

## Information Systems

UGRA\_009143

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Departments	Dept. of Operations, Innovation & Data Sciences
Teaching Languages	English, Spanish, Catalan
ECTS	4
Teacher responsible	Tarda Valls Jordi - jordi.tarda@esade.edu

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### Course Goals

Upon completion of the course, students should be able to:

- Understand the Fundamentals of Machine Learning:
  - Grasp the basic concepts of machine learning, including the difference between supervised and unsupervised learning.
  - Familiarize themselves with key terms such as features, labels, models, training, and prediction.
- Apply Machine Learning Models to Business Problems:
  - Acquire practical skills to apply machine learning models to specific business challenges.
  - Learn to select and prepare relevant data for the training of classification and/or prediction models.
- Evaluate and Communicate Results:
  - Develop skills to assess the effectiveness of models, interpret performance metrics, and accordingly adjust models.
  - Learn to communicate results and conclusions from data analysis and the application of machine learning models effectively.

### Previous knowledge

Knowledge of Python programming is required.

### Prerequisites

It is required to have completed the course: Managing Digital Information: Algorithmic Thinking in Python.

### Teaching methodology

The Python programming and machine learning fundamentals course is structured around lecture-style classes where programming basics and key machine learning concepts are explained. In addition to theoretical lectures, practical sessions are conducted where students engage extensively in exercises related to the course material. These practical sessions are 100% hands-on, enabling students to directly apply what they have learned and develop practical skills in programming and machine learning.

### Description

### Course contribution to

This course will provide students with skills to analyze data and extract insights in crucial areas such as finance, operations, and marketing. This training will enable them to make more informed and strategic

## program

decisions, enhancing efficiency and effectiveness in business management. Furthermore, with knowledge in Machine Learning, students will be better prepared to tackle the challenges of the modern business world, where the ability to work with large datasets and understand predictive models is increasingly important. This will open up new opportunities for more advanced and specialized roles in various business sectors, significantly enriching their professional future.

## Short description

Let's delve into the exciting world of Machine Learning, where artificial intelligence comes to life and redefines the way we interact with technology. This Introduction to Machine Learning course unfolds as a practical journey that not only enriches the curriculum of BBA students but also equips them with essential skills to lead in the finance, marketing, strategic consulting, and technology sectors. Imagine being able to accurately predict financial trends, personalize marketing strategies with an innovative touch, or strategically advise companies with data-backed decisions. Through concrete examples and practical applications, this course will immerse you in the fascinating universe of Machine Learning. From building your own movie recommendation system to understanding how companies use algorithms to optimize their operations, we will explore real-life cases that provide a tangible understanding of how Machine Learning is shaping the future of business. Get ready to uncover not only the 'what' and 'how' of Machine Learning but also the 'why' it has become an essential skill in today's business world. Welcome to the Machine Learning revolution!"

## Content

#	Topic
1	Introduction to Artificial Intelligence and Machine Learning
2	Data pre-processing
3	Supervised models
4	Unsupervised models

## Assessment

Tool	Assessment tool	Category	Weight %
Quizzes/tests	Individual quiz	Retake and ordinary round	15.00%
Group project	Team activity	Retake and ordinary round	15.00%
Group project	Team project	Retake and ordinary round	25.00%
Written and/or oral exams	Final Exam	Retake and ordinary round	45.00%

## PROGRAMS

BBA20-Bachelor of Business Administration (BBA) (Undergraduates: Business)  
BBA20 Year 2 (Mandatory)

BBA23-Bachelor of Business Administration (BBA) (Undergraduates: Business)  
BBA23 Year 2 (Mandatory)

BBE15-Bachelor of Business Administration (BBA) (Undergraduates: Business)  
BBE15 Year 1 (Mandatory)

BBE20-Bachelor of Business Administration (BBA) (Undergraduates: Business)  
BBE20 Year 1 (Mandatory)  
BBE20 Year 2 (Mandatory)

DBAI21-Double Degree in Business Administration and Artificial Intelligence for Business (Undergraduates: Business)  
DBAI21 Year 1 (Mandatory)

GBD20-Double Degree in Business Administration and Law (Undergraduates: Law)  
GBD20 Year 3 (Mandatory)