



1. General Information

Subject: STATISTICAL DATA ANALYSIS

Type: ELECTIVE

Degree: 316 - DEGREE IN ECONOMICS

Faculty: (5) ECONOMICS AND BUSINESS SCIENCES. ALBACETE

Course: 4th

Main language

Code: 53341

ECTS: 4.5

Academic Year: 2016-17

Groups: 10

Duration: First Semester

Second language:

Academic use of other language: Materials and tutorials in English language for erasmus students.

Web Site:

Nombre del profesor: NOELIA GARCIA RUBIO - Grupo(s) impartido(s): 10				
Office	Departamento	Teléfono	Correo electrónico	Horario de tutoría
Faculty of Economics and Business Sciences Office 3.13	DHEP	2176	noelia.garcia@uclm.es	See Web site of the Faculty and Moodle for the subject

2. Previous requirement

It is recommended to have coursed the subjects on Statistics for Economics and Statistical Inference

3. Justification in the curriculum, relationship with other subjects and profession

Today it is very common, in the world of Economics and Business, to have a great amount of data and manage computer tools for proper extraction of the statistical information they contain.

In this process, the knowledge and use of appropriate statistical techniques is fundamental to the discovery of new and meaningful relationships and behavior patterns within the data. The aim of the course is to provide students with the tools necessary for the representation, description and extraction of patterns and relationships between variables in multidimensional data, which is known in the statistical literature as "data mining".

4. Competences of the degree that the subject contributes to

Competencias propias de la asignatura

- E03 Ability to find economic data and select relevant facts.
- E06 Application of professional criteria to the analysis of problems, based on the use of technical tools.
- E11 Diagnosis and assessment skills to conduct structural and cyclical reports, as well as economic forecast summaries on the reality of the economy in Spain, the European Union and in any of the product and factor markets. To do so, it will be necessary to understand and use common handbooks, as well as articles and, in general, leading edge bibliography in the core subjects of the curriculum.
- G01 Possession of the skills needed for continuous, self-led, independent learning, which will allow students to develop the learning abilities needed to undertake further study and a high degree of independence.
- G03 To develop oral and written communication skills in order to prepare reports, research projects and business projects and defend them before any commission or groups of professional (specialised or non-specialised) in more than one language, by collecting relevant evidence and interpreting it appropriately so as to reach conclusions.
- G04 Ability to use and develop information and communication technologies and to apply them to the corresponding business department by using specific programmes for these business areas.
- G05 Capacity for teamwork, to lead, direct, plan and supervise multidisciplinary and multicultural teams in both national and international environments so as to create synergies which benefit organisations.

5. Objectives or learning outcomes

Specific results of the subject

To enable the student to listen and defend arguments orally or in writing.

To enable students to solve problems in a creative and innovative way.

To know the tools and methods for quantitative analysis of markets, sectors and companies, including models for decision-making and economic forecasting models.

Additional outcomes

The student will obtain the ability to conduct a preliminary analysis of the data, identifying relevant information and preparing it for further analysis. The student will know identify the appropriate statistical technique, based on the data available and taking into account their nature, to achieve the objectives. The student will get the ability to properly apply each statistical technique through appropriate tools, mainly using the statistical programming environment R. The student will be able to draw the relevant conclusions and know how to analyze and transmit them appropriately for decision making in a business economic scope.

6. Contents

Theme 1 Introduction to Multivariate Analysis

Theme 1.1 Data and measurement scale.

