Teaching Guide				
Identifying Data				2022/23
Subject (*)	Statistical Methods and Introduction to Econometrics		Code	611G01019
Study programme	Grao en Economía			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Second	Obligatory	6
Language	GalicianEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Economía			
Coordinador	Martinez Filgueira, Xose Manuel	E-mail	xose.martinez@udc.es	
Lecturers	Martinez Filgueira, Xose Manuel Mourelle Espasandin, Estefania	E-mail	xose.martinez@udc.es estefania.mourelle@udc.es	
Web				
General description	This subject constitutes the continuation of the subjects Statistics I and Statistics II, and it is devoted to present the main methodologies to deal with and statistically analyze any type of economic information, both numerical or qualitative, both time or cross-section, as well as the introduction to Econometrics, highlighting the usefulness of its tools and its applications to the economic science; the students should get used to the econometric terminology.			

Study programme competences	
Code	Study programme competences
A1	CE1- Contribuír á boa xestión da asignación de recursos tanto no ámbito privado como no público.
A2	CE2-Identificar e anticipar problemas económicos relevantes en relación coa asignación de recursos en xeral, tanto no ámbito privado como no público.
A3	CE3-Aportar racionalidade á análise e á descripción de calquera aspecto da realidade económica.
A4	CE4-Avaliar consecuencias e distintas alternativas de acción e seleccionar as mellores, dados os obxectivos.
A5	CE5-Emitir informes de asesoramento sobre situación concretas da economía (internacional, nacional ou rexional) ou de sectores da mesma.
A7	CE7-Identificar as fontes de información económica relevante e o seu contido.
A9	CE9-Derivar dos datos información relevante imposible de recoñecer por non profesionais.
A10	CE10-Usar habitualmente a tecnoloxía da información e as comunicación en todo a seu desempeño profesional.
A11	CE11Leer e comunicarse no ámbito profesional en máis dun idioma, en especial en inglés.
A12	CE12-Aplicar á análise dos problemas criterios profesionais baseados no manexo de instrumentos técnicos.
A13	CE13-Comunicarse con fluidez no seu contorno e traballar en equipo.
B1	CB1 - Que os estudantes demostren posuir e comprender coñecementos nun área de estudo que parte da base da educación secundaria xeral, e que soe encontrar nun nivel que, ainda que se apoia en libros de texto avanzados, inclue tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo.
B2	CB2 - Que os estudantes saiban aplicar os seus coñecementos ó seu traballo ou vocación dun xeito profesional e posúan as competencias que se demostran por medio da elaboración e defensa de argumentos e a resolución de problemas dentro da su entorna de traballo.
B3	CB3 - Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da su área de estudo) para emitir xuizos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética
B4	CB4 - Que os estudantes poidan transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado
B5	CB5 - Que os estudantes desenvolvesen aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores cun alto grao de autonomía

B6	CG1- Que os estudantes formados se convertan en profesionais capaces de analizar, reflexionar e intervir sobre os diferentes elementos que constitúen un sistema económico
B7	CG2 - Que os estudantes coñezan o funcionamento e as consecuencias dos sistemas económicos, as distintas alternativas de asignación de recursos, acumulación de riqueza e distribución da renda e estean en condicións de contribuír ao seu bo funcionamento e mellora
B8	CG3 -Que os estudantes sexan capaces de identificar e anticipar os problemas económicos relevantes, identificar alternativas de resolución, seleccionar as máis axeitadas e avaliar os resultados aos que conduce.
B9	CG4 -Que os estudantes respecten os dereitos fundamentais e de igualdade de oportunidades, non discriminación e accesibilidade universal das persoas con minusvalidez.
C1	CT1-Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C4	CT2-Desenvolverse para o exercicio dunha cidadanía aberta, culta, crítica, comprometida, democrática e solidaria, capaz de analizar a realidade, diagnosticar problemas, formular e implantar solucións baseadas no coñecemento e orientadas ao ben común.
C5	CT3-Entender a importancia da cultura emprendedora e coñecer os medios ao alcance das persoas emprendedoras.
C6	CT4-Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C7	CT5-Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	CT6-Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.

