



APPLIES TO ACADEMIC YEAR 2016/2017

GRA 6535 Derivatives

Programme

Master of Science in Business, Master of Science in Business (Finance), Master of Science in Finance, Specialization Course

Responsible for the course

Paul Ehling

Department

Department of Finance

Term

According to study plan

ECTS Credits

6

Language of instruction

English

Introduction

Learning outcome

The course offers a thorough understanding of the workings and pricing of derivative securities. The course covers derivative markets, derivatives payoffs, and derivative strategies. This course will provide students with an understanding of the mathematics of arbitrage pricing, the binomial model, and the mathematics of continuous time (heuristically), the Black Scholes model, and applications of and adjustments to the Black Scholes model. The course also offers a heuristic introduction to numerical methods and simple numerical recipes.

Prerequisites

GRA 6532 Introduction to Derivatives and Risk Management or equivalent

GRA 6543 Introduction to Asset Pricing or equivalent

All courses in the Masters programme will assume that students have fulfilled the admission requirements for the programme. In addition, courses in second, third and/or fourth semester can have specific prerequisites and will assume that students have followed normal study progression. For double degree and exchange students, please note that equivalent courses are accepted.

Compulsory reading

Books:

Hull, John C. 2015. Options, futures, and other derivatives. 9th ed., global ed. Pearson

Other:

During the course there may be hand-outs and other material on additional topics relevant for the course and the examination.

A list of compulsory readings will be provided on It's learning or in class.

Recommended reading

Course outline

1. *Introduction*
 - a) Options markets
2. *Pricing*
 - a) Binomial Trees
 - b) Wiener Processes, Ito's Lemma, Black-Scholes-Merton and beyond
 - c) The Greeks
3. *Numerical Methods and Applications*
 - a) Empirical Performance of Option Pricing Models
 - b) Numerical Techniques
 - c) Exotic Options, Volatility Smiles, Risk Management
 - d) Real Options and Credit Risk

Computer-based tools

Learning process and workload

A course of 6 ECTS credits corresponds to a workload of 160-180 hours.

Please note that while attendance is not compulsory in all courses, it is the student's own responsibility to obtain any information provided in class that is not included on the course homepage/Its learning or text book.

Examination

The course grade will be based on the following activities and weights:

60% - 3-hour written examination at the end of the course

20% - Class participation

20% - Take home examination

Form of assessment	Weight	Group size
Written examination 3 hours	60%	
Class participation	20%	
Take home examination	20%	

Specific information regarding student assessment will be provided in class. This information may be relevant to requirements for term papers or other hand-ins, and/or where class participation can be one of several components of the overall assessment. This is a course with continuous assessment (several exam components) and one final exam code. Each exam component is graded using points on a scale from 0-100. The final grade for the course is based on the aggregated mark of the course components. Each component is weighted as detailed in the course description. Students who fail to participate in one/some/all exam components will get a lower grade or may fail the course. You will find detailed information about the points system and the mapping scale in the student portal @bi. Candidates may be called in for an oral hearing as a verification/control of written assignments.

Examination code(s)

GRA 65353 continuous assessment accounts for 100 % of the final grade in the course GRA 6535.

Examination support materials

BI approved exam calculator

Bilingual dictionary

Interest tables

Peter Berck og Knut Sydsæter. 1993. Economists' Mathematical Manual. 2nd ed. Berlin: Springer Verlag

Permitted examination support materials for written examinations are detailed under examination information in the student portal @bi. The section on support materials and the use of calculators and dictionaries should be paid special attention to.

Re-sit examination

It is only possible to retake an examination when the course is next taught. The assessment in some courses is based on more than one exam code. Where this is the case, you may retake only the assessed components of one of these exam codes. All retaken examinations will incur an additional fee. Please note that you need to retake the latest version of the course with updated course literature and assessment. Please make sure that you have familiarised yourself with the latest course description.

Additional information

Honour code. Academic honesty and trust are important to all of us as individuals, and are values that are integral to BI's honour code system. Students are responsible for familiarising themselves with the honour code system, to which the faculty is deeply committed. Any violation of the honour code will be dealt with in accordance with BI's procedures for academic misconduct. Issues of academic integrity are taken seriously by everyone associated with the programmes at BI and are at the heart of the honour code. If you have any questions about your responsibilities under the honour code, please ask. The learning platform itslearning is used in the teaching of all courses at BI. All students are expected to make use of itslearning.