Georgia Institute of Technology
Scheller College of Business
MGT 3084 - Derivative Securities
Fall 2026

Professor: Alex Hsu, Ph.D.

Time and Location: Tu, Th 12:30 - 1:45 PM, Scheller 101

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Target Audience

Undergraduate students planning a career in trading, fixed income derivatives, security research, risk management, corporate finance, regulation/supervision, central banking, academia or if you are just generally curious.

Course Description

This course offers a comprehensive study of the theory and quantitative tools relevant to financial derivatives including options, futures, forwards, and swaps. By the end of the course, students are expected to have a good knowledge of how derivatives are structured, how they are priced and traded, and how they are used in risk management and investment management. Emphasis will be placed on the practical applications of derivatives and developing solid intuitions.

Course Structure

- We meet twice a week in person.
- Time in class will be used to go through lecture slides and examples.
- Assignments are collaborated in groups.
- One midterm and one final are taken individually.
- Communication channel is always open through email, Canvas, Twitter, etc.

Textbook

Required: ***Fundamentals of Futures and Options Markets***, Hull, 9th edition, Pearson. ISBN# 978-0134083247.

Rules and Suggestions

- Attendance is mandatory and you are expected to participate in the class discussions. I would like the class to be as interactive as possible.
- During the first ten minutes of most classes, we will look at recent articles on The Wall Street Journal, The Economist, and other relevant sources. The articles that I select will touch on the issues of business ethics in the financial industry and how government regulations are designed to help address them. You are expected to participate in this class discussion.
- Derivative analysis is characterized by a quantitative approach. A good quantitative aptitude is an important asset to excel in this course. Note that a good quantitative skill does not necessarily mean a good knowledge of mathematics alone.
- Some of the materials that I cover in the course may seem technical. Of-the-shelf software solutions are readily available for many derivatives applications. However, I believe that a thorough understanding of the fundamentals of derivatives valuation is essential. First, without knowing how the models are developed, you cannot predict when they will break down. Second, you may not always come across standard problems for which well developed models exist. Therefore a good theoretical foundation will empower you to cope with these situations.
- This is a practical course and thus it is important that you can apply what you learn to real financial data. I will rely heavily on the Excel spreadsheet for the exposition of the materials. It is highly recommended that you become familiarize with it as soon as the term starts.

Statement on Artificial Intelligence

AI is a tool to be embrace in our daily lives. However, we need to be smart with AI use in the classroom to preserve academic integrity. For that reason, the final exam will be administered in class on pen and paper. I will not stop you (almost impossible) from using AI to help with homework assignments. However, if you do not understand the concepts taught in the class due to overreliance on AI, it will significantly hurt your performace on the final. Finally, I reserve the right to check your submitted reports using the AI detection tool. It is considered a violation of the GT academic honor code to use AI to generate submissions. Please see the "USG Student Guide to Generative AI Literacy" PDF I have inlcuded in our class folder under Syllabus.

Evaluation

Your grade will be based on the following weighted average:

Midterm	30%
Final	35%
Assignments	30%
Attendance	5%

- **Class Exams**: 75 minutes for the midterm and 90 minutes for the final, closed-book, non-programmable calculator only. Formula sheets will be presented one lecture prior to each examination. I have a strict rule of **NOT** answering any questions during the exam unless you believe that I made a mistake in setting up the problems. The midterm exam will be administered via Canvas. **I will require you to turn in your scratch paper after each test as proof of work.**

- **Assignments**: There will be four assignments during the semester. The first assignment is worth 6%. The remaining three assignments are each worth 8% of your total mark. Students are encouraged to work in groups of three people and hand in a single well-presented report. Typed reports in LaTeXare preferred. If not, please make them as neat as possible. The report will be marked based on the results as well as on its presentation. I will assign you into groups for the first assignment. After, you can choose your own group of three students. However, your group members for the second to fourth assignments must be the same. All assignments must be submitted via Canvas by the beginning of class on the due date, **NO EXCEPTION**!

- **Participation:** Participation is 5% of your mark. For some classes, you will be working with Excel spreadsheets. If you do not come to class, you will not learn the materials and hence will not be able to do your assignments. If you have a prior engagements that must subject you to a class absence, please notify me before the class through e-mail. I will take attendance sporadically at the beginning of some of the classes.

- **Re-grading**: All re-grade requests must be made in writing within one week following the day that the class tests are returned. If you submit a question to be re-graded, your entire test must be re-graded. As a consequence, the mark from your re-graded test could be higher or lower. Regardless, the mark from your re-graded test is final.

- **Final letter grade**: Your final letter grade for the course will be based on your performance relative to the class distribution. This means the class will be curved. I typically shoot for 40% A's, 50% B's, and 10% C's. However, the letter grade cutoffs are not rigid and depend on the overall evaluation of the class. For example, if you achieve a 90% or better for the course, you are guaranteed to get an A.

Class Etiquette

I welcome questions during lectures. Feel free to stop me to ask a question during my teaching. At the same time, I ask that you follow some simple courtesy rules during class: arrive on time, do not leave during class, do not talk while I am talking, do not talk while your peer is asking a question, and make sure computers are put away and cell phones are turned off. I ask that you do not use email or visit social network sites, i.e. Facebook, Twitter, Instagram during class.

Georgia Tech Policy

Students are expected to adhere to the Georgia Tech Honor Code. Substantial documentation on the code is available at: www.honor.gatech.edu. Please feel free to ask me if you need additional clarification about this issue. Cheating and plagiarism of any kinds will not be tolerated in this course.

Acknowledgements

Some of the materials that I use in this course are drawn from my colleagues. I thank Chen Xue at University of Cincinnati for sharing his course material with me.