



## Teaching Guide

Identifying Data					2020/21
Subject (*)	Statistics	Code	710G02075		
Study programme	Grao en Información e Documentación				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Second	Obligatory	6	
Language	Spanish				
Teaching method	Hybrid				
Prerequisites					
Department	Matemáticas				
Coordinador	Tarrio Saavedra, Javier	E-mail	javier.tarrio@udc.es		
Lecturers	Tarrio Saavedra, Javier	E-mail	javier.tarrio@udc.es		
Web					
General description	This is an introductory subject to the use of statistical tools for data analysis. Univariate and multivariate descriptive statistics techniques, bibliometric indicators, index numbers, time series, probability, random variables, probability distributions and statistical inference are taught.				
Contingency plan	<p>1. Changes in content The contents will not be modified.</p> <p>2. Methodologies Teaching methodologies that are maintained All methodologies will be maintained. Teaching methodologies that are modified No methodology will be modified.</p> <p>3. Mechanisms for personalized attention to students Tools: Microsoft Teams, Moodle and email. Temporalization: Microsoft Teams will be used during tutoring hours. E-mail will serve as a means to resolve doubts and to exchange files and general information. Moodle will serve to exchange information, to share the materials of the subject and, in addition to conduct multiple-choice tests and continuous assessment work.</p> <p>4. Modifications in the evaluation No modifications will be made to the assessment. Assessment remarks:</p> <p>5. Modifications of the bibliography or webgraphy No modifications will be made.</p>				

## Study programme competences / results

Code	Study programme competences / results
A1	Coñecemento da natureza da información e dos documentos, dos seus diversos modos de produción e do seu ciclo de xestión, dos aspectos legais e éticos do seu uso e transferencia, e das fontes principais de información en calquera soporte, e ao longo do tempo.
A2	Coñecemento, comprensión, aplicación e valoración dos principios teóricos e metodolóxicos, e das técnicas para a planificación, organización e avaliación de sistemas, unidades e servizos de información.
A4	Coñecemento, comprensión e aplicación dos principios teóricos e metodolóxicos para o estudo, a análise, a avaliación e a mellora dos procesos de produción, transferencia e uso da información e da actividade científica.
A5	Coñecemento e aplicación das tecnoloxías da información que se emprega nas unidades e servizos de información e nos procesos e transferencia da información.
A8	Habilidades na obtención, tratamento e interpretación de datos sobre unidades e servizos de información, dos procesos de produción, transferencia e uso da información e da actividade científica.
B6	Capacidade de análise e de síntese aplicada á xestión e organización da información



C2	Utilizar as ferramentas básicas das tecnoloxías da información e da comunicación (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
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Learning outcomes			
Learning outcomes	Study programme competences / results		
Coñecer as medidas descritivas e representacións gráficas de datos máis usuais.	A1		
Habilidade en sintetizar e analizar descritivamente e gráficamente un conxunto de datos.	A2		
Coñecemento do concepto de probabilidade, regras de cálculo probabilístico e modelos probabilísticos máis usuais.	A4		
Coñecemento das técnicas de inferencia básicas e habilidade no cálculo e interpretación de intervalos de confianza e contraste de hipóteses nunha e dúas poboacións.	A8		
Capacidade de aplicar ferramentas informáticas para o desenvolvemento e a explotación de sistemas de información.	A5		C2
Integrar os coñecementos teóricos e prácticos como vía para o desenvolvemento dun coñecemento e pensamento reflexivo e totalizador respecto á estatística.	A2	B6	C2
Capacidade de análise e de síntese aplicada á xestión e organización da información		B6	

Contents	
Topic	Sub-topic
Tema 1. Descriptive statistics of one variable.	Aims of statistics. General concepts. Data representation. Descriptive measurements. Proportion and index numbers.
Tema 2. . Descriptive statistics of two variables.	Descriptive statistics of two variables. Dependency relationship between qualitative variables. Dependency relationship between quantitative variables: simple linear regression.
Tema 3. Index numbers and time series in documentation.	Index numbers. Simple and composite indexes. Indicators in libraries and documentation. Indices used in databases of ISI (Journal Citation Report). New alternatives: H index. Introduction to descriptive analysis of time series. Series of accelerated growth and other bibliometric processes: law of cumulative advantage of Price.
Tema 4. Statistical research concepts of special interest in Science Information and Documentation.	Statistical models used in documentation. The distribution of words in texts: Zipf's law. Process modeling. Refinement of the model. Both-Federowicz equation, Brookes equation, generalized equation of Mandelbrot.
Tema 5. Elementary notions of probability.	Basic concepts. Operations with events. Laplace rule. Properties of probability. Conditional probability. Product rule, rule of total probability, Bayes rule. Applications to documentation problems.
Tema 6. Discrete and continuous random variables.	Random Variable Definition. Discrete random variables. Binomial distribution and Poisson distribution. Continuous random variables. Normal distribution.
Tema 7. Introduction to statistical inference.	Introduction. Confidence intervals. Hypothesis testing.
Tema 8. Sources of statistical information	Organization of official statistics on the national and international domain (UN agencies, EUROSTAT, INE, IGE, etc.). Main statistics on the socio-economic domain (demographic economic statistics, social, employment, ...).

