



COMILLAS

UNIVERSIDAD PONTIFICIA

ICAI

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CIHS

Syllabus
2020 - 2021

TECHNICAL SHEET OF THE SUBJECT

Data of the subject	
Subject name	Introduction to Business Analytics
Subject code	FCEE-BA-222
Mainprogram	Grado en Análisis de Negocios/Business Analytics
Involved programs	Grado en Análisis de Negocios/Business Analytics y Grado en Relaciones Internacionales [Primer Curso] Grado en Análisis de Negocios/Business Analytics y Grado en Derecho [Segundo Curso] Grado en Administración y Dirección de Empresas y Grado en Análisis de Negocios/Business Analytics [Primer Curso] Grado en Ingeniería en Tecnologías de Telecom. y Grado en Análisis de Negocios/Business Analytics [Segundo Curso]
Level	Reglada Grado Europeo
Quarter	Semestral
Credits	3,0 ECTS
Type	Obligatoria (Grado)
Department	Departamento de Gestión Empresarial
Coordinator	Dra. Noemí Pérez-Macías Martín
Schedule	For this purpose, consult the timetables of the different groups and degrees in which it is taught
Office hours	Request a tutorial in advance by email
Course overview	Business analytics is the application of data science techniques to business decision making. This course describes the most common ones and their practical application in different areas of the company. At the end of the course, students acquire: basic knowledge of what one can do and achieve using business analytics; understanding the differences between what is a big data project and what is not; knowing the life cycle of a business analytics project; understanding the differences between supervised learning and unsupervised learning, understanding the differences between a classification problem and a regression problem; finally understanding the importance of privacy.

Teacher Information	
Teacher	
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Teacher	
Name	Rafael Ángel Vida Delgado



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SPECIFIC DATA OF THE SUBJECT

Contextualization of the subject

Contribution to the professional profile of the degree

The course is an introduction to the vast field that is business Analytics. It is the first contact of the students with this central area of knowledge, which then later in the following courses will be developed in specific subjects. This professional profile requires diverse skills, such as business vision and the scientific-mathematical approach to problems. Then, it is important to maintain a balance between practice and theoretical foundation, that is why the learning by doing methodology will be used.

In block 1 the student is given a framework to see why business analytics is important and what you can get out of it. It also presents the concepts and definitions of what Business Analytics is, and the life cycle that Business Analytics projects usually follow.

Block 2 is the most practical block through which students will see an introduction to the main models of supervised learning or machine learning. The aim is for students to understand how the simplest models are built and to gain practical experience in developing a predictive model with a visual tool.

Block 3 explains the existing legal framework, the importance of privacy and the different anonymisation techniques.

Prerequisites

None

Competencies - Objectives

Competences

GENERALES

CG01	Capacidad de organización y planificación en la identificación de problemas en el contexto de datos masivos
CG02	Capacidad de análisis de datos masivos procedentes de diversas fuentes: texto, audio, numérica e imagen
CG04	Capacidad para elaborar proyectos e informes de manera oral y escrita, difundiendo estas ideas a través de canales digitales
CG06	Habilidades interpersonales en la sociedad de la información: escuchar, argumentar y debatir



CG08	Capacidad crítica y autocrítica en la sociedad de la información
CG09	Compromiso ético en la sociedad de la información
CG11	Capacidad para aprender y trabajar autónomamente en la sociedad de la información
ESPECÍFICAS	
CE01	Comprender la naturaleza de la analítica de negocio y de sus conceptos y herramientas esenciales (análisis estadístico y cuantitativo, modelos exploratorios y predictivos y sistemas de información), orientados a identificar, evaluar y capturar oportunidades derivadas de la información que creen valor para la organización
CE02	Conocer y comprender los determinantes básicos de la dirección de empresas, tales como la planificación de objetivos y actividades, su organización y control, sus áreas funcionales y las relaciones con el entorno, así como reconocer la función de liderazgo que el directivo ejerce en la definición y gestión de los mismos.

THEMATIC BLOCKS AND CONTENTS

Contents - Thematic Blocks

The Business Analytics course has been divided into **three blocks**:

BLOCK 1: Introduction to Business Analytics

BLOCK 2: Machine Learning Models

BLOCK 3: Privacy

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Block One

Introduction to Business Analytics

Chapter 1. Introduction

- Introduction: The new oil
- Strategic Planning Process
- Knowledge-based organizations
- Real-life: Netflix case and Uber case

Chapter 2: Concepts to understand Business Analytics:

- What is Business Analytics (BA)
 - Definition of BA
 - Big data project & a non-big data project



- Differences between data analysis & data analytics
- Data Analyst
- Components Business analytics definition
- Activities of BA:
 - Descriptive analytics
 - Diagnostic analytics
 - Predictive analytics
 - Prescriptive analytics
- An example of the activities of Business Analytics

Chapter 3: The life process of Business Analytics

- Understand the life process of BA
 - Business case evaluation
 - Data Identification
 - Data Acquisition and Filter
 - Data Extraction
 - Data Validation and Cleansing
 - Data Aggregation and Representation
 - Data Analysis
 - Data Visualization
 - Utilization of analysis results

Block Two

Machine Learning Models

Chapter 4. Machine Learning Models

- Supervised and unsupervised learning
- Machine Learning techniques:
 - Regression problem
 - Classification problem
- Practical application

Block Three

Privacy

Chapter 5. Privacy: Statistical Disclosure Control (SDC)

- Introduction
 - Definitions
 - Legal framework
- Anonymization: Techniques



TEACHING METHODOLOGY

General methodological aspects of the subject

In-class Methodology: Activities

AF1. Master class lessons in which the teacher will present the main contents in a clear, structured way and seeking the motivation of the student at all times through the support of PowerPoint transparencies, videos, audios, visualizations, etc.

