B7306 Capital Markets and Investments
Professor Michaela Pagel
Summer 2019 Syllabus

Contact Details:

Michaela Pagel
Roderick H. Cushman Associate Professor of Business
Columbia Business School, NBER, and CEPR

Office hours by appointment (Uris Hall 802)
E-mail: mpagel@columbia.edu

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, expected returns, market efficiency, performance evaluation, 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

6 lectures: Evaluating Investment Performance and Behavioral Finance

6 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 statistical modeling, random variables and distributions, parameter estimators, hypothesis testing, and regression. Particularly in the portfolio choice section, the course 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).

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 names and e-mail addresses of my teaching assistants are:

- David Canmann: dlc2167@gsb.columbia.edu
- Marina Gertsberg: m.gertsberg@maastrichtuniversity.nl

The TAs will hold office hours (during the class days or via skype) and will be available for questions by email. Please do not hesitate to contact either of them throughout the semester.

Review Sessions – Optional review sessions will be held on June 29 at 11:30am and August 17 at 11:30am. The review sessions will help students with questions about problem sets or lectures.

Problem Sets – There will be four practice problem sets. The first two practice problem sets will be solved and discussed during the first part of classes and solutions can be found on Canvas. The last two practice problem sets will be solved and discussed during the second part of classes and solutions can be found on Canvas.

Class Participation – This evaluation is based on a student's contribution to learning inside the classroom. Attendance will be part of your grade for class participation and will be tracked via polleverywhere. Furthermore, the responses to in-class polleverywhere quizzes will be graded. Beyond answering questions, activities that enhance learning in the classroom include **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 do not use mobile electronic devices, such as cell phones, smart phones, laptops, or tablets unless asked to do so.**

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 June 30 and July 7 (one week after the end of the first part of classes). To be fair to students who submit by this deadline, I cannot accept late midterms without penalizing the grade (10% of points per week extension).** 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 August 18 and August 25 (one week after the end of the second part of classes). To be fair to students who submit by this deadline, I cannot accept late finals without penalizing the grade (10% of points per week extension and an initial incomplete as a grade).** 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
- 40% Final exam
- 30% Class participation and attendance including responses to in-class polleverywhere quizzes

Course Content Outline

Class	Date	Topic	Chapters in BKM	Practice problems[+]
1	A: 11-May	Introduction - Course Outline and Background	1, 2	
1	B: 10-May	Introduction - Key Concepts (e.g. Arbitrage and Shorting)	2, 3	Practice PS 1 (part 1)
2	A: 18-May	FIXED INCOME - Treasury Pricing and No-arbitrage	14	
2	B: 18-May	FIXED INCOME - Term Structure of Interest Rates	15	Practice PS 1 (part 2)
3	A: 31-May	FIXED INCOME - Interest Rate Risk (Duration)		
3	B: 31-May	FIXED INCOME - Risk Management (Immunization)	16	Practice PS 1 (part 3)
4	A: 1-June	PORTFOLIO CHOICE - Asset Valuations and Returns	5, 18	
4	B: 1-June	PORTFOLIO CHOICE - Diversification	6	Practice PS 2 (part 1)
5	A: 14-June	PORTFOLIO CHOICE - The Efficient Frontier	7	
5	B: 15-June	PORTFOLIO CHOICE - CAPM in Theory	8, 9	Practice PS 2 (part 2)
6	A: 28-June	PORTFOLIO CHOICE - Applications of the CAPM	8, 9	
6	B: 28-June	GUEST LECTURE		
	7-July	**Midterm Exam - due by 10pm EST**		
7	A: 29-June	PERFORMANCE EVALUATION - CAPM Anomalies	9, 11	
7	B: 29-June	PERFORMANCE EVALUATION - Beyond the CAPM	10, 13	Practice PS 3 (part 1)
8	A: 13-July	PERFORMANCE EVALUTION - Skill versus Luck		
8	B: 13-July	GUEST LECTURE	4, 24	Practice PS 3 (part 2)
9	A: 26-July	GUEST LECTURE		
9	B: 26-July	BEHAVIORAL FINANCE - Limits to Arbitrage	12	
10	A: 9-Aug	BEHAVIORAL FINANCE - Empirical Anomalies		
10	B: 27-July	OPTIONS - Payoffs and Arbitrage Relationships	20	Practice PS 4 (part 1)
11	A: 10-Aug	OPTIONS - Replicating an Option		
11	B: 9-Aug	OPTIONS - Binomial Model		Practice PS 4 (part 2)
12	A: 17-Aug	OPTIONS - Black-Scholes Valuation	21	
12	B: 16-Aug	OPTIONS – Applications		Practice PS 4 (part 3)
	25-Aug	**Final Exam - due by 10pm EST**		

[+] Problem sets will be solved in class, but solutions will also be available on Canvas

Classroom: Warren 310