Theme 1.2 Introduction to Data Mining and software R for statistical computing

Theme 1.3 Descriptive and exploratory data analysis

Theme 1.4 Detection of outliers

Theme 1.5 Treatment of non-response

Theme 2 Clasification and comparison of groups

Theme 2.1 Linear discriminant analysis

Theme 2.2 Cluster Analysis

Theme 2.3 Analysis of variance

Theme 3 Data reduction methods

Theme 3.1 Principal component analysis

Theme 3.2 Factor analysis

Theme 4 Models for qualitative data analysis

Theme 4.1 Contingency tables and measures of association

Theme 4.2 Correspondence factor analysis

Theme 4.3 Multidimensional scaling

7. Activities or blocks of activities and methodology

Training activity	Methodology	Related competences	ECTS	Hours	As	Ma	Re	Description
In-person class (Theory) [Face-to-face]	Expository method / Master class	E03, E06, E11, G04	1.00	25.00	No	-	-	Expository classes in which the teacher will focus on the matter and the fundamental concepts. Time will also be dedicated for examples.
In-person class (Practice) [Face-to-face]	Combination of methods	E03, E06, E11, G01, G03, G04, G05	0.50	12.50	Yes	No	No	In-person class practice: exercises, seminars, debates
Study or test preparation [AUTONOMOUS]	Autonomous work	E03, E06, E11, G01, G04	1.20	30.00	No	-	-	Independent work of student tutored by the teacher.
Reports elaboration [AUTONOMOUS]	Group workshops	E03, E06, E11, G01, G04, G05	0.86	21.50	Yes	No	Yes	Group workshops. At the beginning of the course working groups will be created and they handle a project that will develop along the course. These projects will be supervised by the teacher and may need to be exposed at the end of the course.
Other non-presential activities [AUTONOMOUS]	Self-learning	E11, G01, G03, G04	0.74	18.50	Yes	No	Yes	Individual practice. The teacher will provide the student some tasks which will have to be solved and delivered at the end of each theme.
Other presential activities [Face-to-face]	Combination of methods	E06, E11, G01, G03, G04, G05	0.10	2.50	No	-	-	Seminars or group tutorials
Progress tests [Face-to-face]	Evaluation tests	E03, E06, E11, G01, G03, G04	0.02	0.50	Yes	No	No	Self evaluation tests

Final exam [Face-to-face]	Evaluation tests	E06, E11, G01, G03, G04	0.08	2.00	Yes	Yes	Yes	Test preparation and conduct written questionnaire and exercises to solve
Total:			4.50	12.50				
Total presential credits: 1.70				Total hours of presential work: 42.50				
Total non-presential credits: 2.80				Total hours of non-presential work: 70.00				

As: Assessable activity
Ma: Mandatory activity
Re: Recuperable activity

8. Evaluation criteria. Activities and weights

Evaluation system	Weight		Description
	Presential students	Semi-pres. students	
Assessment of participation in class	10.00%	0.00%	The active attitude of the student will be assessed in the classroom.
Group work	30.00%	0.00%	At the beginning of the course working groups will be created and they will develop a project along the course. These projects will be supervised by the teacher and may need to be exposed at the end of the course.
Problem solving	10.00%	0.00%	The teacher will provide the student some tasks which will have to be solved and delivered at the end of each theme.
Progress tests	10.00%	0.00%	Written choice test with 10 questions. Each question has three alternative answers, one correct and two incorrect. Each correct answer adds 1 point and each failed subtract 0.5, questions left blank unscored.
Final test	40.00%	0.00%	Written test with some practicals questions to be solved.
Total:	100.00%	0.00%	

Evaluation criteria in the ordinary call:

The final test may be replaced by increasing the weight of the part corresponding to the resolution of problems or cases.

Particularities of the extraordinary call:

You can only recover the qualifications of group work and problem solving (handing it over again according to teacher recommendations) and final test (exam). Qualifications of the other sections will be retained but without possibility of recovery.

9. Work sequence, timing, milestones and temporary investment

No allocable to topics

Learning activities

	Hours
Other presential activities [Face-to-face] [Combination of methods] (2.5 h tot.)	2.5
Progress test [Face-to-face] [Evaluation test] (0.5 h tot.)	0.5
Final test [Face-to-face] [Evaluation test] (2 h tot.)	2

Theme1 (of 4): Introduction to Multivariate Analysis

Learning activities

	Hours
Presential learning (Theory) [Face-to-face] [Master class] (25 h tot.)	6.67
Presential learning (Practice) [Face-to-face] [Combination of methods] (12.5 h tot.)	3.33
Study or test preparation [AUTONOMOUS][Independent work] (30 h tot.)	7.5
Reports elaboration [AUTONOMOUS] [Group work] (21.5 h tot.)	5.75
Other non presential activities [AUTONOMOUS][Independent work] (18.5 h tot.)	4

