GRA 6535 Derivatives

Programme
Master of Science in Business, Master of Science in Business (Finance), Master of Science in Financial Economics, Specialization Course

Responsible for the course
Paul Ehling

Department
Department of Financial Economics

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 6543 Introduction to Asset Pricing and GRA 6532 Introduction to Derivatives and Risk Management

Compulsory reading
Books:
Hull, John C. 2012. Options, futures, and other derivatives. 8th 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
Will be used in addition to course homepage on it's learning. An example is Matlab (studentversion).

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/It's learning or text book.

Examination
Your course grade will be based on the following activities and weights:
75% of the evaluation is based on a 3 hour exam at the end of the course.
The remainder 25% is based on class work (in the form of a mix of some / all of the following: hand in of case write ups, projects and homeworks; case presentations and class participation; in class midterm and quizzes).
Both parts of the evaluation need to be passed in order to get a grade in the course.

Specific information regarding student evaluation beyond the information given in the course description will be provided in class. This information may be relevant for requirements for termpapers or other hand-ins, and/or where class participation can be one of several elements of the overall evaluation.

This is a course with continuous assessment (several exam elements) and one final exam code. Each exam element will be graded using points on a scale (e.g. 0-100). The elements will be weighted together according to the information in the course description in order to calculate the final letter grade for the course. You will find detailed information about the point system and the cut off points with reference to the letter grades on the course site in It's learning.

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, Interest Rate Tables, Berck and Sydsæter, Economists' mathematical manual, in Norwegian or English. Bilingual dictionary.

Exam aids at written examiniations are explained under exam information in the student portal @bi. Please note use of calculator and dictionary in the section on examaids

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.
Where this is not the case, all of the assessed components of the course must be retaken.
All retaken examinations will incur an additional fee.

Additional information
Honor Code
Academic honesty and trust are important to all of us as individuals, and represent values that are encouraged and promoted by the honor code system. This is a most significant university tradition. Students are responsible for familiarizing themselves with the ideals of the honor code system, to which the faculty are also deeply committed.

Any violation of the honor code will be dealt with in accordance with BI's procedures for cheating. These issues are a serious matter to everyone associated with the programs at BI and are at the heart of the honor code and academic integrity. If you have any questions about your responsibilities under the honor code, please ask.