COURSE DATA

DATA SUBJECT

Code: 43782
Name: Equity trading models
Cycle: Master's Degree
ECTS Credits: 3
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
2171 - Master's Degree in Actuarial and Financial Sciences	Facultat d'Economia	1	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
2171 - Master's Degree in Actuarial and Financial Sciences	Finance and introduction to insurance	COMPULSORY

COORDINATION

CARCHANO ALCINA OSCAR

SUMMARY

The Variable Income Models subject is located in the second semester of the first year and is taken after the study of the Quantitative Methods and Economic Environment and Legal Framework subjects. Both subjects provide the student with the necessary foundations to approach in the second semester the subject Finance and Introduction to Insurance, within which the subject Variable Income Models is located.

With the study of this subject it is intended that the student knows the different operations and financial assets that are traded in the equity financial markets and acquires competences for the management of price risk. Firstly, the course studies the functioning of the equity markets and their derivative assets. In the second part, special emphasis is placed on equity valuation models and valuation models for futures and options contracts in the absence of arbitrage. Finally, the course deals in detail with the analysis and management of equity portfolios through derivatives on stocks and stock market indexes.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

For an adequate learning of the contents of this subject, the student should know the contents of the subjects Financial Mathematics and Portfolio Management. Both subjects are taken within the same module but at the beginning of the semester. The subject of Financial Mathematics aims that the student knows the different operations and financial assets that are traded in the fixed income financial markets and acquires skills for the management of interest risk.

COMPETENCES / LEARNING OUTCOMES

2171 - Master's Degree in Actuarial and Financial Sciences

Alcanzar sólidos fundamentos para la toma de decisiones financieras: asignación de recursos en el tiempo bajo incertidumbre, estructura y funcionamiento de los mercados financieros, valoración de activos y selección de carteras.

Saber tomar decisiones relacionadas con los riesgos evaluables económicamente.

Ser capaces de construir modelos adecuados al entorno económico empresarial a partir de las posibilidades que ofrecen las modernas tecnologías de la información y de la computación.

Students should apply acquired knowledge to solve problems in unfamiliar contexts within their field of study, including multidisciplinary scenarios.

Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.

DESCRIPTION OF CONTENTS

Unit 1: Valuation of shares

1.1.- Basic concepts of shares.

1.2.- Dividend Discount Model.

1.3.- Dividend estimation in the dividend discount model.

1.4.- The equity market in Spain.

1.5.- Calculation of the yield and volatility of a share.

Unit 2: Introduction to futures markets.

2.1.- Distinction between spot, credit, forward and futures trading.

2.2.- Origin of futures markets.

2.3.- Preliminary definition of a futures contract.

2.4.- Terminology.

2.5.- Specification of a futures contract: standardization.

2.6.- Functioning and organization of a futures market.

2.7.- Daily Settlement of Profits and Losses (DSPL).

2.8.- General conditions of futures traded on MEFF and Eurex.

2.9.- Forward vs. futures contract.

2.10.- Hedging and speculation.

2.11.- Dangers of the use of derivatives.

Unit 3: Arbitrage valuation of forward and futures contracts.

3.1.- Assumptions and fundamental concepts for arbitrage valuation.

3.2.- Valuation of forward contracts.

- Notation.

- Relationship between the spot and forward price of an asset that does not generate cash flows.

- Relationship between the spot and forward price of an asset that generates known cash flows.

- Ratio between the spot and forward price of a stock market index.

3.3.- Relationship between forward prices and futures prices.

3.4.- Valuation in practice: transaction costs and the arbitrage band model.

Unit 4: Hedging operations with futures

4.1.- Introduction.

4.2.- Basic concepts for hedging.

- Definition.

- Short and long hedging.

4.3.- Basis.

- Basis and convergence to maturity.

- Hedging at maturity.

- Hedging with early cancellation.

4.4.- Hedging ratio.

- Definition.

- Choice of the number of contracts.

- Minimum variance hedging ratio.

- Particular cases: naive hedging and hedging with beta.