Temporary period: 4 weeks

Group 10

Starting date: 09/14/2016

Ending date: 10/07/2016

Tema 2 (of 4): Classification and comparison of groups

Learning activities

	Hours
Presential learning (Theory) [Face-to-face] [Master class] (25 h tot.)	5.83
Presential learning (Practice) [Face-to-face] [Combination of methods] (12.5 h tot.)	2.91
Study or test preparation [AUTONOMOUS][Independent work] (30 h tot.)	7.5
Reports elaboration [AUTONOMOUS] [Group work] (21.5 h tot.)	5
Other non presential activities [AUTONOMOUS][Independent work] (18.5 h tot.)	4.5

Temporary period: 3.5 weeks

Group 10

Starting date: 10/10/2016

Ending date: 11/02/2016

Tema 3 (de 4): Data reduction methods

Learning activities

	Hours
Presential learning (Theory) [Face-to-face] [Master class] (25 h tot.)	5.83

Presential learning (Practice) [Face-to-face] [Combination of methods] (12.5 h tot.)	2.91
Study or test preparation [AUTONOMOUS][Independent work] (30 h tot.)	7.5
Reports elaboration [AUTONOMOUS] [Group work] (21.5 h tot.)	5
Other non presential activities [AUTONOMOUS][Independent work] (18.5 h tot.)	5

Temporary period: 3.5 weeks

Group 10

Starting date: 11/03/2016

Ending date: 11/25/2016

Tema 4 (of 4): Models for qualitative data analysis

Learning activities

	Hours
Presential learning (Theory) [Face-to-face] [Master class] (25 h tot.)	6.67
Presential learning (Practice) [Face-to-face] [Combination of methods] (12.5 h tot.)	3.35
Study or test preparation [AUTONOMOUS][Independent work] (30 h tot.)	7.5
Reports elaboration [AUTONOMOUS] [Group work] (21.5 h tot.)	5.75
Other non presential activities [AUTONOMOUS][Independent work] (18.5 h tot.)	5

Temporary period: 4 weeks

Group10

Starting date 11/28/2016

Ending date: 12/22/2016

Global activities

Learning activities	Sum hours
Presential learning (Theory) [Face-to-face] [Master class]	25
Presential learning (Practice) [Face-to-face] [Combination of methods] (12.5 h tot.)	12.5
Study or test preparation [AUTONOMOUS][Independent work] (30 h tot.)	30
Reports elaboration [AUTONOMOUS] [Group work]	21.5
Other non presential activities [AUTONOMOUS][Independent work]	18.5
Other presential activities [Face-to-face] [Combination of methods]	2.5
Progress test [Face-to-face] [Evaluation test]	0.5
Final test [Face-to-face] [Evaluation test]	2
Total hours:	112.5

Group 10

Start-up: 09/14/2016 **General comments on planning:**

The planning may be modified by unpredictable reasons.

End of activities: 12/22/2016

10. Bibliography

Author/s	Title/Web link	Editorial	ISBN	Year	Description
Arriaza, Fernández, López, Muñoz, ...	Estadística Básica con R y R-Commander	Universidad de Cádiz	9788498281866	2008	
Everitt, Hothorn	A handbook of Statistical Analyses using R	Chapman an Hall CRC	1420079336	2009	
Gil Flores, Javier	Análisis discriminante	Salamanca Hespérides	84-7133-704-5	2001	
Gil Flores, Javier	Analisis Factorial	La Muralla-Hespérides.			
Giudici, Figini	Applied data mining : statistical methods for business and industry	Wiley	978-0-470-05886-2	2009	
Hair, Black, Babin, Anderson	Multivariate Data Analysis, 7th Ed.	Pearson	13: 9780133792683	2010	
Johnson, Dallas E.	Métodos multivariados aplicados al análisis de datos	Thomson Editores	968-7529-90-3	2000	
Lévy, J.P. y Varela, J.	Análisis Multivariable para las Ciencias Sociales	Pearson/Prentice		2003	
Martínez Arias, María Rosario	El análisis multivariante en la investigación científica	La Muralla Hespérides	84-7635-386-3	1999	
Peña, Daniel	Análisis de datos multivariantes	McGraw-Hill, Interamericana de España	84-481-3610-1	2002	
Uriel Jiménez, Ezequiel	Análisis multivariante aplicado : aplicaciones al marketing,	Thomson	84-9732-372-6	2005	