Learning outcomes			
Learning outcomes	Study programme competences		
To learn and to manage some of the main statistical methods for dealing with and analyzing any type of economic information, both numerical and qualitative, both time series and cross-section.	A1 A2 A3 A4 A5 A7 A9 A10 A12 A13	B1 B2 B3 B4 B5 B6 B7 B8 B9	C1 C4 C6 C7 C8
To know and to correctly and accurately use the econometric terminology and language.	A1 A3 A4 A5 A7 A12	B1 B2 B3 B4 B5 B6 B7 B8 B9	C1 C4 C5 C6 C7 C8
To estimate and to interpret the parameters of the classical linear regression model. To understand how the model behaves and the situations where it should be applied.	A3 A4 A5 A7 A9 A10 A12 A13	B1 B2 B3 B4 B5 B6 B7 B8 B9	C1 C4 C6 C7 C8

To use the appropriate computer tools for carrying out the calculations and estimating the aforementioned models, both in the part related to Statistical Methods and in the Introduction to Econometrics part.	A9 A10 A11	B1 B2 B3 B4 B5 B6 B7 B8 B9	C3 C6 C8

Contents	
Topic	**Sub-topic**
1) Quantitative data analysis	- Preparing data. - Preliminar analysis for statistical and econometric methods: Graphs and measures. - Measures of concentration.
2) Qualitative data analysis	- Preliminar analysis with qualitative variables: Graphs and tables. - Independence tests. - Measures of association for nominal and ordinal variables. - Statistical methods for qualitative variables.
3) Econometrics and econometric models	- Defining Econometrics. - Econometric models and their elements. - Types of models.
4) The classical linear regression model	- One-equation linear regression model. - Model estimation by Ordinary Least Squares. - Interpretation of the estimators and inference. - Goodness-of-fit. Measures.
5) Analysis Of Variance	- General concepts. - One factor: Fixed effects and completely random information. - Two factors: Fixed effects and completely random information.
6)Introduction to time series	- Stochastic processes: Definition, general characteristics and examples. - Time series: Decomposition. - Time series: Introduction to ARIMA models.
Cross-cutting theme: EXCEPT group with class in ENGLISH Introduction to programming with R.	Introduction to programming with R.

Planning				
Methodologies / tests	**Competencies**	**Ordinary class hours**	**Student?s personal work hours**	**Total hours**
Introductory activities	A1 A2 A7 A11 B8 B9 C5	1	0	1
Guest lecture / keynote speech	A2 A3 A4 A7 A12 C4	17	34	51
Workshop	A7 A10 B1	6	15	21
ICT practicals	A10 A12 C3 C6 C8	4	10	14
Collaborative learning	A5 A13 B2	4	10	14
Problem solving	A9 B3 C7	6	15	21
Supervised projects	A3 A4 A5 A7 A9 A10 A12 A13 C1 C3 C6 C7 C8	4	12	16

Mixed objective/subjective test	A4 A5 B4 B5 B6 B7 C1	2	6	8
Personalized attention		4	0	4
(*)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	The classes will start with an introduction to the subject; by means of this activity, the work to be carried out by the student will be explained in detail, as well as the assessment criteria.
Guest lecture / keynote speech	Lesson given by the lecturer that may have different formats (theory, problems and/or general examples, general guidelines of the subject, etc.). The lecturer might use audiovisual and computer means. In addition, s/he can introduce some questions posed to the students. The objective is to introduce the student into the concepts of the subject, in order to transmit the knowledge base that the student needs to start his/her work and his/her learning.
Workshop	The main objective in these classes will be the realization of especially practical tasks, with the lecturer's support and supervision: proposal and solution of applications from the theory, proposal and supervision of works, problems, exercises, presentations, expositions, debates and comments on works, solving doubts about the theory, etc. It is also possible that the lecturer explains some concepts, especially for clarifying their application, or in any case as a mere comment about the keynote speech. Evaluation activities will be carried out during these classes; these activities will be individual or group exercises.
ICT practicals	The main objective in these classes will be the development of especially practical tasks, with the lecturer's support and supervision. The computer is employed in these classes, which are reserved for lessons or concepts where the intensity of the calculations needs the computer tool. In addition, the students are introduced into the work with Statistics and Econometrics by using computer means.
Collaborative learning	Work in groups of students in order to solve the tasks assigned by the teacher to optimize their own learning and that of the rest of classmates. Before handling the work in groups, several classes will be dedicated to pose the doubts and/or difficulties found when doing the work. In this manner, a debate is created among the students, their classmates and the lecturer, what encourages the interrelation in the work and the critical spirit. Students will carry out group works so as to solve different theoretical-practical questions related to lessons of the syllabus; at the end, the group should present its work, with different possibilities regarding its presentation (oral or written); the election of the method will depend on the evolution of the teaching.
Problem solving	Personalized attention to the student in order to solve doubts related to the different lessons, not only when solving exercises but at any stage of the learning process.
Supervised projects	In combination with collaborative learning and under lecturer supervision, the student will carry out works in groups focussed on the learning of "how to do things". It is an option based on the assumption that the students care about their own learning. This teaching method is based on two basic elements: independent learning (students) and monitoring of that learning (lecturer-supervisor). The lecturer will develop the monitoring of this learning with the aim of assessing the acquisition of the knowledge defined for this category.
Mixed objective/subjective test	A mixed test will be carried out, which will correspond to the final exam. As this test is considered essential for the evaluation, it is necessary to obtain a minimum percentage of the total mark in order to compute (incorporate) the remaining evaluation activities. As an alternative to this mixed test and with the aim of promoting the continued work by the student, the lecturer will propose intermediate mixed tests along the teaching period. Passing all these intermediate tests is equivalent to pass the final test.

