Georgia Institute of Technology
Scheller College of Business
MGT 4068 - Fixed Income Securities
Spring 2027

Professor: Alex Hsu, Ph.D.

Time and Location: M, W 12:30 - 1:45 PM, Scheller 200

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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 covers the important securities that traded in the fixed income market and the valuation models that are used to price them. The course emphasizes traditional bond and term structure concepts which are crucial to the functioning of the fixed-income market. Students will learn the basic tools that are useful for: (1) Valuing securities whose cash flows depend on interest rates, (2) Managing the risk of portfolios of fixed income securities, and (3) Proficiency for basic interest rate modeling. During the course, students will also be introduced to the role of the Federal Reserve Bank and its ability to manage the macroeconomy and the recent financial crisis.

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 performed individually.
- Communication channel is always open through email, Slack, Twitter, etc.

Course Objective

- Gain a broad overview of the issues in fixed income and credit risk
- Understand the basic risk-free term structure models and sensitivity measures
- Develop basic understandings of the techniques for valuing fixed-income securities and credit risk derivatives
- Understand the shortcomings of the available modeling approaches for fixed-income and credit risk securities
- Understand the mathematics of bond market, i.e. yield, duration, and convexity
- Understand the risks that underlie the risk-free term structure models

Required and Suggested Texts

Suggested: ***Fixed-income Securities: Valuation, Risk, and Risk Management***, 2010, Pietro Veronesi, John Wiley and Sons.
Suggested: ***Monte Carlo Methods in Financial Engineering***, 2004, Paul Glasserman, Springer. Not required for the course.
Suggested: ***Arbitrage Theory in Continuous-Time***, 2009, Tomas Bjork, Oxford University Press. Not required for the course.

Rules and Suggestions

- Please do not come to class if you feel ill and get tested ASAP.
- 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.
- Modern fixed income 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.
- Some classes will require the use of computers. In those cases, you need to bring a laptop to the lecture. These computer sessions are dedicated to the Excel spreadsheet modeling. Please don't abuse your computer privilege!

Prerequisites

Students are expected to have taken MGT 3062 or MGT 3078 (or an equivalent course).

Evaluation

Your grade will be based on the following weighted average:

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

- **Class Exams**: 75 minutes for the midterm and 75 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 will be administered via Canvas. **I will require you to turn in your scratch paper after the 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 mandatory for this course. 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 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 Chayawat Ornthanalai at the University of Toronto and Bob Dittmar at the University of Michigan for sharing their course material with me.