FICHA TÉCNICA DE LA ASIGNATURA

Datos de la asignatura	
Nombre completo	Casos de estudio
Código	DOI-MBD-501
Título	Máster en Big Data. Tecnología y Analítica Avanzada/Master in Big Data Technologies and Advanced Analytics
Impartido en	Máster Universitario en Ingeniería de Telecomunicación + Máster Big Data.Tecnología y Anal. Avanzada [Primer Curso] Máster en Big Data. Tec. y Analítica Avanzada/Master in Big Data Technologies and Advanced Analytics [Primer Curso]
Nivel	Master
Cuatrimestre	Anual
Créditos	3,0 ECTS
Carácter	Obligatoria
Departamento / Área	Departamento de Telemática y Computación
Responsable	Carlos Morrás Ruiz-Falcó
Horario de tutorías	Concertar por email

Datos del profesorado	
Profesor	
Nombre	Carlos Morrás Ruiz-Falcó
Departamento / Área	Departamento de Telemática y Computación
Correo electrónico	cmorras@icai.comillas.edu

DATOS ESPECÍFICOS DE LA ASIGNATURA

Contextualización de la asignatura
Aportación al perfil profesional de la titulación

The course pursues that the student manages to internalize a global vision of the real projects of BigData in all its facets, from the most functional or commercial objectives to the most technical part in its different aspects: architecture, load and data processing , algorithms, models, visualization, legal restrictions etc ...

The student at the end of the course should be able to define high-level projects or Big Data solutions integrating all the pieces that have learned in the master.

He also know how the successful projects and company use this technology, the real difficulties of this projects and how to transform and change the organizations and their culture.

In particular, it will provide an overview of big data and data science projects and will provide you with tools to:

- Locate opportunities for projects with big generation of value.

- Understand the usual difficulties in the implementation of this type of projects

- Know how these technologies and techniques are used in the reality of the business world and the key factors to obtain success stories.

- Know how to do business cases and how to measure the contribution of value.

Prerequisitos

Students willing to take this course should be some familiar with analytics and Big Data technology to be able to take advantage of the course

Competencias - Objetivos

Competencias

Competencias GENERALES

CB01

Haber adquirido conocimientos avanzados y demostrado, en un contexto de investigación científica y tecnológica o altamente especializado, una comprensión detallada y fundamentada de los aspectos teóricos y prácticos y de la metodología de trabajo en uno o más campos de estudio

CB02

Saber aplicar e integrar sus conocimientos, la comprensión de éstos, su fundamentación científica y sus capacidades de resolución de problemas en entornos nuevos y definidos de forma imprecisa, incluyendo contextos de carácter multidisciplinar tanto investigadores como profesionales altamente especializados

GUÍA DOCENTE

2021 - 2022

CB04

Ser capaces de predecir y controlar la evolución de situaciones complejas mediante el desarrollo de nuevas e innovadoras metodologías de trabajo adaptadas al ámbito científico/investigador, tecnológico o profesional concreto, en general multidisciplinar, en el que se desarrolle su actividad.

CB05

Saber transmitir de un modo claro y sin ambigüedades a un público especializado o no, resultados procedentes de la investigación científica y tecnológica o del ámbito de la innovación más avanzada, así como los fundamentos más relevantes sobre los que se sustentan

Haber desarrollado la autonomía suficiente para participar en proyectos de investigación y

CB06

colaboraciones científicas o tecnológicas dentro su ámbito temático, en contextos interdisciplinares y, en su caso, con una alta componente de transferencia del conocimiento

CB07

Ser capaces de asumir la responsabilidad de su propio desarrollo profesional y de su especialización en uno o más campos de estudio

CG01

Capacidad para proyectar, calcular y diseñar productos, procesos e instalaciones en todos los ámbitos de la ingeniería de telecomunicación

CG04

Capacidad para el modelado matemático, cálculo y simulación en centros tecnológicos y de ingeniería de empresa, particularmente en tareas de investigación, desarrollo e innovación en todos los ámbitos relacionados con la Ingeniería de Telecomunicación y campos multidisciplinares afines

CG05

Capacidad para la elaboración, planificación estratégica, dirección, coordinación y gestión técnica y económica de proyectos en todos los ámbitos de la Ingeniería de Telecomunicación siguiendo criterios de calidad y medioambientales

