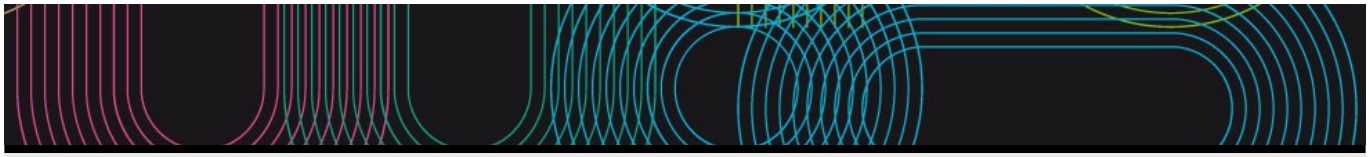

IDENTIFYING DATA				
Data analysis				
Subject	Data analysis			
Code	V05M145V01322			
Study programme	(*)Máster Universitario en Enxeñaría de Telecomunicación			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Optional	2nd	1st
Teaching language	Spanish			
Department				
Coordinator	González Castaño, Francisco Javier			
Lecturers	Díaz Redondo, Rebeca Pilar Fernández Vilas, Ana González Castaño, Francisco Javier			
E-mail	javier@det.uvigo.es			
Web	http://http://faitic.uvigo.es			
General description	Data analysis with a practical approach: data extraction and cleansing, data characterization with techniques such as statistical regression, clustering or outlier analysis, and knowledge generation with techniques such as intuitive visualization or automatic classification.			

Competencies	
Code	
A2	CB2 Students must apply their knowledge and ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study.
A3	CB3 Students must integrate knowledge and handle complexity of formulating judgments based on information that was incomplete or limited, including reflections on social and ethical responsibilities linked to the application of their knowledge and judgments.
B4	CG4 The capacity for mathematical modeling, calculation and simulation in technological centers and engineering companies, particularly in research, development and innovation tasks in all areas related to Telecommunication Engineering and associated multidisciplinary fields.
B8	CG8 The ability to apply acquired knowledge and to solve problems in new or unfamiliar environments within broader and multidiscipline contexts, being able to integrate knowledge.
C25	CE25/TE2 bility to manage the acquisition, structuring, analysis and visualization of data, extracting information and underlying knowledge, critically assessing the results, and applying it to strategic decision-making and innovation in different areas.

Learning outcomes	
Expected results from this subject	Training and Learning Results
- Knowledge of the different stages of knowledge extraction and the areas of application of data mining.	A2 A3 B4 B8 C25
- Knowledge of the importance of the preparation of the data and how to apply the main pre-processing techniques.	A2 B4 B8 C25
- Knowledge of the main techniques of data mining as well as the necessary premises for its application to a particular stage.	A2 A3 B4 B8
- Knowldge of the different types of data mining results evaluation and how to apply them.	C25

- Knowledge of statistical software and how to apply it to on-line and off-line data mining.	B4 C25
-Ability to to schedule, develop and evaluate a data analysis process.	B4 B8 C25
New	

Contents	
Topic	
Statistical analysis of data	- Correlation and causation. - Regressions. - Intervals of confidence and error. Hypothesis tests.
Data mining	- Cleaning, integration, reduction and transformation of data. - Classification and clustering.
Computational analysis of data	- Large-scale data analysis. - Visualisation of data and results. - Application scenarios.

Planning			
	Class hours	Hours outside the classroom	Total hours
Projects	2	36	38
Laboratory practises	8	16	24
Master Session	20	40	60
Short answer tests	2	0	2
Jobs and projects	1	0	1
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Projects	In groups, the students will solve a practical case of data analysis in an application scenario.
Laboratory practises	During the course, students will develop solutions in laboratiry sessions to grasp the course content.
Master Session	Lectures that will illustrate the course content with small exercises. These will be solved by the lecturer of the students themselves, alone or in groups. The goal is to foster discussion and knowledge of course competencies.

Personalized attention	
Methodologies	**Description**
Laboratory practises	Personal attention during official tutoring hours and via the FAITIC platform.

Assessment					
	Description	Qualification	Training and Learning Results		
Short answer tests	Short-answer written exam (around week 5)	40			C25
Jobs and projects	Working groups will deliver their projects during the last week of the course. Then, a public defense will be scheduled in the official examination date.	60	A2 A3	B4 B8	C25

Other comments on the Evaluation

During the bimester, the evaluation of the course will only take place according to the continuous evaluation system.

CONTINUOUS EVALUATION

It will be based on the aforementioned methodologies. The grading of the activities is as follows:

1. Short answer test: Around the fifth week (4 points maximum).
2. Project: To be defended at the official examination date (6 points maximum)

To pass the course, the student must obtain 1,5/4 points at least in the short answer test and an overal mark (across all possible activities) above 5 points. The maximum mark is 10 points.

The contents of the short answer test and the project will be balanced for a reasonable preparation effort.

FINAL COURSE EVALUATION

Final course evaluation, as an alternative to continuous evaluation, will consist on a single exam covering the whole course content, theoretical and/or practical. The maximum mark of this exam will be 10 points. The minimum mark to pass the exam is 5 points.

Sources of information

- Advanced Statistics from an Elementary Point of View. Michael J. Panik. Academic Press; 1 edition (October 28, 2005) ISBN-10: 0120884941 ISBN-13: 978-0120884940

- OpenIntro Statistics: Second Edition. David M. Diez, Christopher D. Barr, Mine C. Cetinkaya-Rundel. CreateSpace Independent Publishing Platform. ISBN-10: 1478217200 ISBN-13: 978-1478217206

- R in a Nutshell, 2nd Edition. Joseph Adler. O'Reilly Media. ISBN-10: 144931208X ISBN-13: 978-1449312084

Recommendations