

**BA in Management Program
Spring 2021
FIN 403 – Derivative Securities**

Instructor: Yiğit Atılğan
Office: FMAN 1002
Phone: 0216 483 9663
E-mail: yigit.atilgan@sabanciuniv.edu
Class Hours: Tuesday 10:00-11:30

Course Objectives:

This course serves as a comprehensive introduction to derivative securities and their applications in financial engineering. Forward contracts, futures, options, and swaps are the focal point of the course. While the main emphasis is on the use of derivatives as risk-transferring devices, valuations of such contracts are also included. In addition to hedging strategies to be created by any of the derivative securities, various trading strategies involving options are presented. A solid coverage of no-arbitrage-based pricing is provided as the common underlying premise to valuing derivative securities. Cost-of-carry valuation of forwards and futures, binomial pricing of options, the Black-Scholes option pricing formula, dynamic delta-hedging, and swap pricing are introduced.

Learning Outcomes:

Upon successful completion of the course, the students should be able to:

1. Identify the characteristics and uses of options and apply option-based trading strategies for various purposes including hedging
2. Identify and analyze the influence of the determinants of the value of options
3. Use appropriate models for the valuation of options, including Black-Scholes and Binomial option pricing models
4. Describe the nature of futures, forwards, and swaps
5. Apply valuation methods for futures, forwards, and swaps
6. Describe how to manage interest rate and foreign exchange risk via futures, forwards, and swaps
7. Explain financial engineering and related applications of derivatives

Course Material:

Fundamentals of Futures and Option Markets, John C. Hull, 9th edition, 2016 (Pearson) (optional)

<https://www.homerbooks.com/urun/fundamentals-of-futures-and-options-markets>

Course Web:

Lecture recordings, lecture slides, assignments and announcements will be posted on SuCourse+. After the assignments are due, the solutions will also be posted so that you can use them to prepare for the exams.

Instructional Design:

The course material will be presented in online pre-recorded video lectures. You will watch these lectures at your own convenience during the week. The links to these lectures will be posted on SuCourse+ on a weekly basis.

We will use our scheduled class time as an opportunity to review the course material from the earlier week. I will be solving some homework or practice questions during these meetings and answer questions you may have about the course material. These sessions will also be recorded and will be shared on SuCourse+. The Zoom link to these synchronous sessions is below:

<https://sabanciuniv.zoom.us/j/94390934962>

Passcode: 939792

Assignments

There will be regular weekly homework assignments posted on SuCourse+. You are required to turn in these assignments by **handwriting** them within one week after the homeworks are assigned. The deadline for submission will be 10 AM each Tuesday (right before our synchronous sessions begin). No late homeworks will be accepted.

For submission, you should scan or take photos of your handwritten assignments and upload them on SuCourse+. The solutions should be uploaded as a single file in PDF format and the name of the file should be "Name_Surname_HW#". **Submissions in other formats will be disregarded.**

Grading:

Assignments: 30%

Midterm Exam: 35%

Final Exam: 35%

Requirements:

Exams

The midterm exam will take place on April 13th during our scheduled class time. The final exam will be scheduled by Student Resources. The exams will be open-book and you will have to submit your answers in the same way you submit your homeworks. You will be required to show all your work and you will get partial credit for this. There will be multiple versions of each exam.

Lectures & Attendance

Students are expected to attend the synchronous sessions. I will track your attendance in these sessions. However, this will be only used for reporting purposes and will not impact your grades.

Make-up Exams

There are no make-up exams unless a situation arises which was not foreseeable and not under the control of the student. Requests for make-ups must be made directly to me as soon as possible and must be accompanied by relevant documentation.

Calculator

Students will need a scientific or financial calculator throughout the course. Many of the problems encountered in this course require arithmetic operations that are difficult or impossible to be solved by hand or with a non-scientific or non-financial calculator. A scientific or financial calculator is useful to solve these problems efficiently, especially in the limited time frame of an exam.

Objections to Grading

Students should make their objections and communicate them to me no later than a week after receiving their grades.

Special Needs Students

Any student who, because of a disability, requires some special arrangements in order to meet course requirements should contact me as soon as possible to make the necessary accommodations.

Academic Honesty:

Learning is enhanced through cooperation and as such you are encouraged to work in groups, ask for and give help freely in all appropriate settings. At the same time, as a matter of personal integrity, you should only represent your own work as yours. Any work that is submitted to be evaluated in this class should be an original piece of writing, presenting your ideas in your own words. Everything you borrow from books, articles, or web sites (including those in the syllabus) should be properly cited. Although you are encouraged to discuss your ideas with others (including your friends in the class), it is important that you do not share your writing (slides, MS Excel files, reports, etc.) with anyone. Using ideas, text and other intellectual property developed by someone else while claiming it is your original work is *plagiarism*. Copying from others or providing answers or information, written or oral, to others is *cheating*. Unauthorized help from another person or having someone else write one's paper or assignment is *collusion*. Cheating, plagiarism and collusion are serious offenses that could result in a failing grade and disciplinary action. Please pay utmost attention to avoid such accusations.

Course Schedule:

Week 1	Date: February 23 Topic: Orientation / Introduction to Derivatives
Week 2	Date: March 2 Topic: Mechanics of Option Markets
Week 3	Date: March 9 Topic: Properties of Stock Options
Week 4	Date: March 16 Topic: Binomial Trees & BSM Model
Week 5	Date: March 23 Topic: Mechanics of Forward and Futures Markets
Week 6	Date: March 30 Topic: Valuation of Forward and Futures Contracts
Week 7	Date: April 6 Topic: Review for Midterm Exam
Week 8	Date: April 13 Topic: MIDTERM EXAM
Week 9	Date: April 20 Topic: Swaps
Week 10	Date: April 27 Topic: Trading Strategies Involving Options
Week 11	Date: May 4 Topic: Greek Letters
Week 12	Date: May 11 Topic: Hedging Strategies Using Futures
Week 13	Date: May 18 Topic: Volatility Smiles & Forward Rate Agreements
Week 14	Date: May 25 Topic: Review for Final Exam