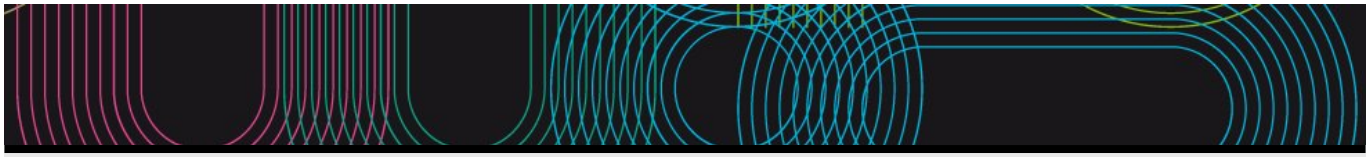

IDENTIFYING DATA				
Data analysis				
Subject	Data analysis			
Code	V05M145V01322			
Study programme	Telecommunication Engineering			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	5	Optional	2nd	1st
Teaching language	Spanish			
Department				
Coordinator	Fernández Vilas, Ana			
Lecturers	Fernández Vilas, Ana González Castaño, Francisco Javier			
E-mail	avilas@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. The course is taught in Spanish.			

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 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 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 Ability 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	Arranged in groups, the students will solve a practical case of data analysis in an application scenario. CB2 CB3 CG4 CG8 CE25
Laboratory practises	During the course, students will develop solutions in laboratory sessions to grasp the course content. CB2 CB3 CG4 CG8 CE25
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. CB2 CB3 CG4 CG8.

Personalized attention	
Methodologies	**Description**
Master Session	Individual atention will take place during official tutoring times or via e-mail at any time.
Projects	Individual atention will take place during official tutoring times or via e-mail at any time.
Laboratory practises	Individual atention will take place during official tutoring times or via e-mail at any time.

Assessment	Description	Qualification	Training and Learning Results		
Short answer tests	Short-answer written exam.	40			C25
Jobs and projects	Working groups will generate two deliverables reporting their work on a dataset that will be handed to them at the beginning on the course.	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 (4 points maximum).
2. Two deliverables on the work on a common dataset (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 deliverables 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

Basic Bibliography

Complementary Bibliography

Recommendations