# Study Plan

# First semester

# Finance and Financial System

- Introduction to the financial system
- Technological innovation in finance
- Financial products and their evaluation
- Financial risk management
- Ethics and sustainability in finance

# First semester ECTS 5 Black-Scholes Environment and Derivative Instruments

Masterclasses

5

5

- Introduction to financial derivatives and arbitrage
- Discrete models and trees
- Continuous models

✓ 225 teaching hours

ECTS

5

5

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- Fixed-income instruments and interest rate derivatives
- Valuations and practical applications

✓ 9 subjects + TFM

## Second semester ECTS

## Fintech and Digital Transformation 5 in Financial Services

- Fintech: digital business models in finance
- Payment methods and wallets
- Alternative financing: crowdfunding and crowdlending
- Wealthtech
- Insurtech
- Startups regulation and funding

## Analysis of the Economic and Technological Environment

- Fundamentals of the economic environment
- Digital transformation and digital economy
- Regulation and economic policy
- Innovation and competitiveness
- Ethics, inclusion, and the digital divide

#### Asset Management and Financial Automation

- Volatility and correlation
- Asset management
- Case studies

# Data Analytics, Artificial Intelligence 5 and Machine Learning in Finance

- What is financial analytics? Introduction to data science applied to finance
- · Elements and stages of financial analytics: an overview of tools, technological infrastructures, and the most widely used programming languages in the financial industry
- Algorithms
- Programming languages: Python and R. Introduction and libraries for data science in finance
- How data science is used in finance
- Case studies

## **Global Financial Markets** and Technology Trends

- Introduction to global financial markets
- Products and assets in global markets
- Transformative technologies in markets
- Regulation and governance of global markets
- Trends and opportunities in global markets

# **Risk Analysis and Control**

- Introduction to financial risks
- Market risk analysis
- Risk analysis methodologies
- Credit risk analysis
- Operational and liquidity risk analysis
- Use of financial instruments in risk management





ECTS

5

# Second semester

## **Blockchain and** Decentralised Finance (DeFi)

- Cryptography, hash functions, and consensus algorithms. Mining
- Blockchain or Distributed Ledger Technology (DLT)
- Types of cryptoassets and tokens: ICOs, stablecoins, CBDC, NFTs
- Digital asset financial services: Decentralised finance (DeFi)
- Business models in DLT: Web3
- Regulation of digital assets

## **Master's Thesis**

The Master's Thesis (TFM) must be completed in teams of up to three members, and you will have the guidance of a PhD professor who will support you throughout the entire process. In accordance with the regulations, the assessment will be individual, and you must present one of the following projects:

- Business plan related to technologies, fintech products or services, or financial decentralisation
- Innovation project
- Document synthesis

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