



IDENTIFYING DATA

Statistics II

Subject	Statistics II			
Code	V03G100V01403			
Study programme	Degree in Economics			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	2nd	2nd
Teaching language	Galician English			
Department				
Coordinator	Bergantiños Cid, Gustavo			
Lecturers	Bergantiños Cid, Gustavo Lorenzo Picado, Leticia			
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Web	http://moovi.uvigo.gal			
General description	This subject gathers different statistical inference techniques, both parametric and non-parametric and an introduction to linear regression techniques.			
	Subject within the English Friendly program.			

Skills

Code	
C8	Ability to look for, identify and interpret relevant sources of economic information and their contents.
C10	Ability to use technical tools to formulate simple models concerning economic variables.
C12	Use empirical techniques to assess the consequences of alternative actions to ultimately choose the best option.
D5	Skills to make coherent and intelligible statements both in oral and written form.
D7	Promote critical and self-critical thinking.

Learning outcomes

Expected results from this subject	Training and Learning Results	
Know how to interpret and draw conclusions about data	C8 C10 C12	D5 D7
Limit the values of an unknown parameter, controlling the error that we commit	C8 C10 C12	D5 D7
Know under what conditions one can assume that a parameter takes a specific value or range of values	C8 C10 C12	D5 D7
Know when we can make assumptions about the distribution of one or more unknown variables	C8 C10 C12	D5 D7
Know how to find linear relationships between a pair of variables	C8 C10 C12	D5 D7

Contents

Topic	
1. Introduction	1. Reminder of Statistics I 2. Aims of Statistics II
2. Point estimation	1. Introduction 2. Properties of the estimators 3. Maximum likelihood estimation

3. Interval estimation	1. Introduction 2. Confidence intervals for normal distributions 3. Confidence intervals for proportions 4. Confidence interval for the average of a Poisson distribution
4. Parametric hypothesis testing	1. Introduction 2. Tests for normal distributions 3. Tests for proportions 4. Tests for the average of a Poisson distribution
5. Nonparametric hypothesis testing	1. Introduction 2. Test of randomness 3. Tests of goodness of fit 4. Tests of homogeneity for independent samples 5. Tests of homogeneity for paired samples 6. Test of independence
6. Simple linear regression model	1. Introduction 2. Least square estimators 3. Coefficient of determination (square R) 4. Hypothesis testing and confidence intervals for the parameters of the model 5. Prediction

Planning

	Class hours	Hours outside the classroom	Total hours
Problem solving	10	0	10
Seminars	2.5	0	2.5
Laboratory practical	6	0	6
Autonomous problem solving	0	30	30
Lecturing	30	30	60
Essay questions exam	2	34	36
Problem and/or exercise solving	1.5	4	5.5

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

Methodologies

	Description
Problem solving	The teacher will solve a series of exercises as an example
Seminars	The students will discuss with the professor the doubts they have about the different lessons
Laboratory practical	Students will use the IBM SPSS software in the computer room
Autonomous problem solving	Students must solve autonomously the exercises that will be proposed during the class
Lecturing	The teacher will explain the theoretical concepts that will be used in the course

Personalized assistance

Methodologies	Description
Problem solving	The teacher will solve the doubts students have about the problem sets
Seminars	The teacher will discuss with the students on various aspects of the subject
Laboratory practical	The teacher will solve the doubts the students have about the IBM SPSS practices at the computer room

Assessment

	Description	Qualification	Training and Learning Results	
Essay questions exam	A final exam.	70	C8 C10 C12	D5 D7
Problem and/or exercise solving	Several tests will be conducted throughout the course. The practices at the computer lab will be the 10% of the final grade, the partial proofs will be the 15%, and the active participation in class (resolution of exercises, answering to questions,...) will be the final 5%.	30	C8 C10 C12	D5 D7

Other comments on the Evaluation

In the final degree call in October, the exam grade will be 100% of the final score of the subject.

Students will have the possibility of not taking some parts of the final exam and so being evaluated based on the scores they obtained in the midterm exams according to the following formula: $f(p) \cdot n(p) / e(p)$, being $f(p)$ the value of part p in the final exam, $e(p)$ the value of part p in the midterm exam, and $n(p)$ the grade obtained by the student in part p of the midterm exam.

Alternatively to the system of continuous evaluation, the student may choose to be evaluated with a final exam that will mean 100% of the grade. This will apply to both the ordinary and the extraordinary call.

The dates of examinations should be consulted on the website of the faculty: <http://fccee.uvigo.es>

Sources of information

Basic Bibliography

F.J. Martín-Pliego López, L. Ruiz-Maya Pérez, **Fundamentos de Inferencia Estadística**, 2005, Thomson, 2005

F.J. Martín-Pliego López, J.M. Montero Lorenzo, L. Ruiz-Maya Pérez, **Problemas de Inferencia Estadística**, 2005, Thomson, 2005

P. Newbold, W.L. Carlson, B.M. Thorne, **Estadística para administración y economía**, 2013, Pearson, 2013

Complementary Bibliography

G.C. Canavos, **Applied probability and statistical methods**, 1984, Little Brown,

T.H. Woonacott, R.J. Wonnacott, **Introductory Statistics**, 1990, John Wiley,

J.D. Gibbons, S. Chakraborti, **Nonparametric Statistical Inference**, 2011, CRC Press,

V.K. Rohatgi, A.K.E. Saleh, **An Introduction to Probability and Statistics**, 2015, John Wiley,

G. Casella, R.L. Berger, **Statistical Inference**, 2002, Duxbury/Thomson Learning,

J. Baró Llinás, **Inferencia Estadística. Aplicaciones Económico Empresariales**, 1993, Parramón, 1993

G.C. Canavos, **Probabilidad y Estadística: Aplicaciones y métodos**, 1997, McGraw Hill, 1997

J. M. Casas-Sánchez y otros, **Ejercicios de inferencia estadística y muestreo para economía y administración de empresas**, 2006, Pirámide, 2006

C. Cuadras, **Problemas de Probabilidad y Estadística**, 1995, PPU, 1995

L. Martínez, C. Rodríguez, R. Gutiérrez, **Inferencia Estadística, un enfoque clásico**, 1993, Pirámide, 1993

D. Peña, **Fundamentos de Estadística**, 2001, Alianza, 2001

D. Peña, **Regresión y diseño de experimentos**, 2010, Alianza, 2010

F. Tusell, L. Garín, **Problemas de Probabilidad y Inferencia Estadística**, 1991, Tebar Flores, 1991

B. Visauta, **Análisis estadístico con SPSS 14**, 2007, McGraw Hill, 2007

Recommendations

Subjects that continue the syllabus

Econometrics I/V03G100V01501

Econometrics II/V03G100V01601

Subjects that it is recommended to have taken before

Statistics: Statistics I/V03G100V01205

Mathematics: Mathematics I/V03G100V01104

Mathematics II/V03G100V01303

Contingency plan

Description

In the event that the authorities (Gobierno de España, Xunta de Galicia, Universidade de Vigo, etc.) had to take measures that make face-to-face teaching impossible, the teachers of the subject will adapt to the new situation following the guidelines they dictate.

As for the teaching methodology, we will change the face-to-face classes for virtual classes through the remote campus. The contents that would be taught will not change and, therefore, no new bibliography will be needed.

As for the evaluation system, we will change face-to-face exams for virtual ones, which would be carried out through one of the platforms that the university enables for such purposes (moovi, remote office, etc.). The weights of the various tests will not change except in circumstances of force majeure (for example, the Universidade de Vigo during the 2019-20 academic year limited the maximum weighting of the final exam).