

# Teaching guide

## IDENTIFICATION DETAILS

Degree:	Business Analytics		
Field of Knowledge:	Social and Legal Science		
Faculty/School:	Law, Business and Governance		
Course:	INTRODUCTION TO BIG DATA AND DATA MANAGEMENT		
Type:	Compulsory	ECTS credits:	6
Year:	1	Code:	5312
Teaching period:	First semester		
Area:	IT applied to Business Analytics		
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 different sources and types of data typically available for a company will be reviewed, as well as the different software solutions available depending on the typology and structure of the data.

Once students understand the variety of data and categorization, we move on the data intake systems and the challenges involved.

Furthermore, it is explained the data storage systems and how the raw data flow is achieved in classified and categorized datasets. Students will have the main solutions explained.

Analytical systems within large stacks of data are where most students will begin to experience the power of Big Data. Workflows, business rules, pattern recognition and predictive modeling will be studied.

Finally, students will go to consumption, where apart from studying stuck delivery systems, the main focus will be on the visualization.

## GOAL

The main goals of the course are to build an understanding of the general framework of Big data and the power and possibilities, integrating them and given coherence to future subjects in the area

## PRIOR KNOWLEDGE

No prior knowledge is required

## COURSE SYLLABUS

- Getting started with big data: 5vs and 5ps. An integrative framework
- Process I: big data process
- Data models: structure, semi-structured and unstructured data. Networks
- Data management: quality, collection
- Platform & programmability: basics of programming environments, techniques, and infrastructure
- Analysis I: the general perspective of analytics: algorithms review. Machine learning, recommendation systems, and networks. Text analysis
- Analysis II: output, visualization, and metrics design. Storytelling with data
- Big data solutions in the real world
- Privacy, ethics, and risk • Risks & cybersecurity

## EDUCATION ACTIVITIES

The subject will be developed around an eminently practical application of the theoretical foundations of the subject. For the development of this subject, two complementary learning methodologies will be applied, allowing the student to carry out research and personal reflection, promote collaborative work and provide an overview of the business and consumer field. Next, we proceed briefly to define each of the methodologies used for the

development of the subject:

-Flipped Classroom: In this methodology, the traditional elements of the class are reversed, so that, the teacher identifies the learning objective that he wants to work on, the competencies that his students will need to put into play, select the theoretical contents of the subject that they will need to cover them and design the activity.

In this type of methodology, there is a part of autonomous learning on the part of the student through the use of various resources. Collaborative learning is also supported, creating a common space between teachers and students.

-Project-based learning: This methodology allows students to acquire key knowledge and competencies through the development of projects that respond to real-life problems. This methodology, it is based on a concrete and real problem, rather than the traditional theoretical and abstract model, allowing the student development of complex competencies such as critical thinking, communication, collaboration or problem-solving.

The activities carried out during the course are detailed below by using the methodologies implemented  
**PRESENIAL**

**WORK** This modality may be altered if the scenarios established by the health authorities change. In this case, all face-to-face classes will be conducted at the same remotely established time, using the tools enabled by the University. Face-to-face work will consist of several formative typologies:

-Masterclasses: Transmission of knowledge by the teacher in order to activate cognitive processes in the student, delving into the points of greatest interest and difficulty. It is highly recommended that the student has previously read the resources prepared by the teacher and thus participate more actively in class.

-Practical classes: This modality has various purposes and can be followed as methods:

oCase study (acquisition of learnings using actual or simulated case analysis)

oResolution of exercises and problems (exercise, rehearse and implement prior knowledge). Practical classes will be based on theoretical content uploaded to the CANVAS (Virtual Classroom) platform previously by teachers.

oWorks presentation: Oral presentation of the research work prepared by the student in groups, with the aim of promoting the understanding and assimilation of the different concepts previously acquired and the development of the student's argumentative and critical capacity.

oDiscussions: on real problems, so that the student learns to reasonably discuss certain topics, exchange opinions, accept contrary opinions, set out reasons and arguments, assimilate the arguments of the opposing party, detect its strengths and weaknesses and develop the capacity for communication and legal argumentation.

**Tutoring:**

Personalized: individual attention of the student with the aim of reviewing and discussing the topics presented in class and clarifying the doubts that have arisen.

Group: Supervision of students working as a group for the development of the work

raised Online: through the channels enabled for this purpose (forums, email, etc.)

Exams: The objective is to evaluate the acquisition of the competencies raised, mainly of a cognitive nature, as part of the evaluation system. While allowing you to evaluate the learning results obtained. The final exam will have theoretical and practical elements, which will allow the evaluator to obtain the indicators that show the objectives and competencies achieved by the students.

