

Máster Universitario en Finanzas y Banca/ Master of Science in Finance and Banking

1. SUBJECT

- **Name:** Data Science for Finance
- **Type of subject:** compulsory
- **Credits:** 4 ECTS
- **Hours dedication:** 24 hours (in classroom)
76 hours (out classroom)
- **Coordinator of the subject:** Alberto Santini, Luz Mary Pinzón
- **Contact:** :alberto.santini@upf.edu, luzmary.pinzon@bsm.upf.edu
- Professor Alberto Santini, Luz Mary Pinzón **Contact:** alberto.santini@upf.edu, luzmary.pinzon@bsm.upf.edu

2. COURSE DESCRIPTION

Contents

An overview of the main problems in machine learning and data analysis will be covered. The most popular models used to solve these problems, the algorithms to train the models and the ways to evaluate their effectiveness are discussed. Finally, how they can be used in a Finance context will be addressed with a hands-on implementation.

Specific Abilities

SA2. Demonstrate an understanding of financial institutions operations, as well as the impact that banking regulation has on them.

SA3. Proficiency in applying financial tools to estimate the value of financial products, real assets, and companies, through qualitative, econometric and statistical techniques

SA4. Apply data science techniques in commercial banks and other deposit-taking institutions necessary to grant or not to grant a bank credit to a company.

SA5. Demonstrate an understanding of the interaction between financial products and institutions and real assets and firms.

SA6. Identify the potential for the digital economy to understand customer needs and expectations.

SA7. Demonstrate knowledge of the new computer technologies of artificial intelligence and machine learning and their possibilities in the digital economy.

SA8. To be able to draw qualitatively robust conclusions from the results of machine learning regarding some new aspects in the field of consumer and business model knowledge.

Teaching methodology

TM1 Traditional methodologies: this includes lectures based on the lecturer's explanations.

TM2 Active methodologies: this includes discussion sessions on previously assigned reading; presentations of topics by students.

TM3 Independent methodologies: this includes reading texts and carrying out individual or group assignments.

Evaluation criteria

Evaluation	Minimum	Maximum
Exam	40%	70%
Presentations	10%	30%
Individual or group project	20%	40%
Participation in the activities planned within the classroom	10%	30%
Total	80%	170%

3. BIBLIOGRAPHY

John C. Hull: Machine Learning In Business: An Introduction to the World Of Data Science

Rudolph Russell: Machine Learning: Step-by-Step Guide To Implement Machine Learning Algorithms with Python

Aurélien Géron "Hands-On Machine Learning with Scikit-Learn and TensorFlow"
O'Reilly Media, Inc., 1005 Gravenstein, USA

Lectures <https://scipy-lectures.org/>