Stockholm Business School

Stockholm University

Syllabus

for course at advanced level

Financial Derivatives and Risk Management
Finansiella derivat och riskhantering

7.5 Higher Education Credits
7.5 ECTS credits

Course code:	FE4127
Valid from:	Spring 2016
Date of approval:	2015-11-10
Department	Stockholm Business School
Main field:	Företagsekonomi
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of Education of Stockholm Business School, Stockholm University, 2015-11-10.

Prerequisites and special admittance requirements

Degree of Bachelor worth at least 180 credits, or equivalent, or admission to Business Studies IV, Extended Course or Business Studies IV, Magister's Course, Master's programme.

Course structure

Examination code	Name	Higher Education Credits
4127	Financial Derivatives and Risk Management	7.5

Course content

Derivatives, including options, futures and forwards, are financial instruments that can be used for risk management, speculation, and for arbitrage activities. This course cover the cornerstone theory in derivatives valuation and risk management, and demonstrates strengths and weaknesses of different models and illustrates and exemplifies how valuation models and risk measures are applied in the financial industry. Contents include: Instrument specifications, market facts and key concepts like the no-arbitrage principle. Derivatives pricing in the Binomial model. Stochastic calculus with application in finance. Derivatives pricing in the Black-Scholes-Merton model. Numerical methods including Monte Carlo simulation. Risk measures and hedging. The course consists of lectures, seminars and computer labs. Examination includes a computer-based project, a take-home assignment and a final written examination.

Learning outcomes

Intended Learning Objectives

The purpose of this course is to provide the participants with an understanding of the theoretical valuation principles and basic risk measures, the strengths and weakness of different valuation techniques and risk measures as well as providing ability to apply valuation and risk management techniques in practical examples. More specifically, the learning objectives are:

Knowledge and understanding:

1. Be able to describe standard derivative contracts, their properties and functionality.

Skills and abilities:

2. Be able to understand and apply scientific methods for valuation of options and other derivatives, in continuous and discrete time.

3. Be able to interpret and apply risk measures that are commonly used in risk management.

Judgement and approach:

4. Be able to reflect over and critically survey different assumptions and principles behind derivatives pricing and risk management.

Education

The course consists of a combination of lectures, seminars and group work and requires a significant portion of self-study on the part of students. Assessment for the course will be continuous and is carried throughout the different activities of the course.

The course workload is 200 hours equivalent to 7,5 ECTS (40 hours per week equivalent to 1,5 ECTS).

The language of instruction is English.

Forms of examination

Assessment for the course will be continuous and is carried throughout the different course activities. Each assessment task is weighted in relation to its importance in the overall assessment of the course. The student's results from the different assessment tasks are added up to a total course score that will then translate into the final grade for the course.

Assessment tasks

The course contains the following weighted assessment tasks:

1. Individual final examination: assesses intended learning outcomes 1, 2, 3, 4; constitute 80% of total course points.

2. Take-home assignment 1: assesses intended learning outcomes 1, 2; constitute 3% of total course points.

3. Oral presentation: assesses intended learning outcomes 1, 2; constitute 3% of total course points.

4. Take-home assignment 2: assesses intended learning outcomes 1, 2, 3; constitute 3% of total course points.

5. Oral presentation: assesses intended learning outcomes 1, 2, 3; constitute 3% of total course points.

6. Computer based take-home exam: assesses intended learning outcomes 2, 3, 4; constitute 8% of total course points.

Grading

After completion of the course, students will receive grades on a scale related to the intended learning outcomes of the course. Passing grades are A, B, C, D and E. Failing grades are Fx and F. A grade Fx can be completed for a grade E.
A course comprises 0–100 course points. Receiving a final passing grade requires ≥ 50 course points. The scale for the final grade is tied to fixed score intervals: A: 90-100; B: 80-89; C: 70-79; D: 60-69; E: 50-59; Fx: 45-49; F: less than 45. The grades correspond to the total score points a student obtains (over a total of 100) for all the weighted assessment tasks combined as part of the continuous assessment for the course.

Each assessment task is awarded 0–100 points. The score for a single assessment task is the number of points multiplied by its percentage weight, and the combined total of score points for all weighted assessment tasks for the course are added up to a final score between 0 and 100 which then translates into a corresponding final course grade between A and F.