AF2. Participatory sessions of an expository nature. In each master class, the master class will be combined with the debate and/or discussion on the topic in question corresponding to each class. This requires the student to be prepared to discuss the subject of study and the readings, videos, or audios that will be indicated to the student in advance.

The teacher will lead the presentation of the basic notions, with the active and collaborative participation of the students, who will discuss and debate the dark points or nuances that are relevant to the correct understanding of the contents. It will include practical cases as the backbone of the presentation of ideas and content, dynamic presentations, and the formal or spontaneous participation of students through various activities.

Active participation in the classroom is an excellent tool to enhance the learning of the student who participates and his or her peers present in the classroom. A productive learning environment requires that everyone in the classroom be actively involved.

AF3. Individual case resolution on a weekly basis. Students will be given short questionnaires about the subject matter dealt with in class to see their degree of progress in the subject

AF4. Cooperative Learning: The goal of this activity is to encourage cooperative work in groups of 4-6 people. The aim is to promote the autonomy and motivation of learning thanks to the shared responsibility. Application of real tools.

AF6. Analysis and resolution of cases proposed by the teacher, based on a brief reading, a material prepared for the occasion, or any other type of data or information that allows the application in practice of the theoretical knowledge acquired, and favors the development of the critical thinking capacity of the student. They are based on the selection of professional materials adapted to the subject, with the aim of training the student to solve real problems and to acquire several capacities to react to unexpected situations and approaches.

AF7. Public exhibition of topics or works. Presentation and defense of their work in front of the teacher and the rest of their classmates. It takes place individually or collectively. It will be valued the conceptual organization, the domain of the treated matter, the expositive clarity, the respect and rationality of the different phases. In the case of being a collective exercise, the active collaboration of each one of the members of the team will be required.

Non-Presential Methodology: Activities

AF8. Individual study and extension of the documentation that the student carries out to understand, re-elaborate and retain scientific content with a view to a possible application in his/her profession. Individual reading of texts (bibliography) and notes of different types (books, magazines, individual articles,



press, Internet publications, reports on practical experiences, etc.) related to the subjects of study.

F11. Academic tutoring, for the resolution of problems that may have arisen in the course of learning the subject or in the process of acquiring the corresponding skills, as well as for the supervision of the student's progress in his/her work.

consecución de las metas.

AF12. Monographic research. A cooperative learning procedure that starts with the assignment of students to teams and the approach of a task that requires research, sharing of information and resources among team members in order to achieve the common goal. Individual objectives are achieved if and only if others achieve theirs, so there is a great deal of personal interdependence in achieving the goals.

SUMMARY STUDENT WORKING HOURS

CLASSROOM HOURS
NON-PRESENTIAL HOURS
ECTS CREDITS: 3,0 (0 hours)

EVALUATION AND CRITERIA

Ratings

- **ORDINARY CALL (CONTINUOUS EVALUATION):**

The final exam (60%)

Multiple choice questions about the course syllabus

Student participation in class (5%)

The attendance and participation of the student in the classes will be evaluated, both those who are present in the classrooms and those who are connected from their homes

Implementation and discussion of case studies and various practices (30%)

The active participation of the student in the classroom, their capacity for analysis and problem solving will be valued.

Carrying out tests for the monitoring of the subject by the student (5%)

The student's ability to follow the course continuously will be assessed

- **EXTRAORDINARY CALL**

The final grade will be the weighted sum of the four types of activity, but it is **MANDATORY** to achieve a **grade of 5** in **both**, the **final exam** and the **continuous assessment to pass** the subject of Introduction to Business Analytics.

Attendance is considered essential because otherwise, the student will be able neither to assimilate the



concepts nor delivering the weekly assignments on the required date and time.

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography

Textbooks:

Evans, J. R. (2016). *Business analytics: Methods, models, and decisions*. Pearson.

Herbet, J. (2019). *Análítica de datos: La guía definitiva de análisis de Big Data para empresas, técnicas de minería de datos, recopilación de datos y conceptos de inteligencia empresarial*.

Jank, W. (2011). *Business analytics for managers*. Springer Science & Business Media.

Koole, G. (2019). *An Introduction to Business Analytics*. MG books. Amsterdam

Provost, F., and Fawcett, T. (2013). *Data Science for Business: What you need to know about data mining and data-analytic thinking*. " O'Reilly Media, Inc

Complementary Bibliography

Textbooks:

Diez, D. M.; Barr, C. D., and Cetinkaya-Rundel, M. (2017). *OpenIntro Statistics*, 3r Ed. <http://openintro.org>

Marr, Bernard (2017). *BIG DATA en la práctica: Cómo 45 empresas exitosas han utilizado análisis de big data para ofrecer resultados extraordinarios*. Tell Editorial

Marr, Bernard (2016). *BIG DATA: La utilización del Big Data, el análisis y los parámetros Smart para tomar decisiones y aumentar el rendimiento*. Tell Editorial

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