Foundations of Finance

FINC-UB.2 Sections 001-002-003

Spring 2022

This version: January 27, 2022

This is a quantitative course introducing the fundamental principles of asset valuation within the framework of modern portfolio theory. The key analytical concepts we will study are present value, option value, risk, diversification, and arbitrage. We will use these concepts to value stocks, bonds, options, and other derivatives. We will cover applications to the structure of financial markets, portfolio selection, and risk management.

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All questions regarding homeworks should be addressed to your section's TF. You can join any TF's office hours, regardless of which section you are enrolled in.

Lectures: See the end of the syllabus for an approximate outline.

- Section 001: MW 8am-9:15am KMEC 5-90
- Section 002: MW 9:30am-10:45am KMEC 5-90
- Section 003: MW 2pm-3:15pm KMEC 3-110

Attendance is highly recommended but not mandatory. In the event that a student needs to be out of class, each class session will be recorded and available in NYU Brightspace.

Prerequisites: To succeed in this class, you must be comfortable with introductory statistics, calculus, and microeconomics. I aim to make the course self-contained, but I strongly encourage you to review Handout 0 on statistics at the beginning of the semester.

Reading materials: The main class material consists of slides and homeworks that will be posted on the website. I will also bring printed copies to class when we start covering a topic. You can get a perfect grade in this class based on the slides and homeworks. To help you review the material I also recommend, but do not require, the following texts:

1. "Essentials of Investments" by Zvi Bodie, Alex Kane, Alan J. Marcus, 10th edition;
2. "Student Solutions Manual to accompany Essentials of Investments" by Zvi Bodie, Alex Kane, Alan J. Marcus, Alan Marcus, 10th edition.

Most of our material is covered in [1], abbreviated BKM below. Other versions of BKM (11th, 9th, or 8th) are fine but it is your responsibility to find out the differences with the 10th edition.

Calculator: You need a calculator for this class. Make sure it can handle logarithms and exponentials. It is an advantage to have a financial calculator, but not a requirement. Standard models include the HP 12C (about $60), the HP 10B–II (about $25) and the TI BA–II Plus (about $30). You are expected to learn how to operate the calculator on your own. I have posted some slides on how to work with a financial calculator. Any questions regarding calculators should be addressed to the TF. Please bring your calculator to class as we will work through examples together.

Software: Some homework problems require you to use Excel. Every student at Stern is expected to be comfortable with Excel. In particular, any Finance Specialization student is expected to have knowledge of Excel that extends beyond basic familiarity. I will also accept homework submissions in Python, a free programming language that is increasingly popular on Wall Street.

Exams and assignments

Grading: Final grades will be based on

- Exams: Midterm (30%), Final (40%)
- Homework assignments (15%)
- Quizzes (15%)

In-class participation is highly encouraged and there will be a participation bonus.

At NYU Stern, we strive to create courses that challenge students intellectually and that meet the Stern standards of academic excellence. To ensure fairness and clarity of grading,

the Stern faculty have adopted a grading guideline for core courses with enrollments of more than 25 students in which approximately 35% of students will receive an "A" or "A-" grade. This course has more than 25 students.

Exams: The exams test your understanding of the key concepts in the class. I will announce the exact format later in the semester. To prepare for these exams, review the slides together with your own class notes, the handouts, the concept questions, the homework assignments, the sample exam questions, and preferably the suggested textbook problems.

If you are forced to miss an exam, you must provide the appropriate certifications (i.e., doctor statement) and you will be required to make it up after the semester is over. There are no exceptions to this rule.

I highly recommend that you regularly review the class material with your study group. Do not wait until exam time to meet with your group. By then it will be too late.

Homework assignments: There are 4 homework assignments over the course of the semester. Some assignments contain an Excel question, emphasizing a practical implementation of a concept from class. Late submissions are not accepted.

You are encouraged to work in groups on the assignments, but you must hand in your own write-up. Acknowledge any help you received on the front page of your submission. Do not just print two copies of the same writeup. This is for your benefit, since being forced to write up the problems will give you added familiarity and comfort with the material. The homework assignments are in the spirit of the exams, but slightly easier. They are meant to help you begin to apply the tools developed in class.

Suggested problems: Suggested problems are posted on the class website. These problems are intended to give you extra practice over and above the homework assignments. You do not have to turn them in, and there is no credit for them. You can look up solutions in the solution manual [2]. Solving lots of practice problems is key in this class.

Miscellaneous

This course strives to support and cultivate diversity of thought, perspectives, and experiences. The intent is to present materials and activities that will challenge your current perspectives with a goal of understanding how others might see situations differently. By participating in this course, it is the expectation that everyone commits to making this an inclusive learning environment for all.

Academic integrity: Our undergraduate Academics Pillar states that we take pride in

our well-rounded education and approach our academics with honesty and integrity. Indeed, integrity is critical to all that we do here at NYU Stern. As members of our community, all students agree to abide by the NYU Academic Integrity Policies as well as the NYU Stern Student Code of Conduct, which includes a commitment to:

- Exercise integrity in all aspects of one's academic work including, but not limited to, the preparation and completion of exams, papers and all other course requirements by not engaging in any method or means that provides an unfair advantage.
- Clearly acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations (which should be designated with quotation marks), paraphrasing, creative expression, or any other incorporation of the work of others should be fully referenced.
- Refrain from behaving in ways that knowingly support, assist, or in any way attempt to enable another person to engage in any violation of the Code of Conduct. Our support also includes reporting any observed violations of this Code of Conduct or other School and University policies that are deemed to adversely affect the NYU Stern community.

