

**COURSE DATA****DATA SUBJECT****Code:** 35856**Name:** Quantitative techniques in finance**Cycle:** Undergraduate Studies**ECTS Credits:** 4.5**Academic year:** 2025-26**STUDY (S)**

| Degree  | Center              | Acad. year | Period        |
|---|---------------------|------------|---------------|
| 1313 - Degree in Business Management and Administration | Facultat d'Economia | 4          | First quarter |

**SUBJECT-MATTER**

| Degree  | Subject-matter                     | Character |
|---|------------------------------------|-----------|
| 1313 - Degree in Business Management and Administration | Quantitative techniques in finance | ELECTIVES |

**COORDINATION**

BRETO MARTINEZ CARLES

**SUMMARY**

The main goal of the course is to expose students to the fundamentals and practice of quantitative techniques suitable for the analysis of financial reality. The key topics addressed are the statistical properties of time series of financial variables and the estimation of models based on real data for portfolio valuation and decision making.

**PREVIOUS KNOWLEDGE****RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE**

There are no specified enrollment restrictions with other subjects of the curriculum.

**OTHER REQUIREMENTS**

Students are advised to have successfully completed the subjects of Mathematics I and II, Statistics I and II and Econometrics.

**COMPETENCES / LEARNING OUTCOMES**



### **1313 - Degree in Business Management and Administration**

Be able to analyse and search for information from different sources.

Be able to apply analytical and mathematical methods for the analysis of economic and business problems.

Be able to define, solve and present complex problems systemically.

Be able to express oneself in formal, graphic and symbolic languages.

Be able to make decisions.

Be able to make decisions under certainty and uncertainty environments.

Be able to solve problems.

Be able to understand and use the different quantitative and qualitative methods to reason analytically, evaluate results and predict economic and financial parameters.

Demonstrate capacity for analysis and synthesis.

Have critical and self-critical capacity.

Show motivation for quality.

## **DESCRIPTION OF CONTENTS**

### **1. Financial data and markets**

### **2. Statistical properties of financial returns**

### **3. ARIMA models**

### **4. Volatility analysis. ARCH models**

**WORKLOAD****PRESENCIAL ACTIVITIES**

| Activity            | Hours        |
|---------------------|--------------|
| Theory              | 30,00        |
| Classroom practices | 15,00        |
| <b>Total hours</b>  | <b>45,00</b> |

**NON PRESENCIAL ACTIVITIES**

| Activity                              | Hours        |
|---------------------------------------|--------------|
| Attendance at other activities        | 0,00         |
| Individual or group project           | 0,00         |
| Independent study and work            | 45,00        |
| Preparation of lessons                | 22,50        |
| Preparation for assessment activities | 0,00         |
| Resolution of case studies            | 0,00         |
| <b>Total hours</b>                    | <b>67,50</b> |

**TEACHING METHODOLOGY**

Teaching will be structured around lectures and computer labs. Lectures will focus on the core aspects of the syllabus, motivated by real data and specific problems. These real data and specific problems will also be addressed in the computer labs, where the focus will be on solving these problems and on studying and analyzing these real data.

**EVALUATION**

Grade: final exam (70%) + continuous assessment (30%).

To pass the course, students must pass the final exam. Continuous assessment will be carried out throughout the academic year and may include assignments, problem sets, partial exams and participation in classroom activities.

**REFERENCES**

- Tsay, R. S. (2010). Analysis of financial time series [electronic resource] / Ruey S. Tsay. (3rd edition). Hoboken, NJ: Wiley. [https://trobes.uv.es/permalink/34CVA\\_UV/um6gse/alma991009620333106258](https://trobes.uv.es/permalink/34CVA_UV/um6gse/alma991009620333106258)
- Tsay, R. S. (2010). Analysis of financial time series / Ruey S. Tsay., the University of Chicago Booth School of Business Chicago, IL (Third Edition). Hoboken, New Jersey: Wiley. [https://trobes.uv.es/permalink/34CVA\\_UV/um6gse/alma991009620333106258](https://trobes.uv.es/permalink/34CVA_UV/um6gse/alma991009620333106258)



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- Wooldridge, J. M. (2015). Introducción a la econometría: un enfoque moderno / Jeffrey M. Wooldridge traducción Ma. del Carmen Enriqueta Hano Roa, Érika M. Jasso Hernan dBorneville (5a ed). México DF: Cengage Learning. [https://trobes.uv.es/permalink/34CVA\\_UV/um6gse/alma991001861329706258](https://trobes.uv.es/permalink/34CVA_UV/um6gse/alma991001861329706258)
- Wooldridge, J. M. (2011). Introducción a la econometría: un enfoque moderno / Jeffrey M. Wooldridge traducción Ma. del Carmen Enriqueta Hano Roa, Érika M. Jasso Hernan dBorneville (4a ed.). México DF: Cengage Learning. [https://trobes.uv.es/permalink/34CVA\\_UV/um6gse/alma991006612259706258](https://trobes.uv.es/permalink/34CVA_UV/um6gse/alma991006612259706258)