**INDIVIDUAL WORK**

-Theoretical study: Study of the theoretical contents of the program and preparation of recommended readings and audiovisual resources made available by teachers.

-Practical study: Study of the practical contents of the program and resolution of case studies.

## **DISTRIBUTION OF WORK TIME**

CLASSROOM-BASED ACTIVITY	INDEPENDENT STUDY/OUT-OF-CLASSROOM ACTIVITY
60 hours	90 hours

## 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 organising, systematization and planning in identifying problems, levers and models in the context of big data.

Capacity for achieving objectives, problem-solving and decision-making in the environment of quantitative and qualitative mass data.

### Specific skills

Know and understand the basic concepts of Big Data and its most characteristic elements.

Be able to understand the basics, paradigms and techniques of intelligent systems, and analyse, design and build computer systems, services and applications which use these techniques in the field of big data.

understand the elements necessary for data-driven businesses

## LEARNING RESULTS

Understand the basics of data science and data management

Understand the basics of supervised and unsupervised learning techniques

understand the basics of data visualization and the connectedness with the business value proposal

## LEARNING APPRAISAL SYSTEM

- Continuous Evaluation (50%) Flipped Classroom and project-based learning.

o Active assistance and participation in face-to-face activities in the classroom and/OR through Canvas(Virtual Classroom): 10%

o Group work: 10%

o Practical tests/Individual work: 30%

- Final Exam (50%): It will consist of conducting a test with theoretical and practical content. Written or oral, developmental, short-response or test-type test: 50%

All proposed work/case studies will be delivered to the teacher in electronic format on the established dates and will be resolved through face-to-face tutoring or through a virtual classroom. For the application of all the percentages with which the subject is rated globally, it is mandatory that the student **obtain a grade greater than 4 in the final exam**, deliver the proposed work and/or internships, and actively participate in the classroom.

### EXTRAORDINARY INTAKE AND FURTHER CALLS

Students attending extraordinary calls must submit the work/practices that are proposed by the teacher with a value of 50% on the total evaluation of the subject. In any case, the examination will be in writing on the theoretical and practical subject given with a value of 50% on the total evaluation of the subject, being mandatory to obtain a grade greater than 4 in the exam, as well as the delivery of the proposed work and/or practices, as well as active participation in the classroom for the application of all the percentages with which the subject is rated globally.

1. Continuous Evaluation (50%) Flipped Classroom and project-based learning. Active assistance and participation in face-to-face classroom activities: 10% Group work: 10% Practical individual tests: 30%

2. Final Examination (50%): It will consist of the conduct of a test with theoretical and practical content. Written or oral, developmental, short-response or test-type test: 50%.

### INTAKE FOR SECOND OR NEXT STUDENT'S APPLICATIONS AND SPECIAL SITUATIONS. ORDINARY AND EXTRAORDINARY.

For those students who are in SECOND OR FOLLOWING LICENSES, or because of a justified circumstance and/or have been recognized AS ACADEMIC DISPENSA and/or are taking ERASMUS and cannot regularly follow up on the subject, the planned evaluation system will be:

1. Continuous Evaluation (50%) Flipped Classroom and project-based learning. Group work: 20% Practical tests: 30%

2. Final Examination (50%): It will consist of conducting a test with theoretical and practical content. Written or oral, developmental, short-response or test-type test: 50%.

All proposed work/case studies will be delivered to the teacher in electronic format on the established dates and will be resolved through face-to-face tutoring or through a virtual classroom. For the application of all the percentages with which the subject is rated globally, it is mandatory that the student obtain a grade greater than 4 in the exam, deliver the proposed work and/or internships and active participation in the classroom.

### HONORS

It is the exclusive faculty of the teacher of this subject in recognition of excellence, granting or not distinguishing, according to the criteria of academic regulations and provided that the student has demonstrated special proactivity, mastery of the subject, ability to integrate with the rest of the disciplines of the Degree, autonomous research capacity, etc.

### PLAGIO

In this subject and for all the training activities that take place in it, including the Exam, the TURNITIN tool is activated applying, if similar, the evaluation regulations of the University Francisco de Vitoria. Plagiarism behaviours, as well as the use of illegitimate means in the assessment tests, will be sanctioned in accordance with those established in the University's Assessment Regulations and Coexistence Regulations.

## BIBLIOGRAPHY AND OTHER RESOURCES

### Basic

Hurwitz, J., Nugent, A., Halper, F., & Kaufman, M. (2013). Big Data for Dummies. 3rd edition

### Additional

Frampton, Michael Hadoop: The definitive guide 1 st edition

Tufte, E. R. (1990). Envisioning Information. Graphic Press 1st edition