Assessment task 1 is assessed on a 100-point scale.

Assessment tasks 2-6 is assessed on a 100-point scale in two intervals:

• Pass: 50% = 100 points.
• Weak: at least 50% = 0 points.

To achieve a passing grade in the oral exam, the underlying written home assignment must have been awarded at least a passing grade.

The student is responsible for completing the course's assessment tasks: that a sufficient amount of course points is earned and a passing course grade is obtained. The course's final assessment task can be taken twice: 1) during the course's first scheduled occasion; and, if a passing result (at least 50 course points or more) was not achieved at the first occasion, 2) at the course's second, scheduled occasion. All other assessment tasks are offered once during the course.

A passing grade (A–E) in the course is obtained when a student has achieved at least 50 course points.

A failing grade (Fx or F) in the course is obtained when a student has not achieved at least 50 course points:

• If 45–49 course points are achieved, a grade Fx is obtained, which can be completed for a grade E within 3 semester weeks after receiving instructions from the course director. If a complementary task is not completed within this time limit, and the course's two final assessment tasks have been accomplished, the course grade Fx is confirmed, implying that the student must re-register for the course and that previously acquired course points are forfeited. Note that first-time registered students have priority access to the seminar groups.

• If less than 45 course points are achieved, a grade F is obtained, implying that the entire course must be retaken and that previously acquired course points are forfeited.
Re-registration implies that:

• first-time registered students have priority access to the course's group registration;

• the final assessment task can be re-assessed without attendance at any of the course's other learning activities and without points from the course's other assessment tasks accredited.

Students receiving a passing grade may not retake the final examination or complete a previously not completed assessment task to attain a higher grade. A passing grade may not be turned into a failing grade upon the request of a student.

Assessment criteria

Assessment criteria are designed as overall assessments, combined qualitative descriptions of what the student is expected to do in order to demonstrate how well the course's learning outcomes are achieved. The assessment criteria are based upon the general abilities as expressed in the degree objectives of the Higher Education Ordinance (appendix 2, System of Qualifications). The list of abilities below is a compilation of these degree objectives. To pass the course (grade E) students should demonstrate general ability to:

• recall, understand and explain course content, the course subject and its scientific basis and methodology;
• apply course content;
• critically analyse course content;
• orally and in writing present and discuss course content;
• meet standards of written presentation and formal accuracy on time.

The following assessment criteria are used to decide to what extent students have demonstrated these abilities and hence fulfil the course's intended learning outcomes, whereby a grading decision can be made. A higher grade-level presupposes the abilities at lower levels.

A (Excellent)

The student demonstrates ability to evaluate and relate to the content of the course from a comprehensive, critically reflective perspective, as well as to transfer and apply insights in new, meaningful contexts.

B (Very Good)

The student demonstrates ability to, from an overarching and coherent perspective of the field, understand and use concepts to explain how different aspects of the course relate to each other, interconnect and become

meaningful.

C (Good)

The student demonstrates ability to discuss the content, tasks and complex issues dealt with in the course from several well-developed but mainly independent perspectives.

D (Satisfactory)

The student demonstrates satisfactory ability to discuss the content, tasks and complex issues dealt with in the course in a way that, albeit in-depth and elaborate, is decidedly one-dimensional.

E (Sufficient)

The student demonstrates sufficient ability to discuss the content, tasks and complex issues dealt with in the course in a way that is decidedly one-dimensional.

Fx (Fail)

The student's knowledge, skills and abilities display minor flaws, overall or in significant parts.

F (Fail)

The student's knowledge, skills and abilities display major flaws, overall or in significant parts.

Interim

If the course is discontinued, or its contents are substantially altered, students have the right to be examined according to this syllabus once per semester for three further semesters.

Limitations

This course may not be included in a degree together with a course, taken in Sweden or elsewhere, of identical or partially similar content.

Required reading

Required Reading

John C. Hull, Options, Futures, and other Derivatives (latest edition). Prentice-Hall.

A selection of academic articles as specified in the study guide.
Lecture notes as specified in the study guide.

Recommended Reading

John C. Hull, Solutions Manual to Options, Futures, and other Derivatives (latest edition). Prentice-Hall.