The Stern Code of Conduct and Judiciary Process applies to all students enrolled in Stern courses and can be found here: https://www.stern.nyu.edu/uc/codeofconduct. To help ensure the integrity of our learning community, prose assignments you submit to NYU Brightspace will be submitted to Turnitin. Turnitin will compare your submission to a database of prior submissions to Turnitin, current and archived Web pages, periodicals, journals, and publications. Additionally, your document will become part of the Turnitin database.

General conduct & behavior: Students are also expected to maintain and abide by the highest standards of professional conduct and behavior. Please familiarize yourself with Stern's Policy in Regard to In-Class Behavior & Expectations and the NYU Student Conduct Policy.

Student accessibility: If you will require academic accommodation of any kind during this course, you must notify me at the beginning of the course and provide a letter from the Moses Center for Student Accessibility (212-998-4980, mosescsa@nyu.edu) verifying your registration and outlining the accommodations they recommend. If you will need to take an exam at the Moses Center for Student Accessibility, you must submit a completed Exam Accommodations Form to them at least one week prior to the scheduled exam time to be guaranteed accommodation. For more information, visit the CSA website: https://www.nyu.edu/students/communities-and-groups/student-accessibility.html

Student wellness: Our aim is for students to be as successful academically as they can, and to help them overcome any impediments to that. Bookmark the NYU Stern Well-being Re-

source Hub (https://www.stern.nyu.edu/wellbeing) for existing services at NYU and Stern covering a wide variety of topics including financial well-being, relationship well-being, mental well-being, and more. Any student who may be struggling and believes this may affect their performance in this course is urged to contact the Moses Center for Student Accessibility (see also the Student Accessibility section of this syllabus) at 212-998-4980 to discuss academic accommodations. If mental health assistance is needed, call the NYU's 24/7 Wellness Exchange hotline 212-443-9999. Furthermore, please approach me if you feel comfortable doing so. This will enable me to provide relevant resources or referrals. There are also drop in hours and appointments. Find out more at http://www.nyu.edu/students/health-and-wellness/counseling-services.html

Name pronunciation and pronouns: NYU Stern students now have the ability to include their pronouns and name pronunciation in Albert. I encourage you to share your name pronunciation and preferred pronouns this way. Please utilize this link for additional information: Pronouns & Name Pronunciation

Religious observances and other absences: NYU's Calendar Policy on Religious Holidays states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. You must notify me in advance of religious holidays or observances that might coincide with exams, assignments, or class times to schedule mutually acceptable alternatives. Students may also contact religiousaccommodations@nyu.edu for assistance.

NYU Stern is committed to ensuring an equitable educational experience for all students regardless of identity or circumstances and strives to recognize the obligations its students have outside of Stern. Please review all class dates at the start of the semester and review all course requirements to identify any foreseeable conflicts with exams, course assignments, projects, or other items required for participation and attendance. If you are aware of a potential conflict, please contact me as soon as possible to discuss any potential conflicts to determine whether/how they can be accommodated.

Course outline

Below is an **approximate** schedule of the topics for each class. Please note the exam dates. The main readings that go with the class are indicated by **MR**; the chapters in BKM will cover roughly the same material as in the classes. You need to know and understand only the material covered in the classes/slides and homeworks; use the readings below to help you achieve that goal. **H** refers to the handouts. If you find that a particular handout is not helpful to you, you can skip it.

Date	**Topic**	**MR**	**H**
M 1/24	Introduction. Axioms of finance.		
W 1/26	Financial instruments.	1.1-5	
M 1/31	Financial markets.	2, 3.1	
W 2/2	Present and future value.	5.1-2	1-2
M 2/7	Returns and compounding.	5.1-2, 5.4	3-5
W 2/9	Portfolio choice: Efficient and optimal portfolios.	5.5, 6.1-2	0, 6-89
M 2/14	Portfolio choice: Adding a riskless asset.	5.6, 6.3	9
W 2/16	Portfolio choice: Multiple risky assets.	6.4-6.5	10-11
M 2/21	***NO CLASS***		
W 2/23	CAPM: Introduction.	7.1-2	12
M 2/28	CAPM: Proof.	7.1-2	12
W 3/2	CAPM: Applications of the CAPM.	7.3-5	13-14
M 3/7	Review session.		
W 3/9	**MIDTERM EXAM**		
	Spring Break		
M 3/21	Midterm review.		
W 3/23	Beyond the CAPM.		
M 3/28	Market efficiency.	8	
W 3/30	Equity Valuation: Valuation ratios.	13.1-3	15
M 4/4	Equity Valuation: Dividend discount models.		
W 4/6	Arbitrage.		17
M 4/11	Bonds: Introduction.		
W 4/13	***NO CLASS***		
M 4/18	Bonds: Prices, yields.	10.1-4	18-19
W 4/20	Bonds: Returns and forward rates.	10.6	20-22
M 4/25	Bonds: The yield curve.	10.6	20-22
W 4/27	Bonds: Duration, immunization.	11.1-3	23-24
M 5/2	Options: Strategies.	15.1-2	25-26
W 5/4	Options: Arbitrage bounds.	16.1	26-27
M 5/9	Options: The Black-Scholes-Merton formula.	16.2-4	
W 5/11	Review session.		