Universida_de_Vigo

IDENTIFYING DATA
Statistical operational techniques

Subject	Statistical operational techniques
Code	O04G020V01912
Study programme	(*)Grao en Administración e Dirección de Empresas

Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Optional	4th	2nd

Teaching language	Spanish Galician
Department	
Coordinator	Mosquera Rodríguez, Manuel Alfredo
Lecturers	Mosquera Rodríguez, Manuel Alfredo
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Web	
General description	It is an optional subject of the second quadmester of fourth course of the degree. It treats of a subject for students that surpassed the three first courses, and that therefore they have training in the disciplines of mathematics and statistics.

Competencies

Code	
B1	Ability to analyse and synthesise
B2	Critical and self-critical thinking
B13	Capacity for learning and independent work
B14	Capacity to apply the theoretical and practical knowledge acquired in a specialised academic context
C7	Acquire and understand knowledge regarding: The main instrumental techniques applied to the business context
C9	Identify the generalities of the economic problems posed in companies, and know how to apply the main instruments available in order to address these problems
C10	Assess the situation and foreseeable evolution of a company based on the relevant information records
C12	Solve problems effectively and make decisions using the appropriate quantitative and qualitative methods, including the identification, expression and solution of business problems
C16	Skills in looking for, identifying and interpreting sources of relevant economic information

Learning outcomes

Expected results from this subject	Training and Learning Results	
Differentiate between parametric and non parametric contrasts.	B1 B2 B14	C7
Use the independence and homogeneity contrasts for the analysis of the existing relations between two qualitative variables.	B14	C12 C16
Obtain information of a 2 x 2 contingency table.	B14	
Enter to the student in the analysis of tables of contingency n x m	B14	C7 C12 C16
Analyze the results of a contingency table	B1	C7 C12
Handle and apply the techniques of analysis of variance.	B1 B14	C12
Know the value of the fulfillment of the applicability conditions of both analysis of variance and regression models.	B1 B14	C7 C12

Study the bases of the classical statistical models, their utility and limitations, particularly in the models of linear regression and general linear regression.	B1 B2 B14	C7 C9 C10 C12 C16
Use the statistical analysis software	B13 B14	
Interpret properly the results provided by the statistical software R	B1	C7

Contents

Topic	
Non parametric statistical methods	Goodness of fit Homogeneity Independence
Analysis of qualitative data	2 x 2 contingency tables Complex tables The danger of the contingency tables
Analysis of variance	One-way ANOVA: fix and random effects. Two-way ANOVA
Regression and correlation	Nonlinear models and transformations Polynomial regression Multiple regression Analysis of the Covariance GLM

Planning

	Class hours	Hours outside the classroom	Total hours
Practice in computer rooms	14.5	29	43.5
Troubleshooting and / or exercises	10	8.5	18.5
Autonomous troubleshooting and / or exercises	0	20	20
Master Session	20	40	60
Short answer tests	2	0	2
Multiple choice tests	2	0	2
Troubleshooting and / or exercises	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

	Description
Practice in computer rooms	It consists in to solve problems, with the help of the statistical package R, related with the contents of the subject. It allows to the students to implement in an effective form the theoretical knowledges learned in the master sessions through the realization of activities such as exercises and problems.
Troubleshooting and / or exercises	It consists in the manual realization or with the R/*Excel software of problems related with the contents of the subject. It allows to the students to implement in an effective form the theoretical knowledges learned in the master sessions through the realization of activities such as exercises and problems.
Autonomous troubleshooting and / or exercises	It encompasses the realization of problems related with the contents of the subject. It allows to the students to implement in an effective form the theoretical knowledges learned in the master sessions through the realization of activities such as exercises and problems.
Master Session	It will consist in the presentation, with the help of practical cases, of the theoretical contents of the subject, complemented with the use of audiovisual media

Personalized attention

Methodologies	Description
Practice in computer rooms	Will carry out an individual analysis of the students by means of his work in the practical groups.
Autonomous troubleshooting and / or exercises	Will carry out an individual analysis of the students by means of the different works/exercises delivered along the course.

Assessment

	Description	Qualification	Training and Learning Results

Troubleshooting and / or exercises	It consists in the realisation, with the help of the statistical package R, of problems on the contents of the subject	50	B1 B2 B13 B14	C9 C10 C12 C16
Master Session	It consists in the realisation of short questions or test on the theoretical contents of the subject	50	B1 B2 B14	C7 C10 C12

Other comments on the Evaluation

CONTINUOUS EVALUATION:

Practical part: they will realise tests with the computer in the practical classrooms. If the individual grade of each test is greater than or equal to 3 (on 10) then the average of these grades is the grade of the practical part. Otherwise, the note of the practical part will be the minimum between 4 and the average of the grades of the tests.

Theoretical part: it could be an only multiple choice/short answer test at the end of the period or it could consists in the delivery of several works, where the students have to apply the statistical technics seen until the moment. To calculate the note of the theoretical part in the case of the delivery of the works one has to take into account that:

- If the individual grade of each work is greater than or equal to 3 (on 10) then the average of these grades is the grade of the theoretical part.
- Otherwise, the note of the practical part will be the minimum between 4 and the average of the grades of the works.

To pass the subject the student has to reach a minimum grade of 4 in the theoretical part (on 10) and a 5 in the weighted sum of the two grades.

NON CONTINUOUS EVALUATION

There will be an alternative system of evaluation for the students that opt to the non continuous evaluation. It consists in an only test where he/she will be evaluated on the contents studied along the course. The test will conssist in the resolution of practical/theoretical problems having the help of the statistical software R.

JULY EXAM

The system of evaluation of the exam of July will be the that of **NON continuous evaluation** for all the students.

That student that use or cooperate in **fraudulent procedures** (copy, present by another student, plagiarism, ...) in any of the activities of evaluation will be evaluated by the method of **NON continuous evaluation.**

The dates and schedules of the evaluation exams of the different periods are the specified in the calendar of evaluation exams approved by the Board of the Centre for the course 2017-18. In case of conflict or disparity between the dates of the examinations will prevail the indicated in the web of the FCETOU.

Sources of information
Basic Bibliography
Anderson, D.R., Sweeney, D.J. y Williams, T.A., **Estadística para administración y economía**, 11, Cengage Learning, 2011

Newbold, P.; Carlson, W. L. y Thorne, B., **Estadística para Administración y Economía**, 6, Pearson Prentice Hall, 2008

R Development Core Team, **R: A language and environment for statistical computing**, R Foundation for Statistical Computing, 2015

Complementary Bibliography
Lind, D. A., Marchal, W. G., Wathen, S.A., **Estadística aplicada a los negocios y a la economía**, McGraw-Hill, 2012

Peña sanchez, D., **Estadística. Modelos y métodos**, Ed Alianza Universidad, 2000

Vilar Fernández, J.M., **Modelos estadísticos aplicados**, Servicio de Publicacións da Universidade da Coruñ, 2003

Webster Allen L, **Estadística aplicada a los negocios y a la economía**, McGrawHill Interamericana, 2006

Recommendations

Subjects that it is recommended to have taken before
Statistics: Statistics/O04G020V01204
Mathematics: Mathematics/O04G020V01104
Econometrics/O04G020V01304

Other comments
It will use the platform of virtual teaching *FAITIC of the University of Vigo (faitic.uvigo.es), where the enrolled students will find all the necessary material for the development of the subject.

Besides, unsuitable behaviours, contrary and hurtful to the school life and his correction will comport that the responsible student/s will be evaluated by the method of NON continuous evaluation, as well as the corresponding disciplinary actions that consider timely.