advantere School of Management

COMILLAS UNIVERSIDAD PONTIFICIA

TEACHING GUIDE COURSE DERIVATIVES 2024-25

COURSE FACTSHEET

Course details	
Credits ECTS	3 ects. Mandatory. (T2).
TITLE	Master in Finance / Master Universitario en Finanzas por la Universidad Pontificia de Comillas
Responsible / Professor	Dr Luba Schoenig
Classes title	Derivatives
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OBJETIVES AND CONTENTS

OBJETIVES

General Competencies

GC1: Develop a profound understanding of the concept of derivates

- Goal 1: Get familiar with the concept of derivatives, the various types of the derivatives, their history, the current use of derivatives and the risks associated with derivatives.

GC2: Get familiar with the main option pricing models

- Goal 2: Learn about the two main pricing models for derivatives, understand which parameters drive the option value, learn about the Greeks as a measure of the option price sensitivity towards a given parameter.

Specific Competences

SC1: Get familiar with the main option strategies used in the financial practice

- Goal 1: Get to know the bullish option strategies, their construction and their risk and return characteristics.
- Goal 2: Get to know the bearish option strategies, their construction and their risk and return characteristics.
- Goal 3: Get to know the neutral option strategies, their construction and their risk and return characteristics.

CONTENTS

What are derivatives

- Definition of derivatives, forwards, futures, swaps and options
- The main use cases of each derivative
- The differences between the various derivative types
- Risks and return characteristics of each derivative type

Option pricing models

- Basic concept and assumptions of the Binomial Model
- Construction of a Binomial Tree
- Risk-neutral valuation
- Limitations of the model

- The stochastic process of a stock price
- Lognormal properties of the stock prices returns
- Black-and-Scholes Equation
- Limitations of the Black-and-Scholes Model

Option strategies

Construction, use cases, risk and return characteristics of the main option strategies, grouped in the following categories:

- Bullish option strategies
- Bearish option strategies
- Neutral option strategies

FORMATIVE ACTIVITIES

Formative activities	Workload (%)	Attendance (%)
Teacher's Lecture	39	100
Student Presentations, Debates, and Group Dynamics	49	100
Exercises and Problem-Solving, Applied Work Preparation	250	25
Study and Documentation	124	0
Tutorial Sessions	10	50
Development of Real Projects for Organizations	8	50

TEACHING METHODOLOGY

General methodological aspects of the subject

This class utilizes facilitative learning techniques driven by defined learning objectives which are supported by curriculum and major objectives. Theoretical knowledge about the concept and valuation techniques for derivatives is combined with practical examples. The lectures include multiple case studies and examples from the market for derivatives. The students will use Bloomberg to access real-time market data on derivatives and check their understanding of the topics.

Note that your success as a student on these learning activities depends on your responsibility to read assigned materials – text chapters and other instructional materials presented in the syllabus and participate actively in the course group assignment. Please take the time to familiarize yourself with this material as well as the course schedule. All learning activities will be closely monitored by your instructor to ensure progress to goal fulfilment, as well as to ensure an acceptable level of student satisfaction and engagement in with learning, and in meeting set deadlines.

EVALUATION AND GRADING CRITERIA

Evaluation activities	Weight (%)
Class participation	15%
Individual / Group assignments	25%
Final exam	60%

Qualifications

Class participation

Students will be assessed on their proactive contribution to class by offering ideas, asking questions regularly, and work consistently on group project the entire time. These ideas and questions must be by nature directed to enrich and expand the discussions linking the topics to the current derivatives course or other courses within the education program.

The code of conduct for students expects class participants to listen without interrupting when others talk, to add new angles to the discussion or to further elaborate on other student's ideas. Active contribution to the full-class environment will be very much taken into consideration as well as an adequate level of preparedness for the sessions, i.e., having covered the recommended readings for each session.

Full attendance is mandatory (including on class field trips/ off-site visits Master Classes and brownbag seminars amongst others) and will be checked at the start of each class; students who either miss many classes or come often late to class will see a reduction in their participation scores. Personal travel does not constitute an excused absence.

