B7306 Capital Markets and Investments
Professor Michaela Pagel
Fall 2020 Bidding Syllabus

Contact Details:

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I. Course Description

This course has three goals:

1. To understand and apply the principles of investing. The course covers the valuation of bonds, stocks, and options. Key applications include personal and professional portfolio management, risk management, security valuation, and capital structure.
2. To develop the following concepts: arbitrage, the term structure of interest rates, bond duration, risk-return trade-offs, diversification, systematic and idiosyncratic risk, performance evaluation, market efficiency, and options.
3. To provide sufficient background knowledge for students seeking an overview of capital markets and an introduction to advanced finance courses.

The main topics can be summarized in the following groups:

2 lectures: Introductory Concepts

4 lectures: Valuation of Fixed Income Securities

6 lectures: Portfolio Choice

8 lectures: Evaluating Investment Performance and Behavioral Finance

4 lectures: Valuation of Options

Throughout the course, I will address two basic questions:

1. How should we manage and evaluate portfolios of investments?
2. Which methods do we use to value securities?

Connection with the Core

Capital Markets builds on knowledge from Corporate Finance, Managerial Statistics, and Business Analytics courses by advancing students' understanding of asset valuation and investment decisions. Capital Markets uses and builds upon the basic valuation tools developed in Corporate Finance, such as arbitrage, time value of money, understanding

risk-return trade-offs, the CAPM, and asset valuation. Capital Markets uses many concepts from Statistics, including regressions, hypothesis testing, statistical modeling, as well as random variables and distributions. The course also uses optimization methods and modeling tools from Business Analytics. Finally, our discussions of the economy's impact on financial markets, especially bond markets, build on ideas from the Global Economic Environment course.

II. Course Materials

Class Notes – I will distribute handouts of the lecture notes during class and will also place electronic copies of the lecture notes and other reading materials on Canvas. The class notes are meant to be self-sufficient for the class.

Readings – There will be **supplementary readings** available on Canvas (relevant articles from industry, academia, and the popular press will be provided throughout the course). Additionally, everyone is encouraged to share articles via Yellowdig on Canvas.

The following textbook is useful as background material:

- *Investments* by Bodie, Kane, and Marcus (hereafter BKM), 10th edition
- *Investments, Student Solutions Manual* by Bruce Swenson, 10th edition.

I will reference relevant chapters in BKM. The 9th and 10th editions have similar chapters.

III. Course Administration

Finance Division, Michelle Zern: mz2492@gsb.columbia.edu

Teaching Assistants:

The name and e-mail address of my teaching assistant is Kim Fe Cramer: kfc2118@columbia.edu

The TA will hold office hours (via zoom) and will be available for questions by email. Please do not hesitate to contact him or her throughout the semester.

Practice Problem Sets – There will be six practice problem sets. The first three practice problem sets will be solved and discussed during the first part of classes (in the classroom using Excel) and solutions can be found on Canvas. The last three practice problem sets will be solved and discussed during the second part of classes (in the classroom using Excel) and solutions can be found on Canvas.

Class Participation – This evaluation is based on a student's contribution to learning inside the classroom. First, attendance will be part of your grade for class participation and will be tracked via Polleverywhere. Second, the responses to in-class Polleverywhere quizzes will be graded. Third, activity on Yellowdig will be graded. Beyond these three metrics, activities that enhance learning in the (virtual) classroom include **showing your video (if classes are attended virtually), sharing thoughts/experiences/ideas, helping a classmate understand a concept, keeping up with the assigned readings, or listening thoughtfully.** I understand that different people have different ways they best

participate and consider all of those valid. **Please use your computer/laptop to zoom into the (virtual) classroom, please do not use your computer/laptop, smart phones, or tablets for other purposes unless asked to do Excel in class.**

Midterm Examination – The midterm will be a take-home exam submitted via Canvas. Students will be able to **submit the exam at any time between Saturday September 26 at 10pm EST and Sunday October 18 at 10pm EST. To be fair to students who submit by this deadline, I cannot accept late midterms without penalizing the grade (10% of points for a one-week extension, 100% of points for submissions after that).** Students can use any books, references, and computing devices. During the submission period, students who are taking or have taken the exam are not permitted to discuss the exam with other students who are taking or have not yet taken the exam. The Columbia Business School Honor Code applies.

Final Examination – The final will be a take-home exam submitted via Canvas. Students will be able to **submit the exam at any time between Friday October 30 at 10pm EST and November 22nd at 10pm EST. To be fair to students who submit by this deadline, I cannot accept late finals without penalizing the grade (10% of points for a one-week extension and an initial incomplete as a grade, 100% of points for submissions after that).** Students can use any books, references, and computing devices. During the submission period, students who are taking or have taken the exam are not permitted to discuss the exam with other students who are taking or have not yet taken the exam. The Columbia Business School Honor Code applies.

Components of the grade:

- 30% Midterm exam
- 30% Final exam
- 40% Participation: 10% Attendance (tracked via Polleverywhere), 10% in-class quiz responses (Polleverywhere), 10% activity on Yellowdig, 10% activity in the (virtual) classroom

- **Course Content Outline**

Class	Date	Topic	Chapters in BKM	Assignment[+]
1	21-Sep	Introduction - Course Outline and Background	1, 2	
2	21-Sep	Introduction - Key Concepts (e.g., Leverage and Shorting)	3	PS 1
3	21-Sep	FIXED INCOME - Treasury Pricing and No-arbitrage	14	
4	21-Sep	FIXED INCOME - Term Structure of Interest Rates	15	PS 2
5	22-Sep	FIXED INCOME - Interest Rate Risk (Duration)		
6	22-Sep	FIXED INCOME - Risk Management (Immunization)	16	
7	23-Sep	PORTFOLIO CHOICE - Asset Valuations and Returns	5, 18	
8	23-Sep	PORTFOLIO CHOICE – Diversification	6	PS 3
9	24-Sep	PORTFOLIO CHOICE - The Efficient Frontier	7	
10	24-Sep	PORTFOLIO CHOICE - CAPM in Theory	8, 9	
11	25-Sep	PORTFOLIO CHOICE - Applications of the CAPM		PS 4
12	25-Sep	Review		
	18-Oct	**Midterm Exam - due by 10pm EST**		available Sep 26 10pm EST
13	26-Oct	PERFORMANCE EVALUATION - CAPM Anomalies	9, 11	
14	26-Oct	PERFORMANCE EVALUATION - Beyond the CAPM	10, 13	
15	27-Oct	PERFORMANCE EVALUATION – Recap		PS 5
16	27-Oct	PERFORMANCE EVALUTION - Skill versus Luck	4, 24	
17	28-Oct	BEHAVIORAL FINANCE - Limits to Arbitrage	12	
18	28-Oct	BEHAVIORAL FINANCE - Empirical Anomalies		
19	29-Oct	PERFORMANCE EVALUATION - Guest Speaker		
20	29-Oct	OPTIONS - Payoffs and Arbitrage Relationships	20	
21	30-Oct	OPTIONS - Replicating an Option	21	PS 6
22	30-Oct	OPTIONS - Black-Scholes Model		
23	30-Oct	OPTIONS - Black-Scholes Valuation		
24	30-Oct	Review		
	22-Nov	**Final Exam - due by 10pm EST**		available Oct 30 10pm EST

[+] Problem Sets will be solved and discussed in class.

All classes will be recorded.