CG08

Capacidad para la aplicación de los conocimientos adquiridos y resolver problemas en entornos nuevos o poco conocidos dentro de contextos más amplios y mulitidisciplinares, siendo capaces de integrar conocimientos

CG10

Capacidad para aplicar los principios de la economía y de la gestión de recursos humanos y proyectos, así como la legislación, regulación y normalización de las telecomunicaciones

CG11

Capacidad para saber comunicar (de forma oral y escrita) las conclusiones- y los conocimientos y razones últimas que las sustentan- a públicos especializados y no especializados de un modo claro y sin ambigüedades ESPECÍFICAS

GUÍA DOCENTE

2021 - 2022

CE5

CE5. Know the techniques used to extract information from large datasets, as well as the different platforms, tools, and languages that make it possible.

Conocer las técnicas para extraer información de grandes conjuntos de datos, así como las diferentes plataformas, herramientas y lenguajes que lo hacen posible.

Resultados de Aprendizaje

Resultados de Aprendizaje

RA01

Analyze a technological problem and propose various solutions

RA02

Evaluate the technical and economic feasibility of the proposed solutions, the economic impact and the measurement of the results obtained (in business language)

RA03

Apply the knowledge acquired in the master in an integrated way to complex problems and select the best solution.

RA04

Plan the development of a project by choosing appropriately the resources and methodology to be used

RA05

Obtain both scientific and legal information to carry out a project

RA06

Synthesize the results of a project extracting conclusions from it

RA07

Present to third parties (experts or not) the most relevant results of a project.

CG08

Ability to apply the knowledge acquired and solve problems in new or little-known environments within broader and multidisciplinary contexts, being able to integrate knowledge

BLOQUES TEMÁTICOS Y CONTENIDOS

Contenidos – Bloques Temáticos

The course has a theoretical part with master classes on how to achieve successful Big data and machine learning projects in companies. Cultural aspects, change management, ways to add a large amount of value, how to present business cases, common difficulties, and how to communicate the added value are analyzed.

The second block is, through real cases of companies and methodology of the case method, to delve into the theory explained and finally the third block consists in that managers and technician of companies present their success stories explaining difficulties and successes that have previously been prepared by the students.

1) Real cases of use in companies, with prior preparation and interactive discussion of

them in class (case method)

2.) Visits to Big Data competence centers or facilities with an intensive Big Data/machine learning

3.) There may be some other activity that helps achieve the objectives of the course.

4) some theoretical explanations about how to make success in machine learning and big data projects. business cases, change management. ML Business opportunities…

METODOLOGÍA DOCENTE

Aspectos metodológicos generales de la asignatura

To ensure useful and practical learning, theoretical classes will be combined with master classes that reflect the reality of the market. Real case examples with also be studied from business and technical perspectives, some of which will be used in practical sessions.

Metodología Presencial: Actividades

In-class activities
▪ Lectures: The lecturer will introduce the fundamental concepts of each unit, along with some practical recommendations, and will go through worked examples to support the explanation. and by proposing quizzes and short application exercises to be solved in class.
Competences: CG1, CG3, CG4, CG7, CE5

▪ Active participation and class discussion: will be encouraged by raising open questions to foster discussion., With the teacher as moderator, discussion in class and in electronic media will be encouraged by the students of topics and readings delivered in advance so that the student faces real situations
Competences: CG1, CG2, CG3, CG5, CG6, CG7, CE5

*Visit some interesting facilities companys or laboratorys

▪ Tutoring for groups or individual students will be organized upon request.

Metodología No presencial: Actividades

Personal study of the course material and resolution of the proposed exercises.
Competences: CG1, CG3, CG4, CG7, CE5
▪ Preparation of work at home. Reading articles and watching videos to prepare the discussions
Competences: CG2, CG5, CE5

group work and essays

EVALUACIÓN Y CRITERIOS DE CALIFICACIÓN

Assessment activities Grading criteria Weight

Quizzes and class participation 40%
▪ Understanding of the theoretical concepts.
▪ intensity, frequency, critical sense and adequacy of the participations

Final exam 60%
▪ Understanding of the theoretical concepts.
▪ Application of these concepts to problem-solving.
▪ Critical analysis of numerical exercises' results.

