed the subject and their mark in the
final official record will be 4.5 points. The subject will be passed when at least five points (or more)
were obtained in the global count of the subject, conditioned to have reached
the minimum mark in the two assessment tests. The student will attend the first and/or the second opportunity to repeat the test were the minimum mark was not achieved.
For the students who have "passed" one part of the
subject by means of an objective test (assessment test): this fact will only have
validity for the current academic year. If a student with one part of the
subject "passed" is not able to pass the whole subject in the
opportunities of May/June or July, his/her final mark will be "failing"
and he/she will have to re-take the whole subject in other academic
year.
"ABSENT" MARK. According to the regulation approved by the Faculty Board, the people that only take part in evaluation activities whose total weight is lower than the 20% of the final mark will get "Absent" as their final mark.
SECOND OPPORTUNITY. The evaluation criteria in the second opportunity will be the same as
those applied in the first opportunity, therefore the exam will continue
to be 70% of the total mark (first assessment exam 40% and second assessment exam 30%), with a minimum of 3 points out of 10 in each of the assessment tests. To
obtain 100% of the mark in this second opportunity, the lecturer will
indicate the alternative test that will be necessary. Students who want
to opt for the recovery of 30% of the continuous evaluation must take
into account that the final mark of the continuous evaluation will be
the one obtained in this second opportunity, losing what was obtained
during the first.
EARLY CALL OPPORTUNITY. The evaluation corresponding to the early opportunity will be developed through a single exam that will be valued with a maximum of 10 points, and that will have as basis the complete syllabus described in the section "Contents" of the guide of the current academic course. To pass the subject it will be necessary to obtain a minimum of 5 points in this exam. These conditions of evaluation are specific for the early opportunity and will only be applied in this case.
STUDENTS WITH RECOGNITION OF PART-TIME DEDICATION. The evaluation system previously described will be valid for all the students, regardless of their academic situation. Part-time students, although are exempt from attendance, will have the same evaluation criteria and the same exam dates than full-time students.
EVALUATION CONDITIONS. Following the rules approved
by the Faculty Board, it is forbidden to enter the classroom where the
evaluation activities are being held with any device that allows for
communicating with the outside and/or information storage.
As is mandatory, the rules of evaluation, review and claim of the qualifications of the studies of degree and university Master of the UDC will apply to the evaluation tests (https://www.udc.es/export/sites/udc/normativa/_galeria_down/
Academica/Normas_avaliacion_revision_reclamacion_consolidado_I. pdf). It is recommended to pay special attention to articles 10. Student identification, and 14. Fraud and disciplinary responsibilities Commission.

Sources of information	
Basic	- Casas Sánchez, J. M. y otros (2006). Ejercicios de Estadística Descriptiva y probabilidad. Madrid, Pirámide - Martín-Pliego, F. J., Montero, J. M. y Ruiz-Maya, L. (2006). Problemas de Probabilidad. Madrid, Thomson - Martín-Pliego, F. J. y Ruiz-Maya, L. (2006). Fundamentos de Probabilidad. Madrid, Thomson - Esteban García, J. y otros (2004). Estadística Descriptiva y nociones de Probabilidad. Madrid, Thomson - Montiel, A. M., Rius, F. y Barón, F. J. (1997). Elementos básicos de Estadística Económica y Empresarial. Madrid, Prentice Hall - Levine, D. M. et al. (2011). Statistics for managers using MS Excel, 6/E. Prentice Hall - Levine, D. M., Krehbiel, T. C. and Berenson, M. L. (2010 (5th ed.)). Business Statistics: A first course. Upper Saddle River, Pearson Education - Newbold, P., Carlson, W. and Thorne, B. (2012). Statistics for business and economics, 8/E. Pearson: Boston Os tres últimos libros servirán como referencia bibliográfica para o grupo de inglés (grupo A) desta materia.
Complementary	- García-Carro Peña, B., Sánchez Sellero, M. C. y Martínez Filgueira, X. M. (2003). Curso práctico de Probabilidad con aplicaciones económicas. Universidad da Coruña - Cao Abad, R. y otros (2001). Introducción a la Estadística y sus aplicaciones. Madrid, Pirámide - Sánz, J. A., Bedate, A., Rivas, A. y González, J. (1996). Problemas de Estadística Descriptiva Empresarial. Madrid, Ariel - Tomeo Perucha, V. y Uña Juárez, I. (2009). Estadística Descriptiva. Madrid, Garceta - Uña Juárez, I., San Martín Moreno, J. y Tomeo Perucha, V. (2010). Cálculo de Probabilidades. Madrid, Garceta - Benítez Márquez, M.D. y otros (2012). Estadística Descriptiva. Madrid, McGraw-Hill

Recommendations
Subjects that it is recommended to have taken before
Mathematics I/611G02009
Subjects that are recommended to be taken simultaneously
Mathematics II/611G02010
Subjects that continue the syllabus
Statistics and Introduction to Econometrics/611G02014
Other comments
Group A of this subject will be taught entirely in English.

(*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.