Unjustified non-attendance will have the following penalty score in the class participation rubric:

a) One unjustified attendance: reduction by 15% of the final class participation grade.
b) Two unjustified attendances: reduction by 40% of the final class participation grade.
c) More than two unjustified attendances will have the following consequences:
   - The final class participation grade will be reduced by 60%.
   - The student will not be allowed to take the exam and thereby will be forced to go to the exam retake.
   - Should the student pass the retake his/her Class Participation final grade will be capped to 5.0.

Tardiness is a sign of disrespect to the teacher and the rest of the students and will not be tolerated in general. Therefore, students arriving later than 10 minutes to class will have to wait outside until the break.

Finally, the student's contribution to solving the practical exercises will also be considered as part of the student's class participation grade.

Individual/Group assignments

Throughout the course the students will have the opportunity to solve exercises based on real cases. To make the most out of the class, students are asked to prepare them beforehand. Some of these exercises will be defined to be done individually and some others in groups.

If a student fails to pass an assignment, then he/she will have to agree with the professor responsible for the course on what activities the student must work on to pass.

Final exam

The final examination will be generally formed either by a group of multiple-choice questions, short/long essays, computational tasks and/or practical exercises. The exam assesses comprehension and analysis of all course's concepts, together with practical exercises based on the topics discussed in class.
A minimum score of 5 (over 10) is required for all assessment criteria - participation/group assignment/final exam - to be weighted as stated in the syllabus. A weighted average grade of more than 5 is required to pass the course.
In case a student does not obtain at least a grade of 5,0 (over 10), the student will have to retake exam.

Retake

The grade for the course will then be calculated as follows:

- The retake grade will be capped to the median grade of the students that passed the first exam.
- The final grade from the retake will then be weighted and added to the weighted grades from the class participation and the individual/group assignments to form the final assessment grade of the student.

General remarks

For those circumstances not foreseen in this Teaching Guide, the Regulations of Advantere School of Management and the General Regulations of Comillas will be applied.

BIBLIOGRAPHY AND RESOURCES

Basic Bibliography

Books:

- Options, Futures, and Other Derivatives, John C. Hull, 11th edition, 2021
- Derivatives markets and analysis, Stafford Johnson, Bloomberg Press, 1st edition, 2017
- The Mathematics of Derivatives, Robert L. Navin, 1st edition, 2006
- Trading Options Greeks, How Time, Volatility, and Other Pricing Factors Drive Profits, Dan Passarelli, 2nd edition, 2012
- Financial Derivatives, Robert W. Kolb, James A. Overdahl, 2014
- Binomial Models in Finance, Van Der Hoek, John; Elliott, Robert J., 2006
- Investment and Portfolio Management, A Practical Introduction, Ian Pagdin, Michelle Hardy, 2017
- Fundamentals of Institutional Asset Management, F. J. Fabozzi, F. A. Fabozzi, World Scientific Publishing Co. Pte. Ltd., 2021.
- Pioneering Portfolio Management, An Unconventional Approach to Institutional

Investment, Fully Revised and Updated, David F. Swensen, 2009

- Foolishness by Randomness: The Hidden Role of Chance in Life and in the Markets, N. N. Taleb, New York, Random House, 2005.
- The Black Swan: The Impact of the Highly Improbable, N. N. Taleb, 2nd edition, New York, Random House, 2010.
- When Genius Failed: The Rise and Fall of Long-Term Capital Management, Roger Lowenstein, 2000.
- Uncertainty, risk, and profit, F. Knight, New York, Houghton Mifflin, 1921.

Articles:

- Fama, E. F. "The behaviour of Stock Market Prices", "Journal of Business", 38 (January 1965): pp. 34 – 105
- Black, F., Scholes, M. "The Pricing of Options and Corporate Liabilities", "Journal of Political Economy", 81 (May - June 1973), pp. 637-59.
- Cox, J. C., Ross, S. A. "The valuation of options for alternative stochastic processes", Journal of Financial Economics, Volume 3, Issues 1–2, (January–March 1976), pp. 145-166
- Itô, K. "On Stochastic Differential Equations", Memoirs of the American Mathematical Society, 4 (1951), pp. 1 – 51.
- Wagner, W. H. and S. Lau, 1971. "The effect of diversification on risk, " Financial Analysts Journal, November-December: 2-7.