Unit 5: Introduction to options markets

5.1.- Brief review of basic concepts.

5.2.- Factors determining option prices.

5.3.- Option contracts traded in the Spanish markets: MEFF-RV.

5.4.- Hedging with options.

- Guarantee of a maximum buying price.

- Guarantee of a minimum selling price

5.5.- Limits on option prices.

- Assumptions and notation

- Upper limits

- Lower limits

5.6.- Early exercise in American options.

- Call options

- Put options

5.7.- Parity relationships between call and put options.

- European options on non-dividend-bearing assets.

- European options on assets that pay dividends.

- European options on futures

- American options on non-dividend assets

Unit 6: Valuation of options with binomial trees

6.1.- The binomial model

- Assumptions

- The one-period binomial model

- The two-period binomial model

6.2.- Valuation formula with n steps.

6.3.- The use of the model in practice.

6.4.- Binomial valuation with American options.

6.5.- From the Binomial Model to the Black-Scholes model.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	15,00
Classroom practices	15,00
Total hours	**30,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	2,00
Individual or group project	21,00
Independent study and work	22,00
Preparation of lessons	0,00
Preparation for assessment activities	0,00
Resolution of case studies	0,00
Total hours	**45,00**

TEACHING METHODOLOGY

During the course the contents of the program will be worked on simultaneously with the theoretical and practical contents.

In general, the theoretical classes will be taught with the methodology of the lecture, in which the professor will detail the fundamental aspects of each topic and will guide the study through the relevant bibliography, to which the student must go to complete and deepen in the subject.

The practical classes will consist of the consideration of questions and exercises of applied character and that have been previously raised in the theoretical classes, having the student to participate actively in the development of the activity discussing the solution, and using the suitable computer techniques for its resolution.

In addition to these face-to-face activities, the student must perform other activities oriented to learning in an autonomous way, such as individual study, the preparation of the activities of evaluation or the realization of individual works. For the successful completion of these activities, the tutoring, carried out either individually or in groups, is an especially important teaching resource as it allows the teacher to know the level of progress of the group, and the student a personalized guidance in their training program. Consequently, throughout the training period of the use of this teaching resource is recommended and encouraged.

The virtual classroom facilitates the development of these methodologies, since it gathers all the teaching material and allows fluid contact between teacher and student.

EVALUATION

The evaluation procedure of the course will consist of:

1. A written exam, which may consist of both theoretical questions and problems and real cases.

This exam will account for 80% of the final grade.

2. Continuous evaluation based on class attendance and the rest of the classroom training activities and participation and involvement in the teaching-learning process. This section will consist of a evaluation of the practical activities developed by the student, from the elaboration of works, and/or oral expositions. It also includes the evaluation of the questionnaires/written tests. This section will represent 20% of the grade of the course.

The final grade is obtained from the weighted average of the grades of each part of the evaluation, provided when the part corresponding to the written test or exam called officially by the Faculty of Economics has been passed. If the written test or exam is not passed, the final grade will be the weighted sum of the grade of the test and the continuous evaluation, not exceeding a maximum of 4.5 points.

Two aspects should be taken into account: i) those students who do not pass the course in the first call, will have the option to be evaluated in the second call maintaining the grade obtained in section 2, not being able to submit for this call the assignments not passed or not submitted during the course; ii) in the second call the same criteria of evaluation and weighting will be used as in the first call.

REFERENCES

Berk, J., DeMarzo, P., y Hardford, J. Fundamentos de Finanzas Corporativas, Ed. Pearson, 2010.

Crespo, J.L. y C. Mir, Descubriendo el mercado II: La rentabilidad y Descubriendo el mercado III: El riesgo: medidas de dispersión y volatilidad, www.bolsasymercados.es

Hull, J. C. (2014) Introducción a los mercados de futuros y opciones. 8ª Edicion. Pearson-Prentice Hall.

Mercado Español de Futuros Financieros, http://www.meff.es

Sociedad de Bolsas, Modelo de mercado, http://www.sbolsas.es/