

**1. General information****Course:** STATISTICAL TECHNIQUES FOR BUSINESS**Code:** 54336**Type:** ELECTIVE**ECTS credits:** 6**Degree:** 320 - UNDERGRADUATE DEGREE IN BUSINESS MANAGEMENT AND ADMINISTRATION (CR)**Academic year:** 2020-21**Center:** 403 - FACULTY OF LAW AND SOCIAL SCIENCES OF C. REAL**Group(s):** 20 29**Year:** 4**Duration:** First semester**Main language:** Spanish**Second language:****Use of additional languages:****English Friendly:** Y**Web site:****Bilingual:** N**Lecturer:** MIGUEL ANGEL TARANCON MORAN - Group(s): 20 29

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2. Pre-Requisites

It is recommended, although not compulsory, to have previously passed the subjects of Business Statistics and Statistical Inference and Introduction to Econometrics.

3. Justification in the curriculum, relation to other subjects and to the profession

Nowadays, it is very frequent in the business world the availability of large volumes of data and the handling of computer tools that allow the adequate extraction of the information they contain. In this process, the knowledge and use of appropriate statistical techniques is fundamental to the discovery of new and significant relationships and patterns of behavior within the data. The objective of the course is to provide the student with the necessary tools 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. Degree competences achieved in this course**Course competences**

Code	Description
E07	Understand the economic environment as a result and application of theoretical or formal representations on how the economy works. To do so, it will be necessary to be able to understand and use common handbooks, as well as articles and, in general, leading edge bibliography in the core subjects of the curriculum.
E08	Ability to produce financial information, relevant to the decision-making process.
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 with a high degree of independence.
G03	Develop oral and written communication skills in order to prepare reports, research projects and business projects and defend them before any commission or group of professionals (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.

5. Objectives or Learning Outcomes**Course learning outcomes****Description**

Search for information in order to analyze it, interpret its meaning, synthesize it and communicate it to others.

Know the tools and methods for the quantitative analysis of the company and its environment, including models for business decision making as well as economic forecast models.

Know the analytical models and techniques of the economic and legal environment currently faced by enterprises, with special attention given to the search for opportunities and the anticipation of potential changes.

Work out problems in creative and innovative ways.

6. Units / Contents**Unit 1: Introduction to Multivariate Analysis. The Multivariate Normal Distribution.****Unit 2: Analysis of Variance****Unit 3: Dimension Reduction Techniques.****Unit 4: Clustering Techniques****Unit 5: Techniques for Qualitative Data Analysis****Unit 6: Other Techniques for Data Analysis in Business**

7. Activities, Units/Modules and Methodology							
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	E08 G01 G03 G04	0.9	22.5	N		Face-to-face lectures, in which the teacher will focus on the subject and explain its fundamental contents.
Class Attendance (practical) [ON-SITE]	Combination of methods	E08 G01 G03 G04	0.9	22.5	N		Classroom practice: exercises, seminars, debates.
Writing of reports or projects [OFF-SITE]	Group Work	E08 G01 G03 G04	2	50	Y	Y	Group workshops. At the beginning of the course, working groups will be created and a project will be assigned to them. The project will be developed throughout the course.
Final test [ON-SITE]	Assessment tests	G01 G04	0.08	2	Y	Y	Preparation and performance of written test with questionnaire and exercises to be solved.
Study and Exam Preparation [OFF-SITE]	Self-study	E08 G01 G04	1.6	40	N		Student's autonomous work tutored by the teacher.
Total:			5.48	137			
Total credits of in-class work: 1.88				Total class time hours: 47			
Total credits of out of class work: 3.6				Total hours of out of class work: 90			

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Assessment of problem solving and/or case studies	20.00%	0.00%	The student will have to solve and submit a selection of problems provided by the teacher throughout the course.
Final test	40.00%	100.00%	Written test of a theoretical-practical nature.
Assessment of active participation	10.00%	0.00%	The student's active participation in the classroom will be valued.
Fieldwork assessment	30.00%	0.00%	At the beginning of the course, working groups will be created and a project will be assigned to them, which will be developed throughout the course. These projects will be led by the teachers and can be displayed at the end of the course.
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

The final exam may be replaced by increasing the weight of the fieldwork and problem solving and/or case studies part.

Non-continuous evaluation:

The performance of the different training activities to be evaluated will be facilitated to students who cannot benefit from the system of continuous evaluation.

Specifications for the resit/retake exam:

In the resit/retake exam the student will be evaluated of all the competences associated to the different formative activities of the subject through the taking of a final test whose structure and composition will be communicated in advance by the lecturer.

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Writing of reports or projects [AUTÓNOMA][Group Work]	20
Final test [PRESENCIAL][Assessment tests]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	10
Unit 1 (de 6): Introduction to Multivariate Analysis. The Multivariate Normal Distribution.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Combination of methods]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Unit 2 (de 6): Analysis of Variance	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Combination of methods]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Unit 3 (de 6): Dimension Reduction Techniques.	
Activities	Hours

Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	4.5
Writing of reports or projects [AUTÓNOMA][Group Work]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Unit 4 (de 6): Clustering Techniques	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Combination of methods]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Unit 5 (de 6): Techniques for Qualitative Data Analysis	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	4.5
Writing of reports or projects [AUTÓNOMA][Group Work]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Unit 6 (de 6): Other Techniques for Data Analysis in Business	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	4.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	4.5
Writing of reports or projects [AUTÓNOMA][Group Work]	6
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Global activity	
Activities	hours
Study and Exam Preparation [AUTÓNOMA][Self-study]	40
Writing of reports or projects [AUTÓNOMA][Group Work]	50
Final test [PRESENCIAL][Assessment tests]	2
Class Attendance (theory) [PRESENCIAL][Lectures]	22.5
Class Attendance (practical) [PRESENCIAL][Combination of methods]	22.5
Total horas: 137	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Hair, J.F., Anderson, R.E., Tatham, R.L. y Black, W.C.	Análisis multivariante	Prentice Hall		978-84-8322-035-1	2005	Existen ediciones anteriores en la biblioteca de la Facultad
Emilio L. Cano, Javier M. Moguerza, Mariano Prieto Corcoba	Quality control with R : an ISO standards approach http://qualitycontrolwithr.com	Springer		978-3-319-24044-2	2015	Para el tema de Otras técnicas
Lévy, J.P. y Varela, J. (dirs)	Análisis multivariable para las ciencias sociales	Pearson Education		978-84-205-3727-6	2008	Existen ediciones anteriores en la biblioteca de la Facultad Este es el manual principal de la asignatura.
Joaquín Aldás, Ezequiel Uriel	Análisis multivariante aplicado con R	Alfa Centauro Paraninfo	Madrid	978-84-283-2969-9	2017	Cubre las técnicas de la asignatura y otras que no se ven pero pueden ser útiles, por ejemplo, para elaborar TFG.
Pérez, César	Técnicas de análisis multivariante de datos : aplicaciones con SPSS	Pearson Educación		978-84-205-4104-4	2008	
Garrett Golemund, Hadley Wickham	R for Data Science	O'Reilly Media, Inc.		9781491910382	2016	Este libro cubre los aspectos relacionados con el software estadístico y lenguaje de programación R, orientado al análisis de datos
Francois Husson, Sebastien Le, Jérôme Pagès	Exploratory Multivariate Analysis by Example Using R	Chapman and Hall/CRC		9781138196346	2017	Este libro cubre algunos de los métodos vistos en la asignatura con el paquete FactoMineR