

Teaching guide

IDENTIFICATION DETAILS

Degree:	Business Analytics		
Field of Knowledge:	Social and Legal Science		
Faculty/School:	Law, Business and Governance		
Course:	BIG DATA III: DATA VISUALIZATION		
Type:	Optional	ECTS credits:	6
Year:	3	Code:	5354
Teaching period:	Sixth semester		
Area:	Big Data		
Module:	Disciplinary Training		
Teaching type:	Classroom-based		
Language:	English		
Total number of student study hours:	150		

Teaching staff	E-mail
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SUBJECT DESCRIPTION

The subject of Big Data III:Data Visualization, forms the student in the characteristics of the visualization of data / information / knowledge in the era of Big Data.
During the development of the classes, first of all, the characteristics of the Methodologies and Visualization Techniques in Big Data will be studied.

It will continue with a significant and differential learning of the Fundamental and Alternative types of Visualizers in Big Data. Visualization Components and Mapping strategies are the next stage in learning this subject. Finally, the current Ecosystem of Visualizers and visualization software tools is described together with a didactic unit dedicated to Responsibility, Good Practices and Ethics in Data Visualization.

GOAL

Acquire a significant and critical learning in the detailed knowledge of the different methodologies, techniques and solutions of visualization of big data (BigData), their attributes, variables, design parameters, implementations and practical tools and associated technological implications.

PRIOR KNOWLEDGE

It is recommended to have studied the subject Big Data I: Infrastructure and the subject Big Data II: Storage, of the Degree in Business Analysis

COURSE SYLLABUS

1. Introduction to Data Visualization. Motivation and empowerment of Big Data Visualization in decision-making.
2. Processes and Phases in The Visualization of Massive Data.
3. Methodologies and Typologies of Fundamental and Alternative Visualizers. Features, use cases, and applications.
4. Graphical components of the Big Data Visualizers.
5. Generation and Mapping Strategies between graphic components and motivated needs ("insights").
6. Specialized techniques for Data Visualization.
7. Specialized software tools for Massive Data Visualization.
8. Responsibility, Good Practices and Ethics in Data Visualization.

EDUCATION ACTIVITIES

The methodology followed in this subject is aimed at achieving a significant learning by the student of the concepts and fundamental techniques of the subject.

For this reason, exhibition and interactive sessions are combined with the students, with practical sessions and presentations of results / conclusions of the same, both individually and in groups. In this way, student participation and student-teacher and student-student interaction are achieved as a way to promote collaborative learning and self-learning capacity.

In some cases, the student will have to make in class the presentation of the main conclusions of his study or work, which will allow the exchange of knowledge and experiences between students.

Priority will be given to the pedagogical techniques of Problem-Based Learning (ABP) and "Flipped-Learning". The face-to-face work will be completed with autonomous work by the student, in some cases developed in a group, so that cooperative learning is encouraged.

Finally, in order to facilitate the student's access to the materials and the planning of their work, as well as communication with the teacher and the rest of the students, LMS platform will be used: Virtual Classroom (CANVAS), which is a learning platform that offers different electronic resources to complement, in a very significant way, the student's learning. All the study and work carried out by the student will be supervised and guided by the teacher through tutoring, individually or in a group.

DISTRIBUTION OF WORK TIME

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
60 hours	90 hours
Expository lesson 22h Practical classes 22h Tests/Practices/Works 16h	Study and Individual work 60h Group work 30h

SKILLS

Basic Skills

Students must have demonstrated knowledge and understanding in an area of study that is founded on general secondary education. Moreover, the area of study is typically at a level that includes certain aspects implying knowledge at the forefront of its field of study, albeit supported by advanced textbooks

Students must be able to apply their knowledge to their work or vocation in a professional manner and possess

skills that can typically be demonstrated by coming up with and sustaining arguments and solving problems within their field of study

Students must have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgments that include reflections on pertinent social, scientific or ethical issues

Students must be able to convey information, ideas, problems and solutions to both an expert and non-expert audience

Students must have developed the learning skills needed to undertake further study with a high degree of independence

General Skills

Capacity for analysing data on a large scale from different sources: audiovisual, textual and numerical.

Capacity for designing and implementing projects and reports, naturally using digital channels.

Capacity for leadership and teamwork in the information society.

Specific skills

Know how to manage quantitative and computer tools for decision-making.

Understand and know how to use the architecture and tools of mass data management systems.

LEARNING RESULTS

Learn the characteristics and typologies of Big Data Visualizers.

Acquires a significant vision for the creation, analysis and efficient design of Visualizers in Big Data.

Learn significantly the different types of software tools for Big Data Visualization.

LEARNING APPRAISAL SYSTEM

The continuous evaluation system includes four types of tests:
Final exam (50%) + Resolution of exercises (20%) + Individual/Group Case Studies (20%) + Class Participation (10%)

- [1] Final theoretical-practical written exam: presents a weight of 50% in the final grade. The format of the same may contain short questions, development questions, resolution of practical assumptions and / or questions type of test of different typology: multiple answer, single answer, True / False, etc.
- [2,3] Class tests, practices, resolution of practical cases and other works related to the subject both individual and group: presents a weight of 40% in the final grade (distributed as follows: resolution of exercises (20%); preparation, resolution of individual/group ABP case studies and presentations (20%)
- [3] Class participation, forum interaction, cooperative learning attitude and involvement in learning (Flipped-Learning): it has a weight of 10% in the final grade.

The weighted score of the continuous evaluation shall be a value between 0 and 10 and shall be calculated as follows: $0,5*[1]+ 0,2*[2]+ 0,2*[3]+ 0,1*[4]$. In the first three tests [1],[2], [3] it is necessary to obtain a minimum of 5 points out of 10 to be able to pass the subject.

The students who do not take the continuous evaluation of the subject and those students who are exempt from the obligation to attend class, either by second registration in the subject or successive, or by having express authorization from the Direction of the Degree, will be evaluated by the computation of: a theoretical-practical examination (70%) that combines all the contents and skills described in this didactic guide. The format of such a test will be similar to that stated above as [1]; and for an Individual Job (30%).

Recovery in extraordinary call: Students who have not reached the minimum grade in the ordinary evaluation may apply to the extraordinary call, evaluating all the contents and skills as described in the previous section (continuous evaluation).

The condition of Not Presented in the ordinary/extraordinary call will correspond to the non-presentation by the student to the theorico-practical tests.

ALL TESTS SUSCEPTIBLE TO EVALUATION WILL BE SUBJECT TO THE PROVISIONS OF THE EVALUATION REGULATIONS OF THE FRANCISCO DE VITORIA UNIVERSITY.

Plagiarism behaviors, as well as the use of illegitimate means in the evaluation tests, will be sanctioned in accordance with the provisions of the Evaluation Regulations and the University's Coexistence Regulations.

Las conductas de plagio, así como el uso de medios ilegítimos en las pruebas de evaluación, serán sancionados conforme a los establecido en la Normativa de Evaluación y la Normativa de Convivencia de la universidad

BIBLIOGRAPHY AND OTHER RESOURCES

Basic

Stuart T. Kard, Jock D. Mackinlay, Ben Scheiderman Readings in information, Visualization, Using vision to think

Daniel Keim, Jörn Kohlhammer, Geoffrey Ellis and Florian Mansmann Solving Problems with Visual Analytics

Additional

David McCandless Information is Beautiful

Cole Nussbaumer Knaflic. Storytelling with data.