Personalized attention	
Methodologies	**Description**

Problem solving ICT practicals Workshop Mixed objective/subjective test	It involves the time the teacher takes in order to address and solve questions and doubts from the students, both in individual and (small) group manner. It consists of: - Solution of particular questions coming from the students as a result of the explanation and understanding of the theoretical concepts or their practical application. - Adaptation of the teaching of computer tools to the specific characteristics and needs of the students. The TGR may be taught either on person or online, depending on the teaching circumstances.

Assessment			
Methodologies	Competencies	Description	**Qualification**
Workshop	A7 A10 B1	The main objective in these classes will be the realization of especially practical tasks, with the lecturer's support and supervision: proposal and solution of applications from the theory, proposal and supervision of works, problems, exercises, presentations, expositions, debates and comments on works, solving doubts about the theory, etc. It is also possible that the lecturer explains some concepts, especially for clarifying their application, or in any case as a mere comment about the keynote speech. Evaluation activities will be carried out during these classes; these activities will be individual or group exercises.	20
Mixed objective/subjective test	A4 A5 B4 B5 B6 B7 C1	A mixed test will be carried out, which will correspond to the final exam. As this test is considered essential for the evaluation, it is necessary to obtain a minimum percentage of the total mark in order to compute (incorporate) the remaining evaluation activities. As an alternative to this mixed test and with the aim of promoting the continued work by the student, the lecturer will propose intermediate mixed tests along the teaching period. Passing all these intermediate tests will be equivalent to pass the final test, without prejudice to the possibility of a final test at the first and second opportunity.	50
Supervised projects	A3 A4 A5 A7 A9 A10 A12 A13 C1 C3 C6 C7 C8	In combination with collaborative learning and under lecturer supervision, the student will carry out one or several works in groups (in case of being more than one, at least one will be in groups, allowing for the possibility of individual works) focussed on the learning of "how to do things". It is an option based on the assumption that the students care about their own learning. This teaching method is based on two basic elements: independent learning (students) and monitoring of that learning (lecturer-supervisor). The lecturer will develop the monitoring of this learning with the aim of assessing the acquisition of the knowledge defined for this category.	30

Assessment comments

As the mixed test is considered essential for the evaluation, it will be necessary to obtain a minimum percentage of the total mark in order to compute (incorporate) the remaining evaluation activities.
These evaluation criteria apply to both the first and the second opportunity. The same criteria are applied to part-time students. In any case, these students should contact the coordinator of the subject so as to keep him informed of the situation.
In case of students opting for the early call opportunity, the evaluation system will be the same as stated in the scheme above. In this case, workshop activities and supervised projects should take place at least 21 days before the scheduled date for the early call opportunity.
The order of the lessons considered in this guide might be modified when explained during the classes, as a result of the teaching needs that might arise.
Some general remarks regarding the evaluation, in line with the remaining teaching guides:
A) EVALUATION REGULATIONS:
1. Evaluation conditions: It is forbidden to access the examination room with any device that allows communication with the outside and / or storage of information.
2. Identification of the student: The student must prove his / her personality in accordance with current regulations.
B) TYPES OF GRADINGS:
1. Grade of not presented: It corresponds to the student when it only participates of activities of evaluation that have an inferior weight to 20% on the final qualification, independently of the qualification achieved.
2. Students with recognition of part-time dedication and academic exemption of waiver attendance: It is recommended that you talk to the coordinator of the subject to inform them of their situation and see if they can adapt the evaluation system (Workshop and supervised work).
C) GRADING OPPORTUNITIES:
1. First opportunity: The evaluation criteria will be applied in accordance with those established in the ?Assessment? section.
2.
Second opportunity: The evaluation criteria are the same for all
evaluation opportunities. Then, the final exam, considered as as mixed objective/subjective
test,
will continue to represent 50% of the mark. In order to reach 100% of
the mark in this opportunity, the professors will state the evaluation
activities that necessarily
must be carried out. The students who select this option must take into
account that the final mark from the continuous evaluation system will
be the one obtained in the second opportunity, that is, the marks
reached in the first opportunity are lost. 3. Advance call: The evaluation criteria are the same for all evaluation opportunities. In the advance call, the activities of the Workshop and supervised work must be carried out at least 21 days before the advance call exam.
D) OTHER EVALUATION OBSERVATIONS: those listed at the beginning of these observations
td p { background: transparent; background: transparent }
p { margin-bottom: 0.25cm; background: transparent; line-height: 115%; background: transparent }
a:visited { color: #800000; so-language: zxx; text-decoration: underline }
a:link { color: #000080; so-language: zxx; text-decoration: underline }
strong { font-weight: bold }

