

Teaching guide

IDENTIFICATION DETAILS

Degree:	Business Analytics
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Field of Knowledge:	Social and Legal Science
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Faculty/School:	Legal and Business Science
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Course:	INTRODUCTION TO BIG DATA AND DATA MANAGEMENT
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Type:	Compulsory
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ECTS credits:	6
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Year:	1
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Code:	5312
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Teaching period:	First semester
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Area:	IT applied to Business Analytics
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Module:	Disciplinary Training
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Teaching type:	Classroom-based
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Language:	English
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Total number of student study hours:	150
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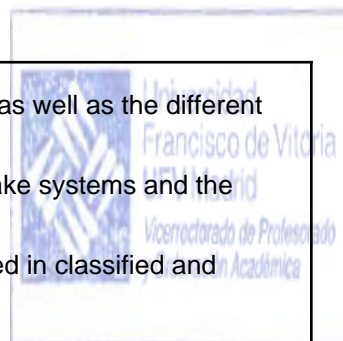
Teaching staff	E-mail
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SUBJECT DESCRIPTION

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.

The final objective is to have a global perspective of the big data environment and capabilities and introduce all the possible perspective of the subject

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

The specific aims of the subject are:

understand the process, sources, data management, platform and programmability, analysis and visualisation elements. Moreover, to understand the security and ethical issues involved

PRIOR KNOWLEDGE

No prior knowledge is required

COURSE SYLLABUS

- Getting started with bigdata: 5vs and 5ps. An integrative framework
- Process I: big data process
- Data models: structure, semi-structured and unstructured data. Networks
- Data management: quality, collection, a/b testing
- Platform & programmability: basics of programming environments and techniques and infrastructure
- Process II: the general perspective of analytics: algorithms review. Machine learning, recommendation systems and networks. Text analysis
- Process III: output, visualization, and metrics design. Storytelling with data
- Data-driven culture and organization
- 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 on 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 in 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, 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. In this methodology, it is based on a concrete and real problem, rather than the traditional theoretical and abstract model, allowing the student in the 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:

-Master classes: 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, exchanging opinions, accepting contrary opinions, setting out reasons and arguments, assimilating the arguments of the opposing party, detecting its strengths and weaknesses and developing 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.

Training activities, as well as the distribution of working times, may be modified and adapted according to the different scenarios established following the instructions of the health authorities

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.

Specific skills

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

understand the elements necessary for data-driven businesses

LEARNING RESULTS

get a global perspective of the technologies and elements to consider in data-driven business environments

manage some basic algorithms and technologies

LEARNING APPRAISAL SYSTEM

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

oActive assistance and participation in face-to-face activities in the classroom and virtually through Canvas(Virtual Classroom): 10%

oGroup work: 20%

oPractical 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 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: 20% Practical tests: 20%

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 STUDENTS 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 ASO 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.

ALTERNATIVE EVALUATION SYSTEM

As circumstances may be amended and adaptation of teaching to recommendations indicated by public authorities of all order and especially health authorities, whether at the national level, may be necessary, or municipal, including any measures that are necessary for compliance with prevention and safety protocols and that can be instructed to indicate full teaching in remote/virtual, the percentages and EVALUATION SYSTEM that encompass the subject will be maintained.

With regard to CONTINUOUS EVALUATION, the means of delivery of the training activities to be presented and resolved through the tools/resources created for this purpose in the virtual classroom is modified. All EXAMS will take place presidentially

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. PLAGIOIn 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. Any fraud or plagiarism (*) by the student in an evaluable activity will be sanctioned and will imply a 0 in the qualification of that part of the subject, canceling the current call. This behavior, in addition, will be communicated to the Directorate of the Career which in turn will communicate to the Directorate General, following the Protocol established by the Universidad Francisco de Vitoria. Se refers the student to the reading of the Regulations of Coexistence of the university, paying special attention to the violations that result from plagiarism (*) and/or copy in exams that will be considered as Serious Violation under article 7 of said Regulations. (*) Any type of copy of exam issues or exercises, memoirs of work, internships, etc., whether in whole or in part, of non-student work with the deception of making the teacher believe that they are their own is considered "plagiarism".

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 actively participate in the classroom.

PLAGIARISM

Plagiarism behaviors, 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.

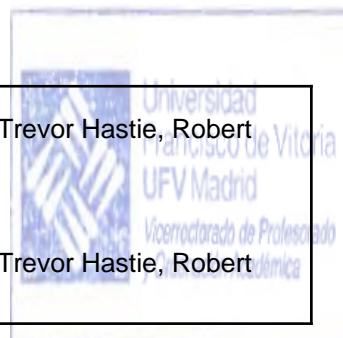
BIBLIOGRAPHY AND OTHER RESOURCES

Basic

An introduction to statistical Learning with applications in R Gareth James, Daniela Witten Trevor Hastie, Robert Tibshirani
<http://www-bcf.usc.edu/~gareth/ISL/>

Big Data for Dummies. Judith Hurwitz et al. WILEY. 2013.

An introduction to statistical Learning with applications in R Gareth James, Daniela Witten Trevor Hastie, Robert Tibshirani <http://www-bcf.usc.edu/~gar>



Additional

Networks, Crowds, and Markets:
Reasoning About a Highly Connected World
By David Easley and Jon Kleinberg
<https://www.cs.cornell.edu/home/kleinber/networks-book/>

Introduction to Information Retrieval
Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütze, , Cambridge University Press. 2008.
<https://nlp.stanford.edu/IR-book/information-retrieval-book.html>

Creating a Data-Driven Organization. Carl Anderson. O'Reilly Media. 2015.

Networks, Crowds, and Markets:
Reasoning About a Highly Connected World

