

**COURSE DATA****Data Subject**

Code	35963
Name	Derivative securities and markets
Cycle	Grade
ECTS Credits	4.5
Academic year	2020 - 2021

Study (s)

Degree	Center	Acad. year	Period
1315 - Degree in Finance and Accounting	Faculty of Economics	4	First term
1328 - Degree in Finance and Accounting (Ontinyent)	Faculty of Economics	4	Second term

Subject-matter

Degree	Subject-matter	Character
1315 - Degree in Finance and Accounting	23 - Year 4 optional subjects	Optional
1328 - Degree in Finance and Accounting (Ontinyent)	23 - Year 4 optional subjects	Optional

Coordination

Name	Department
LUCIA LOPEZ, JULIO JESUS	113 - Financial and Actuarial Economics

SUMMARY

The main objective of this subject is to provide an introduction to the derivative markets and the contracts that are traded therein.

General topics include: the mechanics of derivative markets, valuation of derivatives by no-arbitrage arguments, risk management and hedging with derivatives, and synthetic assets.



PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

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

Other requirements

This subject covers additional topics about financial markets and securities that have not been previously studied in compulsory subjects such as "Financial Mathematics", "Stock markets and securities" and "Fixed-income markets and securities".

OUTCOMES

1315 - Degree in Finance and Accounting

- Conocimiento y capacidad de aplicación de los métodos comúnmente utilizados por los profesionales financieros en el uso de los derivados en la gestión de carteras.
- Capacidad de comprensión y análisis de los llamados productos estructurados de renta variable (bonos bolsa) de gran difusión en la banca minorista.
- Comprensión del modelo de Black y Scholes utilizado en la valoración de opciones en un marco de referencia necesario para la contabilidad de muchas operaciones.
- Realización de valoraciones y aplicaciones prácticas de activos derivados sobre casos reales, tanto en operaciones de cobertura como especulativas.

LEARNING OUTCOMES

Valuation of derivative securities and the use of derivatives in hedging as well as speculative activities.

Understanding of the Black-Scholes model, as the standard option valuation model used in many practical situations.

DESCRIPTION OF CONTENTS

1. Introduction to derivatives markets

- 1.1. Definition of a derivative instrument
- 1.2. Types of derivatives markets and instruments
- 1.3. Basic derivatives
- 1.4. Types of traders
- 1.5. History of derivatives trading
- 1.6. Derivatives traded in MEFF



2. Introduction to futures markets

- 2.1. Specification of a futures contract
- 2.2. Organization of exchanges: The Clearing House
- 2.3. Opening and closing out positions
- 2.4. Margin accounts
- 2.5. Types of settlement at expiration
- 2.6. Forward versus futures contracts

3. Determination of forward and futures prices

- 3.1. Assumptions and notation
- 3.2. Forward prices
 - a) Investment asset that provides no income
 - b) Asset with known income
 - c) Asset with known yield
- 3.3. Valuing forward contracts
- 3.4. Commodities and other underlying assets
- 3.5. Futures prices
- 3.6. Arbitrage in practice

4. Hedging strategies using futures

- 4.1. Basic principles
- 4.2. Perfect hedge
- 4.3. Basis risk
- 4.4. Minimum variance hedge ratio
- 4.5. Hedging in practice: choice of contract

5. Introduction to options markets

- 5.1. Options markets
 - a) Specification of option contracts
 - b) Organization of options markets
 - c) Options versus futures contracts
- 5.2. Basic non-arbitrage relationships
 - a) Preliminaries: notation, assumptions and basic definitions
 - b) Upper and lower bounds
 - c) European put-call parity
 - d) Early exercise of American options
 - e) Put-call relationship for American options on non-dividend-paying stocks
 - f) Conclusions
- 5.3. Options and structured products

**6. Option pricing with binomial trees**

- 6.1. No-arbitrage argument
- 6.2. Risk-neutral valuation
- 6.3. Extensions
 - a) American (put) options
 - b) Underlying assets paying a continuous dividend yield and other related cases
- 6.4. Binomial trees in practice

7. Pricing of European stock options: The Black-Scholes and Merton model

- 7.1. Assumptions for the underlying stock
- 7.2. The Black-Scholes formulas y the Merton extension
- 7.3. Estimating volatility
- 7.4. Empirical evidence: facts versus model

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	15,00	100
Study and independent work	30,00	0
Preparation of evaluation activities	13,50	0
Resolution of case studies	24,00	0
TOTAL	112,50	

TEACHING METHODOLOGY

Many of the topics covered in the course are of a highly practical nature. Accordingly, time will be evenly distributed between theory and practice during the course.

In theory classes, the instructor will introduce, motivate and explain all the topics included in the syllabus. He or she will also illustrate how the theory is applied in reality through many examples as well as real-life problems.

Practical classes will be mainly devoted to problem solving.

An active participation of the students in all the classes is highly encouraged.

The student is expected to complete the notes taken in class with the textbook, which must be considered as required reading, following the teacher's instructions. Additionally, specific exercises of the textbook will be either solved in class or assigned as homework.



All the additional teaching material required to follow the course will be posted on its web page (AULA VIRTUAL).

EVALUATION

IMPORTANT NOTICE: This is a translation into English of the corresponding section in Spanish, which is provided for the benefit of any prospective foreign student. It is expected to be an accurate translation of the original version in Spanish. However, in case of any unintended discrepancy in meaning between both versions, the original Spanish version will prevail.

Final grades will be based on:

1. A **final written exam** that will include questions and problems regarding both theory and practice (80% of the final grade).
2. The **continuous evaluation** of the **active** participation and personal involvement of the student in the teaching-learning process, through diverse activities developed by the student during the term such as: his/her attitude towards the classmates and the teacher, his/her participation through problem solving as well as by participating in discussions in the classroom, and the completion of required tasks and the assigned homework (20% of the final grade).

The final qualification will be given by the sum of the previous concepts. Nonetheless, in order to pass the subject, **the student must pass the final exam** (answer at least 50% of the exam questions correctly), **which is compulsory**. In case of failing the final exam, the maximum qualification that the student can obtain as the sum of all the items will be 4.5 points.

For the second examination call, the same evaluation and weighting criteria as for the first call will be used. Those students who are evaluated on the second examination call will maintain the grade obtained in section 2 above, and they will not be allowed to complete any tasks or homework that had not been previously considered for the first call.

Exams will be regulated by Article 13 on examination fraud of the “Reglament d’avaluació i qualificació de la Universitat de València per a títols de grau i màster, ACGUV 108/2017”. Additionally, all the assessment tasks and homework will be subject to the regulation on plagiarism detailed in Article 15.2 of the same “Reglament”.

Any possible change of the date and/or hour of a final exam will be administered under the terms and conditions established by Article 9.2 of the above-mentioned “Reglament”.

REFERENCES



Basic

- Hull, J. C. (2014). Introducción a los mercados de futuros y opciones. 8ª Edición. Pearson. (Translation of: "Fundamentals of Futures and Options Markets. 8th Ed.", 2014, by John C. Hull, Prentice Hall)

Additional

- Webs:
BIS: www.bis.org
BME: www.bolsasymercados.es
CNMV: www.cnmv.es
ISDA: www.isda.org
MEFF: www.meff.com
Sociedad de Bolsas: www.sbolsas.es

ADDENDUM COVID-19

This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

In this subject, it is expected that all the classes will be face-to-face and this Guide will be thoroughly followed.

Nonetheless, in the event of any change in the sanitary conditions that may cause to modify the educational model, the students would be properly informed of all the required adaptations to the new situation.