Sources of information

Basic	- Ruiz-Maya, L., Martín Pliego, F. J., Montero, J. M., y Uriz, P. (1995). Análisis estadístico de encuestas: datos cualitativos. AC - Aparicio, J., Martinez, M., & Morales, J. (2004). Modelos lineales aplicados en R (http://umh3067.edu.umh.es). Universidad Miguel Hernandez. Dto. Estadística, Matemáticas e Informática - Casas, J.M., Domínguez, J., García, C., Martos, E.I., Rivera, L.F., y Zamora, A.I. (2010). Estadística para las Ciencias Sociales . Centro de Estudios Ramón Areces - Uriel, E. y Peiró, A. (2000). Introducción al Análisis de Series Temporales. AC - Ezequiel, J. U. (2019). Introducción a la econometría. . https://www.uv.es/uriel/libroes.htm - Uriel, E., Contreras, I., Moltó, T. y Peiró, A. (1990). Econometría. El modelo lineal. AC - Newbold, P., Carlson, W. and Thorne, B. (2012). Statistics for business and economics, 8/E.. Pearson: Boston. - Gujarati, D.M. (2003). Basic Econometrics. Mc Graw-Hill O libro Aparicio J. et al. (2004) podese descargar en http://umh3067.edu.umh.esO libro Aparicio J. et al. (2004) podese descargar en http://umh3067.edu.umh.es
Complementary	- Newbold, P. (1997). Estadística para los Negocios y la Economía. Prentice Hall - Wooldridge, J. (2005). Introducción a la Econometría. Un enfoque moderno. Thomson - Gujarati, D. (2006). Principios de Econometría. McGraw-Hill - Wickham, H., & Grolemund, G. (2016). R for data science: import, tidy, transform,visualize, and model data (https://r4ds.had.co.nz/). O'Reilly Media, Inc - Heiss, F. (2016). Using R for Introductory Econometrics. Florian Heiss (http://www.urfie.net/read/index.html) - Esteban, M. V., Moral, M. P., Orbe, S., Regúlez, M., Zarraga, A., & Zubia, M. (2008). Econometría Básica Aplicada con GRETL (https://addi.ehu.es/bitstream/handle/10810/12496/08-09est.pdf?sequence=1&isAllowed=y). Sarriko On, Universidad del País Vasco - Stock, J.H. & Watson, M.W (2011). Introduction to Econometrics. Pearson O libro Heiss, F. (2016). Using R for Introductory Econometrics. Florian Heiss realiza os exercicios do Wooldrige con R, e pódese consultar online en:http://www.urfie.net/read/index.htmlO mesmo ca os libros Wickham, H., & Grolemund, G. (2016) (en https://r4ds.had.co.nz/); Esteban, M.V. et al (2008) (en https://addi.ehu.es/bitstream/handle/10810/12496/08-09est.pdf?sequence=1&isAllowed=y)

Recommendations
Subjects that it is recommended to have taken before
Statistics I/611G01006 Mathematics I/611G01009 Mathematics II/611G01010 Statistics II/611G01014
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Econometrics I/611G01022 Econometrics II/611G01027
Other comments

ENGLISH GROUPGroup A of this subject will be entirely taught in English.PREREQUISITESThis subject continues the previous ones on Statistics. It is highly recommended to be familiar with the contents related to the first part of the subject. In order to complete Introduction to Econometrics, previous knowledge on economic theory, Statistics and Mathematics are required. In addition, as the econometric applications use data, it becomes important to know the structure and contents of the main statistical sources. TEACHING MATERIALThe main teaching material will be available from the Virtual Campus platform, or would be accessible from there. A sustainable use of the resources should be done, as well as trying to prevent negative impacts on the natural environment. In this sense, the following recommendations for contributing to a sustainable faculty are highlighted:

1. The submission of works will be computerised (i.e., in electronic form) in this subject. 2.

The ethic principles related to sustainable values, as well as to the personal and professional behaviour must be accounted for.