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student's personal work hours	Total hours
ICT practicals	A1 A2 A4 A5 A8 B6 C2	0	50	50
Seminar	A2 A4	0	50	50
Objective test	A2 A4 A5 A8 B6	2	47	49
Personalized attention		1	0	1



(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	
Methodologies	Description
ICT practicals	The student will acquire skills and knowledge of statistical software, in particular of the R software. They will solve practical cases of data analysis through the application of computer tools.
Seminar	The student will solve practical problems through the application of statistical techniques, using the acquired theoretical knowledge.
Objective test	Final exam of the theoretical and practical contents consisting of multiple choice questions and / or problem solving.

Personalized attention	
Methodologies	Description
Seminar Objective test ICT practicals	A personalized attention will be applied through personalized tutorials, whether direct or virtual, individual or for groups of students.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Seminar	A2 A4	Problem solving proposed by the teacher.	30
Objective test	A2 A4 A5 A8 B6	It will consist of an examination of questions to be developed and / or questions with multiple answers lasting 2 hours.	40
ICT practicals	A1 A2 A4 A5 A8 B6 C2	Group or individual work in which practical assumptions will be developed through the use of a statistical package.	30

Assessment comments
<p>First opportunity:</p> <p>The final exam of the subject will include theoretical and practical questions of multiple options, although there is also the possibility of the inclusion of questions with longer answers and problems (40%). The aspects and criteria that will be considered to evaluate activities of the Practices through the TIC (30%) and seminars (30%) are the contents addressed, demonstrated knowledge and competences referred for this matter. The qualification system shall be expressed by numerical qualification in accordance with the provisions of art. 5 del Real Decreto 1125/2003 of September 5 (BOE September 18), establishing the European system of credits and the system of qualifications in university degrees of official character and valid throughout the national territory. Qualification system: 0-4.9 = Fail 5-6.9 = Approved 7-8.9 = Notable 9-10 = Outstanding 9-10 Honor Registration (?Graciable?).</p> <p>Those students who have some kind of exceptionality to attend the class legally granted speak with the teacher at the beginning of the course to establish the corresponding tutorials and evaluation systems.</p> <p>Since the degree to which it belongs is to be extinguished, this is a subject without teaching.</p> <p>Second opportunity:</p> <p>The same procedure corresponding to the first opportunity will be applied in the second opportunity.</p>

Sources of information



<b>Basic</b>	<ul style="list-style-type: none"><li>- Marín, J. (1999). Estadística Aplicada a las Ciencias de la Documentación. Murcia: Diego Marín Editor</li><li>- Egghe, L. y Rousseau, R. (1990). Introduction to Infometrics. Quantitative Methods in Library, Documentation and Information Science. Amsterdam: Elsevier</li><li>- Cao, R., Labora, A., Naya, S. e Ríos, M. (2001). Métodos estadísticos e numéricos. A Coruña: Baía Edicións</li><li>- Moya, F., López, J. y García C. (1996). Técnicas Cuantitativas Aplicadas a la Biblioteconomía y Documentación. Madrid: Síntesis</li><li>- Cao, R., Francisco, M., Naya, S., Presedo, M.A., Vázquez, M., Vilar, J.A. y Vilar, J.M. (2001). Introducción a la Estadística y sus aplicaciones. Madrid: Ediciones Pirámide</li><li>- Stephen, P. and Hornby, S. (1997). Simple statistics for library and information professionals. London: Library Association Publishing</li><li>- Peña, D. (2001). Fundamentos de estadística. Madrid: Alianza</li></ul>
<b>Complementary</b>	<ul style="list-style-type: none"><li>- Gonick, L. e Smith, W. (2001). A estatística ¡en caricaturas!. Lugo: SGAPEIO</li><li>- Judit Bar-Ilan (2008). Infometrics at the beginning of the 21st century? A review. Journal of Infometrics: ELSEVIER</li><li>- S. Alonso, F.J. Cabrerizo, E. Herrera-Viedma, F. Herrera (2009). h-Index: A review focused in its variants, computation and standardization for different scientific fields. Journal of Infometrics: ELSEVIER</li></ul>

## Recommendations

Subjects that it is recommended to have taken before

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

## Other comments

To help achieve a sustained immediate environment and meet the objective of action number 5: "Healthy and sustainable environmental and social teaching and research" of the "Green Campus Ferrol Action Plan: &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; The delivery of the documentary work carried out in this subject: &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - They will be requested in virtual format and/or computer support &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - It will be done through Moodle, in digital format without the need to print them. &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - If it is necessary to make them on paper: &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - Plastics shall not be used &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - Double-sided printing shall be carried out. &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - Recycled paper will be used. &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; &nbsp; - Printing of drafts shall be avoided. &nbsp; &nbsp; &nbsp; - A sustainable use of resources and the prevention of negative impacts on the natural environment must be made. &nbsp; &nbsp; &nbsp; - It will work to identify and change gender biases and attitudes, and influence the environment to change them and promote values of respect and equality. &nbsp; &nbsp; &nbsp; - Situations of discrimination should be identified and actions and measures proposed to correct them.

(\*)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.