Calificaciones

Regular assessment

• Quizzes and class participation: 40%
• Final exam: 40% Mid term exam 20%
In order to pass the course, the weighted average mark must be greater or equal to 5 out of 10 points, the mark of the final exam must be greater or equal to 4 out of 10 points, Otherwise, the final grade will be the lower of the three marks.
Additionally, there may be an optional GDPR and privacy work that gives a maximum of 1 point on the final grade (only in case it is approved)

Retake

Case the part of quizzes and participation in class
• is greater than or equal to 7, then:
It will be kept and will make a weighted average (40% / 60%) with a new final exam.
• is less than 7,then
The grade will be that of the final exam (100%), having to obtain at least a 5 in it Course rules

Course rules

▪ Class attendance is mandatory according to Article 93 of the General Regulations (Reglamento General) of Comillas Pontifical University and Article 6 of the Academic Rules (Normas Académicas) of the ICAI School of Engineering. Not complying with this requirement may have the following consequences:
- Students who fail to attend more than 15% of the lectures may be denied the right to take the final exam during the regular assessment period.
- Regarding practice, absence to more than 15% of the sessions can result in losing the right to take the final exam of the regular

assessment period and the retake. Missed sessions must be made up for credit.

▪ Students who commit an irregularity in any graded activity will receive a mark of zero in the activity and disciplinary procedure will follow (cf. Article 168 of the General Regulations (Reglamento General) of Comillas Pontifical University).

PLAN DE TRABAJO Y CRONOGRAMA

Actividades

HORAS PRESENCIALES

Master classes and sessions of the case method	successful case sessions from leading companies
12.00	18.00

HORAS NO PRESENCIALES
Trabajos de carácter práctico individual
60.00

CRÉDITOS ECTS: 3,0 (120,00 horas)

PLANDE TRABAJO Y CRONOGRAMA

Week	In-class activities				Out-of-class activities				Learning outcomes
	Time [h]	Lecture	Laboratory	Assessment	Time [h]	Self-study	Practice preparation and report writing	Other activities	Code
1	2	Course overview (0.5h) Introduction to case studies (1.5h)			2	Review and self-study (2h)			
	2	Case 1 discussion-			3.5	Review and self-study (2h)	reading and preparation of the case (2)		
2	2	Company success case presentation 1		Quiz (0.2 h)	3	Review and self-study (2h)		Paper homework (2h)	
		Case 2 Discussion				Review and	reading and preparation		

Week		Activity		Assessment		Independent work			
	2	Discussion			4.5	self-study (2h)	preparation of the case (2)		
3	2	Master class: Change management.			2.5		Report writing (2.5h)		
3	2	Case 3 Discussion		Quiz (0.2 h)	4	Review and self-study (2h)	reading and preparation of the case (2)		
4	2	Company success case presentation 2		Mid term exam	2	Review and self-study (2h)			
4	2	Company success case presentation 3			6	Review and self-study (2h)		Paper homework (4h)	
5	2	Master class: Making succeeding business plans			2		Practice preparation (2h)		
5	2	Company success case presentation 4		Quiz (0.2 h	2.	Review and self-study (2h)			
6	2	Company success case presentation 5			4	Review and self-study (2h)		Paper homework (2h)	
6	2	Company success case presentation 6			4.5	Review and self-study (2h)	Practice preparation (2.5h)		
7	2	Company success case presentation 6			2.5		Report writing (2.5h)		
7	2	Company success case presentation 6			4.5	Review and self-study (2h)	Practice preparation (2.5h)		
8	2	Company success case presentation 7			2	Review and self-study (2h)	Practice preparation (2.5h)		

9	2	Master class: wrap up			2	Review and self-study (2h)			
	2			Final exam[1]	10	Final exam preparation (10h)			

[1] The final exam will be held on the first week of March.

BIBLIOGRAFÍA Y RECURSOS

Bibliografía Básica
- Leading Digital: Turning Technology into Business Transformation. George Westerman (), Didier Bonnet Harvard Business Review Press (October 14, 2014) ISBN 978-162527247 - Digital Project Management: The Complete Step-by-Step Guide to a Successful Launch. Taylor Olson. ISBN: 978-1604271256 - Teacher notes in moddle